



AARHUS UNIVERSITY



# Study on Environmental Fiscal Reform Potential in 14 EU Member States: Appendices

Nº 07.0201/2014/685390/ENV.D.2

Final Report to DG Environment of the European Commission

## Authors:

Dr Dominic Hogg (Eunomia)

Professor Mikael Skou Andersen (Aarhus University)

Tim Elliott (Eunomia)

Dr Chris Sherrington (Eunomia)

Thomas Vergunst (Eunomia)

Sarah Ettlinger (Eunomia)

Laurence Elliott (Eunomia)

Joe Hudson (Eunomia)

Patrick Ten Brink (IEEP)

Sirini Withana (IEEP)

Paolo Razzini (IEEP)

Peter Hjerp (IEEP)

Andrea Illes (IEEP)

Kristof Geeraerts (IEEP)

Alexandru Ghiurca (IEEP)

27/01/2015



*Report for:*

Jonathan Parker - DG Environment European Commission

*Prepared by:*

Mikael Skou Andersen (Arhus University), Tim Elliott, Dr Chris Sherrington, Thomas Vergunst, Sarah Ettlinger, Laurence Elliott and Joe Hudson (Eunomia), Patrick Ten Brink, Sirini Withana, Paulo Razzini, Peter Hjerp, Andrea Illes, Kristof Geeraerts and Alexandru Ghiurca (IEEP).

*Approved by:*



.....  
(Project Director)

*Contact Details*

Eunomia Research & Consulting Ltd  
37 Queen Square  
Bristol  
BS1 4QS  
United Kingdom  
Tel: +44 (0)117 9172250  
Fax: +44 (0)8717 142942  
Web: [www.eunomia.co.uk](http://www.eunomia.co.uk)

*Disclaimer*

Eunomia Research & Consulting has taken due care in the preparation of this report to ensure that all facts and analysis presented are as accurate as possible within the scope of the project. However no guarantee is provided in respect of the information presented, and Eunomia Research & Consulting is not responsible for decisions or actions taken on the basis of the content of this report.

The information and views set out in this report are those of the authors and do not necessarily reflect the official opinion of the Commission. The Commission does not guarantee the accuracy of the data included in this study. Neither the Commission nor any person acting on the Commission's behalf may be held responsible for the use which may be made of the information contained therein.



# Contents

<b>1.0</b>	<b>Good Practice .....</b>	<b>1</b>
1.1	Introduction .....	1
1.2	Energy Taxes (Including Transport Fuel Taxes) .....	2
1.2.1	Good Practice .....	2
1.2.2	Suggested Implementation .....	4
1.3	Transport Taxes (Excluding Fuel) .....	10
1.3.1	Vehicle Taxes .....	10
1.3.2	Good Practice .....	16
1.3.3	Suggested Implementation .....	20
1.4	Air Transport .....	25
1.4.1	Good Practice .....	25
1.4.2	Suggested Implementation .....	27
1.5	Waste .....	28
1.5.1	Good Practice .....	28
1.5.2	Suggested Implementation .....	29
1.6	Packaging .....	31
1.6.1	Good Practice .....	31
1.6.2	Suggested Implementation .....	37
1.7	Single-use Carrier Bags .....	39
1.7.1	Good Practice .....	39
1.7.2	Suggested Implementation .....	44
1.8	Taxes on Air Pollution from Stationary Sources .....	44
1.8.1	Good Practice .....	44
1.8.2	Suggested Implementation .....	49
1.9	Water Abstraction .....	49
1.9.1	Good Practice .....	49
1.9.2	Suggested Implementation .....	51
1.10	Discharges to Waste Water .....	53
1.10.1	Good Practice .....	53
1.10.2	Suggested Implementation .....	54
1.11	Additional Analysis on Charges for Water Supply and Treatment .....	55
1.11.1	Good Practice .....	55
1.11.2	Suggested implementation .....	58
1.12	Pesticides .....	60

1.12.1	Good Practice.....	60
1.12.2	Suggested Implementation.....	62
1.13	Fertilisers .....	63
1.13.1	Good Practice.....	63
1.13.2	Suggested Implementation.....	64
1.14	Aggregates and Raw Materials.....	65
1.14.1	Good Practice.....	65
1.14.2	Suggested Implementation.....	69
1.15	Power Sector and the ETS .....	69
1.15.1	Setting Floor Prices for EUAs .....	72
1.15.2	Aviation in the EU-ETS.....	73
1.16	HGV Externality Charging .....	74
<b>2.0</b>	<b>Revenue Calculations.....</b>	<b>76</b>
2.1	Estimating Revenue Breakdown by Fuel Type.....	76
2.1.1	Introduction.....	76
2.1.2	Estimating Energy Consumption for ETD Categories .....	76
2.1.3	Revenue Breakdown Estimates.....	78
2.1.4	Pro-rating Actual Revenues based on Approximate Revenue Percentages..	81
2.2	Revenue Projections for Energy Taxation .....	81
2.2.1	Baseline Projections .....	81
2.2.2	Price Elasticities for Good Practice Projections of Tax Bases .....	81
2.2.3	Good Practice Revenue Projections .....	89
2.3	Revenue Projections for Transport (excluding fuels) Taxation .....	89
2.3.1	Vehicle Taxes.....	89
2.3.2	Aviation Taxes .....	90
2.4	Revenue Projections for Pollution and Resource Taxation.....	91
2.4.1	Waste Disposal Taxes.....	91
2.4.2	Plastic Bags.....	94
2.4.3	Other Pollution and Resource Taxes .....	95
<b>3.0</b>	<b>Indirect Benefits .....</b>	<b>99</b>
3.1	Damage Costs for Air Pollutants.....	99
3.2	Energy.....	102
3.2.1	Marginal sources of Electricity and Heat Generation .....	102
3.2.2	Emissions Factors.....	103
3.3	Transport.....	108

3.3.1	<i>Vehicles</i>	108
3.3.2	<i>Aviation</i>	109
3.4	<b>Resource Taxes</b>	110
3.4.1	<i>Diversion of Waste from Landfill</i>	110
3.4.2	<i>Diversion of Waste from Incineration and MBT</i>	112
3.4.3	<i>Water Abstraction and Effluent Treatment</i>	112
3.4.4	<i>Pesticides</i>	112
3.4.5	<i>Aggregates</i>	112
3.4.6	<i>Packaging</i>	113
3.4.7	<i>Single Use Plastic Bags</i>	113
3.4.8	<i>Fertilisers</i>	113
3.4.9	<i>Omissions</i>	114
4.0	<b>Environmental Fiscal Reform and Employment</b>	115
4.1	<b>Energy/Carbon Taxes</b>	120
4.2	<b>Transport Taxes</b>	126
4.2.1	<i>Vehicles</i>	126
4.2.2	<i>Aviation</i>	127
4.3	<b>Pollution and Resource Taxes</b>	128
4.3.1	<i>Waste Taxes</i>	128
4.3.2	<i>Taxes on Aggregates</i>	136
4.3.3	<i>Pesticide Taxes</i>	137
4.3.4	<i>Taxes/Charges on Single Use Carrier Bags</i>	137
4.3.5	<i>Air Pollution Taxes</i>	138
4.3.6	<i>Water Abstraction/Usage Charges/Taxes</i>	139
4.3.7	<i>Taxes on Chemical Fertilizers</i>	140
5.0	<b>Bulgaria</b>	141
5.1	<b>Energy Taxes</b>	141
5.2	<b>Transport Taxes (Excluding Transport Fuels)</b>	143
5.3	<b>Pollution and Resource Taxes</b>	145
5.4	<b>Modelled Changes in Tax Base</b>	149
5.5	<b>Full Revenue Outputs</b>	164
6.0	<b>Cyprus</b>	167
6.1	<b>Energy Taxes</b>	167
6.2	<b>Transport Taxes (Excluding Transport Fuels)</b>	169
6.3	<b>Pollution and Resource Taxes</b>	174

6.4	Modelled Changes in Tax Base.....	176
6.5	Full Revenue Outputs .....	191
<b>7.0</b>	<b>Denmark.....</b>	<b>194</b>
7.1	Energy Taxes .....	194
7.2	Transport Taxes (Excluding Transport Fuels).....	196
7.3	Pollution and Resource Taxes .....	198
7.4	Modelled Changes in Tax Base.....	206
7.5	Full Revenue Outputs .....	220
<b>8.0</b>	<b>Finland.....</b>	<b>223</b>
8.1	Energy Taxes .....	223
8.2	Transport Taxes (Excluding Transport Fuels).....	229
8.3	Pollution and Resource Taxes .....	235
8.4	Modelled Changes in Tax Base.....	238
8.5	Full Revenue Outputs .....	252
<b>9.0</b>	<b>Germany .....</b>	<b>255</b>
9.1	Energy Taxes .....	255
9.2	Transport Taxes (Excluding Transport Fuels).....	259
9.3	Pollution and Resource Taxes .....	259
9.4	Modelled Changes in Tax Base.....	262
9.5	Full Revenue Outputs .....	276
<b>10.0</b>	<b>Greece .....</b>	<b>279</b>
10.1	Energy Taxes.....	279
10.2	Transport Taxes (Excluding Transport Fuels) .....	282
10.3	Pollution and Resource Taxes .....	290
10.4	Modelled Changes in Tax Base .....	292
10.5	Full Revenue Outputs.....	307
<b>11.0</b>	<b>Ireland .....</b>	<b>310</b>
11.1	Energy Taxes.....	310
11.2	Transport Taxes (Excluding Transport Fuels) .....	312
11.3	Pollution and Resource Taxes .....	313
11.4	Modelled Changes in Tax Base .....	314
11.5	Full Revenue Outputs.....	328
<b>12.0</b>	<b>Latvia.....</b>	<b>331</b>
12.1	Energy Taxes.....	331
12.2	Transport Taxes (Excluding Transport Fuels) .....	334



12.3	Pollution and Resource Taxes .....	339
12.4	Modelled Changes in Tax Base .....	344
12.5	Full Revenue Outputs.....	359
<b>13.0</b>	<b>Malta .....</b>	<b>362</b>
13.1	Energy Taxes.....	362
13.2	Transport Taxes (Excluding Transport Fuels) .....	371
13.3	Pollution and Resource Taxes .....	375
13.4	Modelled Changes in Tax Base .....	383
13.5	Full Revenue Outputs.....	397
<b>14.0</b>	<b>Netherlands.....</b>	<b>400</b>
14.1	Energy Taxes.....	400
14.2	Transport Taxes (Excluding Transport Fuels) .....	405
14.3	Pollution and Resource Taxes .....	411
14.4	Modelled Changes in Tax Base .....	417
14.5	Full Revenue Outputs.....	431
<b>15.0</b>	<b>Slovenia.....</b>	<b>434</b>
15.1	Energy Taxes.....	434
15.2	Transport Taxes (Excluding Transport Fuels) .....	437
15.3	Pollution and Resource Taxes .....	443
15.4	Modelled Changes in Tax Base .....	448
15.5	Full Revenue Outputs.....	462
<b>16.0</b>	<b>Spain .....</b>	<b>465</b>
16.1	Energy Taxes.....	465
16.2	Transport Taxes (Excluding Transport Fuels) .....	477
16.3	Pollution and Resource Taxes .....	487
16.4	Modelled Changes in Tax Base .....	510
16.5	Full Revenue Outputs.....	524
<b>17.0</b>	<b>Sweden.....</b>	<b>527</b>
17.1	Energy Taxes.....	527
17.2	Transport Taxes (Excluding Transport Fuels) .....	530
17.3	Pollution and Resource Taxes .....	532
17.4	Modelled Changes in Tax Base .....	533
17.5	Full Revenue Outputs.....	547
<b>18.0</b>	<b>United Kingdom.....</b>	<b>550</b>
18.1	Energy Taxes.....	550

18.2	Transport Taxes (Excluding Transport Fuels) .....	554
18.3	Pollution and Resource Taxes .....	565
18.4	Modelled Changes in Tax Base .....	569
18.5	Full Revenue Outputs.....	584

# 1.0 Good Practice

## 1.1 Introduction

This Appendix sets out the approach taken in making suggestions to the Member States regarding specific types of environmental tax. It is worth setting out some general principles which we have sought to follow:

1. The approach reflects the study's intention to highlight potential for revenue generation using environmental taxes. The intention is to indicate where this potential may lie, and to demonstrate the magnitude of the revenues that could be derived from the taxes;
2. The environmental impact of measures is considered important, and all the suggestions are expected to have an influence, relative to the counterfactual, on behaviour. To the extent, however, that the environmental effect is considered secondary to the issue of revenue generation, the focus is on taxes rather than, for example, refunded levies (an example of which would be the Swedish charge on NO<sub>x</sub>). At the same time, we consider the issue of instrument design with a view to engendering a positive environment response;
3. In most cases, we have sought to develop an approach to each type of tax which could be applied to each country. We recognise, however, that each country's starting point is quite different in that some countries have certain taxes in place already, and at varying levels, whilst others may not have introduced such taxes at the time of writing. Furthermore, countries are confronting different environmental problems, and they have different levels of income. Therefore, in making suggestions for each country, we have sought to take into account the current situation when making country specific suggestions. The way we have done this is also explained in the relevant section for each tax.

It will be appreciated that in a cross country study such as this, proposing a fully designed instrument of a given type would not be feasible. We have, however, given some hints as to the types of design which might be suitable to engender a more pro-environmental response from the taxes suggested.

The way in which the revenues generated by changes in suggests tax rates does not always reflect the way we would expect the tax to be implemented in the country concerned. For example, where pesticides are concerned, it is suggested that any taxes which are introduced are banded such that they take into account the potential for environmental harm associated with each active ingredient. In practice, the data available for us to do that has not been available. As such, we have modelled the potential revenue take on a simplified basis. We would, of course, encourage Member States to introduce the suggested taxes with due consideration given to their design features so as to ensure that the tax structure (e.g. the way it is banded) reflects, as closely as possible, the source of the environmental damages.

This document is, as far as we are aware, correct as of the time of drafting, this having begun in mid-2014. Taxes and charges are changing all the time. Every attempt has been made to be current, but it is in the nature of the subject that matters will evolve over time, rendering some of the material, in due course, out of date.

## 1.2 Energy Taxes (Including Transport Fuel Taxes)

### 1.2.1 Good Practice

Revenues from energy taxation generally account for the largest share of revenue from all environmental taxes. Energy taxes cover taxes on fuels used in transport, industry and the generation of power and heat. In practice, however, it makes sense to consider energy taxes insofar as they affect the generation of power separately from the taxes applied to vehicle fuels and fuels used for heating. This is because power generation is included within the scope of the EU Emissions Trading Scheme, whereas emissions from transport and from heating are not.<sup>1</sup> The power sector is no longer (in Phase III of the ETS) in receipt of free allowances for GHG emissions, with all allowances for the power sector now auctioned.<sup>2</sup> Some countries do make use of taxes on inputs to electricity generation, or production capacity for electricity. However, these are not harmonised taxes. The situation in respect of power generation in the ETS is considered in Section 1.15, whilst it should also be noted that air pollution taxes, which may affect power generating installations (as well as their emitters) are considered in Section 1.4.

Revenues from environmentally-related taxes in EU Member States had, by 2012, declined to 6.05% of taxes and social contribution (TSC), and 2.4% of GDP, from their peak in 1999 of 6.9% of TSC and 2.8% of GDP. There have been very few reductions in the nominal tax rates, so besides TSC/GDP growth being more significant than revenue growth, a key contributing factor for the decline in significance of environmental taxes has been insufficient adjustment to keep pace with inflationary trends, though no doubt, environmental improvements also have contributed by eroding the tax base for specific taxes related to pollution. Environmental tax legislation often details tax rates in absolute units of a currency rather than in ad valorem terms so that the lack of indexation tends to lead to an erosion of the significance of the taxes.

Recognising this, several Member States (including Sweden, Denmark, Netherlands) have introduced a system whereby one or more energy tax rates are indexed automatically to an index of inflation. Indexing energy taxes to a measure of inflation might be considered as one element of 'best practice' relevant to budgetary consolidation, and exploring the extent of revenue erosion in the absence of this mechanism (not to mention, erosion of any environmental incentive). Indeed, the proposal from the Commission for an Energy Tax Directive suggested, at Article 4(4), states:

*4. The minimum levels of general energy consumption taxation laid down in this Directive shall be adapted every three years starting from 1 July 2016 in order to take account of the changes in the harmonised index of consumer prices*

---

<sup>1</sup> It should be noted that several other activities included under the ETS are also not subject to the harmonisation proposals of the existing ETD (as set out in Article 2(4) of the existing ETD, Directive 2003/96/EC). Some activities covered by the ETS are effectively covered by the existing ETD, so both pay the harmonised taxes, and are subject to the requirements of the ETS in terms of their requirement to hold sufficient allowances to cover GHG emissions. The proposed ETD, through identifying a CO<sub>2</sub> component explicitly, allows for installations covered by the ETS to be exempted from this part of the tax.

<sup>2</sup> Some newer Member States have availed themselves of a derogation from the requirement to auction all allowances and will be able to issue a diminishing number of free allowances for the power sector with the number falling to zero in 2020.

*excluding energy and unprocessed food as published by Eurostat. The Commission shall publish the resulting minimum levels of taxation in the Official Journal of the European Union.*

*The minimum levels shall be adapted automatically, by increasing or decreasing the base amount in euro by the percentage change in that index over the three preceding calendar years. If the percentage change since the last adaptation is less than 0.5%, no adaptation shall take place."*

That having been said, it is also clear that energy prices are politically sensitive in many countries, and it may not always be straightforward to index taxes to inflation if the underlying pre-tax prices for energy carriers are increasing at a rate that exceeds the background rate of inflation. We have not proposed *retrospective* increases in rates so as to maintain the real terms value of energy taxes where these have remained constant in nominal terms (or where they have been increased in nominal terms, but at a rate below that of inflation). However, we have proposed that indexation occurs going forward.

The European Union's Energy Taxation Directive (ETD) has, in the past, established minimum levels for energy taxation relating to certain motor fuels, heating fuels and electricity. We refer to these rates as the rates in the existing ETD. A new proposal, referred to henceforth as the proposed ETD, is currently being debated.<sup>3</sup> This proposes new minimum rates of tax for motor fuels, heating fuels, and for electricity. It suggested that these should follow a specific formula linking the tax rate to the energy content of the fuel and the associated greenhouse gas emissions (see below). The proposal, made in 2011, had envisaged the new rates being implemented by January 2013 (with some phasing allowed for some transport fuels).

Most Member States have defined tax rates for one or more fuels that exceed the minimum levels in the proposed ETD, but there is rarely consistency in national tax rates across energy carriers according to their basic properties causing some energy products to be treated, relatively, more favorably than others. In the light of this, the proposed revision of the ETD establishes the principle that energy carriers should be taxed in a more consistent manner according to their physical properties, as follows:

- For the transport fuels, the proposed ETD suggests that different fuels be taxed according to energy content (€9.6 per GJ) and GHG emissions (€20 per tonne CO<sub>2</sub> equ.).
- Where motor fuels are used for commercial and industrial purposes specified in Article 8 (2) of the ETD, the minimum tax rates in the proposed ETD are based on energy content (€0.15 per GJ) and GHG emissions (€20 per tonne CO<sub>2</sub> equ.).
- For heating fuels, the tax rates proposed are determined as for the motor fuels used for commercial and industrial purposes; and
- For electricity, the rate in the proposed ETD is €0.15 per GJ (a small upward revision from the rate in the existing ETD).

---

<sup>3</sup> The consolidated version of the existing Directive (Council Directive 2003/96/EC) can be found here [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/com\\_2011\\_169\\_cod\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/com_2011_169_cod_en.pdf)

For the transport fuels, and for the energy content only, then for countries with taxes below the stated minimum rates set out in the proposed ETD, it was envisaged (as per Table A of Annex I) that any necessary increases could be phased in over a period from 2013 to 2018.

The proposed ETD also made clear that where Member States have tax rates in excess of the minimum levels proposed, the approach to setting tax rates for all fuels in the relevant groups (e.g. heating fuels) should respect the principles by which the ETD rates are set, i.e. a consistent application of rates based on the energy content and related CO<sub>2</sub> emissions.

It is recognized that the proposal has not been agreed and continues to be debated in the European Council. However, it was agreed that it should be used as a basis for suggested changes in this work since, although the proposal continues to be debated, it represents the Commission's most recent published thinking in respect of energy taxation. The document used as the basis for the approach taken is:

*European Commission (2011) Proposal for a Council Directive amending Directive 2003/96/EC restructuring the Community framework for the taxation of energy products and electricity, Brussels, COM(2011) 169/3, 2011/xxxx (CNS)*

This is referred to, henceforth, as 'the proposed ETD'.

### 1.2.2 Suggested Implementation

Most countries have set rates higher than the minimum rates in the proposed ETD for at least one energy carrier within each of the groupings (transport fuels, commercial and industrial motors and heating fuels). In considering how Member States might respond to the proposed ETD, then in principle, one could have considered harmonization of rates within the given groupings either to the highest level of any energy carrier in the group, or to lowest rate of any energy carrier within the group, or many other possibilities. Given the emphasis in this study on the potential for generating revenue, then the approach is generally based on upward harmonization of tax rates within any grouping to the rate which is, according to the formula set out in the proposed ETD, the highest in terms of the implied rate of tax per unit of energy content, assuming that the CO<sub>2</sub> element of the duty is €20 per tonne of emissions of CO<sub>2</sub>.

This approach does not necessarily lead to harmonization of tax rates across Member States. It follows from the formula in the proposed ETD that harmonization could only occur if all Member States harmonized taxes at the same implied rates of taxation in terms of € per GJ of energy content, and € per tonne of CO<sub>2</sub> emitted.

#### 1.2.2.1 Motor Fuels

The countries concerned have taxes in place on motor fuels whose rates, and relative rates (across the motor fuels), vary. Most countries have, however, rates which are either similar to, or already well above, minimum rates in the proposed ETD. The approach we have proposed is as follows:

- 1) Where the rates are below the minimum rates in the proposed ETD, they are increased accordingly;
- 2) Where the rate for any fuel is above the minimum rate in the proposed ETD, we assume that the CO<sub>2</sub> based element of the tax is equivalent to €20 per tonne CO<sub>2</sub>, as per the proposed ETD. We then calculate the implied tax rate per GJ for each of the

fuels. We then propose tax rates for all fuels which are based on equal tax rates for the energy component of the fuel.

If 1) applies, then the tax rate changes are assumed to occur over a period to 2018 as per the proposed ETD. If 2) applies, then alignment of all taxes to that of the fuel with the highest implied tax per unit of energy is assumed to occur over a period to 2023, as per the proposed ETD.

It should be noted that for many countries, the suggested approach implies an upward harmonisation of duties on diesel to reflect the implied energy-related tax on petrol. Differentials regarding rates of duty for transport fuels already give rise to concerns, in some Member States, over so-called 'tank tourism'. Depending upon how different Member States choose to respond to the suggestions made (some of the Member States under consideration share borders), it is recognised that concerns regarding tank tourism might be more or less prominent. The changes suggested are intended to indicate potential for additional revenue, and could not anticipate how each Member State would respond, still less, how other countries (both within and outside the EU-28) might choose to adjust taxes on transport fuels in future. The objective of this work is not to establish a tax harmonising proposal across all member States (indeed, since it covers only 14 Member States, it would be impossible to do so). It should also be noted that in Denmark, in order partly to address the potential for tank tourism, circulation taxes on diesel vehicles are higher than those on petrol-driven vehicles to compensate for the fact that tax rates on diesel are lower than they would otherwise be (indicating, as per the transport section below, some interdependence of circulation taxes and fuel taxes). Respecting the formula in the proposed ETD makes it difficult for Member States to take such compensating measures since the applicable tax rates have to be harmonised with respect to energy and CO<sub>2</sub> content, but this remains a possibility for the time being given that the proposal has not become law.

#### 1.2.2.2 Heating Fuels

There is considerable variation in tax rates applied across Member States for heating fuels (see Table 1-1 and Table 1-2 below). A general pattern that can be discerned is that, when expressed in terms of the tax rate per GJ, mineral oils tend to be taxed at considerably higher rates than natural gas and coal. The propensity for relatively high tax rates on mineral oils also for heating purposes may historically be related to a desire to promote other energy carriers than oil, and to the concern in some Member States that setting different rates of tax for different uses of the same fuel might encourage fraudulent use of the fuel. Electricity is also frequently taxed at a more significant level than natural gas and coal, being taxed at a higher rate than oil, in terms of energy content, in seven Member States.<sup>4</sup> Finally it remains the exception that fiscal administrations consider the energy contents of heating fuels.

The existing ETD has established minimum rates for a range of heating fuels used for non-business and business purposes, notably coal, mineral oils and natural gas. There are also minimum rates for electricity, which in several Member States is used for heating purposes.

---

<sup>4</sup> This might be expected, to a degree, given the fact that non-renewable forms of electricity typically convert fossil energy carriers into electricity at an efficiency well below 100%. Hence, the energy content of electricity reflects a conversion of input fuels with a much higher energy content.



Identification of best practice for taxation of heating fuels is complicated by the various energy mixes employed by Member States across Europe for heating purposes. Low tax rates for certain energy carriers may be used to favor and promote national interests in their wider uptake.

Table 1-1 below provides the effective tax rates in EU Member States for the most important heating fuels in non-business sector, whilst Table 1-2 does the same for the business sector. A weighted average has been computed for each Member State, taking into account its specific energy mix.<sup>5</sup> To allow for an illustrative comparison (exemptions were not accounted for in the weighted rate), all tax rates have been converted into the same metric (i.e. energy content). The final column of the table indicates the effective tax rate implied by adoption of the ETD amendments. While the minimum rate proposed is €0.15 per GJ, the proposed CO<sub>2</sub> element has been converted into an implicit tax rate per GJ too to allow comparison. This is important for heating fuels as the CO<sub>2</sub> element accounts for between 88% and 93% of the proposed minimum rates under the ETD, depending on the fuel.

**Table 1-1: Implicit Energy Tax Rates for Non-business Heating Based on Energy Contents**

€ per GJ	COAL	OIL	GAS	ELECT	Weighted for Member State	ETDwCO <sub>2</sub> (weighted)*
AT	1.70	2.78	1.66	4.17	2.85	1.50
BE	0.40	0.49	0.27	0.53	0.42	1.46
DK	11.55	11.24	10.71	30.53	19.23	1.45
FI	5.20	4.64	2.91	4.73	4.71	1.63
FR <sub>2014</sub>	0.64	1.67	0.39	6.94	2.81	1.39
DE	0.30	1.74	1.53	5.69	2.58	1.42
EL	0.30	9.38	1.50	0.61	6.68	1.63
IE	0.95	2.91	1.03	0.28	1.52	1.60
IT	0.32	11.46	4.73	6.31	6.40	1.36
LU	0	0	0.30	0.28	0.16	1.46
NL	0.52	12.51	5.29	32.36	11.41	1.27
PT	0	9.38	0.30	0.28	3.46	1.57
ES	0.65	2.41	0.65	0.28	1.05	1.46
SE	13.76	13.11	9.50	9.61	10.07	1.59
UK	0	3.68	0	0	0.25	1.32
CY	0.31	3.54	2.60	1.39	2.27	1.63
CZ	0.34	12.41	0.34	0.31	0.47	1.39
EE	0.30	3.15	0.70	1.24	1.05	1.42
HU	0.31	11.32	0.31	0.28	0.65	1.31
LV	0.30	1.63	0.46	0.28	0.50	1.50
LT	0.30	0.60	0	0.28	0.25	1.47

<sup>5</sup> Estimates for the heating energy mix are available from the EU funded ECOHEATCOOL project (see S. Werner et. al., 2007, ECOHEATCOOL, The European Heat Market, Final Report, Bruxelles: Euroheat and Power).



€ per GJ	COAL	OIL	GAS	ELECT	Weighted for Member State	ETDwCO <sub>2</sub> (weighted)*
MT	0.30	4.61	0.84	0.42	1.72	1.63
PL	0.31	1.61	0	1.35	0.62	1.65
SK	0	10.98	0.37	0	0.26	1.31
SI	1.47	3.58	1.33	0.85	2.31	1.57
BG	0.31	0.73	0.05	0.28	0.29	2.01
HR	0.31	1.31	1.09	0.28	0.82	1.41
RO	0.30	9.39	0.32	0.28	1.25	1.32
Average					3.07	1.49
NMember State-average					0.96	1.51
EU15-average					4.91	1.47
NMember State-best practice (SI, MT, CY)					2.10	
EU15-best practice (DK, EL, NL, SE)					11.78	
EU best quartile (DK, EL, FI, NL, IT, PT, SE)					8.85	
Note: *Excluding electricity for which CO <sub>2</sub> price is determined by ETS						

Source: Member state reporting to European Commission, DG TAXUD excise tables, July 2013. Please refer to these tables for all details on exemptions, reduced and banded rates etc.

Table 1-2: Implicit Energy Tax Rates for Business Heating Based on Energy Content

€ per GJ	COAL	GAS OIL	GAS	ELECTR	Weighted for Member State	ETDwCO <sub>2</sub> (weighted)*
AT	1.70	2.78	1.66	4.17	2.75	1.56
BE	0.40	0.49	0.13	0.83	0.46	1.52
DK	11.55	11.24	10.71	15.12	12.46	1.49
FI	5.20	4.64	2.91	1.95	2.92	1.65
FR <sub>2014</sub>	0.64	1.67	0.39	4.73	2.20	1.51
DE	0.30	1.31	1.14	4.27	2.33	1.51
EL	0.30	9.38	1.50	0.69	4.61	1.68
IE	0.95	2.91	1.03	0.14	1.54	1.53
IT	0.16	11.46	0.34	3.47	3.21	1.45
LU	0	0	0.15	0.14	0.12	1.42
NL	0.52	12.51	5.29	32.36	14.64	1.40
PT	0.16	9.38	0.30	0.28	3.80	1.53
ES	0.65	2.41	0.15	0.14	0.63	1.44
SE	4.13	3.93	2.85	0.16	1.46	1.71
UK	0	3.68	0	0	0.70	1.45
CY	0.31	3.54	2.60	1.39	3.10	1.67
CZ	0.34	12.41	0.34	0.31	2.01	1.61

€ per GJ	COAL	GAS OIL	GAS	ELECTR	Weighted for Member State	ETDwCO <sub>2</sub> (weighted)*
EE	0.30	3.15	0.70	1.24	1.32	1.49
HU	0.31	11.32	0.31	0.29	1.28	1.45
LV	0.30	1.63	0.46	0.28	0.57	1.37
LT	0.15	0.60	0	0.14	0.13	1.47
MT	0.30	11.43	0.84	0.42	0.42	n.a.
PL	0.31	1.61	0	1.35	0.73	1.76
SK	0.31	10.98	0.37	0.37	1.31	1.61
SI	1.47	3.58	1.33	0.85	1.46	1.43
BG	0.31	0.73	0.05	0.28	0.35	1.64
HR	0.31	1.31	0.55	0.14	0.68	1.50
RO	0.15	9.39	0.17	0.14	1.03	1.41
EU28 average					2.44	1.33
NMember State-average					1.10	1.28
EU15-average					3.59	1.37
best3-NMember State (SI, CZ, CY)					2.19	
best4-EU15 (DK, NL, EL, PT)					8.88	
best-quartile (DK, NL, FI, , CY, IT, PT, EL)					6.16	
Note: *Excluding electricity for which CO <sub>2</sub> price is determined by ETS						

Source: Member state reporting to European Commission, DG TAXUD excise tables, July 2013. Please refer to these tables for all details on exemptions, reduced and banded rates etc.

It appears that tax rates within individual Member States are rarely consistent, if ever, in terms of the way they treat different energy carriers and fuels. Furthermore some Member States appear to have no tax rates in place even where minima have been defined within the existing ETD. It has not been the purpose here to clarify the legal status of these apparent derogations.

There are fairly considerable discrepancies between old and new Member States, with the latter practicing modest tax rates.

Identifying an overall EU best practice for non-business heating based on the highest quartile comes to an average of €8.85 per GJ<sup>6</sup>. This is based on Greece, Portugal, Italy, Netherlands, Finland, Denmark and Sweden. While the highest tax burdens are found where heating is respectively most and least needed, findings from the ECOHEATCOOL project demonstrate that per capita energy consumption for domestic heating purposes in Belgium and France are in fact higher or at the same level as in somewhat colder

---

<sup>6</sup> The CO<sub>2</sub>-component (at €20/tCO<sub>2</sub>) of this best practice figure is about €1.30/GJ for non-electricity with current mix of heat energy carriers in EU. The CO<sub>2</sub>-component will range from €1.12/GJ in Netherlands to €1.50/GJ in Poland.

Denmark. There are further indications that there is untapped potential in improving energy efficiency across wide parts of Europe and for which purpose a more consistent approach to taxation of heat energy carriers according to energy content would be useful. For business heating the best practice quartile Member States are Cyprus, Italy, Portugal, Greece, Netherlands, Denmark and Germany.

The proposed approach is based on moving towards the rates proposed for the ETD-amendment in much the same way as with motor fuels. In other words:

- 1) Where the rates are below the minimum rates in the proposed ETD, they are increased accordingly;
- 2) Where the rate for any energy carrier is above the minimum rates in the proposed ETD, we assume that the CO<sub>2</sub> based element of the tax is equivalent to €20 per tonne CO<sub>2</sub>, as per the proposed ETD. We then calculate the implied tax rate per GJ for each of the energy carriers. We then suggest tax rates for all fuels which are based on equal tax rates for the energy component of the fuel.

If 1) applies, then the tax rate changes are assumed to occur over a period to 2018 as per the proposed ETD. If 2) applies, then alignment of all taxes to that of the fuel with the highest implied tax per unit of energy is assumed to occur over a period to 2023, as per the proposed ETD. Note that the proposed ETD does not appear to provide for this additional period in the case of heating fuels, but the variation in levels suggests that such a period for adaptation would be necessary given the magnitude of the proposed changes.

One difficulty presents itself with using this approach: several countries use the same tax rate for fuels which are used in different applications (e.g. diesel or kerosene used as fuel for vehicles, industrial motors and heating). Because of the considerable differential between the energy-related taxes in the different applications in the proposed ETD (the tax rate per GJ differs by a factor of 64), the strict application of this approach would lead to suggested hikes in tax rates for e.g. gas used as heating fuel that are extremely large. This can be readily appreciated by reviewing Table 1-1 and Table 1-2 above. Wherever there are large differences between the rates for oils, and the rates for other fuels, harmonisation in line with the highest taxed energy carriers clearly leads to considerable hikes in rates (see the cases of CZ, HU, SK and RO, for example, all of which are included within the first study on 12 Member States).<sup>7</sup> One of the reasons for this is concern regarding fraud, and the potential for using fuels purchased at rates applicable for heating in applications such as use in vehicles. Maintaining a single rate makes such fraudulent / black market transactions unlikely.<sup>8</sup>

As a result of this, we have assumed the rates are harmonized upwards to the rates equivalent to the highest tax rate per GJ applied to the heating fuels other than gas oil and kerosene.

---

<sup>7</sup> Eunomia Research & Consulting, and Aarhus University (2014) *Study on Environmental Fiscal Reform Potential in 12 EU Member States*, Report for European Commission - DG Environment, February 2014, [http://ec.europa.eu/environment/integration/green\\_semester/pdf/EFR-Final%20Report.pdf](http://ec.europa.eu/environment/integration/green_semester/pdf/EFR-Final%20Report.pdf)

<sup>8</sup> Some countries setting similar rates offer rebates on tax where the user provides documentary evidence of the use of the fuel for the purpose of heating. This is then, in turn, sometimes, identified as an environmentally harmful subsidy, even though it seems clear that the combined mechanism is intended to prevent fraud,

It is quite clear from the above that, as with motor fuels, the possibility to go further than this in terms of revenue generation may exist.

### 1.2.2.3 Electricity

For electricity, the proposed approach is to increase electricity taxes to the level proposed in the ETD (€0.15 per GJ). This is a very limited change to the rate in the existing ETD (of €0.50 per MWh, the proposal being equivalent to €0.54 per MWh). The rate is assumed to be applied in 2016. No further changes are considered here reflecting the position of the power sector in the EU-ETS and the fact that all allowances for the power sector will be auctioned (other than for some newer Member States, where a declining quantity of allowances can be issued free of charge, falling to zero in 2020).

## 1.3 Transport Taxes (Excluding Fuel)

### 1.3.1 Vehicle Taxes

The approach taken by Member States in respect of vehicle taxation varies considerably from one country to the next. Quite apart from the variation in VAT rates (EMEA suggests these vary from a low of 15% to a high of 27% across the EU), the countries of the EU make use of different taxes on the purchase / registration and the use of vehicles. In essence, a key distinguishing feature of these taxes is whether or not they are paid once (on purchase / initial registration) or annually (in the form of a license fee). A 2012 Communication from the Commission distinguishes between 'registration' taxes and 'circulation' taxes as follows:<sup>9</sup>

*The term 'registration tax' used in this Communication includes all kinds of taxes currently linked to the registration of a vehicle, regardless of their name (tax, excise duty, environmental bonus-malus scheme, etc.) but does not cover fees covering the administrative cost for registration of a vehicle or the cost of technical inspections.*

*The term 'circulation tax' used in this Communication includes all kinds of taxes linked to the circulation of a car in the territory of a Member State, regardless of the name of the tax, excluding tolls, vignettes and excise duties on fuels.*

Regarding the former, it notes:

*At present, 18 Member States levy a registration tax on vehicles. The tax base and level of taxation differ considerably between Member States. Most common differentiators are the purchase price or value of the car, the fuel used (e.g. petrol or diesel), engine size or power and the CO<sub>2</sub>-emissions of a car. Over the last years, many Member States have restructured the tax base of registration and circulation taxes to be totally or partially CO<sub>2</sub> based. National registration taxes are typically levied once in the lifetime of a car, except in Belgium, where they are levied each time the (private) ownership of a car changes.*

Regarding the latter, the circulation taxes, it notes:

---

<sup>9</sup> Communication from the Commission to the European Parliament, The Council And The European Economic And Social Committee (2012) Strengthening the Single Market by removing cross-border tax obstacles for passenger cars, COM(2012) 756 final, 14/12/2012.

*Typically, circulation taxes are levied annually by the Member State in which a passenger car is registered and are differentiated according to engine size or engine power, the fuel used and/or the environmental performance of the car.*

The tax bases for the circulation taxes are generally similar – weight, CO<sub>2</sub> emissions, engine capacity, engine power, etc. – to those for the registration taxes, with those countries that have both in place sometimes using the same base for the calculation of the tax rate.

The Staff Working Document accompanying the Communication indicated that of the (then) 27 Member States, only four had no circulation tax. Of these four, two – Lithuania and Estonia – were listed as having neither a registration tax nor a circulation tax in place.<sup>10</sup>

Countries with high levels of revenue generation from registration taxes include:

1. Malta, where the tax is based on a quite sophisticated system depending on the vehicle. For example, for passenger cars, the percentage of the retail value to be paid is based both on the length of the vehicle and the emissions performance of the vehicle. For petrol-driven cars, the emissions performance is based only on CO<sub>2</sub> emissions, but for diesel powered vehicles, the rate is based also on the emissions of particulate matter. For freight vehicles, the tax rate is based on weight, the cubic capacity of the engine and the emissions standard of the vehicle. The tax generated revenues equivalent to 0.6% GDP in 2011, down from a level of the 0.94% in 2008, and 1.2% in 2000;<sup>11</sup>
2. Denmark, where the tax is applied as a percentage of the purchase price (including VAT), this percentage being higher on the value above a specified level. The rate payable is moderated by the fuel efficiency of the car, measured in terms of the km per litre for which the vehicle can run. There is a much higher 'bonus' for improved efficiency above the benchmark level (16 km per l for petrol driven cars and 17 km per l for diesel driven cars) than the malus for reduced fuel efficiency. In 2011, the tax raised revenues equivalent to 0.76% GDP (though the level in the mid-2000s was of the order 1.4% GDP);
3. Finland has a vehicle tax which is paid on the retail value of the vehicle. It applies to cars and vans weighing less than 1,875 kg and motorcycles, and for cars, is related to the CO<sub>2</sub> emissions associated with the vehicle. Depending on these, the tax is between 5% and 50% of the taxation value, which is effectively the retail value inclusive of VAT. For motorcycles, the rate is dependent on engine capacity. In 2011, the tax generated revenue equivalent to 0.55% GDP;
4. The Netherlands. Here, the tax on passenger cars is levied in four bands related to CO<sub>2</sub> emissions, but with different bands for petrol and diesel driven cars. For both types, the tax is calculated using a fixed rate and a variable rate, both of which escalate as one moves into higher emissions bands. The tax on

---

<sup>10</sup> Commission Staff Working Document (2012) Principles of taxation of motor vehicles according to EU law as interpreted by the Court of Justice, SWD(2012) 429 final, Brussels, 14.12.2012, [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/other\\_taxes/passenger\\_car/swd\\_2012\\_429\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/other_taxes/passenger_car/swd_2012_429_en.pdf)

<sup>11</sup> These are the most recent figures from the DG TAXUD database.

motorcycles and vans, on the other hand, is based on the net catalogue price. In 2011, the tax generated revenue equivalent to 0.33% GDP (down from 0.6% in early 2000s).

These taxes vary in the extent to which they exempt (completely) the lower emission vehicles. They indicate that revenue generation can still be significant even with relatively high differentials across the different bands used to differentiate on environmental performance.

Countries with high levels of revenue generation from circulation taxes include:

1. Denmark, where the tax is charged on the basis of the fuel efficiency (measured in terms of km per litre of fuel). The rates are quite different for diesel driven cars and petrol driven cars, and since 2009, an additional amount is due on diesel vehicles without an approved filter for removal of particulate matter. In 2011, the tax raised the equivalent of 0.53% GDP;
2. Ireland, where motor tax used to be raised on the basis of the engine size (cc), but since 2008, the tax base has been the emissions of CO<sub>2</sub> per km. There is no zero rate, and there are twelve bands to the tax. The lowest rate of tax payable is €120 and the highest is €2,350 (see Table 1-3 below). The tax raised revenues equivalent to 0.6% GDP in 2011 and 0.62% GDP in 2012.

**Table 1-3: Irish Motor Tax for New Private Cars**

Band	CO <sub>2</sub> emissions-grams per km	Annual €	Half-year € <sup>1</sup>	Quarterly € <sup>2</sup>	Arrears Monthly € <sup>3</sup>
A0	0	120	66	33	12.00
A1	1-80g	170	94	48	17.00
A2	More than 80g per km up to and including 100g per km	180	99	50	18.00
A3	More than 100g per km up to and including 110g per km	190	105	53	19.00
A4	More than 110g per km up to and including 120g per km	200	111	56	20.00
B1	More than 120g per km up to and including 130g per km	270	149	76	27.00
B2	More than 130g per km up to and including 140g per km	280	155	79	28.00
C	More than 140g per km up to and including 155g per km	390	216	110	39.00
D	More than 155g per km up to and including 170g per km	570	316	161	57.00
E	More than 170g per km up to and including 190g per km	750	416	211	75.00

Band	CO <sub>2</sub> emissions-grams per km	Annual €	Half-year € <sup>1</sup>	Quarterly € <sup>2</sup>	Arrears Monthly € <sup>3</sup>
F	More than 190g per km up to and including 225g per km	1,200	666	339	120.00
G	More than 225g per km	2,350	1,304	663	235.00
<b>Notes:</b> 1. 55.5% of the annual rate (disregard cent). 2. 28.25% of the annual rate (disregard cent). 3. 1/10 of the annual rate (disregard cent after multiplication).					

UK, where the vehicle excise duty has some of the characteristics of a registration tax in that, for vehicles first registered after April 2010, there is a ‘first year’ rate payable. Both the ‘first year’ rate, and the rate payable annually thereafter, are banded according to CO<sub>2</sub> emissions per kilometre. The first year rate is zero-rated to a higher level of CO<sub>2</sub> emissions per kilometre, and the escalation is more rapid as one steps through subsequent bands. Hence, for the first year rate, the differentiation between vehicles with higher and lower emissions (between £0 and £1,065) is greater than is the case for rates payable in subsequent years (between £0 and £490), giving a stronger signal to purchasers of vehicles at the point of purchase. The tax raised revenue equivalent to 0.36% of GDP in 2011 (see Table 1-4 and

### 3. Table 1-5).

Table 1-4: UK Vehicle Excise Duty Rates, Petrol and Diesel Cars, 2013/14

Band	CO <sub>2</sub> Emission (g per km)	12 Months Rate	6 Months Rate
A	Up to 100	£0.00	Not available
B	101-110	£20.00	Not available
C	111-120	£30.00	Not available
D	121-130	£105.00	£57.75
E	131-140	£125.00	£68.75
F	141-150	£140.00	£77.00
G	151-165	£175.00	£96.25
H	166-175	£200.00	£110.00
I	176-185	£220.00	£121.00
J	186-200	£260.00	£143.00
K <sup>1</sup>	201-225	£280.00	£154.00



Band	CO <sub>2</sub> Emission (g per km)	12 Months Rate	6 Months Rate
L	226-255	£475.00	£261.25
M	Over 255	£490.00	£269.50
<b>Note:</b> 1. Includes cars with a CO <sub>2</sub> figure over 225g per km but were registered before 23 March 2006.			

**Table 1-5: UK Vehicle Excise Duty, First Year Rates for Petrol and Diesel Cars 2013/14**

Band	CO <sub>2</sub> Emission (g per km)	12 Months Rate	6 Months Rate
A	Up to 100	£0.00	Not available
B	101-110	£0.00	Not available
C	111-120	£0.00	Not available
D	121-130	£0.00	Not available
E	131-140	£125.00	£68.75
F	141-150	£140.00	£77.00
G	151-165	£175.00	£96.25
H	166-175	£285.00	Not available
I	176-185	£335.00	Not available
J	186-200	£475.00	Not available
K	201-225	£620.00	Not available
L	226-255	£840.00	Not available
M	Over 255	£1,065.00	Not available
<b>Note:</b> These rates are for a vehicle's first tax disc when it is first registered.			

4. Netherlands, where the tax payable is calculated using type and weight of the vehicle, type of fuel and province of residence of the owner. For example:

1. Passenger car, 1,400 kg, petrol: from € 748.00 (province of Zeeland) to € 812.00 (province of Zuid-Holland) per year;
2. Passenger car, 1,000 kg, petrol: from € 392.00 (province of Zeeland) to € 420.00 (province of Zuid-Holland) per year;
3. Passenger car, 1,000 kg, diesel: from € 896.00 (province of Zeeland) to € 928.00 (province of Zuid-Holland) per year;
4. Passenger car, 1,000 kg, LPG 3 and natural gas: from € 504.00 (province of Zeeland) to € 536.00 (province of Zuid-Holland) per year;



- Van, used by an entrepreneur, 1,400 kg: € 336.00 per year;
- Lorry, up to 25,000 kilogram, no towing-hook, no air-suspension and three axles: € 440.00 per year; and
- For a lorry with Euro 0, 1 or 2 the rates are 90%, 75% resp. 60% higher

In 2011, the tax raised revenue equivalent to 0.86% GDP.

### 1.3.1.1 Heavy Goods Vehicles

In addition to taxes on passenger vehicles, to the extent that public authorities may bear responsibility for the upkeep of the majority of the road network (other than those to which tolls are applied directly), then it may make sense for an element of 'cost recovery charging' to be incorporated into the design of 'taxes'. For this reason, the taxation of heavier vehicles linked to (for example) axle numbers and weight, might be considered sensible as these are contributing factors to the impact of vehicles on roads. Noise and other factors, such as the emissions (reflected in the Euro standard of the vehicles concerned) may also be reflected in the design of such taxes.

Directive 2011/76/EU on the charging of heavy goods vehicles for the use of certain infrastructures sets common rules on distance-related tolls and time-based user charges for vehicles with a maximum permissible gross laden weight of not less than 12 tonnes.<sup>12</sup> This regulatory framework aims at improving the functioning of the internal market for road transport by reducing the differences in the levels and systems of tolls and vignettes applicable in Member States and taking better account of the principles of fair and efficient pricing by providing for greater differentiation of tolls and vignettes in line with costs associated with the road use. For example, the Directive gives guidance on how road tolls should be set, and on the approaches for setting external cost charges where these are implemented, and maximum rates thereof. An example of an approach to taxation for HGV vehicles is the HGV-Eurovignette, which applies to Belgium, Denmark, Grand Duchy of Luxembourg, the Netherlands and Sweden (Germany has not been part of the system since September 1<sup>st</sup> 2003). The Eurovignette is levied on motor vehicles and combinations of vehicles which are destined for the transport of goods by road and whose maximum gross vehicle weight is in excess of 12 tonnes. In each of the countries concerned, the system generally applies in two ways depending on whether the vehicle is registered in the country to whom the tax should be paid, or elsewhere. In Belgium, for example, this is applied as follows:

1. for vehicles which are or must be registered in Belgium: as from the very moment they use a public highway. The Eurovignette is payable for successive periods of 12 months. However, the three-monthly payment of the Eurovignette can be authorized, on reasoned written request, at monthly rate.
2. for other vehicles subjected to the tax: as soon as they are travelling on the road system specified by the King (of Belgium). According to the period during which the vehicle is driven on roads where the Eurovignette applies, the taxpayer can pay a Eurovignette for one day, one week, one month or one year.

---

<sup>12</sup> Directive 2011/76/EU amending Directive 1999/62/EC on the charging of heavy goods vehicles for the use of certain infrastructures, OJEU 14.10.2011, L 269, pp.1-16, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:269:0001:0016:EN:PDF>

The applicable rates (in euro) are shown below. They indicate variation according to the number of axles and the emissions from the vehicle (EURO standards indicate progressively lower emissions of pollutants such as NOx).

**Table 1-6: Tax Rates Applied under the Eurovignette (€ per vehicle)**

Country of registration	Annually		Quarterly (*)		Monthly		Weekly		Daily
	Number of axles:								
	≤ 3	≥ 4	≤ 3	≥ 4	≤ 3	≥ 4	≤ 3	≥ 4	
Belgium									
emission norm non-EURO	960	1,550	288	465	-	-	-	-	-
emission norm EURO I	850	1,400	255	420	-	-	-	-	-
emission norm EURO II and cleaner	750	1,250	225	375	-	-	-	-	-
All other countries									
Vehicles covered by a Belgian trader's number plate or a temporary number plate									
emission norm non-EURO	960	1,550	-	-	96	155	26	41	8
emission norm EURO I	850	1,400	-	-	85	140	23	37	8
emission norm EURO II and cleaner	750	1,250	-	-	75	125	20	33	8

In 2011, in Belgium, the tax revenues amounted to 0.04% of GDP. The same tax (with the same rates) in the Netherlands (for use of vehicles on Dutch roads) raised revenue equivalent to 0.02% GDP in 2011. The tax revenues raised in Denmark, using the same tax structure, were also 0.02% GDP.

### 1.3.2 Good Practice

The European Commission made, in 2005, a proposal for a Directive on passenger car related taxes. The proposal document noted, regarding consultation on the matter:

*The gradual phasing out of registration tax, with a refund system to apply during a five to ten year long transitional period and the introduction of a new tax structure linked to CO<sub>2</sub> emissions received broad support.*

As well as dealing with some of the perceived single market distortions flowing from the wide range of registration taxes in different Member States, it foresaw some advantages of this approach:

*the abolition of RT [registration taxes] can take place in a revenue neutral framework as the revenue loss can be off-set by a gradual and parallel transfer of revenue from RT to ACT [annual circulation taxes] and, if necessary, from other*

*fiscal measures in compliance with Council Directive 2003/96/EC and even to innovative road use charging provisions. These represent a more stable source of revenue for national budgets, as they produce revenue during the entire lifetime of a passenger car, unlike RT which produces revenue only upon purchase of that car. Those Member States applying a high RT will be able to adjust the shift to ACT according to their needs until 2016 at the latest. These countries will have, on the one hand, to face transition costs to adapt and administer their car tax system particularly during the first years of the transitional period, but on the other hand they will benefit from lower administrative costs for managing the car tax system after the end of the transitional period.*

Regarding the desirability of incentivising a reduction in CO<sub>2</sub> emissions through the tax system, the proposal noted:

*Recent studies provided examples on how Member States can apply the CO<sub>2</sub> based element. In this case the total revenue from the CO<sub>2</sub> based element of the tax should be gradually increased over the period up to 2010 and at the same time the revenue from the old structure of the tax should be gradually reduced if the revenue neutrality is to be respected. Certainly it will belong to each Member State to fix the level of tax in terms of Euros per g CO<sub>2</sub> per km.*

It also cited work by COWI regarding the potential for different instruments to move different Member States towards the EU target of 120 g CO<sub>2</sub> per km. It foresaw some convergence in the proportion of revenues which should be related to the CO<sub>2</sub>- based incentives:

*To avoid further internal market fragmentation based on potential diversified application by Member States of the carbon dioxide element, the Commission proposes that by 1 December 2008 (the start of the Kyoto period) at least 25% of the total tax revenue from registration and annual circulation taxes respectively should originate in the CO<sub>2</sub> based element of each of these taxes. By 31 December 2010, at least 50% of the total tax revenue from both the annual circulation tax and the Registration tax (pending its abolition) should originate in the CO<sub>2</sub> based element of each of these taxes.*

Notwithstanding the Commission's proposal, no Directive was ever passed into law, so in principle, Member States retain freedom to establish their own taxation arrangements, subject to other legally binding treaties. Even so, the Commission proposal does point towards the desirability of ensuring the tax system favours the use of vehicles which emit fewer greenhouse gases per kilometre travelled, whilst also proposing the phasing out of registration taxes. As noted above, this phasing out has not (at the time of writing) occurred. Whilst some countries, such as the UK, have in place circulation taxes, but no registration tax, others, such as France, have in place a registration tax, but no circulation tax.

An ACEA summary of revenues raised from different transport taxes (and those related to taxes on energy used in transport) in 15 Member States indicated that, excluding VAT, and road tolls, then of the revenues raised from transport taxes, the one-off registration taxes accounted for a share ranging 0% to 61% of the combined revenues from annual

ownership taxes and sales and registration taxes (see Table 1-7).<sup>13</sup> This suggests that there is no clear pattern across the countries.

**Table 1-7: Revenues from Transport Taxes**

	AT € bn 2010	BE € bn 2010	DK DKK bn 2010	DE € bn 2010	ES € bn 2010	FR € bn 2009	GR € bn 2010	IE € bn 2011	IT € bn 2010	NL € bn 2010	PT € bn 2011	FI € bn 2010	SE SEK bn 2010	UK £ bn 2010
Purchase or transfer														
1.VAT on vehicle sales servicing/repair,parts, tyres	2.150	4.349	N.A.	25.750	4.242	13.604	0.342	0.382	18.100	1.304	1.719	1.339	18.500	12.500
2. Fuels & Lubricants	5.102	6.270	17.218	39.990	18.383	32.261	4.293	2.521	31.315	7.663	2.498	3.362	50.500	27.010
3. Sales & registration taxes	0.450	0.378	13.431		0.653	1.919	0.249	0.384	1.142	2.005	0.627	0.958		
Annual ownership taxes	1.596	1.455	10.077	8.500	2.813	1.270	1.590	0.990	6.610	3.608	0.396	0.670	13.500	5.840
Driving license fees		0.007		0.010	0.080	-				0.239				
Insurance taxes	0.324	0.734	1.855	3.500	0.692	3.934			4.051			0.284	3.100	
Tolls	1.409		0.356			9.350			1.422					
Customs duties		0.093		0.525		-					0.030			
Other taxes	0.570	0.652		0.820	0.372	1.201	0.055		5.186	1.315	0.370		6.500	1.500
<b>TOTAL</b>	<b>11.601</b>	<b>13.938</b>	<b>42.937</b>	<b>79.095</b>	<b>27.235</b>	<b>63.539</b>	<b>6.529</b>	<b>4.277</b>	<b>67.826</b>	<b>16.134</b>	<b>5.64</b>	<b>6.613</b>	<b>92.100</b>	<b>46.850</b>
<b>EURO</b>	<b>11.6</b>	<b>13.9</b>	<b>5.8</b>	<b>79.1</b>	<b>27.2</b>	<b>63.5</b>	<b>6.5</b>	<b>4.3</b>	<b>67.8</b>	<b>16.1</b>	<b>5.6</b>	<b>6.6</b>	<b>10.5</b>	<b>56.6</b>
<b>GRAND TOTAL = € 375 BN</b>														

Source: ACEA Tax Guide 12, Brussels: ACEA, p.5

At first glance, it may seem odd to implement taxes which are calculated using the same tax base on both registration and circulation. The (typically) one-off nature of registration taxes can be considered as a means to seek to influence the nature of purchases.

Because of their one-off nature, registration taxes may be higher than the annual circulation taxes (and not least, for the more polluting vehicles). Clear differentiation of rates according to emissions can act to bring the issue of fuel economy to the consumers' attention. One issue raised regarding registration taxes has been that they have been too high, and have acted as a barrier to vehicle purchase (and the effect of this may have been to slow down the change in the existing vehicle stock to those which emit fewer GHGs in cases where there is an absence of differentiation in line with such emissions). However, in principle, a suitably differentiated registration tax might influence consumption decisions in a positive manner, whilst having little or no effect on rates at which vehicles with lower emissions are purchased if these attract relatively low registration taxes. The differences in rates across Member States do, however, give rise to Single Market concerns.

Annual circulation taxes may also influence purchasing decisions. In principle, they might be considered as taxes which – when suitably differentiated – seek to reflect the annual impact of the vehicles in use, however imperfectly (since ownership does not determine the level of use). Once the vehicle has been purchased, circulation taxes are payable irrespective (generally) of mileage or actual fuel consumed. As such, the purchase of the

<sup>13</sup> ACEA Tax Guide 12, Brussels: ACEA, p.5.

vehicle leads to annual payments which cannot be avoided, and the level of which will generally be lower (and with lower differentials) than for the one-off registration tax. It could be argued that the annual circulation taxes – to the extent that they seek to change behaviour – are likely to be less influential than taxes on fuel, which more directly influence fuel consumption, and hence, vehicle usage and associated emissions. In the UK, for example, the difference in the tax between different CO<sub>2</sub> bands for vehicle excise duty are of the order £10 per annum, whereas the costs of the fuel used annually by cars in different bands might vary by £80 or so per annum.

If tax authorities seek to raise more revenue from such taxes, they will generally need to strike a balance between the one-off registration style taxes, and the annual circulation taxes.

The rapidity of the change in the average CO<sub>2</sub> intensity of passenger vehicles in France using the bonus-malus system appears to provide some support for the view that the price at the point of purchase is likely to be a key determinant of the pace of transition to low-carbon vehicles, though from the fiscal point of view, the system, combined with scrapping incentives, has led to net expenditure rather than an influx of revenue. The Austrian Normverbrauchsabgabe (NOVA) appears to be a more moderated form of this approach, with smaller ‘bonus’ offered in the context of a system of registration taxes.

From the fiscal perspective, if the main flow of revenue is derived from initial purchase of vehicles, this might lead to tax revenues which are less stable since they vary with the number of new registrations made each year (a point made by the Commission in its proposal for a Directive – see above). One advantage of placing a greater burden of taxation on the annual circulation taxes is to ensure greater stability of revenue (and given that such ‘taxes’ have sometimes had a ‘cost recovery’ element to them – to fund the maintenance of roads, for example – then revenue stability has much to recommend it). If more revenue is derived from annual taxes, it may also be more straightforward to make periodic adjustments to the tax system since the whole stock of vehicles is affected rather than merely those that are yet to be purchased. Indeed, in some countries, the majority of car purchases in any given year are not purchases of new vehicles, but purchases of second-hand ones (in the UK, this figure has been estimated at 75%).

Additionally, in the case of circulation taxes, there is less scope for strategic purchasing in the wake of announcements regarding future tax rates (if the tax revenues are based more on revenues related to vehicle purchases, then the potential for strategic tax avoidance exists in the period between the announcement of any change and the time at which the change takes effect). Indeed, for the circulation taxes, it may make sense to announce rates some time in advance to indicate a direction of travel and allow consumers to see the likely impact of their purchasing decisions on the taxes they will pay: the opposite may be true of registration taxes, where any early announcement is likely to lead to strategic behaviour. Finally, high registration taxes based on environmental arguments may be counterproductive if consumers can simply import vehicles from other countries to escape high tax burdens. More generally, the variety of different registration tax systems can give rise to problems in the Single Market context.

In principle, therefore, one might suggest a mix of the following:

1. Where registration taxes do not currently do so, to have them reflect the emissions of CO<sub>2</sub>, particulates etc.;
2. In line with Commission proposals, to shift more towards circulation taxes, and to

ensure that these are increasingly linked to CO<sub>2</sub> emissions, particulates etc., to the extent that the one-off registration payments seem too high;

3. Taxation on heavier vehicles to reflect the impact on road use (weight, axle numbers) and emissions (Euro standards and CO<sub>2</sub> emissions). Note that road tolls can, in principle, be used to reflect some of these impacts, and would be preferable insofar as they could capture all use of such vehicles; and
4. Reflecting the externalities associated with marginal road-use in conurbations, congestion charges where feasible.

It is difficult to be too specific about the best combination of instruments in this area. Each Member State starts from a different point, and the potential for overlap between policies is clear. For example, it seems entirely possible to design a system of circulation taxes which also incorporates the intent of the HGV-Eurovignette (which can take the form of a circulation tax). Equally, to the extent that Member States need to generate revenue to maintain the road system (and wish to reflect the impact of vehicles on road use), then it might be argued that the tax system ought to reflect the non-zero nature of externalities generated even by low emission vehicles (even though this might be better achieved through some form of road pricing).

Many countries have a number of bands for their vehicle taxes, generally according to the CO<sub>2</sub> emitted. The coarseness of the structure varies across countries. In principle, it seems wise to reward innovation through setting relatively narrow bands of, say, 10-15 g CO<sub>2</sub> per km (so that it is easier to envisage adapting and innovating to move a vehicle from one band to another), as applied in countries such as the UK. Member States may wish to ensure that the incremental costs between bands at least reflect the external costs of the emissions from the vehicle although it can be shown that this leads to relatively small differentials if the focus is CO<sub>2</sub> only.

As noted above, the Commission's proposal for a Directive in 2005 recommended that by the end of 2010, at least 50% of the total tax revenue from both the annual circulation tax and the Registration tax should originate in the CO<sub>2</sub> based element of each of these taxes. More generally, it seems clear that the tax system should have embedded within it incentives designed to promote vehicles with a lower environmental impact (and the above proposals reflect this). Arguably, what is more important is to generate a given quantum of revenue through a tax system which promotes a move towards the purchase of vehicles which, other things being equal, emit lower quantities of GHGs and other pollutants than others. This might suggest an overall structure of taxation which (until such time as road-pricing becomes widespread) ensures a baseline of revenue generation, but with incentives for the purchase of vehicles which emit fewer pollutants (including GHGs). To the extent that fuel duties are intended to reflect many of the externalities of fuel generation, some consideration might also be given as to whether incentives for using low-emission vehicles should allow for an implicit tax rate of zero for such vehicles when they clearly contribute to other externalities of transport.

For HGVs, the specification is more straightforward given the Framework set out in Directive 2011/76/EU. This sets a clear framework for HGV taxation, albeit that some elements of the proposed scheme are more complicated than others to apply in all circumstances.

### 1.3.3 Suggested Implementation

Reflecting the above, and recognising that:



1. the issue of the 'correct design' of transport taxes ought, properly, to consider the whole suite of possible interventions (including, for example, the extent to which road pricing / congestion charging is applied – these may not always be reported as 'taxes' as they more closely resemble user charges, even though vehicle 'taxation' may also have, associated with it, some form of cost recovery element). This includes duties on transport fuels, which (whatever the initial intention of their design) internalise externalities associated with fuel use, and, therefore, tend to overlap in their effect with circulation taxes that are banded according to emissions, but also, registration taxes;
2. different Member States have quite different starting points in respect of their approach to vehicle taxation; and
3. Member States have freedom to determine their own approach to vehicle taxation (though the Commission's expressed wish is that registration taxes are phased out),

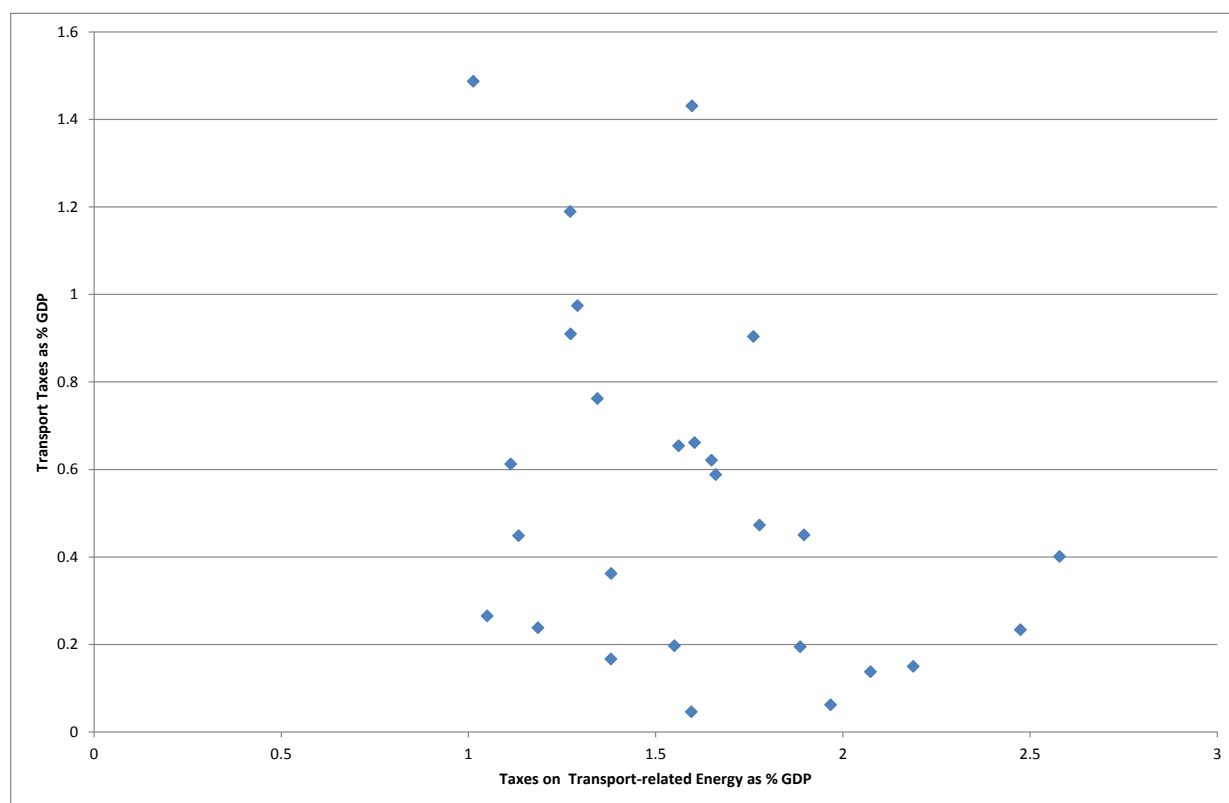
then we have taken a rather pragmatic approach to the application of good practice in this area.

In essence, we have reviewed the current level of tax associated with vehicles and transport fuels in the different countries and have proposed a change to this level in line with the difference in potential revenue take across countries relative to 'good practice'.

In terms of how these revenues are generated, the revenue coming from taxes on transport-fuels (covered under the Energy Tax Directive) is plotted against the revenue coming from transport taxes (excl. transport fuels) in Figure 1-1. This figure suggests two things:

1. First, a line of best fit shows a weak, but discernible, inverse relationship between the two (potentially bearing out the above point regarding the need to look at all transport taxes, including those on transport fuels, in the round: Member States with high taxes on transport fuels tend not to tax vehicles quite as heavily); and
2. Second, and possibly reflecting the influence of the existing Directive on taxation of energy products and electricity (2003/96/EC, as amended), no country raises less than 1% of GDP from taxes on transport fuels, irrespective of the rate at which it applies taxes on transport (excl. transport fuels). Consequently, whilst taxes on transport (excl. transport fuels) range from below 0.1% GDP to around 1.5% GDP, the taxes on transport fuels generate from around 1% to 2.5% GDP. The 'interval' between the lowest and highest levels (as % GDP) is similar for each (around 1.4% GDP), but the proportionate variation (expressed in terms of revenue as % GDP) is much greater where taxes on transport (excl. transport fuels) are concerned.

Figure 1-1: Transport-related Energy Taxes (as % GDP) v Transport Taxes (as % GDP) (EU27, 2011)



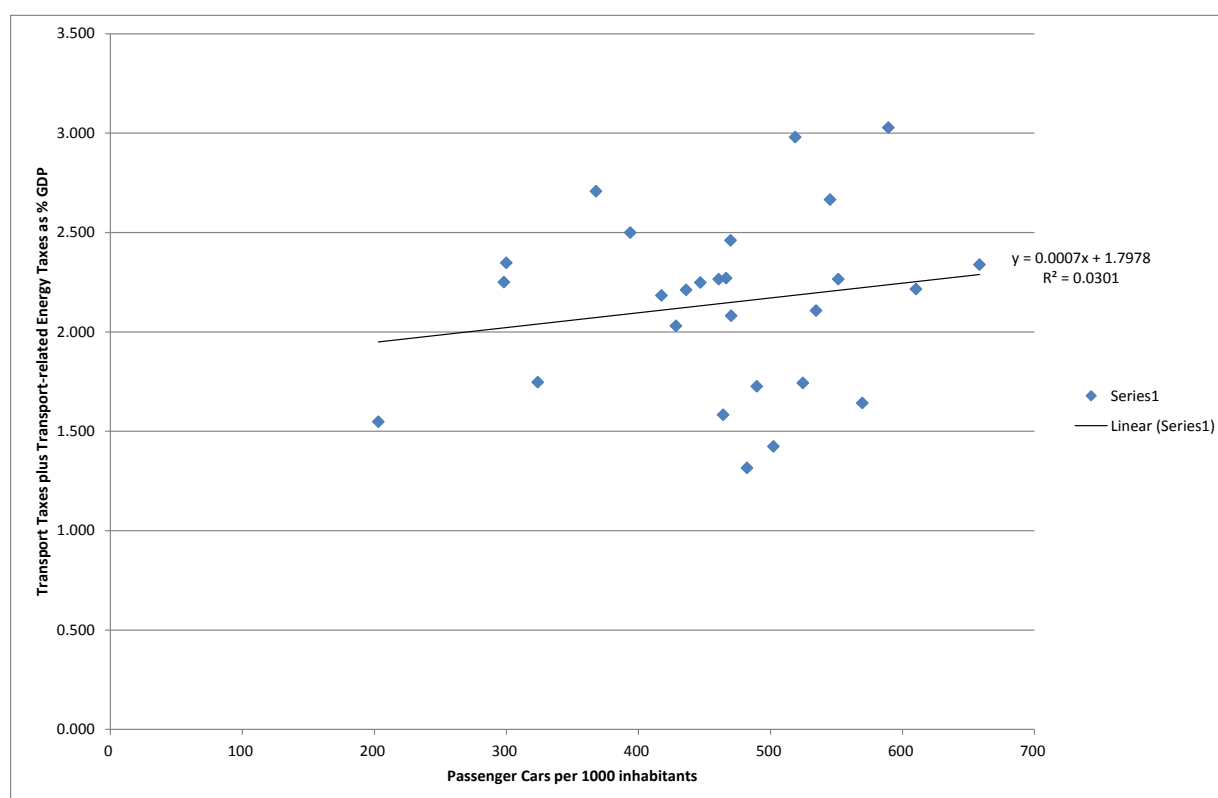
Sources: Transport Taxes as % GDP from Eurostat and Taxes on transport related energy as %GDP from Commission Services in European Commission (2013) *Transport in Figures 2013, Part 2: Transport* p.30, Directorate General for Mobility and Transport

In determining an appropriate level of potential revenue generation which could be generated from transport taxes (excl. transport fuels), we first of all considered the overall revenue generation in the EU Member States from transport fuels and transport taxes (excl. transport fuels) together. The highest level of taxation from the sources combines was to be found, in 2011, in Malta (3.03% GDP), followed by Slovenia (2.98% GDP) and Bulgaria (2.71% GDP). Of the EU-15 countries, the highest level of revenue generation relative to GDP for these combined taxes was in Denmark (2.50% GDP). We took the average figure in the upper quartile of performance (2.67% GDP), and used this figure effectively as a revenue target to inform the extent to which a Member State could increase taxes on transport (excl. transport fuels) and transport fuels.

We considered that in moving towards this rate, where transport taxes are concerned, the potential for revenue generation might be limited by the level of passenger car use. We have plotted in Figure 1-2 the relation between passenger cars per 1,000 inhabitants and the total revenue from transport taxes and transport-related energy taxes (as % GDP). This appears to show only a weak influence of the one upon the other. Similarly weak correspondences are shown when considering only the transport taxes on the y axis, and when considering the total number of vehicles registered on the x-axis. We considered that the evidence was, therefore, too weak to consider this as a controlling variable.



Figure 1-2: Relationship between Transport Taxes plus Transport-related Energy Taxes (as % GDP) and Passenger Cars per 1000 Inhabitants (EU27, 2011)



Sources: Transport Taxes plus Transport related energy taxes as % GDP from Eurostat and Commission Services in European Commission (2013) Transport in Figures 2013, Part 2: Transport p.30, Directorate General for Mobility and Transport / Passenger Cars per 1000 inhabitants from Eurostat in European Commission (2013) Transport in Figures 2013, Part 2: Transport p.83, Directorate General for Mobility and Transport

By subtracting the current revenue take from the target level, a proposal for the level of change in taxes on transport (including transport taxes) is derived. The net result for the countries in this study is shown in Table 1-8. The change in the far column is a suggested minimum level of increase to transport taxes (including transport fuels).

In order to arrive at the suggested level of change in transport taxes (excl. transport fuels), the revenue take from transport fuels under our revised proposals (see above) has to be estimated first. Within our modelling, therefore, there is a sequential logic applied, whereby the change in transport taxes (excl. transport fuels) is derived by subtracting from the figure in the rightmost column of Table 1-8 the implied increase in the revenue take from transport fuels implied by the changes discussed in Section 1.2.2.

Table 1-8: Suggested Minimum Increase in Transport Taxes plus Transport-related Energy Taxes

	Transport Taxes (incl. transport fuels) (% GDP, 2011)	Revenue Target (as % GDP)	Proposed Increase in Transport Taxes (incl. transport fuels) (as % GDP)
BE	1.73%	2.67%	0.94%
BG	2.71%	2.67%	-0.04%
CZ	2.21%	2.67%	0.46%
DK	2.50%	2.67%	0.17%

	Transport Taxes (incl. transport fuels) (% GDP, 2011)	Revenue Target (as % GDP)	Proposed Increase in Transport Taxes (incl. transport fuels) (as % GDP)
DE	1.74%	2.67%	0.93%
EE	2.03%	2.67%	0.64%
IE	2.18%	2.67%	0.49%
EL	2.27%	2.67%	0.40%
ES	1.32%	2.67%	1.35%
FR	1.42%	2.67%	1.25%
IT	2.22%	2.67%	0.45%
CY	2.67%	2.67%	0.00%
LV	2.35%	2.67%	0.32%
LT	1.64%	2.67%	1.03%
LU	2.34%	2.67%	0.33%
HU	2.25%	2.67%	0.42%
MT	3.03%	2.67%	-0.36%
NL	2.46%	2.67%	0.21%
AT	2.11%	2.67%	0.56%
PL	2.08%	2.67%	0.59%
PT	2.25%	2.67%	0.42%
RO	1.55%	2.67%	1.12%
SI	2.98%	2.67%	-0.31%
SK	1.75%	2.67%	0.92%
FI	2.27%	2.67%	0.40%
SE	1.58%	2.67%	1.09%
UK	2.27%	2.67%	0.40%

Source: European Commission (2013) *Transport in Figures 2013, Part 2: Transport, Directorate General for Mobility and Transport, Tables 2.1.11 and 2.1.12*

In terms of the types of taxes to be applied, the proposal for a Directive discussed above was considered, by the Steering Group, to be the latest publicly available view as to the European Commission's thinking on the matter of passenger vehicle taxation. The proposal expressed the Commission's preference for a shift away from registration taxes. As a result, we have tended to focus that the focus for the generation of additional revenue should be through circulation taxes. In this respect, and as noted above, we note that good practice is to band such taxes according to CO<sub>2</sub> emissions from the vehicle, though we note also that the approach in Malta (under its registration tax) to differentiating diesel vehicle tax rates according to particulate emissions is of some interest, with Denmark doing something similar with its circulation tax.

Finally, in terms of the timing of the introduction of any changes, we have typically suggested a phasing in of the changes over a period which relates to the magnitude of the change being proposed in the country concerned. The taxes are assumed to be phased in between 2016 and 2020, and increase in line with GDP thereafter. This would imply an increase over and above inflation to the extent that GDP is forecast to rise in real terms. It should be noted, in this regard, that some countries are already, in anticipation of a shift in the vehicle stock, and increased innovation in terms of fuel efficiency, reducing the level of CO<sub>2</sub> emissions from vehicles at which a zero rate of tax might apply (for example, in Germany, cars emitting less than 120g CO<sub>2</sub> per km are exempted from the CO<sub>2</sub>-related part of the circulation tax: this tax free margin was

decreased to 110g CO<sub>2</sub> per km in 2012 and will be further reduced to 90g CO<sub>2</sub> per km in 2014).<sup>14</sup>

## 1.4 Air Transport

### 1.4.1 Good Practice

Where air transport is concerned, some Member States deploy levies on passenger flights. Aviation emissions have been included under the ETS since the start of 2012, although in April 2013 the EU decided to temporarily suspend enforcement of the EU ETS requirements for flights operated in 2010, 2011, and 2012 from or to non-European countries, while continuing to apply the legislation to flights within and between countries in Europe. In October 2013 the International Civil Aviation Organization (ICAO) Assembly agreed to develop, by 2016, a global market-based mechanism (MBM) addressing international aviation emissions and apply it by 2020. Until then, countries or groups of countries, such as the EU, can implement interim measures.

Countries which are applying, or have applied duties include:

1. Germany, where the aviation tax has three distance bands, which, in 2013, the tax rate was € 7.50 for short journeys, € 23.43 for medium distances and € 42.18 for long distances. The revenues raised amounted to 0.04% GDP in 2011, though the tax rates have been reduced since 2011;
2. France which applies two different rates for passengers, and one to freight: € 4.24 per passenger for a flight to a destination in France or in another Member State of the European Union or in another state in the European Economic Space agreement or in Switzerland; € 7.62 per passenger embarking for any other destination; and € 1.27 per tonne of freight or mail loaded onto an aircraft. The revenues raised amounted to 0.02% GDP;
3. UK, where the tax is levied at twelve different rates depending on the distance and class of travel. All countries are divided into four distance bands based on the distance between London and the capital city of that respective country/territory:
  - Band A: GBP 13 – for flights beginning in the UK and ending in the UK or any other country/territory for which the capital city is within 2000 miles of London.
  - Band B: GBP 67 – for flights beginning in the UK and ending in any country/territory for which the capital city is between 2,001 and 4,000 miles from London.
  - Band C: GBP 83 – for flights beginning in the UK and ending in any country/territory for which the capital city is between 4,001 and 6,000 miles from London.
  - Band D: GBP 94 – for flights beginning in the UK and ending in any other destination in the world.

---

<sup>14</sup> See Eclareon and Ecologic (2013) Horizontal Fiche: Environmental Taxation: Reporting of Task 2 and Task 3 as part of the Project 'Assessment of climate change policies in the European Semester, 21 April 2013.

For each distance band, there are three rates of air passenger duty (APD); reduced, standard and higher, depending upon the class of travel (see Table 1-9). The reduced rates apply where the passengers are carried in the lowest class of travel on any flight unless the seat pitch exceeds 1.016 metres (40 inches), in which case, whether there is one or more than one class of travel the standard rates apply. The standard rates apply where passengers are carried in any class of travel other than the lowest or where the seat pitch exceeds 1.016 metres (40 inches), unless the conditions for the higher rate below are met. The higher rate applies if passengers are carried on aircraft with an authorised take-off weight of 20 tonnes or more and equipped to carry fewer than 19 passengers. Note that a different structure applies for Northern Ireland flights. In 2011, the duty raised revenues amounting to 0.17% GDP.

**Table 1-9: UK Air Passenger Duty Rates, 2012 and 2013**

Destination Bands and distance from London (miles)	Reduced rate from: (for travel in the lowest class of travel available on the aircraft)		Standard rate from: (for travel in any other class of travel)		Higher rate from: (for travel in aircraft of 20 tonnes or more equipped to carry fewer than 19 passengers)	
	1 April 2012	1 April 2013	1 April 2012	1 April 2013	1 April 2012	1 April 2013
Band A (0-2000)	£13	£13	£26	£26	N/A	£52
Band B (2001-4000)	£65	£67	£130	£134	N/A	£268
Band C (4001-6000)	£81	£83	£162	£166	N/A	£332
Band D (over 6000)	£92	£94	£184	£188	N/A	£376
<i>Note: if a class of travel provides for seating in excess of 1.016 metres (40 inches) then the standard or higher (rather than the reduced) rate of APD applies.</i>						

4. Austria, which introduced a passenger flight charge in 2011, with rates being reduced in 2012. The tax has three bands, and rates applicable are:
  - Short haul flight: €7.00 per passenger;
  - Medium-haul flight: €15.00 per passenger;
  - Long-haul flight: €35.00 per passenger; and
  - The revenue take in 2012 was €107 million.
5. Malta, which abolished its flat rate tax (€23.29 per passenger) in 2008. The tax raised revenues amounting to 0.1-0.21% GDP in the years prior to its abolition.
6. Denmark, which abolished its duty of DKK 37.50 per passenger in 2007 (it had been half this level in 2005. The tax raised revenues of around 0.03-0.04% of GDP in the years just prior to abolition.

It should also be noted that some countries – the Netherlands and Italy for example – also levy charges related to aviation noise. In Italy, what was previously a national tax was made a regional one in 2011, with uneven implementation giving rise to some concerns. This is, clearly, a particular problem for households living adjacent to airports, or below major flight-paths.

It would appear that revenues of the order 0.15-0.2% of GDP may be raised where there is a higher propensity for air transport (as in Malta and UK, being island states). The revenue raising potential may be slightly lower in countries where the potential for road and rail transport to and from other countries is greater.

It should be noted that a feature of the French system is that freight is also subject to taxation. This is, in principle, a sensible approach, especially to the extent that road, and other forms of freight are also subject to taxation. In principle, so as not to distort modal choice in a random manner, some objective basis for aligning taxes across the modes used should be deployed (for example, the implied costs of GHG damages should be aligned across modes, to the extent that this can be agreed).

#### 1.4.2 Suggested Implementation

Although aviation is included in the EU-ETS, and EU Aviation Allowances (EUAAAs) were introduced in January 2012, the European Commission announced, in 12 November 2012, a deferral of the enforcement of the requirements under the EU Emissions Trading System for aircraft operators to monitor and report emissions, as well as surrender allowances, in April 2013 for emissions from flights into and out of Europe during 2012. It had been envisaged that 15% of aviation allowances would be auctioned. Evidently, pending the introduction of a new instrument by the ICAO (which is due by 2020), there is scope for some additional revenue to be generated (this is over and above the revenue that might be achieved from intra-EU flights, for which the aviation ETS is still applied). Indeed, it is possible that the market based instrument introduced by the ICAO could provide a source of revenue to Member States (as would have been the case had the auctioning of EUAAAs proceeded as planned). As such, it does not seem unreasonable to propose measures on flights which could be applied either as interim measures, or with more permanent effect.

Most countries with taxes in place are applying fairly coarse banding systems to simplify administration. A three tiered approach seems reasonable in the circumstances, though in principle, a means to link the tax more closely to emissions could be made through, for example, taxes on journeys made by the aircraft.

Our approach has been to assume that such taxes are introduced, commencing in 2016 and phased in over a period to 2018 reaching tax rates broadly reflecting the UK tax rates. As noted above, the ICAO is due to come forward with a proposed instrument for implementation by 2020. It may be that the instrument is such that it can effectively replace the duties indicated here. However, we assume continuation of these levies post 2020. If a mechanism such as a trading scheme was introduced globally, then depending on the nature of the allocation mechanism for allowances, some revenue would be generated through the auctioning of these. As such, the revenues from allowances might simply replace (to a greater or lesser degree) the suggested tax in future.

The data available to us splits out flights in accordance with whether they are:

- 1) Within the country concerned;

- 2) To other countries in the European Union; and
- 3) To other countries outside the European Union.

We have used this as a proxy for distance, though clearly, for most countries, a distance related levy would not be split as neatly as this breakdown suggests.

In addition, although the UK levy is applied in 3 bands, in practice, the main bands are the lower two, relating, broadly speaking, to lower and upper classes of travel. We have not obtained such a breakdown for each country so we have applied rates close to the lower rates. The rates applied are €15 per passenger, €25 per passenger and €50 per passenger for the different types of flight are used to generate indicative revenues only. For countries with land borders with non-EU countries, it could be expected that flights to non-EU countries might be proportionately higher than for those more remote from non-EU countries. In addition, in line with the approach adopted in France, we have also suggested a tax of €1.25 per tonne of freight carried by air.

## 1.5 Waste

### 1.5.1 Good Practice

A number of countries have introduced landfill taxes.<sup>15</sup> The rates vary significantly across countries. The highest rate, for non-hazardous wastes, is in the Netherlands at over €107 per tonne (this tax was abolished, but then reinstated late in 2013). The rate of tax in the UK is also high, at around €90 per tonne in 2013, and due to increase to approximately €100 per tonne in April 2014). Some countries within the EU have also implemented landfill bans, which amount, effectively, to an infinite tax on landfilling of those wastes falling under the scope of the ban. Countries with landfill bans in place have tended (with the exception of Germany) to set high landfill taxes to ensure that those subject to the ban have no financial incentive to seek exemptions from the ban for local reasons (for example, the absence of appropriate treatment facilities).

Much of the literature on the externalities of waste management indicates that there is relatively little to choose between the quantifiable externalities arising from landfill and those arising from incineration.<sup>16</sup> Indeed, several studies have indicated externalities from incineration which exceed those from landfill. It is somewhat surprising, therefore, that taxes on incineration remain relatively rare.

They do exist in Denmark, Flanders in Belgium, Austria, France, Catalonia in Spain, and Portugal. Given the extent to which bans have given rise to over-capacity in treatment in most of the countries which have introduced them (Netherlands, Germany, Sweden, Denmark, Austria, Belgium), then a sensible approach – to encourage a shift away from

---

<sup>15</sup> For a recent review, see ETC/SCP (2012) *Overview of the Use of Landfill Taxes in Europe*, ETC/SCP Working Paper 1/2012, April 2012.

<sup>16</sup> HM Customs & Excise (2004) *Combining the Government's Two Heath and Environment Studies to Calculate Estimates for the External Costs of Landfill and Incineration*, December 2004; E. Dijkgraaf and H. Vollebergh (2005) Literature review of social costs and benefits of waste disposal and recycling, in EAI (2005) *Rethinking the Waste Hierarchy*, EAI: Copenhagen, pp. 80-98; E. Dijkgraaf and H. Vollebergh (2004) Burn or bury? A social cost comparison of final waste disposal methods, *Ecological Economics*, 50, pp.233-247; COWI (2000) *A Study on the Economic Valuation of Environmental Externalities from Landfill Disposal and Incineration of Waste*. Final Report to DG Environment, the European Commission, August 2000.



landfill, but without encouraging a simple shift from landfill to incineration – would be to increase taxes on landfill, whilst also introducing taxes on other ways of treating residual waste so as to act as an incentive for waste prevention and further recycling, rather than encouraging a switch from disposal to landfill to combustion of residual waste. Indeed, this would be consistent with the Roadmap to a Resource Efficient Europe and the recently agreed 7<sup>th</sup> Environmental Action Programme.<sup>17</sup> The economic case for a landfill ban in the general case seems difficult to justify.

The way in which taxes are applied to non-municipal waste is also of some interest in the design of landfill taxes. A number of countries have considerable ‘structure’ in the design of their taxes, with some countries applying more than 10 different rates depending on the waste stream.

It is interesting that Member States with taxes in place treat construction and demolition wastes very differently. The UK includes a standard rate (currently at €90 per tonne) for most wastes, and a much lower rate (currently at €3 per tonne) for specified materials which are usually of a ‘biologically inert’ character. On the other hand, Latvia applies a much higher rate of tax for inert construction wastes than it does to municipal type wastes. Several countries levy the same rates of tax for both types of waste.

Another interesting aspect of landfill taxes is the way in which hazardous wastes are dealt with. In many countries, there is no special rate for hazardous wastes, whilst in some (France), the taxes are lower for hazardous waste than for municipal waste, whilst in others, they are much higher. In this latter regard, the case of the Czech Republic is interesting given the imposition of both a tax and a risk charge, revenue from the latter being given over to the State Environmental Fund.

### 1.5.2 Suggested Implementation

A recent report for DG Environment highlighted the role of landfill taxes in incentivising improved waste management performance:<sup>18</sup>

*The analysis suggests that there is a relationship between higher landfill taxes (and higher total landfill charges) and lower percentages of municipal waste being sent to landfill. Three broad groups of Member States emerge:*

- 1. Member States with high total charges for landfill and low percentages of municipal waste landfilled (AT, BE, DE, DK, LU, NL, SE);*
- 2. Member States with mid- to high-range total charges and mid-range percentages landfilled (FI, FR, IE, IT, SI, UK); and*
- 3. Member States with low total charges and high percentages landfilled (BG, CZ, GR, HU, LT, LV, PL, PT, RO, SK, CY, EE, ES). All except the last three of these Member States have total landfill charges of less than €40 and are landfilling more than 60% of their municipal waste.*

---

<sup>17</sup> European Commission (2011) *Roadmap to a Resource Efficient Europe*, COM(2011) 571 final, [http://ec.europa.eu/environment/resource\\_efficiency/about/roadmap/index\\_en.htm](http://ec.europa.eu/environment/resource_efficiency/about/roadmap/index_en.htm)

<sup>18</sup> E. Watkins, D. Hogg, A. Mitsios, S. Mudgal, A. Neubauer, H. Reisinger, J. Troeltzsch, M. van Acoleyen (2012) *Use of Economic Instruments and Waste Management Performances*, Final Report to DG Environment, 10 April 2012, [http://ec.europa.eu/environment/waste/pdf/final\\_report\\_10042012.pdf](http://ec.europa.eu/environment/waste/pdf/final_report_10042012.pdf), p.4.

*The Member States in group 1 all have some form of landfill restriction in place for unsorted or untreated municipal waste; several of the Member States in group 2 also have landfill restrictions in place for unsorted or untreated municipal waste; and only EE, SK and LT in group 3 currently have or are planning to introduce such restrictions. It is reasonable to believe that in addition to the taxes and total charges, these restrictions also have an influence on forcing landfill rates down to low levels.*

It went on to note:<sup>19</sup>

*A fairly clear and linear correlation was observed between the total landfill charge and the percentage of municipal waste recycled and composted in the Member States. The Member States that charge more for landfilling show a higher percentage of waste recycled and composted. Evidently, other policies (including those to promote recycling, to encourage prevention, extended producer responsibility schemes and PAYT schemes) also influence recycling and composting rates, but it appears reasonable to state that in addition to simply reducing the amount of waste sent to landfill, higher landfill charges tend to push waste towards recycling and composting, therefore moving waste treatment up the waste hierarchy. It appears that Member States are much more likely to meet a 50% recycling target once landfill charges (or the cost of the cheapest disposal option) approach €100 per tonne.*

In reality, the rate of tax to be set depends partly on the objectives for the tax. To the extent that waste is to be moved up the hierarchy, then it should be considered that the gap between the costs for recycling and the costs of landfilling are likely to be influenced by a range of factors, not least, the labour costs in the country concerned.

The above study indicates, however, that broadly speaking, a tax of less than €40 per tonne might not be sufficient to stimulate significant change in performance. Equally, for a number of countries, the rate of €100 per tonne suggested as necessary to achieve 50% recycling would impose significant costs to many of the countries in this study that don't already have low levels of landfilling.

It should also be noted that many Member States have made use of funds from the European Union to fund treatment facilities dealing mainly with residual waste. Some concerns have arisen regarding the fact that this might lead to a stitch of material from landfill to incineration with limited movement of waste management into the upper tiers of the waste hierarchy.

The suggested approach is based upon moving tax rates for landfilling to a level of €50 per tonne, and indexing rates once they are at this level. The implementation of major changes in landfill tax in short periods of time without prior announcement can be problematic in a sector which is characterised by long lead times. As such, the implementation is phased, with the €50 rate being met in a number of years, depending on the current level of tax in the country concerned.

---

<sup>19</sup> E. Watkins, D. Hogg, A. Mitsios, S. Mudgal, A. Neubauer, H. Reisinger, J. Troeltzsch, M. van Acoleyen (2012) *Use of Economic Instruments and Waste Management Performances*, Final Report to DG Environment, 10 April 2012, [http://ec.europa.eu/environment/waste/pdf/final\\_report\\_10042012.pdf](http://ec.europa.eu/environment/waste/pdf/final_report_10042012.pdf), p.4.



In order to ensure landfill taxes generate movement of waste into upper tiers of the hierarchy, it is also suggested that a tax is implemented on incineration. Although Denmark has a much higher tax rate for incineration (and this is now related to CO<sub>2</sub> emissions), the suggestion is that rates similar to those in France would be appropriate. The tax rate proposed is €15 per tonne, with the rate being phased in so that it is achieved in the same year as the landfill tax proposed above.

For Austria and Belgium, no amendment in landfill tax is proposed given the ban on landfilling in Austria and the Flemish and Walloon regions of Belgium.

As regards inert (construction type) wastes, for countries with no such tax in place at present, it is suggested the tax is set at €2.40 per tonne. In conjunction with aggregates taxes, such taxes can help to encourage recycling of construction wastes for use as secondary aggregates, but experience indicates the tax does not have to be especially high (and where it is, it may give rise to problems of poor management of such wastes).

These approaches give some time for response by industry (which is already changing in most of these countries). The taxes on both landfill and incineration / MBT are designed to encourage approaches more focused on the upper tiers of the waste hierarchy. In some countries, there is, as yet, no incineration, but a tax, even at a low rate, can serve to indicate the desired direction of travel in future, and present over-investment in incineration capacity (which is particularly easy to do in some of the smaller Member States). Hence, the early announcement of such a tax is designed to forestall excessive investment in such infrastructure in future years. It is assumed that the taxes are indexed to inflation (they stay constant in real terms) for the purposes of the revenue calculation. In practice, this may happen through annual indexing or through periodic adjustments.

## 1.6 Packaging

### 1.6.1 Good Practice

Where packaging taxes are concerned, databases frequently record taxes which are either a) not taxes, or b) only applied in limited circumstances. This is due, mainly, to the existence of producer responsibility organisation which have been established as part of countries' response to the packaging and packaging waste Directive, and which themselves (typically) require producers to pay a fee to ensure their packaging obligations are discharged. Some taxes may relate to these schemes, whilst some are used, in essence, as inducements to join such schemes since they are paid only by organisations that choose not to discharge their obligations through such schemes. Several countries apply such taxes in the latter form, including (within the group of countries we are interested in), for example, Lithuania. The DG-TAXUD database records the tax on packaging as part of Lithuania's scheme of environmental taxes. The applicable rates are shown in Table 1-10.

**Table 1-10: Packaging Tax Rates in Lithuania**

Types of Packaging	Rates (LTL per kilogram of the weight of the packaging)
1. Glass packaging	0.20
2. Plastic packaging	1.80

Types of Packaging	Rates (LTL per kilogram of the weight of the packaging)
3. Composite packaging	2
4. Metal packaging	2.60
5. Paper and carton packaging	0.10
6. Other packaging	0.20
7. PET packaging	2

The description in the DG-TAXUD database states

*Manufacturers and importers are exempted from the pollution tax for polluting the environment with goods and/or packaging waste proportionally the recovered and/or recycled amount of goods and/or packaging waste.*

*If manufacturers and importers fulfil the tasks set for recovery or recycling of goods and packaging waste they are fully exempted from this tax paying.*

In our experience, few organisations will choose to ‘self-comply’ so that revenues from such taxes will be extremely limited as the implied rates are effectively punitive. For this reason, we concentrate on those taxes which are not linked to (non-)compliance with recycling obligations.

Another tax which has links to other packaging instruments is the tax in Finland. This is applied to warehouse keepers, and other persons who import packaged beverages from outside the Union or receive them in the course of their business activities from another Member State. However, there are exemptions for packaging which belongs to a deposit refund system and are recoverable within such a scheme or as raw material. The relevant deposit system has to be approved by the environmental authorities. Also exempt are liquids in board packaging (presumably, since Finland does not include such packaging in the scope of its own deposit refund scheme, operated by Palpa). Beverages produced in legally and economically independent small manufacturers are also exempt, when the amount of beverages released for consumption does not exceed 50,000 litres. The applicable rate is 51 cents per litre of packaged product. The tax raised €15 million in 2011, equivalent to 0.01% GDP.

Denmark has had a packaging tax in operation since 1978, and despite generally favourable reviews, it has recently been abolished. Significant changes to the tax were made over the last fifteen years or so.<sup>20</sup> Between 1999 and 2001, Denmark introduced a more sophisticated version of the tax which removed fiscal equality between different packaging materials. The revised taxes are now determined through reference to life cycle-based assessment of the environmental damages associated with the different materials. In Denmark, the tax was implemented for a variety of objectives including:

- Waste prevention;

---

<sup>20</sup> ECOTEC in association with CESAM, C. U. (2001) *Study on Environmental Taxes and Charges in the European Union and its Member States*, Final report for the European Commission, April 2001.

- Higher rates of recycling; and
- Reduced environmental / climate change impacts.

Not all packaging was covered within the scheme. The levy does not cover other items such as general foodstuffs and household goods and only applies to retail containers up to 20 litre capacity (see Table 1-11). One report suggests that only 7% of packaging was covered by the tax.<sup>21</sup> The tax was weight based for a wide range of products. The rate varied depending on the material used, and there are 13 different tax levels, corresponding to the different types of materials. For drinks containers, the tax was levied per unit. This was partly in acknowledgement of the fact that reusable packaging, used in the Danish deposit refund system, is heavier, and to base the tax on weight would have penalized the use of reusable containers. In any event, a report states that:<sup>22</sup>

*If there is no obligatory deposit on the beverage, the tax rate depends on the material used and the volume of the beverage. If the material is made of cardboard or of laminate there is a single rate and if it is made from other materials such as glass, metals, plastic etc. there is a higher rate per unit (Danish Ministry of Taxation, 2011).*

*If there is an obligatory deposit on the beverage, the tax rate is not influenced by the material used, and the rate is lower than for beverage packaging not subject to a deposit.*

Table 1-11 demonstrates the tax rates on packaging material that were applied in Denmark.

---

<sup>21</sup> ETC / SCP (2012) Effectiveness of Economic Instruments for Packaging, ETC / SCP Working Paper No.4 / 2012, December 2012, [http://scp.eionet.europa.eu/publications/wp2012\\_4/wp/wp2012\\_4](http://scp.eionet.europa.eu/publications/wp2012_4/wp/wp2012_4) p.26.

<sup>22</sup> Ibid, p.27.

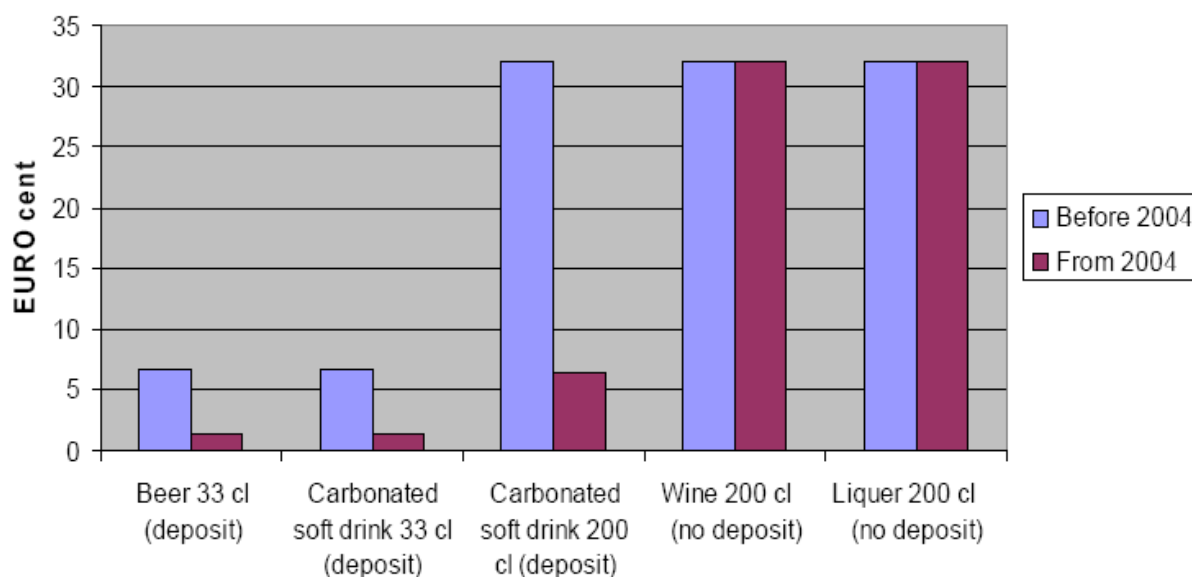
Table 1-11: Primary Packaging Tax Rates in Denmark, 2008 (weight-based)

Volume-Based Tax	Packaging Material	Rate (DKK per item)
A. Packaging and multi-packaging with a cubic content of not more than 20 litres for:		
Spirits, wine and fruit-wine;	- Cardboard or laminates of various materials: <b>per item</b>	
	containers with a capacity of less than 10 cl	DKK 0.08
	containers with a capacity of not less than 10 cl and not more than 40 cl	DKK 0.15
	containers with a capacity of not less than 40 cl and not more than 60 cl	DKK 0.25
	containers with a capacity of not less than 60 cl and not more than 110 cl	DKK 0.50
	containers with a capacity of not less than 110 cl and not more than 160 cl	DKK 0.75
	containers with a capacity of above 160 cl	DKK 1.00
	- Other materials: <b>per item</b>	
	containers with a capacity of less than 10 cl	DKK 0.13
	containers with a capacity of not less than 10 cl and not more than 40 cl	DKK 0.25
	containers with a capacity of not less than 40 cl and not more than 60 cl	DKK 0.40
	containers with a capacity of not less than 60 cl and not more than 110 cl	DKK 0.80
	containers with a capacity of not less than 110 cl and not more than 160 cl	DKK 1.20
	containers with a capacity of above 160 cl	DKK 1.60
Beer, mineral water, lemonade and similar beverages containing carbonic acid, falling under customs tariff items 22.01 and 22.02, blends of non-alcoholic drinks with spirits with an alcohol content of no more than 10% vol.;		
	containers with a capacity of less than 10 cl	DKK 0.05
	containers with a capacity of not less than 10 cl and not more than 40 cl	DKK 0.10
	containers with a capacity of not less than 40 cl and not more than 60 cl	DKK 0.16
	containers with a capacity of not less than 60 cl and not more than 110 cl	DKK 0.32
	containers with a capacity of not less than 110 cl and not more than 160 cl	DKK 0.48
	containers with a capacity of above 160 cl	DKK 0.64
<i>Weight-based tax</i>		
B. Packaging and multi-packaging of any other material and volume used for:		
Mineral water, lemonade and similar beverages not containing carbonic acid, falling under customs tariff items 22.01 and 22.02, juice and must and concentrates used for the production of such drinks;	cardboard and paper primary material and textiles	DKK 0.95
Water;		
Vinegar and edible oil;		
Denatured spirits;		
Soap, detergents, cleansing agents and cleaning preparation, polish and similar goods falling under customs tariff items		

<b>Volume-Based Tax</b>	<b>Packaging Material</b>	<b>Rate (DKK per item)</b>
34.01, 34.02 and 34.05;	cardboard and paper secondary material	DKK 0.55
Lubricant and similar goods falling under customs tariff item 27.10, 38.19 and 34.03 and goods liable to tax according to law of energy tax on mineral oil, etc;	plastic (except eps and pvc), primary material	DKK 12.95
Pesticides liable to tax according to law of tax on pesticides;	plastic (except eps and pvc), secondary material	DKK 7.75
Paint, lacquer, dye, stopper and similar goods falling under customs tariff items 32.08-32.10 and 32.14;	plastic (except eps and pvc), UN-approved	DKK 10.35
Perfume, cosmetics and similar goods falling under custom tariff items 33.03-33.07;	plastic (except eps and pvc) where more than 50% of the packing materials are different from plastic	DKK 7.75
Coolant for engines and windscreen wash;	eps and pvc	DKK 20.35
Certain chemical substances and products falling under statutory order No 329 of 16 May 2002 from the Ministry of the Environment and Energy;	Aluminium	DKK 33.30
Milk and dairy products falling under customs tariff items 04.01-04.03 and 04.05 except for liquid whole milk, light milk, skimmed milk and buttermilk and the vegetable replacement of these products;	tinplate and other packings of steel	DKK 9.25
Margarine and similar goods falling under customs tariff item 15.17 and other lubricate products consisting of a mixture of milk fat and vegetable fat falling under customs tariff item 21.06;	tinplate and other packings of steel, UN-approved	DKK 7.40
Dog food and cat food falling under customs tariff item 23.09.10;	glass and ceramics	DKK 1.85
Sauce, mustard and similar goods falling under customs tariff item 21.03 and tomato purée and tomato juice falling under customs tariff item 20.02.	Wood	DKK 0.55
C. Plastic or paper bags with a cubic content of not less than five litres.	Paper bags	DKK 10 per kg
D. Disposable tableware.	Plastic bags	DKK 22 per kg
E. Film wrapping product of soft polyvinyl chloride (pvc) used for wrapping foodstuff.		DKK 19.20 per kg
		DKK 20.35 per kg

The rates for beverage packaging in Denmark implied by the above levies are shown in Figure 1-3.

Figure 1-3: Tax on Beverage Packaging in Denmark



Source: Christian Fischer (2008) *Producer Responsibility Schemes versus Deposits and Taxes- Danish Experiences*, PRO Europe Congress, 15 May 2008

Due to the nature of the levy and its connection with consumption, the primary environmental outcome of the levy was anticipated to be waste prevention. According to the Nordic Council, the tax on packaging in Denmark led to an annual reduction of packaging of 400,000 tonnes.<sup>23</sup> It was designed to complement other existing market-based instruments, in particular, the deposit refund scheme for drinks containers.

The Danish scheme is considered by many to be successful. Success factors for the system are:

- Good coverage of materials covered by the tax;
- A switch from weight based taxation to LCA tax; and
- Tax levels set high enough to have an impact.

In 2011, the tax raised DKK 1.3 billion, or 0.07% GDP. This appears to include the revenue from taxes on plastic bags, disposable tableware, and PVC film used to wrap foodstuffs. A recent study suggests the following revenues from the packaging tax itself.<sup>24</sup>

<sup>23</sup> The Nordic Council (2008) *Extension of environmental taxes*, consulted October 2008  
<http://www.norden.org/webb/news/news.asp?id=6237>

<sup>24</sup> ETC / SCP (2012) *Effectiveness of Economic Instruments for Packaging*, ETC / SCP Working Paper No.4 / 2012, December 2012, [http://scp.eionet.europa.eu/publications/wp2012\\_4/wp/wp2012\\_4](http://scp.eionet.europa.eu/publications/wp2012_4/wp/wp2012_4) p.29.

Table 1-12: Revenues from Danish Packaging Tax

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Revenue mill.	DKK	437	436	447	423	448	474	460	394 <sup>1</sup>	413 <sup>1</sup>
% of 2002	100	100	102	97	103	108	105	90 <sup>1</sup>	95 <sup>1</sup>	
GDP index	100	100	103	105	109	111	110	104	-	
Final consumption index	100	101	105	108	111	114	114	-	-	
<b>Note:</b> 1) On 1 December 2008, packaging for mineral water was transferred to the volume based packaging tax due to their inclusion in a deposit refund system. Source: Danish Ministry of Taxation, Eurostat (as cited in the original, B. Kjær et al (2012) Effectiveness of Economic Instruments for Packaging, December 2012, ETC/SCP Working Paper, No 4/2012).										

### 1.6.2 Suggested Implementation

In countries without deposit-refund systems, the distinction which is made in the Danish system makes rather less sense. The Danish weight-based rates could, in principle, be applied to all packaging, but as noted above, the tax has never covered more than a relatively small fraction of all packaging placed on the market. Applying the Danish weight-based rates to all packaging across the EU would imply a significant revenue take.

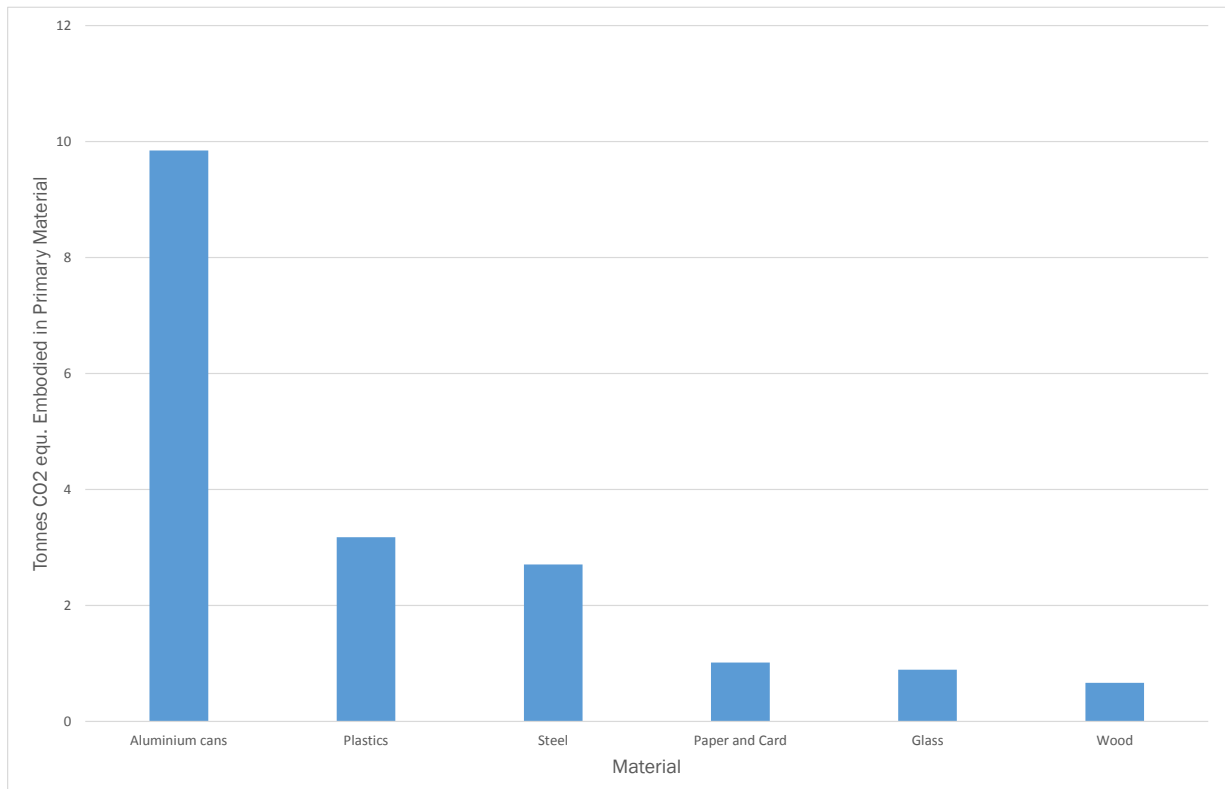
Table 1-13: Weight-based Packaging Tax Rates in Denmark (€ per kg)

Material	Tax (€ per kg)
Paper and Cardboard (primary)	€0.13
Paper and Cardboard (secondary)	€0.07
Plastic (except EPS and PVC) (primary)	€1.74
plastic (except EPS and PVC) (secondary)	€1.04
plastic (except EPS and PVC), UN-approved	€1.39
plastic (except EPS and PVC) where >50% of materials not plastic	€1.04
EPS and PVC	€2.73
Aluminium	€4.46
Tinplate and other steel packaging	€1.24
Tinplate and other steel packaging, UN approved	€0.99
Glass and ceramics	€0.25

Material	Tax (€ per kg)
Wood	€0.07
<i>Note: converted at exchange rate of €1 = DKK 7.46</i>	

The fact that these figures are relatively high can readily be appreciated from the magnitude of the greenhouse gas savings from avoiding the use of primary materials of the different types commonly used in packaging. They are shown in Figure 1-4 below.

**Figure 1-4: Embodied Greenhouse Gas Emissions in Specific Materials (tonnes CO<sub>2</sub> equ. per tonne of primary material)**



Source: based on Zero Waste Scotland carbon metric

If one assumes (as per the proposed ETD) a value of €20 per tonne CO<sub>2</sub>, these figures can be translated into a tax rate for each material as shown in Table 1-14.

**Table 1-14: Weight-based Packaging Tax Rates Based on Embodied CO<sub>2</sub> Content**

Material	Tonnes CO <sub>2</sub> Embodied in Material	€ per Tonne of Material
Aluminium	9.84	€196.88
Plastics	3.18	€63.57
Steel	2.71	€54.16
Paper and Card	1.02	€20.35
Glass	0.89	€17.89



Material	Tonnes CO <sub>2</sub> Embodied in Material	€ per Tonne of Material
Wood	0.67	€13.32

These are the rates we have suggested are applied in those countries without similar measures already in place. The tax was modelled as being introduced in 2017. It is expected that a reasonable period of time would be required for discussions around such taxes prior to their being implemented.

## 1.7 Single-use Carrier Bags

### 1.7.1 Good Practice

At one level, the taxing of single-use carrier bags looks ‘trivial’ from the point of view of both revenues and environmental impact. By weight and by volume, they account for a very small proportion of the waste stream. However, the environmental impact of such bags, particularly plastic bags, is disproportionately large.

Plastics dominate marine litter and represent a significant threat to the marine environment due to their abundance, longevity in the marine environment and their ability to travel vast distances.<sup>25</sup> Despite representing only 10% of all waste produced, plastics account for between 50-80% of marine litter and this is not expected to decline for the foreseeable future (particularly as plastics do not degrade quickly).<sup>26</sup> As they are lightweight and long-lasting, and able to travel great distances, plastics are reported to present a long term threat to marine ecosystems, as they can:

- Directly harm wildlife; <sup>27</sup>
- Damage benthic environments; <sup>28</sup>
- Transport non-native and invasive species; and <sup>29</sup>

---

<sup>25</sup> KIMO (2010) Economic Impacts of Marine Litter, Kommunernes Internationale Miljøorganisation Local Authorities International Environmental Organisation, September 2010, available at <http://www.kimointernational.org/Portals/0/Files/Marine%20Litter/Economic%20Impacts%20of%20Marine%20Litter%20Low%20Res.pdf>

<sup>26</sup> Thompson, R.C., Swan, S.H., Moore, C.J. and vom Saal, F.S. (2009a) Our Plastic Age. *Philosophical Transactions of the Royal Society B: Biological Sciences* 364(1526): 1969-2166; Barnes, D.K.A., Galgani, F., Thompson, R.C. and Barlaz, M. (2009) Accumulation and fragmentation of plastic debris in global environments. *Philosophical Transactions of the Royal Society B: Biological Sciences* 364(1526): 1985-1998; Thompson, R.C., Moore, C.J., vom Saal, F.S., and Swan, S.H. (2009b) Plastics, the environment and human health: current consensus and future trends. *Philosophical Transactions of the Royal Society B: Biological Sciences* 364(1526): 2153-2166.

<sup>27</sup> Sheavly, S.B. (2005) Marine Debris – an Overview of a Critical Issue for Our Oceans. Presentation at Sixth Meeting of the UN Open-ended Informal Consultative Process on Oceans and the Law of the Sea. Available at <http://www.un.org/Depts/los/index.htm>

<sup>28</sup> Moore, C.J. (2008) Synthetic polymers in the marine environment: a rapidly increasing, long-term threat. *Environmental Research* 108: 131-139.

<sup>29</sup> Cheshire, A.C., Adler, E., Barbière, J., Cohen, Y., Evans, S., Jarayabhand, S., Jeftić, L., Jung, R.T., Kinsey, S., Kusui, E.T., Lavine, I., Manyara, P., Oosterbaan, L., Pereira, M.A., Sheavly, S., Tkalin, A., Varadarajan, S.,

- Concentrate toxic chemicals from seawater.<sup>30</sup>

Of all plastics, it is, arguably, single use plastic carrier bags that have the greatest impact. Data taken from the International Bottom Trawl Survey and the Clean Seas Environmental Monitoring Programme indicate that plastic bags make up 40% of all marine litter in the waters of the North East Atlantic. The French research institute IFREMER has also found that in the Bay of Biscay most of the waste items found on the seabed were plastic (92%) and of those 94% were plastic bags.<sup>31</sup> An increasing area of concern is the potential impact of microplastic particles, although the environmental significance of this form of pollution is not yet fully understood.<sup>32</sup>

The need for action on single-use plastic carrier bags was further emphasised in 2013 when the European Commission published three studies looking into the composition and sources of marine litter in European seas. In a chapter integrating the results it noted that:<sup>33</sup>

*Plastics are the most abundant debris found in the marine environment and comprise more than half of marine litter in European Regional Seas. More than half of the plastic fraction is composed of plastic packaging waste with plastic bottles and bags being predominant types of plastic packaging.*

*Therefore, measures within a strategy to close the largest loopholes in the plastic packaging cycle should target plastic bottles and plastic bags.*

Accordingly, a more considered perspective leads one to the view that the application of such taxes – which have proved successful in radically reducing single-use carrier bag use – should be one of the key policies by which Europe addresses the problem of marine litter. It is worth noting that this issue is a growing concern and has led to various initiatives within the European Commission<sup>34</sup> as well as initiatives in coastal areas of the EU.<sup>35</sup>

However, while there is clearly merit in addressing *plastic* bags, there is a more compelling logic to placing a tax on *all kinds* of single-use carrier bags, whatever their material. Such an approach would avoid the inevitable arguments about the relative

---

Wenneker, B. and Westphalen, G. (2009) UNEP/IOC Guidelines on Survey and Monitoring of Marine Litter. UNEP Regional Seas Reports and Studies, No. 186; IOC Technical Series No. 83.

<sup>30</sup> Committee on the Effectiveness of International and National Measures to Prevent and Reduce Marine Debris and Its Impacts, National Research Council, Ocean Studies Board and Division on Earth and Life Sciences (2008) Tackling Marine Debris in the 21st Century. Washington D.C.: The National Academies Press.

<sup>31</sup> Seas at Risk (2011) Commission Consults on Binning Plastic Bags, available at [http://www.seas-at-risk.org/news\\_n2.php?page=408](http://www.seas-at-risk.org/news_n2.php?page=408)

<sup>32</sup> T Thompson, R.C., Olsen, Y., Mitchell, R.P., Davis, A., Rowland, S.J., John, A.W.G., McGonigle, D. and Russell, A.E. (2004) Lost at Sea: Where is all the Plastic? Science 304: 838.

<sup>33</sup> See

<http://ec.europa.eu/environment/marine/pdf/Integration%20of%20results%20from%20three%20Marine%20Litter%20Studies.pdf>

<sup>34</sup> See [http://ec.europa.eu/environment/marine/good-environmental-status/descriptor-10/index\\_en.htm](http://ec.europa.eu/environment/marine/good-environmental-status/descriptor-10/index_en.htm)

<sup>35</sup> The Conference of Parties of the Barcelona Convention for the Protection of the Mediterranean adopted a regional plan to manage marine litter in December 2013 ([http://europa.eu/rapid/press-release\\_MEMO-13-1110\\_en.htm](http://europa.eu/rapid/press-release_MEMO-13-1110_en.htm)).

impacts of paper versus plastic (including biodegradable plastic) bags - arguments which, we note, are often conducted through the relatively restricted lens of life cycle assessment, typically excluding from consideration the 'downstream' impacts of such items when they become littered (which, as noted above, might be decisive in terms of any decision in respect of relative impacts).

Moreover, applying a tax to *all* single-use carrier bags would more fully respect the waste hierarchy, and lead to a greater waste prevention impact. Furthermore, in terms of communication, applying a tax in such a way enables the delivery of a clearer and more intellectually coherent message to citizens. This is exemplified by the Welsh Government's implementation of the Carrier Bag Charge, which also demonstrates best practice by having the charge at the point of sale, rather than absorbed by the retailer.

Several countries apply carrier bag taxes.

In France, a tax under the TGAP is levied on plastic bags delivered in supermarkets. The rate of the tax is € 10 per kilogramme. In Denmark, there is a weight-based carrier bags charge (for bags made of paper and plastic, and having a handle). The tax is charged to manufacturers and suppliers (importers) on a per kg basis on plastic and paper bags with a greater than 5-litre capacity and which can be replaced by alternatives. Charging by weight encourages greater resource efficiency and less waste. These charges in most cases are passed on by retailers to their customers, in charging for plastic bags or selling a range of re-usable bags. The tax is charged at the equivalent of 2.95 EUR per kg of plastic bags and 1.34 EUR per kg for paper bags. The initial effect was dramatic, with a 60% fall in shopping bag use experienced. Bag use in Denmark is considerably below the EU average, with 80 bags used per person per year compared to the EU average of 500. Tax revenues from the shopping bag tax were estimated in 2007 at 26.6 million EUR and these have increased each year as bag use has crept up. Revenues are understood to go to general public budgets.<sup>36</sup>

However, it is worth noting that charging manufacturers and suppliers by weight may encourage a shift from paper to plastic, and indeed incentivise the production of thinner plastic bags. Whilst, from a resource efficiency perspective, such 'light weighting' may be desirable, this does not lessen the impacts if such bags become littered (indeed in some cases it may actually increase the impact, e.g. in respect of ingestion by marine fauna). Additionally, the Danish charge was not passed on to customers in all cases, thus reducing the effectiveness of the measure.

The Welsh Government introduced a £0.05 (€0.06)<sup>37</sup> compulsory charge for all single-use carrier bags at the point of sale in October 2011. Unlike Ireland this mechanism is not a levy, but a minimum charge that retailers are guided to pass on to local and environmental causes (although this is not mandatory).<sup>38</sup> Additionally it also applies to all single-use bags including those composed of paper and other plant based material, not just plastic.

---

<sup>36</sup> Ecorys, CambridgeEconometrics, COWI (2011); The role of market-based instruments in achieving resource efficiency; [http://ec.europa.eu/environment/enveco/taxation/pdf/role\\_marketbased.pdf](http://ec.europa.eu/environment/enveco/taxation/pdf/role_marketbased.pdf)

<sup>37</sup>Based on a £:€ exchange rate of 1:1.27650, ft.com currency converter, 26<sup>th</sup> July 2012.

<sup>38</sup> Welsh Government (2012), Carrier Bag Charge Wales, Accessed 19<sup>th</sup> July 2012. <http://www.carrierbagchargewales.gov.uk/?lang=en>

Nine months after the introduction of the charge, reductions are cited by Welsh Government as between 70% and 96%, depending upon the sector.<sup>39</sup> Retailers in the following sectors reported a range of reductions:

- Food retail – between 96% and 70% reductions;
- Fashion – between 75% and 68% reductions;
- Home improvement – 95% reduction;
- Food service – up to 45% reduction; and
- Telecommunications – 85% reduction.

Data released by WRAP in 2011 shows a reduction of 22% in usage across supermarkets in Wales from 2010 to 2011.<sup>40</sup> This would appear to be consistent with the reductions noted by the Welsh Government, bearing in mind that the charge was only in place for the final three months of 2011.

A study produced for The Welsh Government by Cardiff University conducted surveys both before and after the introduction of the charge regarding attitudes and behaviours towards it in England and Wales.<sup>41</sup> Results show that the charge has helped to increase greatly own bag use in Wales with a 21% increase in consumers taking a reusable bag to the supermarket (increased from 61% to 82% of the sample). This also illustrates the scale of reusable bag use prior to the charge which was also confirmed at a similar level of approximately 60.5% in England. The study however, does not consider the effect of the previous UK voluntary agreement in the baseline figures, which would be expected to have influenced use of reusable bags. The magnitude of the change associated with the implementation of a charge might be expected to be greater in nations with no such agreement already in place, but with a similar ‘end point’ in terms of uptake.

The Welsh Regulatory Impact Assessment<sup>42</sup> assumed that a 199% increase in demand for reusable bags would occur based on a levy charge of £0.07 (€0.09)<sup>43</sup>, cited from a study commissioned for the Welsh Assembly Government by AEA Technology plc on single-use bags.<sup>44</sup> No supporting rationale for this figure can be gained from reviewing the AEA report and it seems to be slightly at odds with the *Cardiff University* study highlighted above which noted a relatively high level of pre-existing use of reusable

---

<sup>39</sup> *Welsh Government (2012), Reduction in Single-use Carrier Bags, Accessed 7<sup>th</sup> August 2012.*  
[http://wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/substance/carrierbags/reduction/](http://wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/substance/carrierbags/reduction/)

<sup>40</sup> WRAP (2012), UK Supermarket Retailers Voluntary Carrier Bag Agreement: 2011 Carrier Bag Use, Presentation for the WRAP website, WRAP July 2012

<sup>41</sup> Poortinga et al (2012), Evaluation of the Introduction of the Single-Use Carrier Bag Charge in Wales: Attitude and Behavioural Spillover, Report for the Welsh Government, Cardiff University 2012.

<sup>42</sup> Welsh Assembly Government (2010), Proposals for a Charge on Single Use Carrier Bags: Regulatory Impact assessment, Welsh Assembly Government May 2010.

<sup>43</sup> Based on a £:€ exchange rate of 1:1.27650, ft.com currency converter, 26<sup>th</sup> July 2012.

<sup>44</sup> AEA Technology plc (2009), Welsh Assembly Government, Single Use Bag Study: Final, Report for the Welsh Assembly Government August 2009.

bags.<sup>45</sup> Indeed, such a change would, most likely, not have been possible given the pre-existing level of use.

Table 1-15 summarises the impacts of single-use bag levies introduced in Belgium, Italy, Ireland and South Africa. From this Table it is evident that levy's on single-use bags have had a marked, if not always long-lasting, effect on demand. It might be supposed that households may have 'a stock' of single-use bags which they use for various purposes (bin liners etc.). It may be that consumption of single-use bags increases as this stock is drawn down.

**Table 1-15: Examples of Taxes on Plastic Carrier Bags and Their Impact on Consumption**

Rate of Tax	Consumption Trends	Impacts on Litter
Belgium, April 2007 <sup>1,2</sup>		
€3.00 per kg of plastic bags (1 to 10 cents per bag, depending on weight)	Reduction in sales of 80% between 2003 and 2009	n/a
Ireland, March 2002 <sup>3</sup>		
Initially €0.15, but raised to €0.22 per plastic bag in July 2007	Consumption decreased by over 90%, from 328 bags per capita prior to the levy, to 21 the year after (this increased to 30 units per capita prior to the price increase in 2007)	Plastic bag litter reduced from 5% of total litter (estimated figure) in 2001 to 0.25% in 2010
Italy, 2002 <sup>4</sup>		
Initially €0.13, but raised to €0.20 per plastic bag in 2007	Use of plastic bags decreased from 1.3 billion prior to the tax to 20 million units the year after (consumption then began to increase to 140 million units per annum)	n/a
South Africa: May 2003 <sup>5</sup>		
Initially ZAR 0.46 (€0.04) for standard 24L bags, but subsequently decreased as retailers have absorbed the costs (retailers are liable for the tax)	For high-income earners consumption of plastic bags per ZAR 1,000 worth of shopping (€92 on 22 September 2011) has decreased by approximately 57% and for low-income earners the reduction has been approximately 50%. There was an initial sharp drop in demand, but this was soon reversed	According to the cited paper, no pre or post levy data exists on litter levels in South Africa
Notes:		
1. Pre-Waste (2011) Good Practice in Waste Prevention, International Pre-Waste Workshop, March 2011, <a href="http://www.bruxellesenvironnement.be/uploadedFiles/Contenu_du_site/Professionnels/Formations_et_s%C3%A9minaires/Conf%C3%A9rence_Pre-waste_2011_%28actes%29/p2-posters-good-practices.pdf">http://www.bruxellesenvironnement.be/uploadedFiles/Contenu_du_site/Professionnels/Formations_et_s%C3%A9minaires/Conf%C3%A9rence_Pre-waste_2011_%28actes%29/p2-posters-good-practices.pdf</a>		
2. Bruxelles Environment (2010) Mapping Report on Waste Prevention Practices in Territories within EU27 - Pre-Waste: Improve the Effectiveness of Waste Prevention Policies in EU Territories, October 2010, <a href="http://www.bruxellesenvironnement.be/uploadedFiles/Contenu_du_site/Professionnels/Formations_et_s%C3%A9minaires/Conf%C3%A9rence_Pre-waste_2011_(actes)/p3-%20prewaste-mapping-report.pdf">http://www.bruxellesenvironnement.be/uploadedFiles/Contenu_du_site/Professionnels/Formations_et_s%C3%A9minaires/Conf%C3%A9rence_Pre-waste_2011_(actes)/p3-%20prewaste-mapping-report.pdf</a>		
3. The full impacts of this levy are covered in the case study described in the preceding section		
4. Friends of the Irish Environment (2010) Call for Ireland to Extend Levy to all Single-use Bags, Date		

<sup>45</sup> This may be due to the voluntary agreement on carrier bags between UK Governments and a number of supermarkets.

Rate of Tax	Consumption Trends	Impacts on Litter
<p>Published: 30 December 2010, Date Accessed: 19 September 2011,  <a href="http://www.friendsoftheirishenvironment.net/index.php?do=friendswork&amp;action=view&amp;id=878">www.friendsoftheirishenvironment.net/index.php?do=friendswork&amp;action=view&amp;id=878</a>  5. Dikgang, J. Leiman, A. and Visser, M. (2010) Analysis of the Plastic-Bag Levy in South Africa, Policy Paper No. 18, Environmental Policy Research Unit, School of Economics, University of Cape Town, July 2010, <a href="http://www.econrsa.org/papers/p_papers/pp18.pdf">www.econrsa.org/papers/p_papers/pp18.pdf</a></p>		

### 1.7.2 Suggested Implementation

We have proposed an introduction of a single-use carrier bag tax at a rate of €0.10 per bag, though adjusted for purchasing power parities (see Table 1-16 for country-specific rates). In countries where such taxes have been implemented, the taxes have been implemented at their full rates with no phased increases. We have assumed such taxes could be implemented by 2016. It is assumed that the taxes, once applied, are kept constant in real terms through either annual, or periodic increases in line with inflation. Experience in Ireland suggests that without such indexation, the use of single use bags can steadily increase as inflation erodes the incentive to use reusable carrier bags.

Table 1-16: Good Practice Tax Rates for Single-use Bags (€ per bag)

Member State	BG	CY	DK	FI	DE	EL	IE	LV	MT	NL	SI	ES	SE	UK
Tax Rate	0.05	0.09	0.14	0.12	0.10	0.09	0.11	0.10	0.08	0.11	0.08	0.09	0.13	0.11

## 1.8 Taxes on Air Pollution from Stationary Sources

### 1.8.1 Good Practice

There are a number of Member States which have used measures to tax air pollutants, usually from industrial plant, and typically, from large combustion plants.

Several Member States differentiate their fuel taxes according to the sulphur contents. In this way they exercise an implicit tax on sulphur. The country to do this first was Norway, in 1971 (the tax rate in Norway was NOK 0.078 per litre on sulphur, around €0.009 per litre of sulphur).<sup>46</sup> Presently the following Member States differentiate one or more of their fuel tax rates according to sulphur content; Austria, Belgium, Germany, Netherlands, Slovakia.

Denmark introduced an SO<sub>2</sub> tax in 1996, based on:

- 1) The sulphur (S) content in the following energy products if the sulphur content is above 0.05 %: gas oil and diesel oil, fuel oil, fuel tar, kerosene, coal, petroleum coke, lignite, petrol (leaded and unleaded), auto gas (LPG), gas (LPG), gas from refineries (mineral oils), natural gas.

<sup>46</sup> Royal Ministry of Finance (2013) Main Features of the Tax Programme for 2013, [http://www.statsbudsjettet.no/Upload/Statsbudsjett\\_2013/dokumenter/pdf/skatt\\_eng.pdf](http://www.statsbudsjettet.no/Upload/Statsbudsjett_2013/dokumenter/pdf/skatt_eng.pdf)



- 2) The sulphur (S) content in: wood, straw, waste etc. used for energy purposes in plants with a capacity of 1,000 kW and more.
- 3) Instead of paying tax on the sulphur content in the above mentioned energy products, businesses can choose to pay excise duty of the sulphur dioxide (SO<sub>2</sub>) emissions into the air.

Current rates for the tax are DKK11.1 per kilo of SO<sub>2</sub> emitted or DKK 22.2 per kg of sulphur in the fuel.<sup>47</sup> Denmark has the lowest level of SO<sub>2</sub> emissions per capita of all OECD countries. In 2011, the tax generated DKK 48 million.

Norway implements a tax on NO<sub>x</sub> emissions. The rate in 2013 was NOK 17.01 per kg (approx. €2.04 per kg).<sup>48</sup>

In Estonia, an air pollution charge exists covering a range of air pollutants (see Table 1-17). The pollution charge rates, applied to all installations requiring a permit, are increased by a factor of:

- 1.2 if the pollutants are released into the ambient air from stationary sources of pollution located within the boundaries of local governments bordering on the Narva River, if the height of release of pollutants is more than 100 metres above ground level;
- 1.5 if the pollutants are released into the ambient air from stationary sources of pollution located within the boundaries of the administrative territory of Jõhvi, Kiviõli, Kohtla-Järve, Narva, Sillamäe or Tartu;
- 2 if the pollutants are released into the ambient air from stationary sources of pollution located within the boundaries of the administrative territory of Tallinn;
- 2.5 if the pollutants are released into the ambient air from stationary sources of pollution located within the boundaries of the administrative territory of Haapsalu, Kuressaare, Narva-Jõesuu or Pärnu.

Table 1-17: Tax Rates for Air Pollutants in Estonia

Pollutant	EUR per 1 ton of pollutant
sulphur dioxide (SO <sub>2</sub> ) or other inorganic sulphur compounds	86.08
carbon monoxide (CO)	6.35
particulates, except heavy metals and compounds of heavy metal	86.47
nitrogen oxides, calculated as nitrogen dioxide, and other inorganic nitrogen	101.1

<sup>47</sup> Danish Energy Authority. *Green Taxes in Trade and Industry – Danish experiences*. Copenhagen (no year provided). [http://www.ens.dk/da-DK/ForbrugOgBespargelser/IndsatsVirksomheder/TilskudtilCO2afgift/Documents/Green\\_taxes%20danish%20experiences.pdf](http://www.ens.dk/da-DK/ForbrugOgBespargelser/IndsatsVirksomheder/TilskudtilCO2afgift/Documents/Green_taxes%20danish%20experiences.pdf)

<sup>48</sup> Royal Ministry of Finance (2013) Main Features of the Tax Programme for 2013, [http://www.statsbudsjettet.no/Upload/Statsbudsjett\\_2013/dokumenter/pdf/skatt\\_eng.pdf](http://www.statsbudsjettet.no/Upload/Statsbudsjett_2013/dokumenter/pdf/skatt_eng.pdf)

Pollutant	EUR per 1 ton of pollutant
compounds	
volatile organic compounds, except mercaptans and methane (CH <sub>4</sub> )	101.1
mercaptans	28,830
heavy metals and compounds of heavy metal	1,240

In Lithuania, taxes are set for emissions from stationary sources into the environment. For emissions to the atmosphere, the tax rates for various pollutants are shown in Table 1-18.

**Table 1-18: Taxes on Pollutants Discharged into the Atmosphere**

Pollutants	Tax rates, LTL per tonne
SO <sub>2</sub>	360
NO <sub>x</sub>	680
Vanadium pentoxide	13,311
Solid particles (organic and inorganic)	213
<b>Groups of pollutants</b>	
I	1,402
II	661
III	86
IV	15

A feature of the Lithuanian system is that where environmental measures, intended for use of bio-fuel, or aimed at reducing the emission of pollutants into the atmosphere from stationary sources of pollution by at least 5 per cent, are planned, these are exempted from taxes except in those cases when funds from the state budget are used to fund the measure. The tax exemption is valid for a time period not exceeding 3 years from the beginning of the implementation of the measure.

In France, the TGAP covers a range of environmental taxes, including Atmospheric emissions of polluting substances: in most cases, from € 43.24 to € 259.86 per tonne.

In Italy, a tax is levied on the sulphur dioxide and nitrogen oxide discharged by large combustion plants. The tax rates are:

- 1) € 106 per tonne/year of sulphur dioxide; and
- 2) € 209 per tonne/year of nitrogen oxides.



In Czech Republic, the Clean Air Act introduces a new system of charges for air pollution imposed on VOC, NO<sub>x</sub>, SO<sub>2</sub> and PM pollutants. The charge is not collected if it is less than approximately EUR 2,000 (CZK 50,000) because any amount below that threshold would not cover the administrative costs.

**Table 1-19: Taxes on Air Pollution in Czech Republic (CZK per tonne)**

	2013-16	2017	2018	2019	2020	2021 onward
TSP	4,200	6,300	8,400	10,500	12,600	14,700
SO <sub>2</sub>	1,350	2,100	2,800	3,500	4,200	4,900
NO <sub>x</sub>	1,100	1,700	2,200	2,800	3,300	3,900
VOC	2,700	4,200	5,600	7,000	8,400	9,800

Latvia also implements taxes for air pollutants. The applicable rates are shown in Table 1-20 below.

**Table 1-20: Latvia - Tax Rates for Air Pollution and the Volume of Greenhouse Gases Emitted by Stationary Technological Installations which is not Included in the Number of Transferred Allowances**

Classification of emission	2013	2014	2015
	from January 1st till December 31 (LVL per tonne)	from January 1st till December 31 (LVL per tonne)	from January 1st (LVL per tonne)
Solid particles (dust not containing heavy metals)	24	36	40
Carbon monoxide (CO)	5.5	5.5	5.5
Ammonia (NH <sub>3</sub> ) and other non-organic compounds	13	13	13
sulphur dioxide (SO <sub>2</sub> ), nitrogen oxide (NO <sub>x</sub> - nitrogen oxide sum, recalculated to NO <sub>2</sub> )	60	60	60
Volatile organic compounds and other hydrocarbons (CnHm)	60	60	60
Heavy metals (Cd, Ni, Sn, Hg, Pb, Zn, Cr, As, Se, Cu) and compounds thereof, recalculated for the relevant metal, and vanadium pentoxide recalculated to vanadium	800	800	800
PM <sub>10</sub> air emissions for bulk handling at open terminals or other open areas	480	720	800

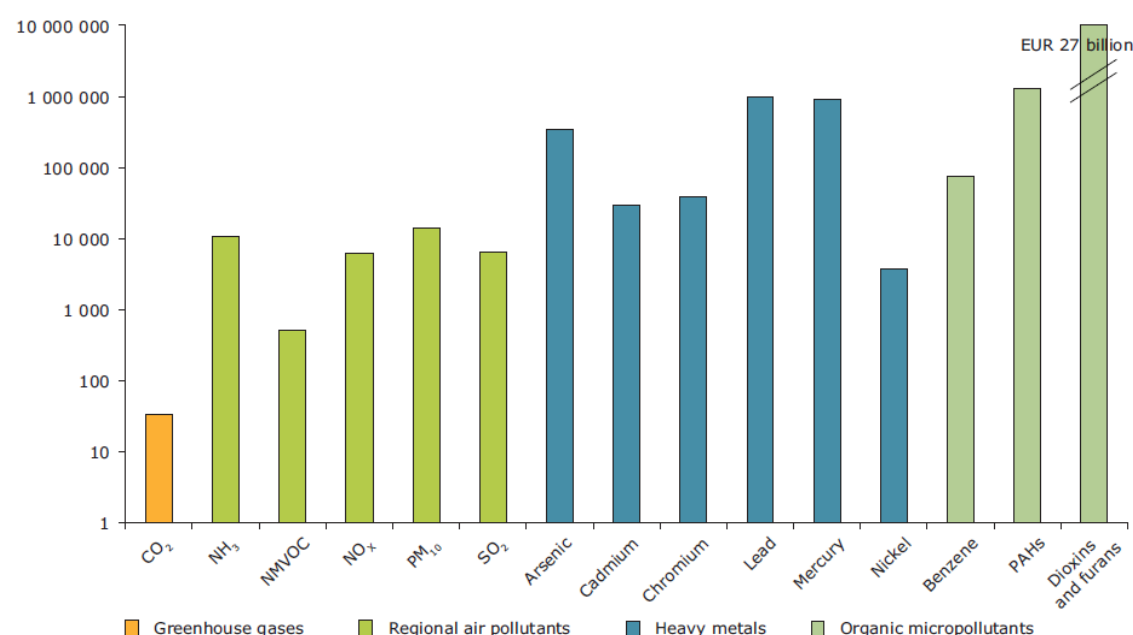
Sweden has a refunded emissions charge for NO<sub>x</sub>. This has been successful in reducing NO<sub>x</sub> emissions, but it does not contribute to the budget as the levy revenue is refunded in full to those subject to the tax.

In many of the countries concerned, the levy appears to be well below the level of the externalities, and does not seem to exert a significant environmental effect. The Danish

tax appears to be one of the few bona fide taxes that are high enough to have such an effect, with the Norwegian tax on NO<sub>x</sub> also at relatively high levels. The Swedish system has much higher charge rates for NO<sub>x</sub>, but this is made possible, in part, by the fact that all revenues are refunded to the affected parties in line with thermal output (so the charge actually works to drive the efficiency of thermal power generation with respect to the emissions of NO<sub>x</sub>). As such, it does not represent a conventional tax, but a refunded levy.

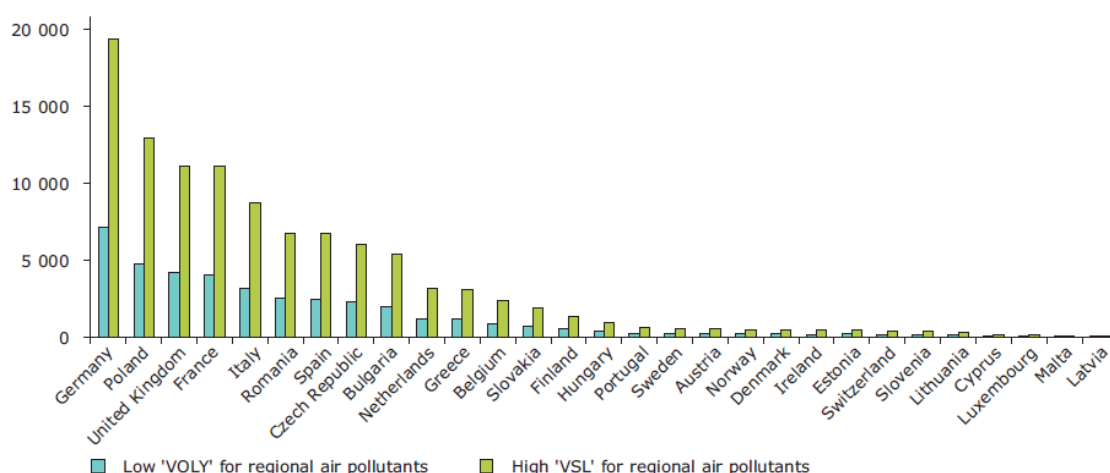
Of some interest is the fact that some of the newer Member States have tax systems which affect a range of pollutants and installations. This is encouraging and suggests the potential for wider application of such taxes across a range of pollutants. The level at which they are levied, on the other hand, seems rather low. Externalities from the emission of such pollutants are typically at least a factor of 10, and sometimes a factor of 100 or more, higher than the tax rates levied (see Figure 1-5). Another effect of this is that revenues tend to be very small. The Italian tax raised €13 million in 2011, which is a notional proportion of GDP. It compares with figures for the externalities from industrial facilities which appear to be well over 100 times that value, irrespective of the assumed approach to mortality valuation (which influences unit damage costs - see Figure 1-6).

Figure 1-5: Estimates of the European Average Damage Cost (€ per tonne) Emitted for Selected Air Pollutants (note the logarithmic scale on the Y-axis)



Source: EEA (2011) *Revealing the Costs of Air Pollution from Industrial Facilities in Europe*, EEA Technical report, No.15/2011, p.23

Figure 1-6: Aggregated Damage Costs by Country, excluding CO<sub>2</sub> (€ million)



**Note:** The low-high range shows the differing results derived from the alternative approaches to mortality valuation for the regional pollutants.

SouSource: EEA (2011) *Revealing the Costs of Air Pollution from Industrial Facilities in Europe*, EEA Technical report, No.15/2011, p.33

## 1.8.2 Suggested Implementation

The suggestion is that there is scope for introducing such taxes where other equivalent schemes (such as emissions trading) are not already in operation, and for increasing them where they already exist. We suggest rates moving towards €1,000 per tonne of SO<sub>2</sub>, €1,000 per tonne of NO<sub>x</sub>, and €2,000 per tonne of PM<sub>10</sub> (and / or €3,000 per tonne of PM<sub>2.5</sub>). Such rates are still below the level of the externalities generated (see Figure 1-5), but are more likely to generate some additional incentive for abatement. In fact where abatement costs are lower than the externalities these would determine the rate.<sup>49</sup>

The suggested transition period from existing rates, or where there is no air pollution tax in place, is from 2016 to 2021. It is assumed that the taxes are indexed to inflation (they stay constant in real terms) for the purposes of the revenue calculation. In practice, this may happen through annual indexing or through periodic adjustments.

## 1.9 Water Abstraction

### 1.9.1 Good Practice

The majority of Member States appear to have some kind of tax or charging scheme for water abstraction and/or supply. Although only two Member States have reported their water tax to the Commission's 'Taxes in Europe database', the TAXUD list of 'minor taxes' features further Member States with water abstraction taxes or charges in places. Member States have also reported such taxes to the OECD/EEA database on economic instruments. Apparently revenues from some of these schemes are ring-fenced for water management purposes and so do not feature in Eurostat's revenue statistics (they may

<sup>49</sup>

[http://www.unece.org/fileadmin/DAM/env/documents/2009/EB/wg5/wgsr45/Informal%20docs/NMR\\_Gothenburg\\_Protocol\\_finalversion.pdf](http://www.unece.org/fileadmin/DAM/env/documents/2009/EB/wg5/wgsr45/Informal%20docs/NMR_Gothenburg_Protocol_finalversion.pdf)

have more the character of charges than taxes, with revenues used to manage, or support the management of, the water resource).

Altogether 20 of 28 Member States are reported in one of these sources to have such environment-related tax or charge, which is not a simple user charge or water tariff for the supply of water, Member States that have NOT reported any such instrument include Ireland, Cyprus, Malta, Slovakia, Luxembourg, Sweden, Finland and Austria.

Numerous exemptions and special arrangements apply where these instruments are concerned, making it difficult to assess their tax bases accurately. For the same reason revenue flows appear to be rather small in most Member States, although water across Europe is a scarce resource in many regions. As water is abstracted at relatively well-defined points, the administrative requirements for a fiscal instrument are not very demanding. Even in regions where water is relatively abundant, the 'tragedy of the commons' has caused shortfalls in water availability in the absence of pricing. Hence, it is appropriate with a fiscal instrument to ensure that water is abstracted for purposes of genuine economic value and is not wasted. Article 9 of the EU's Water Framework Directive aimed for 'adequate' full-cost water pricing by 2010, which is understood to include pricing of the resource. Article 9(1) states that "*Member States shall take account of the principle of recovery of the costs of water services, including environmental and resource costs*".

In Netherlands a national tax is due on tap water. The tax is due on water supplied in piped water supply. The tax applies to households, as well as to water used for business purposes. The rates are banded, so that a basic consumption of up to 300m<sup>3</sup> is taxed at a rate of €0.33 per m<sup>3</sup>, and above that level at a rate of €0.40/m<sup>3</sup>. Above 50,000 m<sup>3</sup> the rate is €0.36 per m<sup>3</sup> and then lowered successively down to €0.05 per m<sup>3</sup> for consumption above 250,000 m<sup>3</sup> annually, which is relevant for business purposes. These rates apply from mid-2014, at which time, the previous basic household rate is being doubled. The tax has raised €125-€130 million in recent years, or 0.02% of GDP, which is expected now to double.

In Denmark, a national tax (introduced 1994) is payable on water extraction from all freshwater bodies. The tax is paid on the quantity of water supplied to the consumer, where this is not less than 90 % of the extracted quantity. This arrangement provides an incentive for water suppliers to monitor leakages more carefully, and they have been considerably reduced in Denmark as a result. Whereas spills and leakages at the level of 30-40% are usual in many European cities, Denmark has recorded a leakage rate of 10%. The tax was DKK 5.23 per m<sup>3</sup> in 2012, and 5.46 per m<sup>3</sup> in 2013 – or €0.73 per m<sup>3</sup>.

In addition to the national tax, a temporary surtax is due for the purpose of protecting groundwater aquifers, this surtax amounts to DKK 0.67 per m<sup>3</sup> or €0.09 per m<sup>3</sup>.

Denmark's water tax raised DKK 1,333 million in 2011, equivalent to 0.07% GDP, which is well above most other schemes. According to results from the EU-funded EPI-WATER project household consumption of drinking water has dropped by 40 per cent over the past 20 years in one representative Danish river catchment as a result of the full-cost water pricing scheme including this tax, due in part to many new and simple water saving installations being introduced. In turn, this has improved water flows, especially in smaller brooks and streams, where numerous red list species dependent on water are resident.

The majority of the new Member States that joined EU from 2004 and onwards have in place water abstraction charges, implying that the administrative requirements are in

place. Schemes are often differentiated and complex to capture adequately, in particular, because reporting to EU appears to be inadequate and, in some cases, absent. Table 1-21 below shows the case of Latvia.

**Table 1-21: Tax Rates for the Extraction of Water, Lithuania**

End Use	Tax Rate (per m <sup>3</sup> )	
	LTL	EUR
Groundwater, with exception of mineral water:		
a) Provided by water supplier for household use and heating	0.06	0.02
b) Used by legal entities for commercial purposes, put up in a container	10.8	3.12
c) Other (not specified in a and b) groundwater	0.24	0.069
Mineral water, with exception of mineral water used in medical institutions	10.8	3.12
Mineral water used in medical institutions	5.4	1.6
Surface water used for industry and agriculture	0.007	0.002
Surface water used for cooling of thermal power plants	0.0007	0.0002
Surface water for fishery sector	0.0005	0.0001
Surface water hydropower	0.00003	0.000008
Surface water nuclear power plant	0.001	0.00028
Building Primer	0.64	0.19

Source: Republic of Lithuania (2012) Law on State Natural Resources, Actual version of the Law on 1<sup>st</sup> January 2012, Annex 2, Accessed 21<sup>st</sup> January 2014, [www3.lrs.lt/pls/inter2/dokpaieska.showdoc\\_l?p\\_id=416294](http://www3.lrs.lt/pls/inter2/dokpaieska.showdoc_l?p_id=416294)

### 1.9.2 Suggested Implementation

The suggested approach takes its starting point from the approaches in Denmark (€0.73 per m<sup>3</sup> for households excl. surtax), the Netherlands (€0.36 per m<sup>3</sup> for business), and the lowest Dutch rate for businesses which is applied to agriculture. The household and business tax rates have been adjusted to reflect purchasing power parities (see Table 1-22 and Table 1-23), and then, as a proxy for the seriousness of the problems related to the water resource, and recognising there is no perfect indicator in this regard, the Water Exploitation Index (WEI – see Figure 1-7).

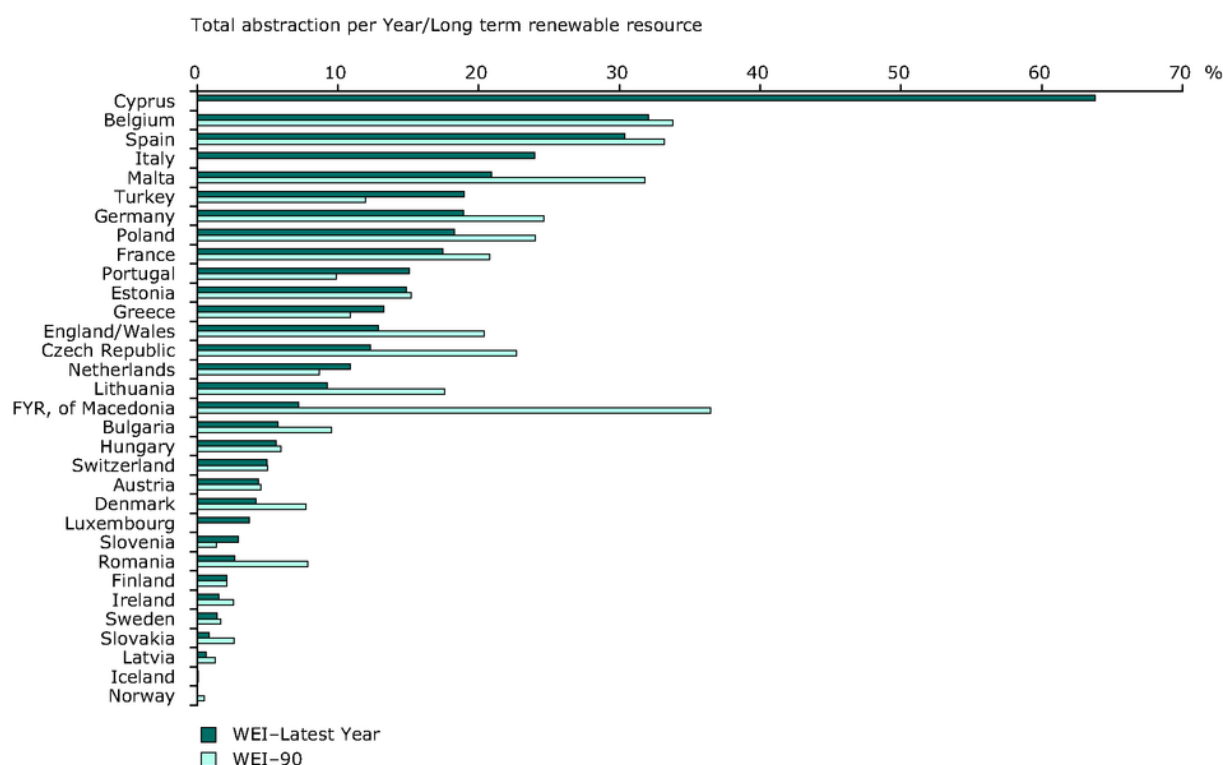
**Table 1-22: PPP Adjustment for Tax Rates for Water Abstraction, Water Use in Households, in Countries under Assessment, EUR / m<sup>3</sup>**

Member State	BG	CY	DK	FI	DE	EL	IE	LV	MT	NL	SI	ES	SE	UK
Tax Rate	0.24	0.45	0.00	0.65	0.55	0.45	0.58	0.50	0.40	0.25	0.43	0.48	0.71	0.58

Table 1-23: PPP Adjustment for Tax Rates for Water Abstraction, Business Use, in Countries under Assessment, EUR / m<sup>3</sup>

Member State	BG	CY	DK	FI	DE	EL	IE	LV	MT	NL	SI	ES	SE	UK
Tax Rate	0.15	0.28	0.45	0.41	0.34	0.28	0.36	0.31	0.25	0.36	0.26	0.30	0.44	0.36

Figure 1-7: Annual Total Water Abstraction as a Percentage of Available Long-term Freshwater Resources around 1990 (WEI-90) Compared to Latest Year Available (1998–2007) (WEI-Latest Year)



Source: EEA (see <http://www.eea.europa.eu/data-and-maps/figures/water-exploitation-index-wei-3>)

The PPP adjusted rates in Table 1-22 and Table 1-23 were multiplied by:

- 0.25 for Member States with a WEI <10%
- 0.50 for Member States with a WEI >10%, <20%
- 0.75 for Member States with a WEI between >20%, <30%
- 1 for Member States with a WEI between >30%

This leads to the rates shown in Table 1-24 below. These are assumed to be phased in over a period to 2018. After this, they are assumed to be indexed in line with inflation.

Table 1-24: Suggested Tax Rates for Water Abstraction (€ per 1,000 m<sup>3</sup>)

	Public Supply	Manufacturing	Agriculture
Bulgaria	60	40	5
Cyprus	460	280	40
Denmark	180	110	16
Finland	160	100	14
Germany	280	170	24
Greece	230	140	19
Ireland	150	90	12
Latvia	130	80	11
Malta	300	190	26
Netherlands	290	180	25
Slovenia	110	70	9
Spain	480	300	40
Sweden	180	110	15
United Kingdom	290	180	25

## 1.10 Discharges to Waste Water

### 1.10.1 Good Practice

Numerous Member States have some kind of tax, or other fiscal instrument addressing waste water discharges. Altogether, 14 Member States have reported a waste water levy to the Commission's 'Taxes in Europe database', or the OECD/EEA database on economic instruments. Member States that have not reported any such fiscal instrument include Austria, Croatia, Finland, Sweden, Ireland, Greece, Portugal, Italy, UK, Cyprus, Latvia, Malta and Bulgaria.

Revenues from several of these schemes are ring-fenced for water management purposes but, nevertheless, in most cases feature in Eurostat's revenue statistics, implying they are not simple user charges for sewage. This relates to the definition of environmental tax as an unrequited payment: even if there is some return regarding water management purposes, there is no direct relationship between the polluter being obliged to pay and the improvements that are achieved, over time, as a result of more general water management efforts.

Most of the schemes are fairly old and dating from the 1960's or 1970's, where water



pollution was more clearly on the agenda for many countries. Levy rates have been gradually increased in several Member States and the tax base has also been broadened to cover several different types of emissions.

A study by the European Environment Agency reviewed the application of waste water levies in a range of Member States (incl. France, Germany, Poland, Estonia, Spain, Denmark and Netherlands) and identified, in line with other previous studies, the Dutch scheme as the most comprehensive in terms of 'good practice'.<sup>50</sup>

The Dutch waste water levy was introduced with the Surface Waters' Pollution Act of 1970. In the Netherlands, the levy applies to discharges of organic material, nitrogen, mercury, cadmium, copper, zinc, lead, nickel, chromium and arsenic. The levy is imposed on all direct discharges to surface waters, as well as on all indirect discharges. The levy does not cover the costs of the sewer network, which is financed via a separate municipal fee. Insofar as the levy applies also to direct dischargers, i.e. industries and municipal treatment plants which discharge directly to surface waters, it provides a sound incentive to minimise discharges, and is in line with the polluter-pays principle.

Among the old Member States France has a well-developed system for waste water levies, based on the six regional Water Agencies. There is a comparable approach in the Flemish region of Belgium. Among the new Member States, Poland and Estonia have well institutionalised systems for waste water levies, the revenues from which are ring-fenced for Environmental Funds. The systems in Hungary, Lithuania and Romania are comparable in approach, but with lower rates and weaker frameworks for water management.

### 1.10.2 Suggested Implementation

The suggested approach takes, as its starting point, the approach applied in the Netherlands. The Netherlands tax rates have been adjusted using purchasing power parities in the various Member States result, giving applicable tax rates. Data availability for waste water discharges is not sufficient to allow the calculation of potential revenues generated by waste water taxes. For illustrative purposes, therefore, the tax is assumed to be implemented only for simple organic discharges (BOD/COD), this being responsible for reducing oxygen availability and depth of vision in surface waters. The Figures in Table 1-25 below reflect the application of PPP-adjustments to the Dutch tax rate for BOD, which is €2.47 per kg BOD in 2013. There is a high level of regional variability in the application of waste water levies.

Table 1-25: Rate of Tax Increase to be Applied for BOD, € per kg

Member State	BG	CY	DK	FI	DE	EL	IE	LV	MT	NL	SI	ES	SE	UK
Tax Rate	1.03	1.93	1.62	2.77	2.34	1.92	2.46	2.14	1.69	0.00	1.81	2.04	3.01	2.44

In principle, it would be interesting to extend this analysis to other pollutants, but the data available do not make this possible. Evidently, the strength of the rationale for

---

<sup>50</sup> EEA (2005) Effectiveness of urban wastewater treatment policies in selected countries: an EEA pilot study, EEA Report 2/2005, Copenhagen.



taxing discharges on other pollutants is likely to vary somewhat across the Member States.

## 1.11 Additional Analysis on Charges for Water Supply and Treatment

### 1.11.1 Good Practice

Article 9 of the EU's Water Framework Directive (2000/60/EC) (WFD) establishes that Member States *"shall take account of the principle of the recovery of costs of water services"* and requires that by 2010, they have ensured *"that water-pricing policies provide adequate incentives for users to use water resources efficiently and thereby contribute to the environmental objectives of this directive"*.

The preamble of the WFD states that *"there is a need for a greater integration of qualitative and quantitative aspects of both surface waters and ground waters"*. Although the WFD is primarily concerned with water quality, control of quantity is an 'ancillary element' to this purpose. The WFD specifically defines the 'available groundwater resource' for potable water in view of the need to respect the *"long-term annual rate of flow required for achieving the ecological quality objectives for associated surface waters"*. This definition is effectively linking water abstraction to ecological water quality, which in turn explains why the WFD mandates influencing the demand for water through the mechanism of water pricing.

Despite their financial difficulties, Member States have been slow to bring their policies on water pricing up to the wording and 2010 deadline of the Directive's Article 9. The European Environment Agency, in its report from 2013 entitled, *"Assessment of cost-recovery through pricing of water"*,<sup>51</sup> provided some insights on the practices in a number of Member States relating to water pricing. The report observes that *"information on cost-recovery levels is not always easily accessible"*, but that for the selected sample of Member States, the available data suggests there is a fairly high rate of *financial* cost-recovery. The report takes a bottom-up approach, whereby cost-recovery is explored in specific regions and countries. The charges for water are as complex as for using cell phones, and there is a confusing array of charging principles in place.

In the following analysis, the extent of water charging is explored on the basis of data retrieved by Eurostat from the national household budget surveys. The approach is more top-down in nature in that these surveys provide insights regarding the relative significance of expenditures for water supply and waste water services for consumers. As such, they are used on a regular basis to provide item weights for the computation of the harmonized indices for consumer prices (HICP). This dataset enables a somewhat better understanding of the general situation across all Member States. Value added taxes at national level (in several cases, at reduced rates) have been subtracted to allow for comparison of the pure water charging elements. Since HICP excludes imputed rents, care has been taken to subtract these from the final consumption aggregates when applying the two water service-related item weights.

---

<sup>51</sup> European Environment Agency (2013) Assessment of cost-recovery through water pricing, EEA Technical Report No 16, Luxembourg:

Eurostat data for the share of population with access to public water supply, and who are being serviced with sewerage and waste water treatment, have been applied to allow for an estimate of the costs per individual in receipt of the service. Taking proper account of the share of the population being serviced plays a role when contrasting the present charges to the level of cost-recovery that could be expected on basis of best practice.<sup>52</sup>

Provision of water services is based on employment of labor and capital, the costs for which can be expected to differ among Member States according to their relative price levels. Hence, a comparison across Member States ought to take account of these differences, and we have done this through adjusting for purchasing power parities across Member States.

We use the case of France as a point of reference for the best practice benchmark because the findings of the EEA report on cost-recovery shows that there is a fairly rigorous legal and economic regime in place, which allows for a good match between the costs of service provision and the (volumetric) user charges levied on consumers. The provisions allowing for contracting out of water services in France entail limited cross-subsidies from general tax revenue, whereby a reasonable match between costs (supervised closely by the authorities) and actual charging is to be expected. At the same time France has a technological mix of waste water treatment that is more representative for Europe as a whole compared with, say, more sophisticated (and costly) schemes in Germany and Denmark.

Figure 1-8 and Figure 1-9 show for each Member State the estimated water supply tariff and waste water charge per individual on an annual basis for 2013. The benchmark represents 2013 cost recovery levels for water pricing in France at PPP=100.

These illustrative estimates suggest that overall, there is better cost-recovery with tariffs for water supply than for charges for waste water services. This is hardly surprising when taking into account the generous subsidies that have been handed out for investments in waste water treatment, not only in “new” Member States (through Cohesion Funds, for example), but also in many old Member States. It is not clear from this dataset, though, whether the charging gap is entirely associated with investment subsidies, or whether general tax revenues are still required to enable proper operation in waste water treatment.

Ireland is notable as a Member States which had abandoned water pricing, but which now, as part of its budgetary consolidation effort, is reintroducing it.<sup>53</sup> The figures here suggest that cost recovery for water services in Ireland would involve annual costs of about €244 per individual. The actual scheme now being introduced by Irish Water will cap annual water bills at €176 per individual<sup>54</sup>, but in fact falls short of full cost-recovery<sup>55</sup>.

Charging for waste water appears to be at fairly low levels especially in Bulgaria, Spain, Portugal and Greece – Member States that are indeed confronted with severe budget challenges. The charging situation in Malta might be in transition following the

---

<sup>52</sup> Desalinization is playing a large role for Cyprus and Malta and is added to estimates at a cost of €1/m3.

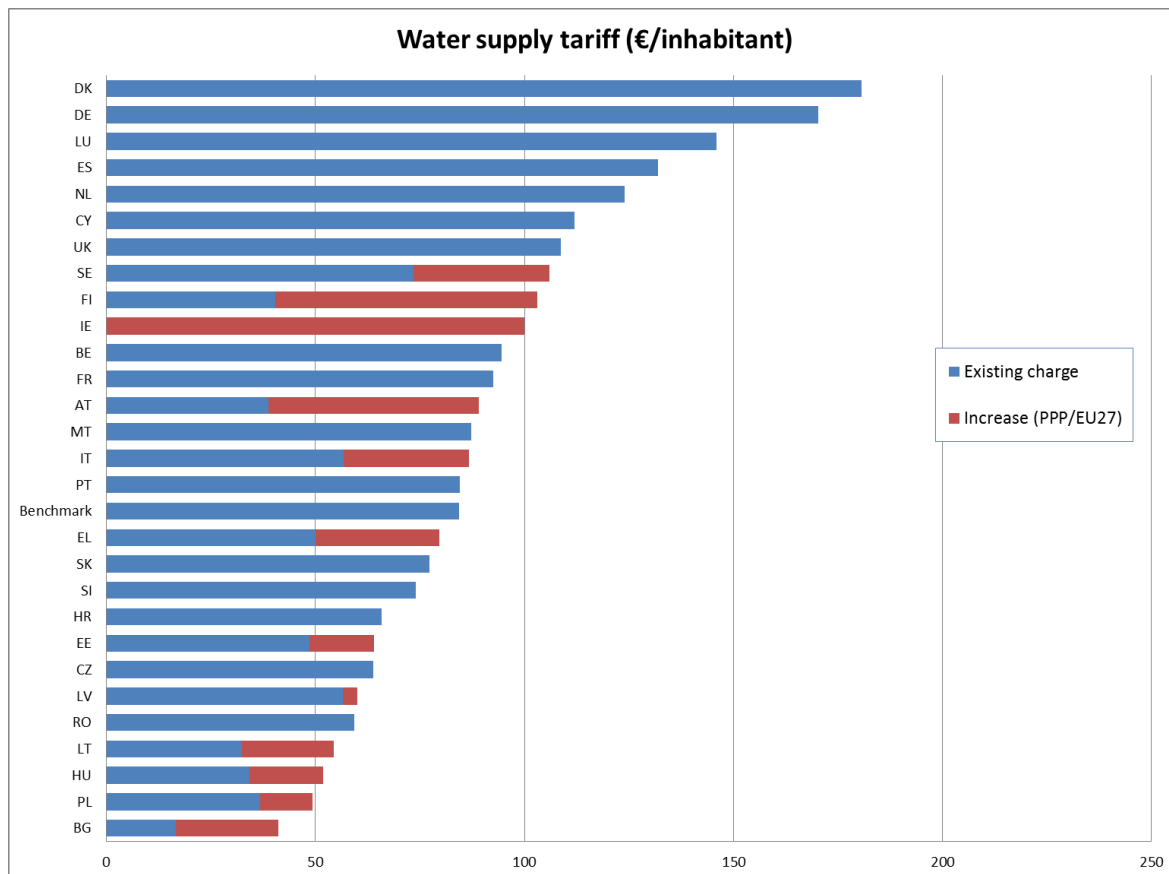
<sup>53</sup> <http://newswatch.nationalgeographic.com/2013/11/20/in-ireland-water-will-no-longer-be-free/>

<sup>54</sup> [http://en.wikipedia.org/wiki/Water\\_supply\\_and\\_sanitation\\_in\\_the\\_Republic\\_of\\_Ireland](http://en.wikipedia.org/wiki/Water_supply_and_sanitation_in_the_Republic_of_Ireland)

<sup>55</sup> Irish Water, personal communication, May 2014.

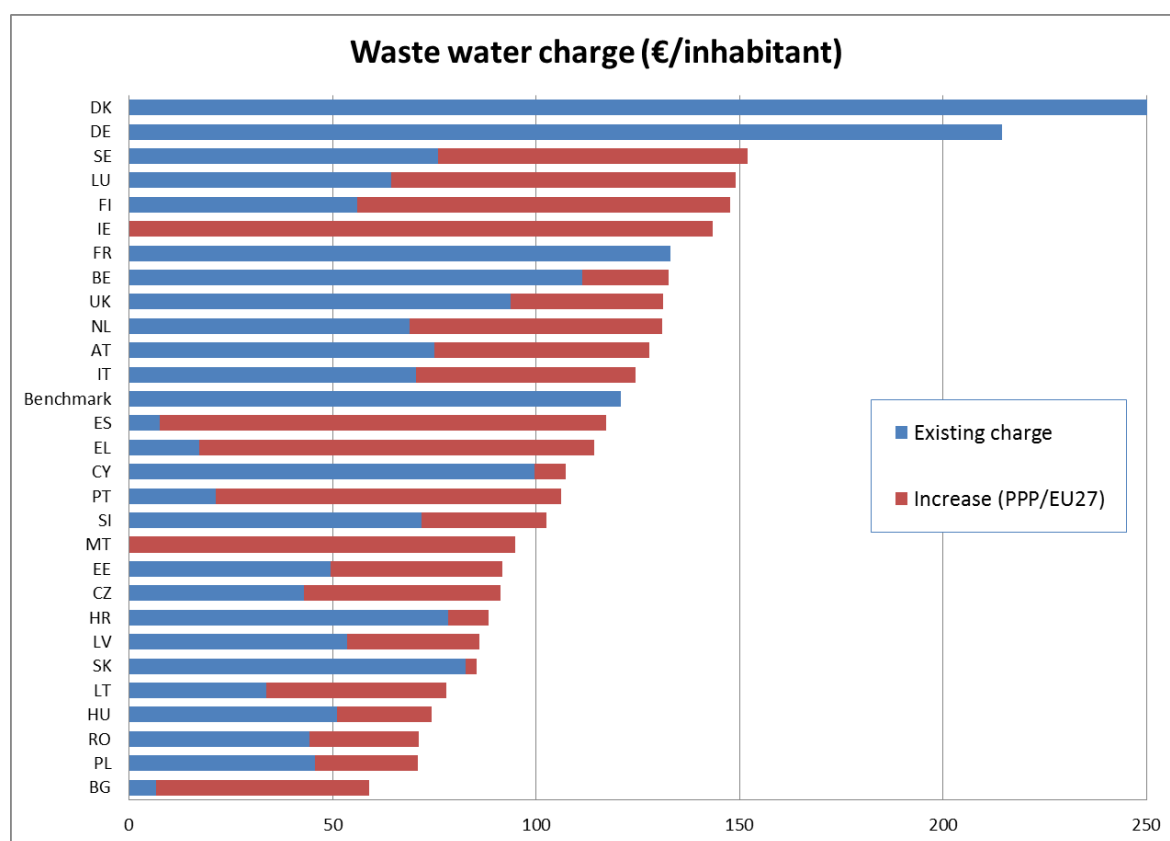
completion of its extended waste water treatment scheme. For the Netherlands the costs for the sewer networks are not included in water charges, but are covered by municipalities. Finland lacks a legal framework for water pricing.<sup>56</sup>

Figure 1-8: Water Supply Tariff (EUR/inhabitant)



<sup>56</sup> EUREAU, 2009, Statistics overview on water and wastewater in Europe, Brussels, p. 36.

Figure 1-9: Waste Water Charge (EUR/inhabitant)



### 1.11.2 Suggested implementation

On November 14 2012 the European Commission adopted “A blueprint to safeguard Europe’s water resources”, commonly known as the Blueprint<sup>57</sup>. The Blueprint includes 18 measures to increase the efficiency and effectiveness of European water policies, most of which relate to economic and financial aspects. In paragraph 2.3 of the Blueprint the Commission has specifically proposed a strengthening of the principle of cost recovery and pricing established in Article 9 of WFD;

*“Article 9 of the WFD requires implementation of pricing policies that provide an incentive to use water efficiently. Pricing is a powerful awareness-raising tool for consumers and combines environmental with economic benefits, while stimulating innovation. Metering is a pre-condition for any incentive pricing policy. Article 9 also requires cost-recovery (including environmental and resource costs) for water services, taking into account the polluter pays principle. The 2007 Commission Communication on Water Scarcity and Droughts included options related to ‘putting the right price tag on water’, ‘allocating water more efficiently’ and ‘fostering water efficient technologies and practices’. These water efficiency measures fit into the overall resource-efficiency objective of Europe 2020”*

<sup>57</sup> Communication from the European Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, 2012, A Blueprint to safeguard Europe’s water resources, SWD(2012) 381 final.

To explore the revenue implications of the approach, it is assumed that Member States with water tariffs and sewage charges below the benchmark will gradually increase these. The rate increases would affect not only households, but all users that are serviced. Table 1-26 provides estimates for potential short-run revenues in the event that each Member State provides a framework that will allow water managers to recover costs.

**Table 1-26: Results from Water Charging Analysis by Member State**

Member State	Non-domestic water use	Households € per capita <sup>58</sup>		Non-domestic € per capita		SUM	POP	STATIC REVENUE, million €
	% of household use <sup>59</sup>	water	sewage	water	sewage	Euro	Million	€/YEAR
AT	49	45	50	22	24	141	8,3	1,168
BE	45		16		7	23	10,6	238
BG	22	24	29	5	6	64	7,6	496
CY	15	3	2	0.5	0.3	6	0,8	5
CZ	57		38		21	59	10,3	608
DE	23					0	82,2	0
DK	55					0	5,4	0
EE	35	12	35	4	12	63	1,3	82
EL	10	30	85	3	9	127	11,2	1,420
ES	49		105		52	157	45,2	7,083
FI	67	56	76	38	51	221	5,3	1,171
FR	17					0	63,7	0
HR	70		4		3	7	4,4	29
HU	13	17	17	2	2	38	10	387
IE	69	94	90	65	62	311	4,4	1,368
IT	34	29	39	10	13	91	59,6	5,439

<sup>58</sup> For the purpose of revenue estimates the price increase is normalized to the general population with MS service rates.

<sup>59</sup> EUREAU, 2009, Statistics overview on water and wastewater in Europe, Brussels.

LT	14	15	32	2	4	54	3,3	179
LU	43		80		34	115	0,48	55
LV	24	3	21	1	5	30	2,2	65
MT	73		95		70	164	0,4	66
NL	51		61		31	93	16,4	1,517
PL	32	11	17	3	5	36	38,1	1,375
PT	51		60		31	91	10,6	961
RO	64		11		7	18	21,5	380
SE	64	29	66	19	42	156	9,1	1,422
SI	59		17		10	27	2	55
SK	48		2		1	3	5,4	14
UK	44		36		16	52	61,1	3,205

Clearly this would be expected to have a certain impact on water use and in exploring the potential relief for the budget a short-run demand elasticity of 0.2 could be applied. However, these calculations were not carried out for this study.

## 1.12 Pesticides

### 1.12.1 Good Practice

A number of countries have implemented taxes on pesticides.

Denmark has a tax which, until recently was levied in the following manner:

Product	Tax Rate
Insecticides and Chemical products for disinfecting of soil	35 % of the retail value, including excise duty and VAT
Herbicides, Chemical products for reduction of plant growth, Chemical deterrents of insects and mammals and Fungicides	25 % of the retail value, including excise duty and VAT
Chemicals for destruction of alga, slime creating organisms in paper pulp, Deterrents of rats, mice, moles and rabbits, Microbiological pesticides.	3 % of the retail value, including excise duty and VAT.

This tax raised DKK 480 million in 2011, or 0.03% GDP.

The tax has recently been revised, so that it includes a 'flat rate' per kg of active ingredient used, and a variable tax level according to the pesticide's score against three

criteria: its environmental effect, its environmental fate and behaviour, and its human health effect.<sup>60</sup> Hence, the tax will be levied as follows:

- 1) Basic tax based on the amount (kg) of active substance in the product - 50 DKK per kg or litre active substances;
- 2) 107 DKK per kg or litre active substance multiplied by the score of the environmental effect;
- 3) 107 DKK per kg or litre active substance multiplied by the score of the environmental fate and behaviour effect; and
- 4) 107 DKK per kg plant protection product multiplied by the score of the human health effect.

This tax is expected to increase revenues (in 2012 prices) by DKK150 million per annum.

Sweden has a much simpler pesticides tax which is simply levied on the amount of active ingredient in the pesticide. The tax rate is SEK 30 per kilogram of active substance of the pesticide.

Norway has pioneered approaches (now adopted in Denmark) based on the risk profiling of pesticides. There are 5 different classes of pesticides for professional use, classified according to their health and environmental impact, and 2 classes of pesticide for private garden use. The tax is calculated using a 'basic tax' of 25 NOK/hectare (about €3.4 euros), and calculating either a tax per hectare equal to the basic tax, multiplied by a factor which lies between 0.5-9 for products for professional use, and 50-150 for products for private garden use. The equivalent tax per kg or litre = 25 NOK x factor x 1000 /SAD. The tax raised NOK 60-65 million per year (about €8.2-€8.9 million).<sup>61</sup>

In Italy, a flat tax of 0.5% was introduced in January 2000 (Law No 488/99) to all pesticides manufactured and sold with the following risks: R33 ("with risks of cumulative effects"), R40 ("limited evidence of carcinogenic effect", R45 ("may cause cancer") and R60 ("may impair fertility").<sup>62</sup> In the case of pesticide imports, a flat tax of 1% over the final price was introduced. The income raised by this levy is used to develop organic farming and quality products. Under the Ministry of Finance, the Italian Government created a "Fund for the development of organic farming and quality products" in order to finance the following measures under the national and regional programmes:

- 1) financing research and experimenting on low environmental impact agriculture;
- 2) supporting promotion and information campaigns on organic agriculture, regional products and PDO (Protected Designation of Origin);
- 3) producing, revising and publicising the code for good agricultural practice.

---

<sup>60</sup> See note from the Danish Ministry of the Environment (2013) *Background and content of the new pesticide tax*, Pesticider og Genteknologi, Den 29. maj 2013

<sup>61</sup> See Erlund Spikkerud (2012) Pesticide Taxation in Norway, presentation from the Norwegian Food Safety Authority.

<sup>62</sup> Pesticides Action Network Europe (2005) Pesticide taxes- national examples and key ingredients, Briefing no. 6, December 2005 <http://www.pan-europe.info/Archive/publications/downloads/PesticideTax.pdf>



However, not all the income raised by the pesticide tax has been used; 5 million EURO was allocated to the national plan for organic farming but this plan is still to be implemented.

Belgium previously had a tax in place, but the tax was abolished in 2007 (and replaced with stricter regulation).<sup>63</sup>

### 1.12.2 Suggested Implementation

It is suggested that there remains considerable potential for application of pesticide taxes. It remains possible, also, that this can improve the efficiency of agriculture by signalling to farmers the need to consider the rate of application of existing products. There are believed to be considerable differences in terms of impacts between the various active ingredients. Hence, basing the tax on the volume of active ingredients does not solve the problem.<sup>64</sup> The recent tendency has been for pesticide taxes to be banded in accordance with some measure of 'potential to do harm'. This is in response to past criticisms of pesticides taxes – that they were not necessarily reflective of actual environmental impact. The Norwegian and revised Danish taxes are deliberately banded in such a way as to improve efficiency of application of pesticides, and move the use of pesticides towards those which appear to have the potential to do least harm when they are used.

It has not been possible to gain data for each country disaggregated by the nature of the active ingredient. In the absence of that, we have applied the tax in a manner which is similar to the Danish scheme.

The Norwegian tax raises around €8.2 - €8.9 million on a tax base which is typically of the order 700 tonnes of active ingredient. The Danish tax raises €64.3 million on a tax base of around 4,000 tonnes of active ingredient. The average rate of tax per kg active ingredient is €15.80 and €12.21, respectively. We have based the application of a tax of the level of €15 per kg active ingredient. Even so, considering the broader experience in other Member States, the starting point here is a rate of €10 per kg active ingredient.

To implement this tax rate in Member States, the tax rate is adjusted with differences in relative price levels of the various national agricultural sectors. The adjustment index refers to the effective CAP support schemes per hectare of utilised agricultural area in Member States, and has been derived from the CAPRI-model.<sup>65</sup> The resulting tax rates at Member State level are indicated in Table 1-27 below.

---

<sup>63</sup> Vojtech, Vaclav (2010), "Policy Measures Addressing Agri-environmental Issues", *OECD Food, Agriculture and Fisheries Papers*, No. 24, OECD Publishing. <http://dx.doi.org/10.1787/5kmjrzg08vnb-en>

<sup>64</sup> See for example Szabó Z., 2011: Evaluation of external environmental impacts of crop production: Case study of an intensive farm and an ecological farm. LAP LAMBERT Publishing, pp.243. ISBN 978-3-8473-0980-2

<sup>65</sup> Annex III 'Intensity of spending for CAP pillar 1 and pillar 2 per hectare of UAA' in European Environment Agency (2009) *Distribution and Targeting of the CAP Budget from a Biodiversity Perspective*, EEA Technical Report 12/2009.

Table 1-27: Tax Rates Suggested for Member States for Pesticides Based on Relative Levels of CAP Support (€ per kg active ingredient)

Rate	€2.50	€5.00	€7.50	€10.00	€12.50	€15.00	€17.50	€20.00
Countries	LV	BG	ES	FI SE UK CY SI	IE	DK DE	NL	EL

In the application of the tax, some form of banding, rather a more crude approach based on a flat rate per active ingredient, would be appropriate. The application of a flat rate does, however, give a sensible indication of the likely order of magnitude of the potential revenue take.

The suggested transition period from existing rates, or where there is no pesticides tax in place, is from 2017 to 2019.

## 1.13 Fertilisers

### 1.13.1 Good Practice

Relatively few countries have currently taxes on fertilisers. Usually, the focus has been on nitrate pollution, with phosphate being of some interest also. A report for the OECD noted:<sup>66</sup>

*Since 1998, the **Netherlands** has tackled the measurement problem by introducing a range of levies on off-farm nutrient emissions above a set limit. Since 2006, the system directly regulates the maximum amount of fertilizers (animal manure plus maximum amounts of nitrate and phosphate) that may be used on the farm. The former system (MINAS) regulated emissions, not usage, to comply with the EU nitrate directive. Similar taxes on the estimated on-farm generation of nutrients over set levels are also in place in **Belgium**. The **Czech Republic** applied, taxes on ammonia emissions per head of ruminants in large scale enterprises. Fertilizer levies are applied in **Italy**, **Sweden** and some states of the **United States**. Input-based taxes are generally inexpensive to administer, but may be less effective than a tax on pollution itself, as they do not discriminate on the basis of actual loading on the environment.*

Mineral fertilizer taxes were in place in Finland, Austria and Sweden for up to two decades before they joined the EU in 1995. Rougoor et. al. report that fertilizer use was relatively inelastic (price elasticities ranging from -0.1 to -0.5) in response to these taxes,

but nevertheless, they estimated the presence of significant impacts, in particular in Austria, with a tax rate at 70% of the fertilizer price.<sup>67</sup>

A leaching tax was in operation in the Netherlands from 1998-2005.<sup>68</sup> To calculate the farm-specific losses, a comprehensive mineral accounting scheme (MINAS) was introduced. Farmers were obliged to account for nitrogen applications and offtakes, and were taxed accordingly. Tax rates were increased in steps from low initial levels, and in the final years, amounted to €5 per kg N and €20 per kg P, which is around 5-10 times the market price for mineral nitrogen fertilizer, for example. Still, it was only surplus losses of nitrogen and phosphorus that were addressed, with tax-exempted allowance thresholds of 40 kg N per ha and 10 kg P per ha. The European Court in its decision on the Dutch implementation of the Nitrate Directive assessed the compatibility of this taxation scheme with the Nitrates Directive and raised a question mark over leaching taxation due to the inherent uncertainties, and the discretion with book-keeping, which led to the MINAS scheme coming to an end.

A nutrient input taxation scheme has been introduced in Denmark for phosphorus. Traded animal fodders are subject to the tax rate of €0.50 per kg of P. A 20 per cent P-reduction was observed within 3 years from the start in 2005. Denmark also has a tax on nitrogen fertilisers with a rate of €0.67 per kg N, but this tax exempts farmers (see EPI-WATER).<sup>69</sup>

### 1.13.2 Suggested Implementation

It follows from the decision by the European Court in the MINAS case, that input taxation is required for a scheme to be compatible with the Nitrates Directive: the justification as followed by the Court stresses that the legal requirements of the Directive relate to the input of nutrients, and not to surpluses over a specified level (as in the Dutch scheme, now abandoned).<sup>70</sup> Hence the tax base for a scheme needs to refer to the input of nutrients, as is the case for the mineral fertiliser tax in Croatia.

As for a nitrogen tax rate, the 'best practice' identified is presumably Austria, with rates up to €0.47 per kg N. Even so, considering the broader experience in other Member States, the starting point here is a rate of €0.2 per kg N.

To implement this tax rate in Member States, the tax rate is adjusted with differences in relative price levels of the various national agricultural sectors. The adjustment index refers to the effective CAP support schemes per hectare of utilised agricultural area in Member States, and has been derived from the CAPRI-model.<sup>71</sup> The resulting tax rates at Member State level are indicated in Table 1-28 below.

---

<sup>67</sup> Rougoor CW, van Zeijts H, Hofreither MF and S Bäckman, 2001, Experiences with fertilizer taxes in Europe, *Journal of Environmental Planning and Management* 44:6, 877-887.

<sup>68</sup> Oenema O and Berentsen P, 2005, Manure policy and MINAS: Regulating nitrogen and phosphorus surpluses in agriculture of the Netherlands, OECD OM/ENV/EPOC/CTPA/CFA(2004)67/FINAL.

<sup>69</sup> <http://www.feem-project.net/epiwater/pages/download-public-deliv.html>; Synthesis report

<sup>70</sup> European Court, 2002, Case C-322/00, Commission v. Netherlands, Opinion of Advocate General Léger.

<sup>71</sup> Annex III 'Intensity of spending for CAP pillar 1 and pillar 2 per hectare of UAA' in European Environment Agency (2009) *Distribution and Targeting of the CAP Budget from a Biodiversity Perspective*, EEA Technical Report 12/2009.

Table 1-28: Tax Rates Suggested for Nitrogen Fertilisers Based on Relative Levels of CAP Support (€ per kgN)

Rate	0.05€ per kg N	0.10€ per kg N	0.15€ per kg N	0.20€ per kg N	0.25€ per kg N	0.3€ per kg N	0.35€ per kg N	0.4€ per kg N
Member States	LV	BG	ES	CY FI SE SI UK	IE	DK DE MT	NL	EL

The suggested transition period from existing rates, or where there is no such tax in place, from zero rates, is from 2016 to 2018.

## 1.14 Aggregates and Raw Materials

### 1.14.1 Good Practice

The objectives for introducing a tax on aggregates vary depending upon the country in which it is being implemented. The policy can have four main effects on aggregates:

- Reduce the amount of virgin aggregate material extracted (reduced consumption leads to less disposal);
- Increase the amount of aggregate re-use;
- Increase the use of substitutes for primary aggregate; and
- Increase the recycling of, and use of, secondary aggregates

A tax on aggregates is a fiscal measure which usually works by shifting the price differential against virgin, and in favour of secondary aggregates, making it financially more beneficial to recycle aggregate and use secondary aggregate. The recycled aggregate is mainly derived as waste from the construction and demolition industry.

Denmark, Sweden, the UK, Belgium (Flanders) and Italy (at a regional level) have all implemented a pure aggregate levy.<sup>72</sup> The main policy objectives and the year in which the policy was introduced are outlined in Table 1-29.

Table 1-29: Main Aggregate Levy Policy Objectives

	Denmark	Sweden	UK
Name of Policy	Tax on Waste and Certain Raw Materials	The Law Concerning Tax on Natural Materials	Aggregate Levy
Year Policy	1990	1996	2002

<sup>72</sup> R. Bleischwitz and b. Bahn-Walkowiak (2007) Aggregates and Construction Markets in Europe: Towards a Sectoral Action Plan on Sustainable Resource Management, Minerals and Energy, *Raw Materials Report*, 22:3, 159-176.

Introduced			
Objective 1	To reduce resource extraction	To safeguard gravel resources and water quality	To reduce demand for aggregates and encourage recycling
Objective 2	To increase aggregate recycling	To increase material substitution to crushed rock and recycled material	To compensate for environmental externalities caused by quarry activities

The Danish raw material extraction tax<sup>73</sup> was introduced in 1987, alongside the waste tax. In 1990, the tax was modified to become an extracted raw materials tax (sand, gravel, stones, peat, clay and limestone), to reduce the use of these natural materials and to promote the use of recycled products, such as construction and demolition waste. The combined aggregate and waste taxes have produced a greater demand for recycled substitutes: in 1985 only 12% of construction and demolition waste was recycled, compared with 94% in 2004. The following are described by an ECOTEC report as being exempt from the tax:<sup>74</sup>

- Raw materials extracted for coastal projects to protect the beaches against erosive action;
- Sea bed materials, which originate from maintenance and capital dredging projects and which are utilised as raw materials;
- Residual products and waste products, which are extracted from already closed depots;
- Top soil and peat, which are delivered without payment; and
- Raw materials commercially extracted or imported by a business, when the annual amount is less than 200 m<sup>3</sup> of raw materials.

The tax in Denmark is based on volume (m<sup>3</sup>) of material extracted and the tax currently stands at DKK 5 per m<sup>3</sup>. The revenue generated goes directly to the State's general budget as well as towards subsidy schemes, which support waste-related initiatives in the fields of waste prevention, recovery and recycling.

In Sweden, gravel is a very important resource due to necessity for aquifers on which much of the country relies for drinking water. It was also recognised that gravel is an easily extractable, finite resource. This was leading to a shortage of gravel in some parts of Sweden. The tax was therefore introduced for environmental reasons and aimed to make gravel-alternatives more cost-competitive, therefore increasing use of recycled aggregates, and reducing consumption of gravel. Sweden's 'Tax on Natural Materials', commonly referred to as 'Gravel Tax', applies to gravel, which consists mainly of sand, gravel, cobble and boulder size fractions.

In Sweden the tax is levied on the basis of weight and the current level of tax is SEK 13 per tonne of extracted material.

---

<sup>73</sup> Söderholm, P. (2011); [ec.europa.eu/environment/integration/research/newsalert/pdf/262na1.pdf](http://ec.europa.eu/environment/integration/research/newsalert/pdf/262na1.pdf)

<sup>74</sup> ECOTEC Research and Consulting (2001) *Economic and Environmental Implications of the Use of Environmental Taxes and Charges in the EU and its Member States*, Accessed 21<sup>st</sup> October 2008, [http://ec.europa.eu/environment/enveco/taxation/pdf/ch11\\_aggregated\\_taxes.pdf](http://ec.europa.eu/environment/enveco/taxation/pdf/ch11_aggregated_taxes.pdf)

The UK's 'Aggregate Levy' applies to aggregate which in the UK is deemed to consist of sand, gravel and rock, with the following exceptions:

- Materials such as clay, slate and shale, which are not strictly aggregates but which are used for similar purposes;
- Minerals (mainly for industrial use) whose extraction necessarily involves the extraction of stone, gravel or sand; and
- Coal, metals and peat.

The levy is applied to materials which are:

- Quarried in the UK;
- Mined underground in the UK;
- Dredged from UK waters; or
- Imported into the UK.

In the UK the aggregate levy is also levied on a weight basis and currently stands at £2.00 (approx. €2.40) per tonne (increased from £1.60 (€1.92) per tonne in April 2008 to account for inflation).<sup>75</sup>

The level of tax implemented is considerably higher in the UK, as a proportion of price, than elsewhere. In the UK the tax on aggregates equates to 20% of the average price for sand, rock and gravel compared to the case of Sweden, where the tax equates to only 12% of the average price.

The UK recently saw an increase in the rate of the levy, but generally, the level of aggregate tax has been fairly stable over time. Sweden, however, has introduced incremental increases in the tax over time.

The taxes raised 0.02% of GDP in UK, and less than 0.01% of GDP in Sweden. The Danish figures reported are combined with those derived from the tax on incineration and landfilling so the contribution is less easy to discern.

In Latvia, taxes are levied on the extraction or use of natural resources or environmental pollution. The taxes are paid by the person who has received or is under obligation to receive a permit, and who in the territory of the Republic Latvia, continental shelf or exclusive economic area obtains taxable natural resources, or realizes taxable natural resources, obtained in an economic activity which is not related to the output of mineral deposits. The tax rates are set out in Table 1-30.

**Table 1-30: Tax Rates for Resource Extraction and Use in Latvia**

Type of Resource	Unit of Measurement	Rate, LVL
Soil	m <sup>3</sup>	0.3
Sandy loam and clay loam, aleirite	m <sup>3</sup>	0.1
Quartz sand	m <sup>3</sup>	0.25

<sup>75</sup> Converted using an exchange rate of €1.2 = £1.

Type of Resource	Unit of Measurement	Rate, LVL
Sand	m <sup>3</sup>	0.15
Sand-gravel (fragments > 5 mm content > 15%)	m <sup>3</sup>	0.25
Clay, other clayey rock for the production of construction materials	m <sup>3</sup>	0.15
Dolomite for decoration (finishing)	m <sup>3</sup>	0.25
Dolomite	m <sup>3</sup>	0.15
Limestone	m <sup>3</sup>	0.2
Freshwater limestone (friable and chunky)	m <sup>3</sup>	0.1
Travertine	m <sup>3</sup>	1
Gypsum	m <sup>3</sup>	0.35
Field stones	m <sup>3</sup>	0.4
Pigmentary soil	m <sup>3</sup>	0.1
Peat (moisture – 40%)	ton	0.3
Organogenic sapropel (algal and zoogenic – algal) and organocenic lime with ash, < 30% (moisture – 60%)	ton	0.5
Other sapropel (moisture – 60%)	ton	0.1
All types of medicinal mud	ton	0.5
Edible park snails ( <i>Helix pomatia</i> L), collected for further economic utilisation	kg	0.03

In Lithuania, the relevant tax rates are set for one cubic meter of extracted natural resources, except in the case of amber and for hunting. The rate on amber is set per 1 kg of extracted resource, and the hunting tax is set for each hectare of hunting area. The natural resource tax is applied tenfold in cases where the amount of extracted resources is concealed. The tax raised 0.06% GDP in 2011 (the amount having tripled since 2006).

In France, under the TGAP, there is a tax on the release for consumption and supply on the domestic market of aggregates: the tax is levied according to weight at € 0.20 per tonne.

In Estonia, economic operators pay a mineral resources extraction charge for the extraction and use of mineral resources belonging to the state. Mineral resources for which such a tax is payable include dolomite, granite, gravel, sand, limestone, clay, peat, phosphate rock, oil shale, and crystalline building stone.



Czech Republic and Italy are not included in this review because these taxes are mining charges, not aggregate product taxes, and do not impact upon aggregate waste and recycling in any significant way.

#### 1.14.2 Suggested Implementation

It is suggested that the implementation of such taxes should be such that the rates applied to aggregates in the UK (€2.40 per tonne) are applied to the types of materials covered by such taxes.

There appears to be little reason to phase this tax in. It is suggested that where there is no aggregates tax in place, or where there are taxes already in place, the tax is implemented at, or raised to, this rate by the start of 2016.

Data on the following categories of aggregates was obtained from Eurostat material flow accounts as the tax base for revenue calculations:<sup>76</sup>

- Marble;
- Chalk and dolomite;
- Slate;
- Limestone and gypsum; and
- Sand and gravel.

As with the UK tax, it is assumed that the tax is levied on the first use or sale and that those who export are effectively given a tax credit for aggregate that is exported from the country on provision of relevant documentary evidence.

### 1.15 Power Sector and the ETS

In Phases I (2005-2007) and II (2008-2012) of the EU Emissions Trading Scheme (EU ETS), the Member States could auction up to 5% and 10% of allowances, respectively, as they saw fit. For the first trading period of the EU ETS (2005-2007) only 4 countries (Denmark, Hungary, Ireland and Lithuania) used auctioning or direct selling, as opposed to grandfathering, for allocating EU allowances (EUAs) to the companies covered by the scheme. Although only Denmark chose to auction the full 5% allowed, it finally decided to sell them directly on the market. In Phase II, a larger number of countries auctioned or sold allowances. These are shown in Table 1-31, along with the total sold or auctioned over the Phase II period. The sale of allowances by year is shown in Table 1-32.

**Table 1-31: Auctioned or Sold Allowances in Phase II of the EU-ETS, '000 emission units (kt CO<sub>2</sub>-eq), all stationary sectors (1-9 and 99)**

Country	Allowances Auctioned / Sold in Phase II (‘000 EUAs)
Austria	2,000
Belgium	9,565

<sup>76</sup> [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env\\_ac\\_mfa&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env_ac_mfa&lang=en)

Country	Allowances Auctioned / Sold in Phase II (‘000 EUAs)
Bulgaria	130
Cyprus	0
Czech Republic	2,569
Denmark	2,837
Estonia	0
Finland	0
France	0
Germany	220,181
Greece	18,750
Hungary	7,675
Iceland	0
Ireland	557
Italy	0
Latvia	0
Liechtenstein	0
Lithuania	3,331
Luxembourg	4
Malta	0
Netherlands	16,000
Norway	35,019
Poland	210
Portugal	0
Romania	638
Slovakia	0
Slovenia	0
Spain	0
Sweden	0

Country	Allowances Auctioned / Sold in Phase II (‘000 EUAs)
United Kingdom	122,819

Source: EEA EU Emissions Trading System (ETS) data viewer, <http://www.eea.europa.eu/data-and-maps/data/data-viewers/emissions-trading-viewer>

**Table 1-32: Auctioned or Sold Allowances by Year, ‘000 emission units (kt CO<sub>2</sub>-eq), all stationary sectors (1-9 and 99)**

Year	Allowances Auctioned / Sold in Phase II (‘000 EUAs)
2005	0
2006	6,782
2007	1,730
2008	53,130
2009	79,315
2010	91,862
2011	92,943
2012	125,034

Article 10(1) of Directive 2003/87/EC requires Member States to auction allowances covered by Chapter III of that Directive not allocated free of charge. Thus, Member States must auction allowances not allocated free of charge. They may not use any other means of allocation, nor could they withhold or cancel allowances not allocated for free instead of auctioning them.

In 2013 over 40% of all allowances were expected to be auctioned, and the ETS legislation sets the goal of phasing out free allocation completely by 2027. Regular auctions take place in accordance with Commission Regulation (EU) No. 1031/2010 (the "Auctioning Regulation").

For the power generation sector, the rule is that operators no longer receive any free allowances but have to buy them. However, eight of the Member States which have joined the EU since 2004 - Bulgaria, Cyprus, as well as 6 of the countries being considered as part of this study, Czech Republic, Estonia, Hungary, Lithuania, Poland and Romania - have made use of a derogation (under Article 10c of the revised EU ETS Directive) which allows them to allocate, free of charge, a decreasing number of allowances to existing power plants for a transitional period. Latvia and Malta were also eligible to use this derogation but chose not to. The derogations require that the number of free allowances allocated declines progressively to reach zero no later than 2020. In exchange, the eight Member States concerned are required to implement national plans to modernise their electricity sectors and diversify their energy mix through investments

worth at least as much as the value of the free allowances.

Because of the rules governing the way in which the EU-ETS functions, we have not made major suggestions regarding how the power sector should be taxed other than in respect of air pollution (i.e., excluding greenhouse gases). In principle, it is possible for Member States to consider setting price floors (the UK, for example, has already done so – see below), but we have taken the view that in the absence of a process being led at the European level, the implied message would be that the cap within the EU-ETS was insufficiently tight. Evidently, the EU-ETS is intended to address only those greenhouse gases covered by the scheme. However, it should also be considered that a minimum rate of tax for electricity (on the output side) exists under the existing (and proposed) Energy Taxation Directive. In addition, we have considered the situation in respect of the level of taxes on air pollution. For these reasons, we have not proposed changes other than in relation to air pollution taxation. Perhaps more important is the way in which the relationship between the power sector and the EU-ETS influences whether or not one interprets some exemptions from energy excise duties as ‘environmentally harmful subsidies’ or not.

Evidently, the auctioning of revenues provides a source of additional revenue to Member States relative to the situation where they are allocated free of charge. By way of comparison, the quantity sold or auctioned in the last year of Phase II was 125 million across the EU (see Table 1-32 above). In 2013, the quantity sold or auctioned is expected to have been around a billion (eight times the number in 2012). At the same time, the allowance values have not been particularly high. For UK allowances, the figures for auctions in 2013 and for the first auction in 2014 are shown below. For 2013, the average value of allowances was €4.31 per EUA. For the UK auction, revenue raised was €410 million, or around 0.03% of GDP, in 2013.

Nonetheless, this provides an additional – albeit potentially unstable (because of the potential for allowance values to change) - source of revenue to the countries under examination in this study. It might also be noted that six of the eight countries availing themselves of derogations under Article 10c of the ETS Directive are included within this study. As such, they will be auctioning a progressively increasing number of allowances between now and 2020.

#### 1.15.1 Setting Floor Prices for EUAs

The decline in economic activity which followed the 2008 crisis led to a reduction in demand for EUAs relative to their availability. This led to concerns that the value of allowances under the EU-ETS would remain low, and that the incentive for abatement of greenhouse gases was too weak. This was particularly the case in those countries who had set their own targets to reduce emissions below what was suggested by the EU-ETS. In April 2013, for example, the UK implemented a price floor for allowances through the mechanism of its existing Climate Change Levy. Carbon Price Support rates of the Levy are applied to the use of gas, solid fuels and LPG used in power generation.

Whilst potential exists, therefore, to generate additional revenue from such mechanisms, we have not suggested them in this study.

Table 1-33: Key Results from UK Auctions of EUAs

Date	Allowances	Clearing Price	Notional
------	------------	----------------	----------

16-Jan-13	4,134,000	€ 5.81	€ 24,018,540.00
30-Jan-13	4,134,000	€ 3.72	€ 15,378,480.00
13-Feb-13	4,134,000	€ 4.57	€ 18,892,380.00
27-Feb-13	4,134,000	€ 4.23	€ 17,486,820.00
13-Mar-13	4,134,000	€ 3.60	€ 14,882,400.00
27-Mar-13	4,134,000	€ 4.68	€ 19,347,120.00
10-Apr-13	4,134,000	€ 4.58	€ 18,933,720.00
24-Apr-13	4,134,000	€ 2.93	€ 12,112,620.00
08-May-13	4,134,000	€ 3.51	€ 14,510,340.00
22-May-13	4,134,000	€ 3.43	€ 14,179,620.00
05-Jun-13	4,134,000	€ 3.96	€ 16,370,640.00
19-Jun-13	4,134,000	€ 4.52	€ 18,685,680.00
03-Jul-13	4,134,000	€ 3.85	€ 15,915,900.00
17-Jul-13	4,134,000	€ 4.06	€ 16,784,040.00
31-Jul-13	4,134,000	€ 4.10	€ 16,949,400.00
14-Aug-13	2,075,000	€ 4.26	€ 8,839,500.00
28-Aug-13	2,075,000	€ 4.56	€ 9,462,000.00
11-Sep-13	4,134,000	€ 4.94	€ 20,421,960.00
25-Sep-13	4,134,000	€ 5.30	€ 21,910,200.00
09-Oct-13	4,134,000	€ 4.70	€ 19,429,800.00
23-Oct-13	4,134,000	€ 4.59	€ 18,975,060.00
06-Nov-13	4,134,000	€ 4.76	€ 19,677,840.00
20-Nov-13	4,134,000	€ 4.40	€ 18,189,600.00
04-Dec-13	4,134,000	€ 4.42	€ 18,272,280.00
15-Jan-14	4,630,000	€ 4.91	€ 22,733,300.00
TOTAL 2013	95,098,000	€4.31	€409,625,940.00

Source: <https://www.theice.com/marketdata/reports/ReportCenter.shtml#report/148>

### 1.15.2 Aviation in the EU-ETS

EU Aviation Allowances (EUAAAs), which were introduced in January 2012, had been expected to be auctioned in a similar way as for power in Phase III. However following the announcement by the European Commission of 12 November 2012, proposing a deferral of the enforcement of the requirements under the EU Emissions Trading System for aircraft operators to monitor and report emissions as well as surrender allowances in April 2013 for emissions from flights into and out of Europe during 2012, auctioning of EUAAAs has been suspended (the ETS Directive provides for 15% of aviation allowances to be auctioned).

Given this situation, and given also that the expected proposal from ICAO may not be implemented until 2020, we have suggested that taxes on aviation could be introduced. It is recognised that Member States may want to consider the 'fit' of such an instrument with any proposal once its nature becomes clearer. It is possible that such a proposal could include auctioning of allowances (as had been expected under the EU-ETS), in which case, it might be appropriate to scale back such taxes.

## 1.16 HGV Externality Charging

We also suggest that Member States give consideration to their approach to taxing HGVs in line with Directive 2011/76/EU. A recent report indicates that there is wide variation in the extent to which Member States are aligned with the approach set out in the Directive.<sup>77</sup> In some additional analysis (relative to the previous work), we have considered the potential revenues which could be generated from what Directive 2011/76/EC refers to as external cost charges related to air pollution and noise. The estimates assume – in line with the study’s focus on revenue potential – that vehicles have applied to them maximum rates of externality charge for air pollution and noise as set out in Annex IIIb of the Directive. We have, however, applied the (lower) rates applicable to interurban roads (for air pollution and noise) and the (lower) rates applicable for daytime for noise.

Data on the estimated number of vehicles miles driven per country and for each class of vehicle was taken from the TREMOVE database.<sup>78</sup> Table 1-34 shows the revenue figures derived from this analysis for the air quality and noise elements, and the total per country.

---

<sup>77</sup> See Ricardo-AEA (2014) *Evaluation of the Implementation and Effects of EU Infrastructure Charging Policy since 1995*, Final Report to DG MOVE, January 2014.

<sup>78</sup> <http://www.tmleuven.com/methode/tremove/home.htm>

Table 1-34: Revenue Potential from HGV Externality Charges

Country	Air Pollution	Noise	Total
AT	122	9.7	132
BE	285	15.6	301
BG	127	5.9	133
CY	52	1.7	54
CZ	320	15.9	336
DE	1,253	93.7	1,346
DK	103	6.5	110
EE	47	2.3	49
ES	1,840	87.6	1,927
FI	203	9.2	212
FR	1,230	83.8	1,313
EL	279	11.1	290
HR	70	3.3	73
HU	177	9.8	187
IE	80	7.0	87
IT	1,276	59.8	1,336
LT	146	6.9	153
LU	22	1.4	24
LV	66	3.9	70
MT	4	0.2	5
NL	287	18.5	306
PL	825	43.2	868
PT	213	11.0	224
RO	440	25.6	466
SE	128	9.0	137
SI	51	2.9	54
SK	145	7.0	152
UK	1,611	84.0	1,695



## 2.0 Revenue Calculations

### 2.1 Estimating Revenue Breakdown by Fuel Type

#### 2.1.1 Introduction

In this section we outline the methodological approach used to estimate revenue breakdowns by fuel type and usage for each of the 14 Member States analysed.

The primary sources for revenue data were the DG-TAXUD *Taxes in Europe Database*, the National Tax List published by DG-ESTAT, and information obtained from government statistical sources.<sup>79,80</sup> This information was supplemented with revenue data from the *OECD Database on Instruments used for Environmental Policy and Natural Resources Management*. In addition, some revenue data was obtained directly from Member States' environmental and finance ministries.<sup>81</sup>

In most cases, excise duty revenues are not broken down by fuel type, rather, a summary figure is available for all excise duty revenues, or for the revenues relating to each of the major energy carriers / types (mineral oils, natural gas, solid fuels and electricity) without their being broken down by end use. In order to estimate baseline revenues for each individual excise duty going forward, and to compare these to the potential revenues realised through 'good practice', a methodology was designed to estimate revenue breakdowns by fuel type and usage.

In essence, we made a 'bottom up' estimation of the revenues based on current tax rates and energy consumption. Tax rates were gathered from the latest *Excise Duty Tables*.<sup>82</sup> Energy balance data was obtained for each Member State from the 2011 Energy Balance Sheets, published by Eurostat.<sup>83</sup> The proportions of calculated revenue by fuel type over the total calculated revenue figure, were used to pro-rate the actual total revenue figure to each fuel type.

#### 2.1.2 Estimating Energy Consumption for ETD Categories

The Energy Balance Sheets publish energy consumption data for each fuel type, which is further grouped according to the final use of the fuel, using the following categories: industry, transport, and other sectors (including a subsector for households). Conversely, excise duty rates are specified within the Energy Tax Directive (ETD) according to the

---

<sup>79</sup> European Commission (2013) *Taxes in Europe Database*, Accessed 2<sup>nd</sup> December 2013, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=553/1357119977&taxType=Other+indirect+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=553/1357119977&taxType=Other+indirect+tax)

<sup>80</sup> Eurostat (2013) *National Tax List*, Accessed 30<sup>th</sup> December 2013, [http://epp.eurostat.ec.europa.eu/statistics\\_explained/images/b/ba/National\\_tax\\_lists\\_20130717.xls](http://epp.eurostat.ec.europa.eu/statistics_explained/images/b/ba/National_tax_lists_20130717.xls)

<sup>81</sup> OECD/EEA (2013) *OECD/EEA Database on Instruments used for Environmental Policy and Natural Resources Management* <http://www2.oecd.org/ecoinst/queries/index.htm>

<sup>82</sup> 2012 - European Commission (2013) *Excise Duty Tables*, Accessed 2<sup>nd</sup> December 2013, p.6, [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/excise\\_duties/energy\\_products/rares/excise\\_duties-part\\_ii\\_energy\\_products\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/excise_duties/energy_products/rares/excise_duties-part_ii_energy_products_en.pdf)

<sup>83</sup> Eurostat (2013) *Energy Balance Sheets 2010-11*, 2013, April 2013, [http://epp.eurostat.ec.europa.eu/cache/ITY\\_OFFPUB/KS-EN-13-001/EN/KS-EN-13-001-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-EN-13-001/EN/KS-EN-13-001-EN.PDF)

following fuel usages: motor fuels, industry and commercial motors, and business and non-business heating.<sup>84</sup>

Relating Eurostat data for transport and household fuel consumption to specific excise duties (motor fuels and non-business heating) is relatively straightforward – these categories already exist within the Energy Balance Sheets. For the other excise duty categories – industry and commercial motors and business heating – it was necessary to make a number of assumptions in order to make use of the Eurostat data. In Table 2-1 we specify which Eurostat categories, for each fuel type, were assigned to each ETD category.

**Table 2-1: Relating Energy Balance Sheet Categories to ETD Categories**

ETD Category	Eurostat Category	Eurostat Fuel
Motor Fuels		
Motor spirit (petrol)	Transport	Motor spirit
Light fuel oil (diesel)	Transport	Gas/diesel oil
LPG	Transport	LPG
Kerosene	Transport	Kerosenes, jet fuels
Natural gas	Transport	Natural gas
Industry and Commercial Motors		
Light fuel oil (diesel)	Industry	Gas/diesel oil
Kerosene	Industry	Kerosenes, jet fuels
LPG	-	LPG
Natural gas	-	Natural gas
Business Heating		
Light fuel oil (diesel)	Other sectors (excluding households)	Gas/diesel oil
Heavy fuel oil	Industry and other sectors (excluding households)	Residual fuel oil
Kerosene	Other sectors (excluding households)	Kerosenes, jet fuels
LPG	Industry and other sectors (excluding households)	LPG
Natural gas	Industry and other sectors (excluding households)	Natural gas
Coal	All energy consumption excluding households	Hard coal + Coke + Lignite
Non-Business Heating		
Light fuel oil (diesel)	Households	Gas/diesel oil
Heavy fuel oil	Households	Residual fuel oil
Kerosene	Households	Kerosenes, jet fuels
LPG	Households	LPG
Natural gas	Households	Natural gas
Coal	Households	Hard coal + Coke + Lignite

<sup>84</sup> Official Journal of the European Union (2003) *Council Directive 2003/96/EC*, 27<sup>th</sup> October 2003, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:283:0051:0070:EN:PDF>

ETD Category	Eurostat Category	Eurostat Fuel
Electricity		
Electricity - business use	All energy consumption excluding households	Electrical Energy
Electricity - non-business use	Households	

In summary, our assumptions were as follows:

- All industrial consumption of light fuel oil (diesel) and kerosene is used to supply industrial and commercial motors, and was not used for heating purposes;
- All industrial consumption of heavy fuel oil, LPG and natural gas, was for heating purposes. The assumption was made because the IEA tables did not differentiate between the use of some fuels by when used for motor fuels or heating in the industrial and commercial sectors. In the absence of any robust data to estimate a split in the revenues, this simplifying assumption was made, in order to gain as much granularity in the revenue estimations as possible;
- All fuel consumption by 'other sectors' (excluding households) was for business heating purposes.

### 2.1.3 Revenue Breakdown Estimates

Given the above assumptions, we were able to calculate the tax base (total fuel consumption) relating to each of the fuels in the ETD, subcategorised by usage. By taking the product of the tax base and tax rate we calculated the revenues which each Member State should, in theory, have received from energy taxes in 2011. This information was used to estimate the percentages of total revenue relating to fuel usage, presented in Table 2-2 for each Member State.

Table 2-2: Approximate % Revenue Breakdowns by Member State

ETD Category	% of Total Revenues from Excise Duties on Energy													
	Bulgaria	Cyprus	Denmark	Finland	Germany	Greece	Ireland	Latvia	Malta	Netherlands	Slovenia	Spain	Sweden	United Kingdom
Motor Fuels														
Motor spirit (petrol)	22.77%	41.10%	13.84%	25.87%	28.48%	52.42%	33.81%	25.72%	29.15%	24.28%	30.15%	18.57%	32.39%	
Light fuel oil (diesel)	57.93%	25.82%	26.33%	30.32%	32.55%	14.48%	43.55%	52.38%	27.73%	22.05%	56.51%	58.09%	35.30%	
LPG (propellant)	5.35%	0.00%	0.00%	0.00%	0.20%	0.51%	0.01%	1.39%	0.00%	0.55%	0.08%	0.01%	0.00%	
Kerosene	6.17%	24.41%	10.09%	12.85%	13.34%	6.53%	11.73%	9.99%	29.30%	11.81%	0.76%	15.22%	8.08%	
Natural gas (prop)	0.45%	0.00%	0.00%	0.04%	0.16%	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.04%	0.17%	
Industry and Commercial Motors														
Gas oil	1.11%	1.58%	0.44%	2.11%	0.13%	2.13%	0.77%	0.73%	0.00%	1.56%	0.25%	0.69%	0.59%	
Kerosene	0.00%	0.00%	0.00%	0.00%	0.00%	0.03%	0.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Business Heating														
Gas oil	0.41%	1.16%	5.37%	3.27%	0.74%	1.94%	2.41%	2.00%	0.00%	1.87%	2.20%	1.93%	1.00%	
Heavy fuel oil	0.16%	0.07%	1.01%	1.78%	0.08%	0.17%	0.39%	0.02%	0.00%	0.02%	0.04%	0.06%	1.00%	
Kerosene	0.00%	0.03%	0.00%	1.10%	0.00%	1.16%	0.15%	0.00%	0.00%	0.13%	0.00%	0.00%	0.00%	
LPG	0.00%	0.00%	0.38%	0.00%	0.05%	0.35%	0.13%	0.00%	0.00%	0.15%	0.15%	0.05%	0.62%	
Natural gas	1.01%	0.00%	8.76%	1.91%	2.62%	0.81%	1.65%	1.21%	0.00%	5.59%	1.99%	2.16%	0.81%	
Coal	1.83%	3.39%	0.42%	0.44%	0.04%	0.40%	0.71%	4.25%	11.68%	0.12%	1.64%	0.14%	0.29%	
Non-Business Heating														
Gas oil	0.00%	2.01%	3.07%	1.97%	1.74%	14.84%	0.91%	0.37%	0.00%	0.18%	2.41%	1.06%	0.30%	
Heavy fuel oil	0.00%	0.00%	0.03%	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	
Kerosene	0.00%	0.44%	0.00%	0.00%	0.00%	0.01%	1.48%	0.00%	0.00%	0.05%	0.00%	0.00%	0.00%	
LPG	0.00%	0.00%	0.17%	0.00%	0.08%	0.02%	0.05%	0.00%	0.50%	0.04%	0.11%	0.12%	0.00%	
Natural gas	0.00%	0.00%	6.28%	0.10%	2.69%	0.39%	0.91%	0.44%	0.00%	3.53%	0.54%	0.69%	0.25%	
Coal	0.21%	0.00%	0.00%	0.00%	0.01%	0.00%	0.63%	0.04%	0.00%	0.00%	0.00%	0.02%	0.00%	
Electricity														
Electricity - business use	1.59%	0.00%	0.24%	8.98%	11.63%	2.46%	0.28%	1.09%	1.10%	21.45%	2.35%	0.60%	0.72%	

Electricity - non-business use	1.01%	0.00%	23.56%	9.24%	5.46%	1.37%	0.29%	0.38%	0.54%	6.61%	0.80%	0.54%	18.49%
--------------------------------	-------	-------	--------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

### 2.1.4 Pro-rating Actual Revenues based on Approximate Revenue Percentages

These estimated revenue breakdowns were then applied to aggregated revenue data (i.e., published revenues for all excise duties on energy). This enabled approximate revenues, disaggregated by fuel type and usage, to be obtained for each Member State, to be used in forward projections of the baseline and 'good practice' scenarios.

## 2.2 Revenue Projections for Energy Taxation

### 2.2.1 Baseline Projections

The following approach was taken to estimate future revenue projections for energy taxes:

- Existing Tax Base for Energy Related Excise Duties:
  - The tax base for each fuel type, and electricity, was estimated by dividing the total estimated revenues figures (see Section above) by the excise duty rates.
- Tax Base Projections for Energy Related Excise Duties:
  - A simple approach was taken in projecting the tax base for fuels and electricity generation. This was to keep the tax bases constant going forwards.
- Approach to Setting Future Energy Related Excise Duty Rates:
  - The approach for energy excise duty rates was to keep the levels constant in real terms. It is clear that energy excise duties are not always increased in line with inflation. On the other hand, it might be considered good practice to index rates in order to maintain their incentive effect. Article 4(4) of the proposed ETD also indicates the desirability of indexing, if only periodically.
  - The minimum levels of general energy consumption taxation laid down in this Directive shall be adapted every three years starting from 1 July 2016 in order to take account of the changes in the harmonised index of consumer prices excluding energy and unprocessed food as published by Eurostat. The Commission shall publish the resulting minimum levels of taxation in the *Official Journal of the European Union*.
- Future Revenue Projections:
  - Future revenue figures were calculated by multiplying the future rate by the projected tax base for each fuel type and electricity.

### 2.2.2 Price Elasticities for Good Practice Projections of Tax Bases

The approach for projecting the tax base forwards was to use own-price elasticities to calculate the estimate change in demand, and use, of the different fuels based upon the change in their price associated with the suggested changes in duty levels.

Elasticities indicate the responsiveness of consumer behaviour with respect to changes in explanatory variables, in this case, the price of the fuel. Using the example of energy use, determining the price elasticity of demand permits us to estimate the effects that

changes in duties, and it turn, overall energy prices, will have on consumer demand. This is also referred to as the 'own-price' elasticity of demand.

It is important to understand that changes in the demand for a good, such as fuel, are affected not only by the price of the good itself, but also by the price of other goods. So, for example, if the price of diesel increases whilst the price of other fuels do not, the demand for these other fuels may increase, especially if the fuels are close substitutes. The strength of this response is represented by another elasticity, the cross-price elasticity (the elasticity of demand for the fuel with respect to the price of diesel). Demand for goods relative to the price of the good itself and the price of other goods is characterised not by one 'own-price' elasticity, but a matrix of own- and cross-price elasticities.

The figures within this matrix are likely to vary according to the country under study, but they are not so well known in any given country. The figures also differ in the short- and long-term – some factors affecting demand, such as the stock of vehicles, change only over extended periods of time.

In the absence of a complete matrix of own and cross-price elasticities, we opted for a simple approach, using a single own-price elasticity figure for fuel use. This is clearly a simplified way of estimating a reduction in the tax base, and hence, revenue projections, based upon the increased price of the fuels. Modelling no decrease at all would simply not have been a realistic assumption to make, especially as the proportionate change in the price of some fuels is not insignificant.

A number of studies have looked at price elasticities of demand for energy at specific level. For example, a meta-study of residential energy usage from 2004 demonstrated that in the short-run a 1% rise in domestic electricity prices reduces demand by 0.35%, whereas in the long-run demand falls by 0.85%.<sup>85</sup> The fact that demand is more inelastic in the short-run is not surprising. Short-run changes in demand tend to be limited due to the long lifetimes and slow turnover of energy-using appliances and capital equipment. If, however, an increase in energy prices is persistent, this will be more likely to significantly affect adoption of energy efficiency measures leading to a greater reduction in consumption, as consumers replace older capital equipment (and firms develop new processes and products).<sup>86</sup>

A range of estimates of energy own-price elasticities (both short- and long-run) covering the residential, commercial and industrial sectors, for electricity, natural gas and fuel oil (albeit with a focus on the US) are presented in a 2009 publication from Resources for the Future (RFF).<sup>87</sup> These are summarised in Table 2-3.

---

<sup>85</sup> James, A. Espey, and Molly Espey (2004) *Turning on the Lights: A Meta-Analysis of Residential Electricity Demand Elasticities*, April 2004, p.66.

<sup>86</sup> Gillingham, K., Newell, R.G., and Palmer, K. (2009) *Energy Efficiency Economics and Policy*, April 2009

<sup>87</sup> Gillingham, K., Newell, R.G., and Palmer, K. (2009) *Energy Efficiency Economics and Policy*, April 2009



Table 2-3: Ranges of US Estimates of Energy Own-Price Elasticities (all values are negative)

	Short-run	Long-run
Residential		
Electricity	0.14 – 0.44	0.32 – 1.89
Natural Gas	0.03 – 0.76	0.26 – 1.47
Fuel Oil	0.15 – 0.34	0.53 – 0.75
Commercial		
Electricity	0 – 0.46	0.24 – 1.36
Natural Gas	0.14 – 0.29	0.40 – 1.38
Fuel Oil	0.13 – 0.49	0.39 – 3.5
Industrial		
Electricity	0.11 – 0.28	0.22 – 3.26
Natural Gas	0.51 – 0.62	0.89 – 2.92
Fuel Oil	0.11	0.5 – 1.57

A number of studies with a European focus provide elasticity estimates that fall within (or close to) to ranges identified in Table 2-3. A 2004 study using time series data from 1986 to 1999 estimated the long-run price elasticity of residential electricity demand in Greece to be -0.41.<sup>88</sup> A similar study in Cyprus, also using a time series approach, (from 1960 to 2004) estimated the long-run price elasticity of residential electricity demand to be -0.43.<sup>89</sup>

For residential gas, a Norwegian study from 2005 analysed the price elasticity of demand in 12 European countries during the period from 1978 to 2002. Short-run own-price elasticities were typically in the range 0 to -0.3. Long run own-price elasticities were typically between 0 and -1.5.<sup>90</sup> These are broadly consistent with those shown in Table 2-3.

<sup>88</sup> Hondroyiannis, G. (2004) *Estimating Residential Demand for Electricity in Greece*, 2004 in Table 2 E.ON Energy Research Center (2011) *Econometric Estimation of Energy Demand Elasticities*, October 2011

<sup>89</sup> Zachariadis, T., Pashourtidou, N. (2007) An empirical analysis of electricity consumption in Cyprus, p.191.

<sup>90</sup> Odd Bjarte Nilsen, Frank Asche, and Ragnar Tveteras (2005) *Natural Gas Demand in the European Household Sector*, August 2005

Another Norwegian study estimated price elasticities of demand for several energy goods in OECD countries over 1978 to 1999.<sup>91</sup> The authors estimated elasticities for electricity, and natural gas, in the residential and industrial sectors, as shown in Table 2-4.

Table 2-4: Own-price elasticity estimates for OECD Countries (all values are negative).  
(Figures from Table 2-3 shown in parentheses)

	Short-run	Long-run
Residential		
Electricity	0.029 – 0.043 (0.14 – 0.44)	0.132 – 3.692 (0.32 – 1.89)
Natural Gas	0.114 – 0.196 (0.03 – 0.76)	0.369 – 0.774 (0.26 – 1.47)
Industrial		
Electricity	0.007 – 0.012 (0.11 – 0.28)	0.037 – 0.045 (0.22 – 3.26)
Natural Gas	0.074 – 0.121 (0.51 – 0.62)	0.266 – 0.507 (0.89 – 2.92)

The authors note that there exists ‘discernible divergence among the estimates of energy demand elasticities from empirical studies due to the differences in modelling methodologies and/or data sets applied in these studies’. This is clearly demonstrated, through comparison with the figures reported in Table 2-3, which are shown in parentheses in Table 2-4.

In order to illustrate the elasticity of demand with respect to fuel price, the European Environment Agency draws upon a 2004 literature review undertaken for the UK Government.<sup>92</sup> With a focus on cars, the authors reviewed 69 new empirical studies, published since 1990, identifying the effects of price and income on fuel consumption, traffic levels, and where available, other indicators including fuel efficiency and car ownership.

Based on the best defined results, the authors state that if the real price of fuel rises by 10% and stays at that level, the result is a dynamic process of adjustment such that the following occur:

---

<sup>91</sup> Gang Liu (2004) *Estimating Energy Demand Elasticities for OECD Countries: A Dynamic Panel Data Approach*, March 2004

<sup>92</sup> See Table 3 in Goodwin, P., Gargay, J. And Hanly, M. (2004) *Elasticities of Road Traffic and Fuel Consumption with Respect to Price and Income: A Review*, May 2004, illustration sourced from European Environment Agency (2012) *Elasticity of Transport Demand with Respect Fuel Price*, Accessed December 2013, <http://www.eea.europa.eu/data-and-maps/figures/elasticity-of-transport-demand-with-respect-to-fuel-price>

1. Volume of traffic will fall by approximately 1% within about a year, building up to a reduction of about 3% in the longer run (about 5 years or so); and
2. Volume of fuel consumed will fall by about 2.5% within a year, building up to a reduction of over 6% in the longer run.

The authors state that the reason why fuel consumed falls by more than the volume of traffic is probably because price increases trigger a more efficient use of fuel, by a combination of:

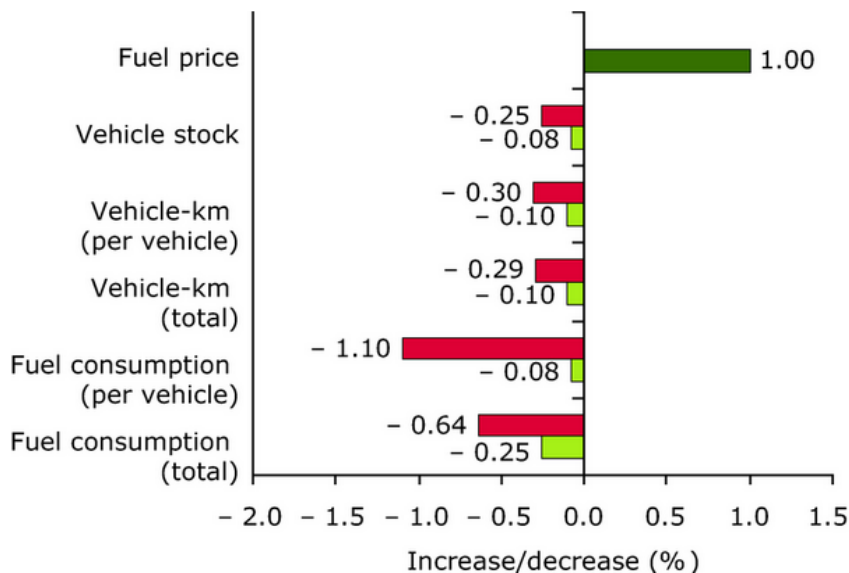
- Technical improvements to vehicles;
- More fuel-conserving driving styles; and
- Driving in easier traffic conditions.

A further probable differential effect is between high- and low-consumption vehicles, since with high prices, 'gas guzzlers' are more likely to be left at home or scrapped. Therefore, further consequences of the 10% price increase (albeit the authors suggest the evidence is not as strong as for the effects noted above) are as follows:

- Efficiency of the use of fuel rises by about 1.5% within a year, and around 4% in the longer run: and
- Total number of vehicles owned falls by less than 1% in the short run and by 2.5% in the longer run.

The headline results of the study, a short run elasticity of -0.25 and a long run elasticity of -0.6, are illustrated in Figure 2-1.

Figure 2-1: Elasticity of Transport Demand with Respect to Fuel Price



The authors of a parallel review, also undertaken in 2004 for the UK Government, draw similar conclusions, based on 1083 fuel demand elasticity estimates, from 113 studies

published between 1966 and 2000. The authors state that the weight of evidence in the literature suggests that:<sup>93</sup>

- Long-run price elasticity of demand for fuel falls between -0.6 and -0.8; and
- Short-run price elasticity of demand for fuel lies between -0.2 and -0.3.

In 2012, the UK Government's Department of Energy and Climate Change commissioned research to review academic literature of price elasticities for the industrial sector.<sup>94</sup> This showed that there is a wide range of possible elasticities, with the UK Government applying what they believed to be a conservative estimate of -0.2 in their analysis of meeting Article 7 of the Energy Efficiency Directive.<sup>95</sup> However, there is no differentiation in the publicly available document between elasticities for natural gas and electricity.

A 2010 study for Transport and Environment reviewed the literature on road freight elasticities.<sup>96</sup> The authors identified a best estimate of fuel price elasticity with regard to total fuel demand of -0.3, stating that this includes three behavioural responses:

1. Changes in fuel efficiency;
  - a. Using more fuel efficient vehicles
  - b. Improving fuel efficient driving
2. Changes in transport efficiency; and
  - a. Improving the load factor
  - b. Changing the route and time of day
  - c. Increasing the shipment size
3. Changes in road freight transport demand.
  - a. Changing mode: to rail, inland waterways, sea or air

Given the paucity of data relating to specific Member States, and moreover, given the likely range of differing approaches applied in terms of both datasets and methodologies, the choice of elasticities for use in the model has been made on pragmatic grounds.

Reflecting that some long-run effects would take place we take the upper end of the short-run elasticity to reflect the potential for some these long-run effects over the period during for which revenue forecasts are made. Table 2-5 shows the elasticities we have chosen to apply to the fuels and uses set out in the ETD. Clearly, the choice is subjective, but it should be considered that the main rationale for the application of these elasticities is to overlay some degree of realism on how the tax base is affected by changes in price (consumers are not completely indifferent to price increases).

---

<sup>93</sup> Graham and Glaister (2004) *Road Traffic Demand Elasticity Estimates: A Review Transport Reviews*, 2004

<sup>94</sup> Paul Ekins (2012) *Energy Price Elasticities: A Critical Survey*, for DECC - unpublished

<sup>95</sup> Communication of the United Kingdom's Proposed Approach and Analysis to Meet Article 7 of the Energy Efficiency Directive, available at [http://ec.europa.eu/energy/efficiency/eed/doc/article7/2013\\_uk\\_eed\\_article7\\_en.pdf](http://ec.europa.eu/energy/efficiency/eed/doc/article7/2013_uk_eed_article7_en.pdf)

<sup>96</sup> De Jong, G., Schroten, A., Van Essen, H., Otten, M., and Bucci, P. (2010) *Price Sensitivity of European Road Freight Transport – Towards a Better Understanding of Existing Results*, June 2010, p.iv.

Table 2-5: Application of High-level Elasticities to ETD Categories

Fuel Type	Elasticity	Notes
MOTOR FUELS-ENERGY		
Motor spirit (petrol)	-0.30	Upper end of transport fuels elasticity
Light fuel oil (diesel)	-0.30	Upper end of transport fuels elasticity
LPG (propellant)	-0.30	Upper end of transport fuels elasticity
Kerosene	-0.30	Upper end of transport fuels elasticity
Natural gas (prop)	-0.30	Upper end of transport fuels elasticity
INDUSTRY AND COMMERCIAL MOTORS		
Gas oil	-0.30	Average upper end of commercial and industrial fuel oil range
Kerosene	-0.30	Average upper end of commercial and industrial fuel oil range
LPG	-0.30	Average upper end of commercial and industrial fuel oil range
Natural gas	-0.46	Average upper end of commercial and industrial natural gas range
BUSINESS HEATING		
Gas oil	-0.30	Average upper end of commercial and industrial fuel oil range
Heavy fuel oil	-0.30	Average upper end of commercial and industrial fuel oil range
Kerosene	-0.30	Average upper end of commercial and industrial fuel oil range
LPG	-0.30	Average upper end of commercial and industrial fuel oil range
Natural gas	-0.46	Average upper end of commercial and industrial natural gas range
Coal	-0.46	Average upper end of commercial and industrial natural gas range
NON-BUSINESS HEATING		
Gas oil	-0.34	Upper end of residential fuel oil range
Heavy fuel oil	-0.34	Upper end of residential fuel oil range
Kerosene	-0.34	Upper end of residential fuel oil range

Fuel Type	Elasticity	Notes
LPG	-0.34	Upper end of residential fuel oil range
Natural gas	-0.76	Upper end of residential natural gas range
Coal	-0.76	Upper end of residential natural gas range
ELECTRICITY		
Electricity - business use	-0.37	Average upper end of commercial and industrial electricity range
Electricity - non-business use	-0.44	Upper end of residential electricity range

The formula used for calculating the change in demand for the different fuels and electricity was as follows:

$$Q_1 = Q_0 \times ( (Fuel\ Price + P_1) / (Fuel\ Price + P_0) )^{\varepsilon}$$

Where:

$Q_1$  = Final quantity of fuel / electricity

$Q_0$  = Initial quantity of fuel / electricity

Fuel Price = Unit price of fuel /electricity in real terms

$P_1$  = Suggested tax rate in real terms

$P_0$  = Existing tax rate in real terms

$\varepsilon$  = elasticity of demand (see Table 2-5)

The unit prices of the fuels were taken from the following sources:

- Energy.eu provides data on oil products: unleaded petrol, diesel, LPG and heating oil prices (2014) <http://www.energy.eu/fuelprices/>
- The commission website also holds oil products price statistics (2014): [http://ec.europa.eu/energy/observatory/oil/bulletin\\_en.htm](http://ec.europa.eu/energy/observatory/oil/bulletin_en.htm)
- Eurostat provides Electricity and Natural gas prices (2012) for industry and domestic consumers
  - [http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/Energy\\_price\\_statistics](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Energy_price_statistics)
  - <http://epp.eurostat.ec.europa.eu/portal/page/portal/energy/data/database>
- Coal prices were taken from IEA coal industry prices:
  - <http://www.iea.org/media/training/presentations/statisticsmarch/CoalInformation.pdf>

The following assumptions were made to fill data gaps in the energy prices:

- The price of kerosene was assumed equivalent to gas oil;

- Price of natural gas used as a propellant was assumed the same price as natural gas for business heating;
- Gas oil for C&I motors and business heating was based upon non-business heating use, but factored down based upon the relative difference in natural gas prices between non-business and business heating;
- LPG used in C&I motors used the propellant price but factored down based upon the difference in gas oil prices between the two uses;
- Natural gas used in C&I motors was assumed to be the same price as natural gas used for business heating;
- Price for non-business heating coal was assumed to be the same price as business heating coal;
- Industrial electricity price based upon the following band as an average, Band ID: 2,000 MWh < 20,000 MWh;
- Domestic electricity price based upon the following band as an average, Band DC: 2,500 kWh < 5,000 KWh;
- Where there were gaps in the data for certain Member States an average figure from the Member States with data was used.

### 2.2.3 Good Practice Revenue Projections

These largely follow the approach set out above for baseline revenue projections:

- Approach to Setting Future Energy Related Excise Duty Rates
  - The approach for energy excise duty rates was to keep the levels constant in real terms (see above).
- Future Revenue Projections
  - Future revenue figures were calculated by multiplying the future rate, in real terms, by the adjusted tax base (adjusted based on the application of the elasticities as discussed above) for each fuel type and electricity.

## 2.3 Revenue Projections for Transport (excluding fuels) Taxation

### 2.3.1 Vehicle Taxes

As highlighted in the Good Practice Appendix, the approach to suggesting changes in transport taxation is a pragmatic one based on the level of revenue currently generated from taxes on motor fuels and vehicles. The complexity and diversity of the existing tax structures makes it a major exercise to model the way in which the tax base and the tax rates lead to specific revenue outcomes.

The approach adopted, therefore, is relatively simple. For the baseline, the latest revenue figure for total vehicle taxes was projected forward based upon annual GDP growth in real terms. In other words the annual percentage change in vehicle taxation is equal to the annual percentage change in real GDP growth. It should be considered that this might overstate revenues given that in the absence of specific interventions, transport tax revenues have not always maintained a constant share of GDP over time. This means that the additional revenue take associated with suggested increases in revenue might be greater than suggested here.



That having been said, the suggested increase in revenue that might be derived from vehicle taxes in the good practice scenario is also maintained as a constant proportion of GDP. For the good practice projections, the suggested increase in revenues (expressed as a proportion of GDP) is maintained at a constant level in real terms in future years.

## 2.3.2 Aviation Taxes

### 2.3.2.1 Baseline Revenue Projections

The latest revenue figure for total aviation taxes was projected forward based upon annual GDP growth in real terms. In other words the annual percentage change in aviation taxation is equal to the annual percentage change in real GDP growth.

### 2.3.2.2 Good Practice Revenue Projections

For the good practice projections of revenues from passenger taxes an elasticity based approach has been taken. A long run price elasticity of demand of -0.6 across all passenger types is identified in the UK Government's 2013 Aviation Forecasts.<sup>97</sup> Given the mix of domestic, European and global destinations served from the UK, we take this as representative of the wider price elasticity of demand for air transport in other Member States.

The formula used for calculating the change in passenger flights was as follows:

$$Q_1 = Q_0 \times ( (\text{Price of Flight} + P_1) / (\text{Price of Flight} + P_0) )^\varepsilon$$

Where:

$Q_1$  = Final number of flights

$Q_0$  = Initial number of flights

Price of Flight = Unit price of passenger flight in real terms

$P_1$  = Suggested tax rate in real terms

$P_0$  = Existing tax rate in real terms

$\varepsilon$  = elasticity of demand (-0.6)

Data on the existing number of flights was taken from the Eurostat database on '*National air passenger transport by reporting country*' and used as the tax base for the revenue calculations.<sup>98</sup> Projections for the number of flights out to 2025 were based upon historic trends. An estimate of the price of existing flights was taken for all countries, and is as follows:

➤ National      €150 per flight

---

<sup>97</sup> UK Department for Transport (2013) *UK Aviation Forecasts*, January, 2013, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/223839/aviation-forecasts.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/223839/aviation-forecasts.pdf)

<sup>98</sup> Eurostat (2014) *National air passenger transport by reporting country* [avia\_panc], Accessed 22<sup>th</sup> January 2014, [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=avia\\_panc&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=avia_panc&lang=en)

- Intra-EU      €250 per flight
- Extra-EU      €500 per flight

Good practice tax rates were assumed to stay constant in real terms for future years. Revenues were calculated by multiplying the tax rate (in real terms) by the tax base (after the reduction in demand was applied).

### 2.3.2.3 Air-freight Taxes

Data on existing levels of air-freight was taken from the Eurostat database on 'National freight and mail air transport by reporting country' and used as the tax base for the revenue calculations.<sup>99</sup> Projections for the volume of air-freight out to 2025 were based upon historic trends. For taxes on air-freight no literature on price elasticities was found, therefore to represent a reduction in the demand for air-freight a basic reduction of 5% was introduced in the model over the transition period from existing (or no) rates to maximum good practice rates.

Good practice tax rates were assumed to stay constant in real terms for future years. Revenues were calculated by multiplying the tax rate (in real terms) by the tax base (after the reduction in demand was applied).

## 2.4 Revenue Projections for Pollution and Resource Taxation

### 2.4.1 Waste Disposal Taxes

The latest revenue figures for waste disposal taxes, where these are in place and at a constant rate, were projected forward based upon annual GDP growth in real terms. In other words the annual percentage change in waste disposal taxation is equal to the annual percentage change in real GDP growth.

#### 2.4.1.1 Non-hazardous Waste Landfill Tax (excluding construction and demolition wastes)

For the good practice projections of revenues from non-C&D waste landfill taxes an elasticity based approach has been taken. The calculated price elasticity of demand for waste disposal shows some variation between different studies, but in general is relatively inelastic. One study from 1993 gathered data from 14 municipalities in the United States (including 10 municipalities that charged a unit-based price) over several years, and reported a price elasticity of -0.12.<sup>100</sup> This is comparable to that identified in a 1976 US study of -0.13.<sup>101</sup> A 1994 study used a household production model to simulate responses to different pricing schemes using calibration techniques. The authors estimated that the elasticity of demand for waste disposal services was in the range

---

<sup>99</sup> Eurostat (2014) *National freight and mail air transport by reporting country* [avia\_gonc], Accessed 22<sup>nd</sup> January 2014, [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=avia\\_gonc&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=avia_gonc&lang=en)

<sup>100</sup> Jenkins, Robin R(1993) *The Economics of Solid Waste Reduction*, Hants, England: Edward Elgar Publishing Limited

<sup>101</sup> Wertz, Kenneth L. (1976) Economic Factors Influencing Households' Production of Refuse, *Journal of Environmental Economics and Management*, Vol.2, pp.263–272

between -0.51 and -0.6.<sup>102</sup> A study in 2000, expanding on the 1976 study reported above, used a 1991 cross-section of 959 towns, of which 114 implemented user fees. A price elasticity of demand of -0.28 was identified.<sup>103</sup>

Based on the range identified above (from -0.12 to -0.6), using the approximate mid-point, we will apply a price elasticity of demand of -0.3.

The formula used for calculating the change in quantity of waste landfilled was as follows:

$$Q_1 = Q_0 \times ( (\text{Landfill Gate Fee} + P_1) / (\text{Landfill Gate Fee} + P_0) )^\varepsilon$$

Where:

$Q_1$  = Final quantity of waste landfilled

$Q_0$  = Initial quantity of waste landfilled

Landfill Gate Fee = Landfill gate fee in real terms

$P_1$  = Suggested tax rate in real terms

$P_0$  = Existing tax rate in real terms

$\varepsilon$  = elasticity of demand (-0.3)

To calculate the tax base data from the European Reference Model on Municipal Waste (currently under development by Eunomia) was taken from the Business as Usual scenario. The figures were then factored up using data from Eurostat on the deposit into or onto land of all wastes excluding major mineral wastes in order to obtain future projections for the landfilling of all non-inert wastes in the countries (i.e. a ratio between total landfilling and landfilling of municipal waste only – the latter is only available from the European reference model).<sup>104</sup> The landfill gate fees used in the model are shown in Table 2-6.

**Table 2-6: Gate Fees Used in the Model**

Country	Landfill Gate Fee (pre-tax)	Incin. (pre-tax)	MBT
Bulgaria	20.42	80	17.89
Cyprus	56	80	75

<sup>102</sup> Morris, G.E., and Holthausen, D.M. (1994) The Economics of Household Solid Waste Generation and Disposal, *Journal of Environmental Economics and Management*, Vol.26, pp.215–234

<sup>103</sup> Kinnaman, T., C., and Fullerton, D. (2000) Garbage and Recycling with Endogenous Local Policy, *Journal of Urban Economics*, Vol.48, pp.419–442

<sup>104</sup> Eurostat (2014) Waste excluding major mineral wastes, [http://epp.eurostat.ec.europa.eu/portal/page/portal/waste/key\\_waste\\_streams/waste\\_excluding\\_major\\_mineral\\_wastes](http://epp.eurostat.ec.europa.eu/portal/page/portal/waste/key_waste_streams/waste_excluding_major_mineral_wastes)

Country	Landfill Gate Fee (pre-tax)	Incin. (pre-tax)	MBT
Denmark	44	36	95
Finland	59.4	100	95
Germany	140	174	100
Greece	23.5	80	40.14
Ireland	70	100	110
Latvia	30	80	65
Malta	20	80	65
Netherlands	25	95	95
Slovenia	105.5	113	55
Spain	32.75	57	75
Sweden	106.5	110	95
United Kingdom	26.8	87.55	89
Source: Eunomia Research & Consulting and Copenhagen Resource Institute (2014) <i>European Reference Model for Municipal Waste Management</i> , <a href="http://www.wastemodel.eu">www.wastemodel.eu</a> , E. Watkins, D. Hogg, A. Mitsios, S. Mudgal, A. Neubauer, H. Reisinger, J. Troeltzsch, M. van Acoleyen (2012) <i>Use of Economic Instruments and Waste Management Performances</i> , Final Report to DG Environment, 10 April 2012, <a href="http://ec.europa.eu/environment/waste/pdf/final_report_10042012.pdf">http://ec.europa.eu/environment/waste/pdf/final_report_10042012.pdf</a> , p.74-75 for incin, pp44-49 for landfill and Expert judgement.			

Good practice tax rates were assumed to stay constant in real terms for future years. Revenues were calculated by multiplying the tax rate (in real terms) by the tax base (after the reduction in demand was applied).

#### 2.4.1.2 Construction and Demolition Waste Landfill Tax

The basis for the calculated revenues from the tax on construction and demolition wastes is also data from Eurostat reported under the Waste Statistics Regulation (Treatment of waste database).<sup>105</sup> The waste type 'Mineral waste from construction and demolition' was chosen to represent the tax base for a landfill tax on C&D waste. We recognise that this is an underestimate of the amount of C&D waste landfilled, other wastes such as soils, but also mixed C&D wastes (i.e. plastics, metals etc) will also be landfilled. However, data on treatment reported under the Waste Statistics Regulation

<sup>105</sup> Eurostat (2013) *Treatment of waste*, Accessed 20<sup>th</sup> December 2013, [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env\\_wasrt&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env_wasrt&lang=en)

does not categorise the waste by sector, therefore to avoid overestimating the revenue potential (which will not be significant for a tax of this nature anyway) we choose the above mentioned category only. Levels of landfilling of C&D wastes were assumed to remain constant for all future years as no robust estimates were available. There is less literature on the price elasticity of demand for C&D landfill services, therefore to represent a reduction in the demand for C&D wastes a basic reduction of 40% was introduced in the model over the transition period from existing (or no) rates to maximum good practice rates.

Good practice tax rates were assumed to stay constant in real terms for future years. Revenues were calculated by multiplying the tax rate (in real terms) by the tax base (after the reduction in demand was applied).

#### 2.4.1.3 Incineration / MBT Tax

For the good practice projections of revenues from incineration / MBT taxes an elasticity based approach has been taken. The elasticity of demand used is the same as used in the method for the non-hazardous landfill tax (i.e. -0.3).

To calculate the tax base data from the European Reference Model on Municipal Waste (currently under development by Eunomia) was taken from the Business as Usual scenario. As some wastes from MBT plants ultimately end up in incineration plants in the same country, there is the potential for double counting of some tax revenues. To reflect this the tax base for MBT plants has been factored down by 25%.

The average gate fees for incineration and MBT plants used in the model are shown in Table 2-6. Good practice tax rates were assumed to stay constant in real terms for future years. Revenues were calculated by multiplying the tax rate (in real terms) by the tax base (after the reduction in demand was applied).

#### 2.4.2 Plastic Bags

Data on the consumption of single-use plastic bags was taken from the Assessment of the Socio-economic Costs and Benefits of Options to Reduce the Use of Single-use Plastic Carrier Bags in the EU was used as the tax base for the revenue calculations.<sup>106</sup> The baseline number of carrier bags were projected forward based upon annual GDP growth in real terms.

The Irish Plastic Bag Levy was introduced in March 2002. Initially the levy was set at €0.15 per bag. The tax is passed directly to consumers at the point of sale, and has thus been reported to provide a clearer, more consistent message than systems where retailers are responsible for the levy (such as in Denmark and South Africa). Prior to the implementation of the levy, 1.3 billion plastic bags were given away free of charge each year. This fell by over 90% in the first five months after the introduction of the levy.

On the basis of modelling a levy of €0.10 per bag (adjusted to national prices), we assume a slightly more conservative level of reduction, of 80%.

---

<sup>106</sup> Eunomia (2012) *Assistance to the Commission to Complement an Assessment of the Socio-economic Costs and Benefits of Options to Reduce the Use of Single-use Plastic Carrier Bags in the EU*, Final Report to European Commission - DG Environment, 25th October 2012

Good practice tax rates were assumed to stay constant in real terms for future years. Revenues were calculated by multiplying the tax rate (in real terms) by the tax base (after the reduction in demand was applied).

### 2.4.3 Other Pollution and Resource Taxes

The approach to calculating the revenue projections for the remaining pollution and resource taxes is broadly the same and so the general approach is described in this section, without repeating much of the detail. For these remaining taxes little data was easily available on either the price elasticity or the price of the product, making the calculations for change in demand difficult. Taking a pragmatic approach the reductions in demand were estimated based upon any *ex post* assessments on the effects of introducing environmental taxes, or by taking a simple reduction figure.

Data for the different tax bases comes from the following sources:

- **Air pollution:** Data from the European Environment Agency on emissions of air pollutants was used as the tax base for the revenue calculations.<sup>107</sup> Emissions for the following sectors only were included in the tax base:
  - Energy production and distribution (NFR 1A1a, b, c, 1A3e and 1B1a, b, c, 1B2a, b, c and 1B3)
  - Energy use in industry (NFR 1A2a, b, c, d, e, f)
  - Industrial processes (NFR 2A1-7, 2B1-5, 2C1-5 (except 2C4), 2D1-3, 2E, 2F, 2G)
  - Solvent and other product use (NFR 3A1-3, 3B1-2, 3C, 3D1-3)
  - Waste (NFR 6A, 6B, 6Ca-e, 6D)
- **Water abstraction:** Data on 'Annual freshwater abstraction by source and sector' (surface water and groundwater) was obtained from Eurostat as the tax base for the revenue calculations.<sup>108</sup>
- **Waste water:** Data taken from EEA on urban waste water discharge.<sup>109</sup>
- **Pesticides:** Data on active ingredients in pesticides was taken from Eurostat and OECD sources as the tax base for the revenue calculations.<sup>110</sup> However, the latest year available from Eurostat was 2008 and not all countries were covered. For those countries with no data from the Eurostat or OECD databases, pesticide

---

<sup>107</sup> Eurostat (2013) *Air pollution (source: EEA)* [env\_air\_emis], Accessed, 20<sup>th</sup> December 2013, [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env\\_air\\_emis&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env_air_emis&lang=en)

<sup>108</sup> Eurostat (2014) *Annual freshwater abstraction by source and sector* [env\_wat\_abs], Accessed 20<sup>th</sup> December 2013, [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env\\_wat\\_abs&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env_wat_abs&lang=en)

<sup>109</sup> EEA (2013) *Urban waste water treatment (CSI 024) - Assessment published Jan 2013*, <http://www.eea.europa.eu/data-and-maps/indicators/urban-waste-water-treatment/urban-waste-water-treatment-assessment-3>

<sup>110</sup> Eurostat (2014) *Pesticide sales (1997-2008)*, Accessed, 20<sup>th</sup> December 2013, [http://epp.eurostat.ec.europa.eu/portal/page/portal/product\\_details/dataset?p\\_product\\_code=AEI\\_FM\\_S\\_ALPEST](http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/dataset?p_product_code=AEI_FM_S_ALPEST)

sales were estimated by taking an average figure per unit of GDP for the countries with data available and multiplying by GDP in the countries concerned.

- **Fertilisers:** Data on 'Use of inorganic fertilizers [aei\_fm\_usefert]' was obtained from Eurostat as the tax base for the revenue calculations.<sup>111</sup>
- **Aggregates:** Data on the following categories of aggregates was obtained from Eurostat material flow accounts as the tax base for revenue calculations:<sup>112</sup>
  - Marble;
  - Chalk and dolomite;
  - Slate;
  - Limestone and gypsum;
  - Sand and gravel.
- **Packaging:** Data reported to Eurostat under the Packaging and Packaging Waste Directive was used as the tax base for the revenue calculations.<sup>113</sup>

All tax base data was projected forwards to 2025 based upon historic trends.

For air pollution some evidence on the effects of taxes on air emissions were available. In Sweden the charge on NO<sub>x</sub> emissions (€1,600 per tonne) from industrial boilers is automatically and fully refunded to the industries that paid the tax on the basis of their energy use. This has led to a large number of abatement investments, fuel switching and other measures that reduced emission coefficients by about 50% within just 5 years for the 190 large plants that were first targeted.<sup>114</sup>

In addition, as can be seen in Figure 2-2, emissions of SO<sub>2</sub> in Denmark dropped considerably between 1996 and 1997, and then again further between 1997 and 2000. However, the extent to which this is due to the tax on SO<sub>2</sub> alone is not clear.

---

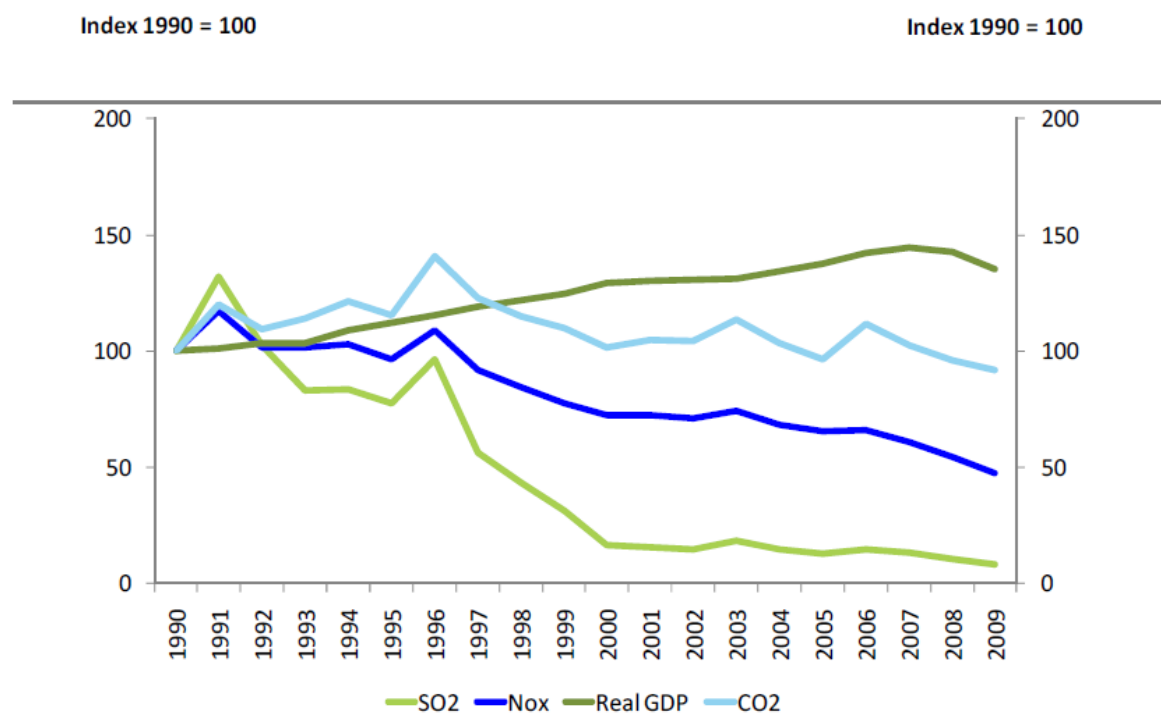
<sup>111</sup> Eurostat (2013) *Use of inorganic fertilizers*, [aei\_fm\_usefert], Accessed 20<sup>th</sup> December 2013, [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=aei\\_fm\\_usefert&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=aei_fm_usefert&lang=en)

<sup>112</sup> Eurostat (2013) *Material flow accounts* [env\_ac\_mfa], Accessed 20<sup>th</sup> December 2013, [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env\\_ac\\_mfa&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env_ac_mfa&lang=en)

<sup>113</sup> Eurostat (2013) *Packaging waste* [env\_waspac], Accessed 20<sup>th</sup> December 2013, [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env\\_waspac&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env_waspac&lang=en)



Figure 2-2: Danish Emissions of NO<sub>x</sub>, SO<sub>2</sub> and CO<sub>2</sub>



Source: Danish Skatteministeriet, 2011

For the purposes of this study we assume a 20% reduction in emissions of air pollutants from stationary sources after the level of the tax reaches good practice rates.

Also in Denmark a water supply tax was introduced in 1993. The current Danish rate equates to just over €0.70 per m<sup>3</sup>. The main environmental aim of the tax was to reduce household consumption of water, which had increased through the 1980s, reaching a peak in 1989. From 1989 to 1998 consumption decreased from 360 million m<sup>3</sup> to 266 million m<sup>3</sup>, i.e. by about 26 per cent. About half of the reduction took place prior to the introduction of the water tax, with the remaining half since its inception. There are no studies which explore the precise effect of the tax but it is thought likely to represent less than a 13 per cent reduction since 1994. We assume a 10% reduction in the abstraction of waste from any source for this study.

Table 2-7 indicates the remaining assumptions used in the model to estimate some reduction in demand based upon increase to good practice rates.

Table 2-7: Assumptions for Reduced Demand of Products and Services

Tax	Max Reduction
Waste Water Discharge Tax	-10%
Pesticides Tax	-5%
Aggregates	-40%
Packaging Tax	-5%

Tax	Max Reduction
Fertiliser Tax	-5%

The latest revenue figures for the any other pollution and resource taxes were projected forward based upon annual GDP growth in real terms. In other words the annual percentage change in taxation is equal to the annual percentage change in real GDP growth.

## 3.0 Indirect Benefits

### 3.1 Damage Costs for Air Pollutants

The set of data that we have used for the assessment of the externalities associated with emissions to air is based on modelling recently undertaken for the European Environment Agency (EEA).<sup>115</sup> Table 3-1 and Table 3-2 present the assumptions used in the model for the pollutants affecting air quality, reflecting the damage to human health (the damage costs were updated in the model to 2014 prices).

Reflecting the approach taken in Estimating Revenues based upon the proposed ETD, a carbon price of EUR 20 per tonne of CO<sub>2</sub> eq was used to reflect the externalities associated with emissions of greenhouse gases. The figure was kept constant in real terms out to 2025.

---

<sup>115</sup> The methodology used is summarised in: European Environment Agency (2011) *Revealing the Costs of Air Pollution from Industrial Facilities in Europe*, EEA Technical Report No 15/2011, November 2011

Table 3-1: Damage Costs Applied to the Air Pollutants (2010 Prices) – Key Air Pollutants

Country	NH3	NOx	PM2.5	PM10	SO2	VOCs
Croatia	€ 15,583	€ 5,326	€ 25,322	€ 16,443	€ 8,033	€ 1,007
Austria	€ 15,696	€ 12,383	€ 30,569	€ 19,850	€ 10,094	€ 812
Belgium	€ 27,980	€ 8,566	€ 44,388	€ 28,823	€ 11,392	€ 1,980
Czech Republic	€ 1,372	€ 665	€ 13,288	€ 8,629	€ 1,441	-€ 49
Estonia	€ 8,011	€ 3,919	€ 11,231	€ 7,293	€ 4,835	€ 735
France	€ 4,639	€ 1,470	€ 7,333	€ 4,762	€ 3,024	€ 253
Hungary	€ 5,214	€ 1,694	€ 18,724	€ 12,158	€ 3,238	€ 62
Italy	€ 2,420	€ 4,109	€ 15,656	€ 10,166	€ 5,960	€ 642
Lithuania	€ 5,882	€ 3,106	€ 9,961	€ 6,468	€ 4,570	€ 381
Poland	€ 20,319	€ 7,970	€ 40,980	€ 26,610	€ 13,180	€ 1,432
Romania	€ 4,806	€ 1,389	€ 24,644	€ 16,002	€ 3,682	€ 331
Slovakia	€ 7,722	€ 9,256	€ 21,448	€ 13,927	€ 6,323	€ 162

Table 3-2: Damage Costs Applied to the Air Pollutants (2010 Prices) – Heavy Metals

Country	Arsenic	Cadmium	Chromium	Nickel	1, 3 Butadiene	Benzene	PAH	Form-aldehyde	Dioxins/furans
Croatia	€ 349,000	€ 23,000	€ 31,000	€ 3,100	€ 390	€ 60	€ 1,309,000	€ 160	€ 28,000,000
Austria	€ 369,000	€ 29,000	€ 39,000	€ 4,000	€ 500	€ 80	€ 1,315,000	€ 220	€ 28,000,000
Belgium	€ 435,000	€ 50,000	€ 67,000	€ 6,700	€ 840	€ 120	€ 1,332,000	€ 360	€ 28,000,000
Czech Republic	€ 371,000	€ 30,000	€ 40,000	€ 4,100	€ 500	€ 80	€ 1,315,000	€ 220	€ 28,000,000
Estonia	€ 301,000	€ 8,300	€ 11,000	€ 1,100	€ 140	€ 30	€ 1,296,000	€ 60	€ 28,000,000
France	€ 390,000	€ 33,000	€ 49,000	€ 4,800	€ 610	€ 90	€ 1,320,000	€ 270	€ 28,000,000
Hungary	€ 368,000	€ 29,000	€ 39,000	€ 3,800	€ 480	€ 70	€ 1,314,000	€ 210	€ 28,000,000
Italy	€ 380,000	€ 33,000	€ 44,000	€ 4,400	€ 540	€ 80	€ 1,317,000	€ 240	€ 28,000,000
Lithuania	€ 316,000	€ 13,000	€ 17,000	€ 1,700	€ 220	€ 40	€ 1,300,000	€ 90	€ 28,000,000
Poland	€ 358,000	€ 26,000	€ 35,000	€ 3,500	€ 430	€ 70	€ 1,312,000	€ 190	€ 28,000,000
Romania	€ 339,000	€ 20,000	€ 27,000	€ 2,700	€ 330	€ 50	€ 1,306,000	€ 140	€ 28,000,000
Slovakia	€ 366,000	€ 28,000	€ 38,000	€ 3,700	€ 470	€ 70	€ 1,313,000	€ 210	€ 28,000,000

## 3.2 Energy

### 3.2.1 Marginal sources of Electricity and Heat Generation

The model used data on the electricity generation mix from the International Energy Agency (IEA) and European Commission. Table 3-3 shows the energy mix for each of the 14 countries included in this study. Some of the data included in this table comes directly from Member States and was obtained as part of Eunomia's work in developing the European Reference Model on Municipal Waste Management.<sup>116</sup>

**Table 3-3: Electricity Generation Mix, 2011**

Member State	Coal	Gas	Nuclear	Renewables <sup>1</sup>	Other <sup>2</sup>
Bulgaria	48.71%	5.17%	31.47%	13.79%	0.86%
Cyprus <sup>3</sup>	0.00%	0.00%	0.00%	0.00%	100.00%
Denmark <sup>4</sup>	91%	5%	0%	24.84%	4%
Finland <sup>4</sup>	100%	0%	0%	0%	7%
Germany	43.40%	13.31%	22.77%	16.18%	4.33%
Greece	55.71%	17.96%	0.00%	13.78%	12.54%
Ireland <sup>3</sup>	28%	62%	0%	8%	3%
Latvia <sup>4</sup>	0.00%	100%	0.00%	0%	0.00%
Malta <sup>4</sup>	0.00%	0.00%	0.00%	2%	98%
Netherlands	23.44%	60.53%	3.73%	8.16%	4.14%
Slovenia <sup>4</sup>	100%	0%	0%	0%	0%
Spain <sup>3</sup>	9%	32%	21%	31%	8%
Sweden <sup>4</sup>	0%	100%	0%	0%	0%
UK <sup>4</sup>	0%	100%	0%	0%	0%
<b>Notes:</b> <ol style="list-style-type: none"> <li>1. Includes biofuels and biomass.</li> <li>2. Includes oil and waste.</li> <li>3. Fuel mix data supplied by Member State as part of work undertaken by Eunomia in developing the European Reference Model on Municipal Waste Management.</li> <li>4. Marginal source data supplied by Member State as part of work undertaken by Eunomia in developing the European Reference Model on Municipal Waste Management.</li> </ol>					

<sup>116</sup> Eunomia Research & Consulting and Copenhagen Resource Institute (2014) *European Reference Model for Municipal Waste Management*, Accessed 31<sup>st</sup> January 2014, [www.wastemodel.eu](http://www.wastemodel.eu)

Sources: IEA Statistics (available from [www.iea.org/stats/](http://www.iea.org/stats/) ); European Commission Country Factsheets, Available from <http://ec.europa.eu/energy/observatory/countries/doc/2012-country-factsheets.pdf>, Eunomia Municipal Waste Model Report

### 3.2.2 Emissions Factors

The emissions factors used to estimate the impacts of electricity generation for the different generation sources considered within the model are shown in Table 3-5. Table 3-6 presents the emissions factors which have been used to estimate the impacts of heat generation.

Table 3-7 presents the emissions factors used for diesel combustion. The source of the emissions data is the ecoinvent database, which includes for the majority of fuels a dataset considered to be representative of European facilities.

Where required the conversion factors shown in Table 3-4 were used to convert to MWh.

**Table 3-4: Conversion Factors to Convert Energy Units to MWh**

Fuel Type	Unit	kWh
Oil (Heavy Fuel Oil)	billion litres	11,080,000,000
Kerosene	billion litres	9,695,000,000
LPG	million tonnes	12,714,300,000
Natural Gas	1,000 TJ	277,777,000
Coal	million tonnes	7,105,050,000

Source: 2012 Guidelines to Defra / DECC's GHG Conversion Factors for Company Reporting, [www.gov.uk/government/publications/2012-greenhouse-gas-conversion-factors-for-company-reporting](http://www.gov.uk/government/publications/2012-greenhouse-gas-conversion-factors-for-company-reporting)



Table 3-5: Emissions Factors for Electricity Generation (tonnes pollutant per kWh)

Fuel Type	CO <sub>2</sub> e	NH <sub>3</sub>	NO <sub>x</sub>	PM	SO <sub>2</sub>	VOCs	Arsenic	Cadmium
Gas	4.00E-04	1.4034E-10	2.5304E-07	1.275E-09	1.6263E-09	1.5578E-09	2.76E-15	2.3269E-15
Coal	8.00E-04	2.6636E-10	7.1098E-07	2.428E-09	4.1141E-08	1.6624E-08	6.735E-12	1.7428E-12
Nuclear	1.00E-06	1.4504E-10	3.8024E-09	6.398E-10	1.6195E-08	1.8067E-10	2.006E-13	3.1833E-13
Renewables	1.00E-06	3.675E-11	8.6228E-09	1.619E-09	1.3942E-08	2.3682E-09	3.126E-13	8.2309E-14
Fuel Type	Chromium	Nickel	1, 3 Butadiene	Benzene	PAH	Formaldehyde	Dioxins/furans	
Gas	1.2903E-16	2.2382E-12	2.0709E-19	1.7024E-12	2.4785E-13	1.9003E-12	6.3519E-19	
Coal	1.3353E-13	1.4377E-11	6.5556E-19	1.0881E-14	6.5846E-13	2.996E-11	1.5426E-18	
Nuclear	8.9085E-15	6.4668E-12	1.3962E-18	1.6996E-11	2.5287E-13	1.0827E-11	4.2164E-19	
Renewables	3.0718E-14	2.623E-12	6.548E-19	2.8188E-11	2.1087E-13	5.3271E-12	3.6474E-18	

Source: Source: Ecoinvent Centre (2007) Ecoinvent Data v2.2. Ecoinvent Reports No.1-25, Swiss Centre for Life Cycle Inventories, Dübendorf, [www.ecoinvent.org](http://www.ecoinvent.org)

Table 3-6: Emissions Factors for Heat Generation (tonnes pollutant per kWh)

Fuel Type	CO <sub>2</sub> e	NH <sub>3</sub>	NO <sub>x</sub>	PM	SO <sub>2</sub>	VOCs	Arsenic	Cadmium
Gas	0.2	2.97E-11	1.37E-07	1.18E-09	9.53E-09	1.09E-09	1.47E-13	9.46E-14
Coal	0.3	1.52E-10	9.13E-07	1.82E-07	2.27E-06	8.03E-09	1.14E-10	7.35E-12
Nuclear	0.25	6.47E-11	1.23E-07	5.97E-09	2.35E-07	2.22E-09	1.31E-12	2.95E-12
Renewables	0.001	8.31E-09	7.31E-07	5.61E-07	1.73E-08	5.19E-08	4.91E-12	3.47E-12
Fuel Type	Chromium	Nickel	1, 3 Butadiene	Benzene	PAH	Formaldehyde	Dioxins/furans	
Gas	6.94E-15	4.75E-12	6.74E-18	1.46E-09	3.65E-11	3.72E-10	1.36E-18	
Coal	1.02E-10	9.36E-11	1.21E-17	2.28E-09	5.38E-13	3.79E-10	9.08E-17	
Nuclear	1.95E-14	3.59E-11	2.13E-18	6.37E-10	1.95E-12	3.59E-11	9.77E-19	
Renewables	2.00E-13	3.06E-11	1.41E-17	4.38E-09	5.33E-11	6.27E-10	1.59E-16	

Source: Source: Ecoinvent Centre (2007) Ecoinvent Data v2.2. Ecoinvent Reports No.1-25, Swiss Centre for Life Cycle Inventories, Dübendorf, [www.ecoinvent.org](http://www.ecoinvent.org)

Table 3-7: Emissions Factors for Diesel Combustion (tonnes per litre)

	CO <sub>2</sub> e	NH <sub>3</sub>	NO <sub>x</sub>	PM	SO <sub>2</sub>	VOCs	Arsenic	Cadmium
Diesel	0.00026	6.83E-10	1.30E-06	5.78E-08	2.48E-06	2.34E-08	1.39E-11	3.12E-11
	Chromium	Nickel	1, 3 Butadiene	Benzene	PAH	Formaldehyde	Dioxins/furans	
Diesel	2.06E-13	3.79E-10	2.25E-17	6.73E-09	2.05E-11	3.79E-10	1.03E-17	

Source: Ecoinvent Centre (2007) Ecoinvent Data v2.2. Ecoinvent Reports No.1-25, Swiss Centre for Life Cycle Inventories, Dübendorf, [www.ecoinvent.org](http://www.ecoinvent.org)

The externalities from emitting air pollutants from vehicles at ground level are higher than when emitted from industrial facilities (Table 3-1 and Table 3-2 relates to the latter). However, there is evidence on the damages from emissions from vehicles. Brandt et al provide some tables with external costs of HGVs in Member States (see Table 3-8).<sup>117</sup> These are in the order of 4 /5 times greater than those in Table 3-1 and Table 3-2 above. This is reflected in the modelling of air pollution externalities from transport.

**Table 3-8: Unit Costs of Air Pollutants, € per kg**

Unit Costs of Air Pollutants		PM <sub>2.5</sub>	N	NO <sub>x</sub>
		€ per kg		
AT	Austria	46.656	59.022	17.963
BE	Belgium	82.991	48.345	14.714
BG	Bulgaria	30.941	39.132	11.910
CH	Switzerland	70.860	88.693	26.994
CY	Cyprus	3.263	5.897	1.795
CZ	Czech Republic	50.388	48.863	14.871
DE	Germany	62.981	60.142	18.304
DK	Denmark	25.182	29.769	9.060
EE	Estonia	15.351	16.434	5.002
EL	Greece	23.620	22.486	6.844
ES	Spain	25.992	26.271	7.996
FI	Finland	12.605	11.469	3.491
FR	France	47.489	56.983	17.343
HU	Hungary	52.613	53.859	16.392
IE	Ireland	27.070	36.308	11.050
IT	Italy	48.584	58.838	17.907

<sup>117</sup> Brandt, J., Silver, J. D., Gross, A. & Christensen, J. H. (2010) *Marginal Damage Cost per unit of Air Pollution Emissions*, Roskilde: National Environmental Research Institute. 23 p. Specific agreement 3555/B2010/EEA.54131 implementing framework contract ref. no. EEA/IEA/09/002.

Unit Costs of Air Pollutants		PM <sub>2.5</sub>	N	NO <sub>x</sub>
LT	Lithuania	20.513	28.783	8.760
LU	Luxembourg	61.534	60.581	18.438
LV	Latvia	17.932	21.760	6.623
MT	Malta	7.085	8.692	2.645
NL	Netherlands	86.140	51.402	15.644
NO	Norway	13.755	17.881	5.442
PL	Poland	46.547	43.428	13.217
PT	Portugal	37.078	14.725	4.481
RO	Romania	40.816	61.353	18.673
SE	Sweden	18.021	20.342	6.191
SI	Slovenia	37.238	53.076	16.154
SK	Slovakia	44.665	49.917	15.192
TR	Turkey	23.325	19.733	6.006
UK	United Kingdom	61.544	40.188	12.231

### 3.3 Transport

#### 3.3.1 Vehicles

The approach to calculating good practice revenues was to assume a benchmark % of GDP. This approach therefore did not include any analysis of the number of types of vehicles in use in the countries, or how the behavioural patterns or drivers (and consumers) would change following increases in the level of vehicle taxation. However, taxes of the type being suggested, with incentives to choose and use vehicles with lower emissions, would be expected to deliver some behavioural change, albeit that any effect might take several years to occur (because the change relates to the nature of the vehicle stock). In order to reflect some environmental benefits a proxy to increases in efficiency and change in driver behaviour was factored into the model. The assumption was that national petrol and diesel consumption would fall by 10% by the time the full increase of the vehicle taxes had come into effect (by 2020), for the country with the greatest reduction. The fall in consumption for the other countries was pro-rated based upon the relative increases in vehicle taxes. So a country which only increased vehicle taxes by one half of the maximum would only see a reduction in consumption of 5%.

The method for valuing the change in emission was the same as described above.

### 3.3.2 Aviation

The model differentiates between three types of journeys:

1. National – journeys within a single country;
2. Intra-EU – journeys within the European Union; and
3. Extra-EU – journeys outside of the European Union.

The amount of carbon emitted by passengers per km travelled on different types of journeys is summarised in Table 3-9. This table also shows the assumed distance that is seen to be typical of the three types of journeys.

**Table 3-9: Tonnes of Carbon Emitted per km for Passenger Flights and Average Distances Travelled**

Type of Journey	Tonne CO <sub>2</sub> eq per km
National	1.67E-04
Intra-EU	9.52E-05
Extra-EU	1.09E-04
Type of Journey	Average Distance per Journey (km)
National	463
Intra-EU	1,108
Extra-EU	6,482

Source: UK Department of Environment, Food and Rural Affairs (2012) 2012 Guidelines to Defra / DECC's GHG Conversion Factors for Company Reporting, [www.gov.uk/government/publications/2012-greenhouse-gas-conversion-factors-for-company-reporting](http://www.gov.uk/government/publications/2012-greenhouse-gas-conversion-factors-for-company-reporting)

The amount of carbon emitted per tonne of freight transported on national, intra-EU, extra-EU flights is summarised in Table 3-10.

Table 3-10: Tonnes of Carbon Emitted per km for Freight

Type of Journey	Kg CO <sub>2</sub> eq per km
National	2.06
Intra-EU	1.24
Extra-EU	0.64
Type of Journey	Average Distance per Journey (km)
National	463
Intra-EU	1,108
Extra-EU	6,482

Source: 2012 Guidelines to Defra / DECC's GHG Conversion Factors for Company Reporting, [www.gov.uk/government/publications/2012-greenhouse-gas-conversion-factors-for-company-reporting](http://www.gov.uk/government/publications/2012-greenhouse-gas-conversion-factors-for-company-reporting)

## 3.4 Resource Taxes

### 3.4.1 Diversion of Waste from Landfill

The externalities associated with landfilling various waste streams are summarised in Table 3-11. These were calculated during the development of the European Reference Model on Municipal Solid Waste Management.<sup>118</sup>

Table 3-11: Externalities Associated with Landfilling per Material (Euro, 2014 Real Term Prices)

Year	Food	Garden	Paper	Wood	Textiles	Fines	Other
2011	€ 39	€ 41	€ 45	€ 70	€ 67	€ 29	€ 31
2012	€ 39	€ 41	€ 46	€ 71	€ 67	€ 29	€ 31
2013	€ 39	€ 41	€ 47	€ 72	€ 68	€ 29	€ 32
2014	€ 39	€ 42	€ 48	€ 74	€ 69	€ 29	€ 32
2015	€ 39	€ 42	€ 48	€ 75	€ 70	€ 29	€ 32
2016	€ 39	€ 43	€ 49	€ 76	€ 71	€ 30	€ 32
2017	€ 40	€ 43	€ 50	€ 78	€ 72	€ 30	€ 33
2018	€ 40	€ 44	€ 51	€ 80	€ 73	€ 30	€ 33

<sup>118</sup> Eunomia Research & Consulting and Copenhagen Resource Institute (2014) *European Reference Model for Municipal Waste Management*, Accessed 31<sup>st</sup> January 2014, [www.wastemodel.eu](http://www.wastemodel.eu)

Year	Food	Garden	Paper	Wood	Textiles	Fines	Other
2019	€ 40	€ 44	€ 53	€ 82	€ 74	€ 30	€ 33
2020	€ 41	€ 45	€ 54	€ 84	€ 76	€ 31	€ 34
2021	€ 41	€ 46	€ 55	€ 86	€ 77	€ 31	€ 34
2022	€ 42	€ 47	€ 57	€ 88	€ 79	€ 31	€ 35
2023	€ 43	€ 48	€ 58	€ 91	€ 81	€ 32	€ 35
2024	€ 43	€ 49	€ 60	€ 94	€ 83	€ 33	€ 36
2025	€ 45	€ 50	€ 62	€ 97	€ 86	€ 33	€ 37
2026	€ 46	€ 52	€ 64	€ 100	€ 89	€ 34	€ 38
2027	€ 47	€ 54	€ 67	€ 104	€ 91	€ 35	€ 40
2028	€ 49	€ 56	€ 69	€ 107	€ 95	€ 37	€ 41
2029	€ 51	€ 58	€ 72	€ 111	€ 98	€ 38	€ 43
2030	€ 53	€ 60	€ 74	€ 116	€ 102	€ 40	€ 44

The assumed composition of residual waste in the countries under consideration in this study is shown in Table 3-12.

**Table 3-12: Assumed Residual Waste Composition used in the Model**

Material	Proportion
Food	25%
Garden	10%
Paper	15%
Wood	5%
Textiles	5%
Fines	3%
Other	3%
Inerts	35%
<b>Total</b>	<b>100%</b>

The reduction in the amount of inert waste going to landfill can save 0.0134 tonnes of



CO<sub>2</sub> eq per tonne of waste diverted. This figure is based on the provided by PE International and was used to assess the environmental impacts associated with diverting inert wastes from landfill once a landfill tax on construction and demolition waste is introduced.<sup>119</sup>

### 3.4.2 Diversion of Waste from Incineration and MBT

Data from WRATE shows that the incineration of 1 tonne of residual waste can result in 0.567 tonnes of CO<sub>2</sub> eq being emitted.<sup>120</sup> Thus, in situations where an incineration tax is introduced and waste is diverted from incineration it is assumed that this quantity of CO<sub>2</sub> eq is avoided for every tonne of waste diverted.

Given that MBT recovers some materials recycling the process actually results in a net benefit relative to landfilling. For materials sent to MBT, rather than to landfill, 0.012 tonnes of CO<sub>2</sub> eq can be saved per tonne of waste processed.<sup>121</sup> Where a tax causes waste to be diverted away from MBT the model assumes that this benefit is forgone. However, the benefits associated with recycling are far greater. This is not reflected in the model as it would require one to understand the current waste management systems in all the countries considered, and thus is a conservative estimate of the environmental benefits associated with reduced landfilling.

### 3.4.3 Water Abstraction and Effluent Treatment

For the purposes of modelling the impacts of water extraction and treatment a figure from PE International was used.<sup>122</sup> According to this source every m<sup>3</sup> of water abstracted and treated results in the emission of 0.00073 tonnes of CO<sub>2</sub> eq.

### 3.4.4 Pesticides

For the impact of pesticides on the environment data was taken from the Ecoinvent database. This database indicates that one tonne of pesticide is associated with 10.1 tonnes of CO<sub>2</sub> eq.<sup>123</sup>

### 3.4.5 Aggregates

Data on the impact of sand and gravel quarrying and processing on the environment was obtained from the PE International. This source indicates that every tonne of aggregate extracted results in 0.002 tonnes of CO<sub>2</sub> eq being emitted.<sup>124</sup>

---

<sup>119</sup> PE International AG, LBP-GaBi, University of Stuttgart (2011) *GaBi Software System*, Leinfelden-Echterdingen, Germany, [www.gabi-software.com/deutsch/index/](http://www.gabi-software.com/deutsch/index/)

<sup>120</sup> UK Environment Agency (2014) *Waste and Resources Assessment Tool for the Environment (WRATE)*, [www.environment-agency.gov.uk/research/commercial/102922.aspx](http://www.environment-agency.gov.uk/research/commercial/102922.aspx)

<sup>121</sup> UK Environment Agency (2014) *Waste and Resources Assessment Tool for the Environment (WRATE)*, [www.environment-agency.gov.uk/research/commercial/102922.aspx](http://www.environment-agency.gov.uk/research/commercial/102922.aspx)

<sup>122</sup> PE International AG, LBP-GaBi, University of Stuttgart (2011) *GaBi Software System*, Leinfelden-Echterdingen, Germany, [www.gabi-software.com/deutsch/index/](http://www.gabi-software.com/deutsch/index/)

<sup>123</sup> Ecoinvent Centre (2007) *Ecoinvent Data v2.2*, Ecoinvent Reports No.1-25, Swiss Centre for Life Cycle Inventories, Dübendorf, [www.ecoinvent.org](http://www.ecoinvent.org)

### 3.4.6 Packaging

Data on the climate change impacts of the production of packaging materials was taken from the WRATE database and is summarised in Table 3-13.

**Table 3-13: Environmental Damages Associated with Production of Different Packaging Materials**

Packaging Material	Tonne CO <sub>2eq</sub> per Tonne of Packing Material
Paper and card	0.30
Plastic	1.18
Wood	0.00
Metals (combined) <sup>1</sup>	4.35
Non-ferrous metals	1.62
Ferrous metals	10.72
Glass	0.09
<i>Note: 1. Assumes a 70%/30% split between ferrous/non-ferrous metals.</i>	

### 3.4.7 Single Use Plastic Bags

For the purposes of modelling the impact of single use plastic bags on the climate, data was extracted from the PE International database. This data suggests that every tonne of polyethylene film is associated with the emission of 2.4 tonnes of CO<sub>2 eq</sub>.<sup>125</sup> It was assumed that an average single use plastic bag weighs 8.5g.

### 3.4.8 Fertilisers

Data on the climate change impact of fertilisers was taken from the Ecoinvent database, which indicates that every tonne of nitrogen fertiliser is associated with the emission of 5.3 tonnes of CO<sub>2 eq</sub>.<sup>126</sup>

---

<sup>124</sup> PE International AG, LBP-GaBi, University of Stuttgart (2011) *GaBi Software System*, Leinfelden-Echterdingen, Germany, [www.gabi-software.com/deutsch/index/](http://www.gabi-software.com/deutsch/index/)

<sup>125</sup> PE International AG, LBP-GaBi, University of Stuttgart (2011) *GaBi Software System*, Leinfelden-Echterdingen, Germany, [www.gabi-software.com/deutsch/index/](http://www.gabi-software.com/deutsch/index/)

<sup>126</sup> Ecoinvent Centre (2007) *Ecoinvent Data v2.2, Ecoinvent Reports No.1-25*, Swiss Centre for Life Cycle Inventories, Dübendorf, [www.ecoinvent.org](http://www.ecoinvent.org)

### 3.4.9 Omissions

The above analysis concentrates only on emissions of greenhouse gases, and other air pollutants. The major omissions are related to those activities where the main benefits are not experienced in these terms. Key omissions from the above analysis are, therefore:

1. The wider suite of impacts of improved water flows and enhanced water quality;
2. The wider benefits from reduced use of pesticides and fertilisers;
3. Disamenity effects from:
  - a. Avoidance of litter through reduced littering of plastic bags;
  - b. Reduced landfilling;
  - c. Reduced incineration / MBT
  - d. Reduced extraction of aggregates.

The analysis is, therefore, incomplete, but highlights some of the benefits expected to flow from the taxes.

## 4.0 Environmental Fiscal Reform and Employment

Even before the financial downturn in 2008 there was significant interest in environmental tax policies which can promote sustainable economic growth and increase employment.<sup>127</sup> The protracted economic recovery has further stimulated interest in environmental tax reform which has now become a core objective of the European Commission. The Roadmap to a Resource Efficient Europe, for example, includes the following objective:

*“By 2020 a major shift from taxation of labour towards environmental taxation, including through regular adjustments in real rates, will lead to a substantial increase in the share of environmental taxes in public revenues, in line with the best practice of Member States”.*<sup>128</sup>

Since the Roadmap's publication in 2011 a number of reports have been issued by the Commission focusing on the need for EFR as means of promoting sustainable growth.<sup>129</sup> This chapter examines some of the research that has been conducted in the area of EFR and its impact on employment.

In 1991 Pearce suggested that environmental taxation could lead to a ‘double dividend’ as well structured schemes could help to curb harmful environmental activities and at the same time boost employment opportunities.<sup>130</sup> According to a recent review the rationale behind this claim was the idea that:

*“...environmental taxes not only produce improvements in the environment but they also generate substantial amounts of government revenue. This new revenue allows governments to reduce the rates of other taxes in the economy while maintaining a constant level of total revenue and expenditure”.*

Employment can be increased either directly through private actors responding to the tax by finding innovative ways to reduce their tax burden (and therefore pollution), or indirectly through Government offsetting the revenue raised by the environmental tax against taxes on labour.<sup>131</sup> Although it is widely accepted that EFR can help to stimulate

---

<sup>127</sup> See for example: European Commission (2007) *Green Paper on Market-Based Instruments for Environmentally and Related Policy Purposes*, COM(2007) 140 final, [http://ec.europa.eu/environment/enveco/green\\_paper.htm](http://ec.europa.eu/environment/enveco/green_paper.htm); European Environment Agency (2005) *Market-Based Instruments for Environmental Policy in Europe*, [www.eea.europa.eu/publications/technical\\_report\\_2005\\_8](http://www.eea.europa.eu/publications/technical_report_2005_8)

<sup>128</sup> European Commission (2011) *Roadmap to a Resource Efficient Europe*, COM(2011) 571 final, [http://ec.europa.eu/environment/resource\\_efficiency/about/roadmap/index\\_en.htm](http://ec.europa.eu/environment/resource_efficiency/about/roadmap/index_en.htm), p. 11.

<sup>129</sup> See for example: European Commission (2013) *Tax Reforms in EU Member States 2013: Tax Policy Challenges for Economic Growth and Fiscal Sustainability*, [http://ec.europa.eu/economy\\_finance/publications/european\\_economy/2013/pdf/ee5\\_en.pdf](http://ec.europa.eu/economy_finance/publications/european_economy/2013/pdf/ee5_en.pdf); European Commission (2012) *Tax Reforms in EU Member States 2012: Tax Policy Challenges for Economic Growth and Fiscal Sustainability*; and European Commission (2011) *Taxation Papers – Quality of Taxation and the Crisis: Tax Shifts from a Growth Perspective*, [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/gen\\_info/economic\\_analysis/tax\\_papers/taxation\\_paper\\_29\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/gen_info/economic_analysis/tax_papers/taxation_paper_29_en.pdf)

<sup>130</sup> Pearce, D. (1991) The Role of Carbon Taxes in Adjusting to Global Warming, *Economic Journal*, Vol. 101, pp. 938-948.

<sup>131</sup> European Environment Agency (2012) *Environmental Tax Reform in Europe: Opportunities for Eco-innovation*, January 2012, [www.eea.europa.eu/publications/environmental-tax-reform-opportunities](http://www.eea.europa.eu/publications/environmental-tax-reform-opportunities)

employment (see Table 4-1), the degree to which this occurs is very much dependent on the specifics of the environmental tax being considered, how the revenues will be spent, and the employment/economic dynamics within a country (e.g. the size of the informal sector, extent of unemployment, and the flexibility of different elements of the labour force).

Over the last few decades a growing body of literature has emerged which has looked at the relationship between EFR and employment. Although a substantial amount of work has been done much of this is based on theoretical modelling as opposed to the gathering of empirical evidence (this may not be surprising given the difficulties of gathering empirical data and assigning cause and effect to a particular policy intervention). Nevertheless, the findings appear to be relatively consistent and suggest that gains in employment are likely to be achieved where offsetting reductions in other taxes are made. Some of these studies are summarised in Table 4-1 from where it can be seen that the majority of studies appear to show that there are slight gains in employment as a result of EFR; however, some studies have suggested that unemployment may rise as a result of environmental tax reform.

It is reasonably obvious that in terms of absolute levels of employment, it is better to recycle the revenues to create positive economic and social outcomes. On this point the EEA notes:

*“The recycling of revenues is especially important for the acceptability and equity of the tax reforms. This is because shifting the burden of tax increases some costs and reduces others, and since no two individuals in society will have exactly the same earning and spending patterns, the impacts will vary”.*<sup>132</sup>

Probably what matters rather more is not the effect of environmental taxes on absolute levels of employment, but the effects relative to the most plausible counterfactual. If the most plausible counterfactual would involve resorting to taxes other than environmental ones to generate the same revenue, then it might be expected that the use of environmental taxes still has a positive effect relative to the alternatives.

---

<sup>132</sup> European Environment Agency (2012) *Environmental Tax Reform in Europe: Implications for Income Distribution*, January 2012, [www.eea.europa.eu/publications/environmental-tax-reform-in-europe](http://www.eea.europa.eu/publications/environmental-tax-reform-in-europe)

Table 4-1: Short Summary List of Studies on EFR and Employment Outcomes

Nature of Study	Nature of the Environmental Tax	Distribution of Revenue	Impacts on Employment
Employment Effects of selected scenarios from the Energy Roadmap 2050 <sup>133</sup>	ETS and a carbon tax – a range of options are considered in relation to the implementation of the Commission's Energy Roadmap.	Revenue raised from the carbon tax and ETS are used to offset labour taxes.	All scenarios examined showed a positive impact on both GDP and employment over the longer-term. Employment for all scenarios was calculated to be 1.3% above the baseline.
Study uses QUEST model to analyse the impact of a consumption tax in the EU27. <sup>134</sup>	Consumption tax equal to 1% of GDP.	The tax is offset by a 1% reduction in labour taxes.	The central scenario showed employment increasing from 0.11% above the baseline in year 1 to 0.24% in year 10.
This paper models the impacts of a carbon tax in Germany. <sup>135</sup>	Introduction of a carbon tax on the non-ETS sector which increased incrementally to €68 per tonne in 2020.	The model assumes recycled through reductions in income tax and social security contributions.	The model projected an additional employment of 58,200 in 2010 relative to the baseline scenario (an increase of 0.2%). This increases 122,000 additional employment opportunities in 2015 (0.3% above the baseline), and 152,000 by 2020 (0.4% above the baseline).
Model to study the impact of an EU wide carbon tax such that	Carbon tax. The rate was varied for different model scenarios.	Different forms of revenue recycling were modelled under a number of scenarios.	The authors conclude that: <i>"Results show positive employment effects and only small negative impacts on GDP. Economic impacts depend on the level of international energy prices, the recycling mechanism, country specifics such as carbon and energy intensity and structure of</i>

<sup>133</sup> Cambridge Econometrics, exergica, Ernst & Young, and Warwick Institute for Employment Research (2013) *Employment Effects of Selected Scenarios from the Energy Roadmap 2050*, Report for DG Energy at the European Commission, October 2013

<sup>134</sup> European Commission (2013) *Tax Reforms in EU Member States 2013: Tax Policy Challenges for Economic Growth and Fiscal Sustainability*, [http://ec.europa.eu/economy\\_finance/publications/european\\_economy/2013/pdf/ee5\\_en.pdf](http://ec.europa.eu/economy_finance/publications/european_economy/2013/pdf/ee5_en.pdf), p. 49

<sup>135</sup> European Environment Agency (2012) *Environmental Tax Reform in Europe: Implications for Income Distribution*, January 2012, [www.eea.europa.eu/publications/environmental-tax-reform-in-europe](http://www.eea.europa.eu/publications/environmental-tax-reform-in-europe)

Nature of Study	Nature of the Environmental Tax	Distribution of Revenue	Impacts on Employment
would allow a 20% reduction in emissions by 2020. <sup>136</sup>			<i>energy consumption”.</i>
This paper models the impact of a carbon tax in Spain. <sup>137</sup>	An economy wide tax on CO <sub>2</sub> . Different levels of tax were considered in this study.	The model included different scenarios each of which assumed that revenues were recycled in different ways: 1. via lump sum transfers; 2. via reducing income tax; and 3. by reducing taxes on capital (in all instances it was assumed that the proposed tax was revenue neutral).	The results were strongly related to the way in which the tax revenues were recycled back into the economy and the assumed flexibility of the labour market and the unemployed. With a carbon tax of US\$62.40 per tonne – the amount deemed necessary to achieve a 15% reduction in CO <sub>2</sub> emissions - the model results suggest that unemployment could fall by 3.5% if revenues are used to reduce income tax (see cited reference for further details on the assumptions). When revenues were used to make lump sum payments or reduce taxes on capital it was found that unemployment may increase by 1.4%. Under these two scenarios, which also sought to reduce emissions by 15%, the CO <sub>2</sub> tax was lower at US\$46 per tonne.
This paper models the impact of a carbon tax in Spain <sup>138</sup>	A 10% tax on all energy products and a 15% tax on petrol and other petroleum products		If the wage curve is assumed to be infinitely elastic the authors showed that unemployment could fall by 2.43% for a carbon tax of an estimated US\$31.90 per tonne (the authors in the cited report provided this estimate). If the wage elasticity is assumed to be 0.15 then unemployment only falls by 0.65%. This suggests that the rate is likely to be somewhere between these two points.
A simple model to calculate the impact of the UK's Climate	This study looked at the UK Climate Change Levy that was introduced in 2001.	Not stated in the study.	The results of the study suggest that the following employment impacts could be expected in six sectors: <ul style="list-style-type: none"> <li>• Food and Tabaco – 0.07% increase;</li> <li>• Rubber and plastics – 0.08% increase;</li> </ul>

<sup>136</sup> Lutz, C., and Meyer, B. (2010) Environmental Tax Reform in the European Union: Impact on CO<sub>2</sub> Emissions and the Economy, *Zeitschrift Für Energiewirtschaft*, Vol.34, No.1, pp.1–10

<sup>137</sup> Markandya, A., González-Eguino, M., and Escapa, E. (2012) *Environmental Fiscal Reform and Unemployment in Spain*, BC3 Working Paper Series 2012-04, Report for Basque Centre for Climate Change, April 2012

<sup>138</sup> Cited in the above study.

Nature of Study	Nature of the Environmental Tax	Distribution of Revenue	Impacts on Employment
Change Levy on employment. <sup>139</sup>			<ul style="list-style-type: none"> <li>• Non-metallic minerals – 0.13% decrease;</li> <li>• Machinery – 0.26% increase;</li> <li>• Electrical and optical equipment – 0.23% increase; and</li> <li>• Financial intermediation – 0.45% increase.</li> </ul>
A simple model to calculate the impact of Germany's EFR on employment. <sup>140</sup>	A range of environmental taxes which were introduced in the late 1990s and early 2000s are considered as part of this analysis.	Reduction in the social security contributions made by employees and employers.	<p>The results of the study suggest that the following employment impacts could be expected in four sectors:</p> <ul style="list-style-type: none"> <li>• Pulp, paper and printing – 0.82% decrease;</li> <li>• Rubber and plastics – 0.05% decrease;</li> <li>• Non-metallic minerals – 0.40% increase; and</li> <li>• Wholesale and retail trade – 0.04% decrease.</li> </ul>
This paper models the employment double dividend in a segmented labour market in 15 Member States. <sup>141</sup>	Energy tax (based on carbon emissions). The study determines the 'optimal tax' for each Member State (€3 to €33 per tonne).	The model considers various mechanisms whereby revenues are recycled to reduce gross wages and increase employment (e.g. varying the distribution of the revenue between skilled and unskilled labour).	The authors of the study conclude that: <i>"i) an employment double dividend can be achieved in the short run only, even if a trade-off between environment and employment always exists; ii) the effect on employment is larger when the fiscal revenue is recycled into all workers' gross wages rather than into unskilled workers only; iii) a co-operative policy leads to even larger benefits in terms of employment provided that an adequate redistribution of fiscal revenues is adopted by EU countries"</i> .

<sup>139</sup> Agnolucci, P. (2009) The Effect of the German and British Environmental Taxation Reforms: A Simple Assessment, *Energy Policy*, Vol.37, No.8, pp.3043–3051

<sup>140</sup> Ibid.

<sup>141</sup> Bosello, F., and Carraro, C. (2001) Recycling Energy Taxes: Impacts on a Disaggregated Labour Market, *Energy Economics*, Vol.23, No.5, pp.569–594



The effects of EFR are most well documented in relation to energy and carbon taxes. Other forms of environmental taxes, such as resource taxes, or taxes on pollution, have received less attention. One reason for this is that the modelling studies have tended to address effects at the level of the macro-economy, whilst the level of revenue generation by some pollution and resource taxes is rather low (so that the net effects estimated by models are likely to lie within, or close to, their limits of resolution). The sections below examine, as far as is possible given the time constraints of this study, the employment impacts of a number of environmental taxes.

## 4.1 Energy/Carbon Taxes

Although slightly outdated, a compressive review in 2000 looked at 139 model simulations coming from a total of 59 studies.<sup>142</sup> Seventy-five of the 108 simulations which were reviewed for employment impacts (i.e. 73%) predicted that EFR would result in net job creation (Figure 4-1). The authors note that:

*“...the best results in terms of employment are obtained when recycling occurs through cuts in SSC [social security contributions]. This is because employers’ SSC directly influence the price of labour; the higher employers’ SSC, the more costly it is to hire labour, similarly, the higher employees’ SSC, the greater the disincentive to supply labour”.*<sup>143</sup>

These employment impacts were also divided up by the time horizon of the modelled simulations. This showed, as demonstrated in Figure 4-2, that short to medium term projections have similar employment outcomes (again positive and negative impacts were identified - the latter, however, being less common).

The authors go on to say that:

*“One important caveat is that for employment gains to materialize, the labour market must be flexible”.*<sup>144</sup>

These authors also suggest that job losses may results if the revenue raised from EFR is not recycled in such a way as to offset the price rises:

*“Indeed, certain models suggest that sharp increases in the real wage rate on account of higher energy and consumer prices must be prevented. The tax increase cannot be fully passed on to sales prices as the rest of the world is prepared to absorb only a fraction of the price increase. The rest must, thus, be split between domestic capital and labour. For jobs to be created, most of the residual cost increase will be borne by labour in the form of reductions in real wage costs. If, instead, wages are rigid, high losses of employment may result”.*<sup>145</sup>

---

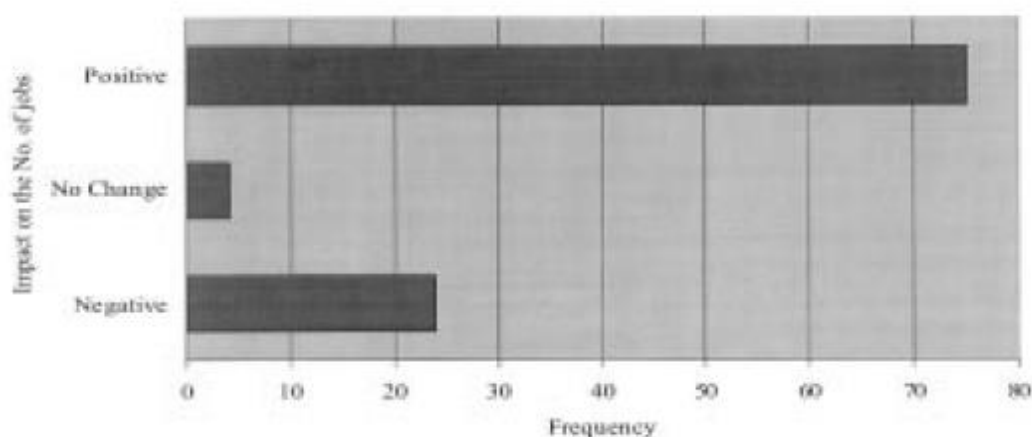
<sup>142</sup> Bosquet, B. (2000) Environmental Tax Reform: Does it Work? A Survey of the Empirical Evidence, *Ecological Economics*, Vol.34, No.1, pp.19–32

<sup>143</sup> *Ibid.*, p. 24

<sup>144</sup> *Ibid.*, p. 24

<sup>145</sup> *Ibid.*, p. 25

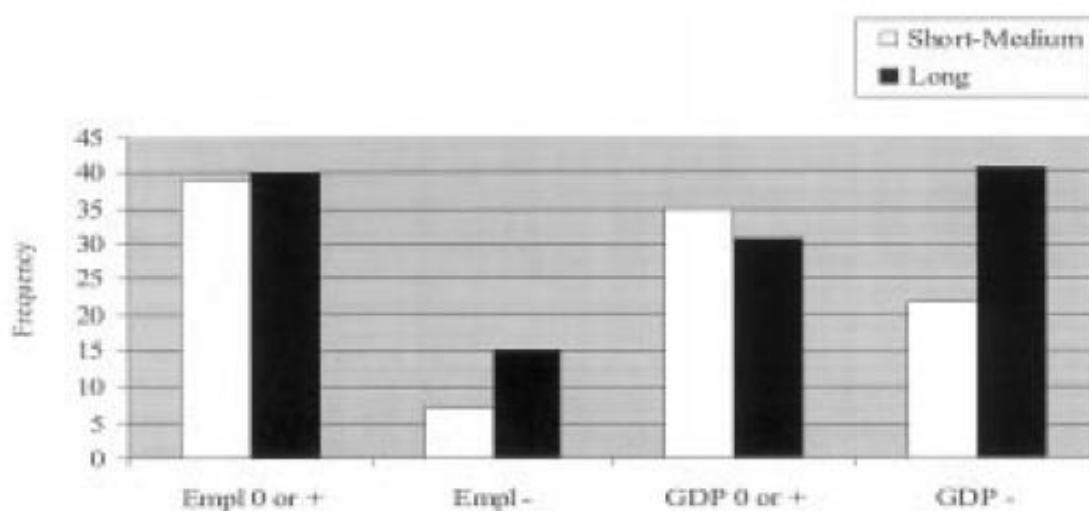
Figure 4-1: EFR and its Impact on Employment



Note: Based on 103 simulations. Positive means that EFR allows gains in employment. No change means that EFR causes neither gains nor losses in employment. Negative means that EFR leads to losses in employment.

Source: Figure 2 in Bosquet, B. (2000) *Environmental Tax Reform: Does it Work? A Survey of the Empirical Evidence*, *Ecological Economics*, Vol.34, No.1, pp.19–32, p. 24

Figure 4-2: Time Horizon and Impact on Employment



Note: Based upon 46 short- to medium-term simulations of employment impact, 55 long-term simulations of employment impact, 57 short- to medium-term simulations of GDP impact, and 72 long-term simulations of GDP impact. 'Empl 0 or +' means positive or zero employment effect; 'Empl -' means negative employment effect; 'GDP 0 or +' means positive or zero GDP effect; 'GDP -' means negative GDP effect. Short- to medium term means less than 10 years; long-term means 10 years or more.

Source: Figure 3 in Bosquet, B. (2000) *Environmental Tax Reform: Does it Work? A Survey of the Empirical Evidence*, *Ecological Economics*, Vol.34, No.1, pp.19–32, p. 25

The paper concludes by saying that:

*“Substantial empirical evidence exists on the predicted effect of ETR. This paper has reviewed 139 modelling simulations. The general findings are that reductions in carbon emissions may be significant, marginal gains in employment and marginal gains or losses in [economic] activity may be recorded in the short- to*

*medium-term, and investments decrease and prices increase moderately*".<sup>146</sup>

A review of EFR conducted in 2005 updated the findings from the study discussed above. This work looked at a total of 186 model simulations from 61 separate studies.<sup>147</sup> These simulations were grouped according to different characteristics, for example, *"the type of economic model used, the length of the simulation period employed, and the type of environmental policies considered"*.<sup>148</sup> The results of this work are summarised in Table 4-2, from which it can be seen that, on average, all of the different groupings of studies predicted net job creation with significant reductions in CO<sub>2</sub> emissions. The authors stated that:

*"...the magnitude of the environmental effect is much larger than the other effects. This difference suggests that, despite the importance attached to the economic aspect of ETR, ETR policies are more efficient on the environmental side than on the economic side. At the same time, it appears possible to improve the environment with a low or negligible variation in the economic sector"*.<sup>149</sup>

The authors of the above cited study provide the following conclusion:

*"We observed that the environmental effect of ETR is consistently evident in terms of CO<sub>2</sub> emissions reduction. The effects of ETR on the economy are, however, less clear and, undoubtedly, much smaller than the environment effects. The data show that it is possible to obtain a DD [double dividend] and maintain it over the long run. From [Table 4-2], it seems that an employment DD is uncontroversial, whereas the GDP DD shows mixed results. The result on the employment DD is robust with respect to long-term analyses and different model types"*.<sup>150</sup>

**Table 4-2: Average Results (in %) of a Large Number of ETR Model Simulations**

	CO <sub>2</sub> Emissions	Employment	GDP	Firm Investments	Consumer Prices
Average Variation	-9.70	0.44	-0.05	-0.23	1.18
Europe	-9.40	0.71	-0.07	-0.14	1.42
Rest of the World	-12.86	0.31	0.24	0.95	n.a.
Mediterranean Countries	-2.85	0.3	0.15	-0.58	2.7
Nordic Countries	-11.03	1.07	-0.03	-0.02	1.23
Short- to Medium-term Simulations	-6.02	0.44	0.06	-0.42	1.23
Long-term Simulations	-13.08	0.97	-0.05	0.48	1.17
EC Tax	-6.39	0.33	0.01	-0.85	1.69
Other Taxes	-11.22	0.85	-0.07	0.38	0.97

---

<sup>146</sup> *Ibid.*, p. 29

<sup>147</sup> Patuelli, R., Nijkamp, P., and Pels, E. (2005) Environmental Tax Reform and the Double Dividend: A Meta-analytical Performance Assessment, *Ecological Economics*, Vol.55, No.4, pp.564–583

<sup>148</sup> *Ibid.*, p. 568

<sup>149</sup> *Ibid.*, p. 568

<sup>150</sup> *Ibid.*, p. 577

	CO <sub>2</sub> Emissions	Employment	GDP	Firm Investments	Consumer Prices
SSC Recycling <sup>1</sup>	-7.99	1.04	0.15	0.24	1.2
Other Recycling	-12.10	0.05	-0.17	-0.16	1.72
Macroeconomic Model	-7.57	0.46	-0.12	-0.86	1.51
General Equilibrium model	-12.89	1.06	0.26	0.73	0.38
Journal/Book Papers	-11.85	0.79	0.22	0.37	1.33
Non-Published Papers	-7.40	0.48	-0.06	-0.51	1.2

Notes: 1. SSC = Social Security Contributions

Source: Table 1 in Patuelli, R., Nijkamp, P., and Pels, E. (2005) *Environmental Tax Reform and the Double Dividend: A Meta-analytical Performance Assessment*, *Ecological Economics*, Vol.55, No.4, pp.564–583, p. 569

As discussed above, this paper also highlights the importance of recycling the revenues to help offset price rises or wage inflation. In this regard it is noted that:

*“The usual formulation of ETR, with a carbon/energy tax recycled through SSC reductions, continues to be a valid model, which could produce the above-mentioned DD (viz. a better environment and more jobs). Our meta-analysis showed a significant and positive effect, generated on employment, by the CO<sub>2</sub> tax/SSC recycling policy combination. However, these results still need to be properly tested against different model specifications”.<sup>151</sup>*

As might be expected, the outcomes of the model projections which have looked at the impact of EFR on employment are very much dependent on the explicit and implicit assumptions made when setting up the model scenarios and choosing the type of model that will be used.<sup>152,153</sup> Thus, although the consensus appears to be that there is a clear double dividend in relation to energy/carbon taxes it is important to bear in mind that the results of these studies can vary quite significantly at times.

The 2011 Impact Assessment which was developed to support the proposed amendments to the Energy Taxation Directive (Directive 2003/96/EC) (ETD) used the E3ME model (developed by Cambridge Econometrics) and the QUESTIII model to assess the impact of various EFR options on GDP and employment.<sup>154</sup> As part of the modelling the impacts of various energy and carbon taxes were examined. The results of the E3ME modelling showed that the *“impact on employment is positive in all options and in all Member States”*.<sup>155</sup> However, it is noted that:

---

<sup>151</sup> *Ibid.*, p. 577

<sup>152</sup> Anger, N., Böhringer, C., and Löschel, A. (2010) Paying the Piper and Calling the Tune?: A Meta-Regression Analysis of the Double-Dividend Hypothesis, *Special Section: Ecosystem Services Valuation in China*, Vol.69, No.7, pp.1495–1502

<sup>153</sup> Berck, P., and Hoffmann, S. (2002) Assessing the Employment Impacts of Environmental and Natural Resource Policy, *Environmental and Resource Economics*, Vol.22, No.1-2, pp.133–156

<sup>154</sup> For a more detailed discussion of these models see Annex 2 of the IA, p. 59

<sup>155</sup> European Commission (2011) Impact Assessment on the Proposal for a Council Directive Amending Directive 2003/96/EC Restructuring the Community Framework for the Taxation of Energy Products and Electricity,

*“This positive impact on GDP and employment is driven by the modelling assumption that additional revenue from energy taxation would be used to reduce the employers' social security contributions. Lower labour costs boost employment and decrease domestic price levels increasing private consumption. This assumption reflects the practices of many Member States which have carried out environmental tax reforms (cf. Annex 2, point 5) and is in line with the general orientation in the ETD itself (recital 11), which promotes the principle of tax neutrality as a means to modernise national tax systems in favour of both the environment and employment”.*<sup>156</sup>

The QUESTIII modelling was undertaken to determine if the effects of the recent financial crisis and protracted economic recovery have altered the case for EFR. The results showed that there was still a strong case for reform, but that Member States may want to consider how the revenues from the energy taxes were recycled back into the economy. The impact of different approaches to revenue recycling on GDP and employment are shown Table 4-3. The results if this table are summarised as follows:

*“When revenue is recycled via lump-sum payments to households or is retained in the public budget to reduce public debt, the positive economic impacts would not materialise. However, the modelling showed that the impacts of fiscal consolidation via a carbon tax would be slightly better than effects of lump-sum tax recycling. Use of revenue is a matter for Member States to decide and will also depend on how Member States would implement any possible ETD revision”.*<sup>157</sup>

**Table 4-3: GDP and Employment Effects from Carbon Taxes (Percent Deviation from Baseline)**

Parameter	Labour Tax Recycling		Lump-sum Tax Recycling		Fiscal Consolidation	
	2020	2030	2020	2030	2020	2030
GDP	0.014	0.028	-0.082	-0.099	-0.085	-0.062
Employment	0.028	0.036	-0.122	-0.158	-0.087	-0.098

Source: European Commission (2011) *Impact Assessment on the Proposal for a Council Directive Amending Directive 2003/96/EC Restructuring the Community Framework for the Taxation of Energy Products and Electricity*, [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/sec\\_2011\\_409\\_impact\\_assessment\\_part1\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/sec_2011_409_impact_assessment_part1_en.pdf), Table 17, p. 30.

The Impact Assessment on the Energy Taxation Directive goes on to say:

---

[http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/sec\\_2011\\_409\\_impact\\_assessment\\_part1\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/sec_2011_409_impact_assessment_part1_en.pdf), p. 28

<sup>156</sup> *Ibid.*, p. 29

<sup>157</sup> *Ibid.*, p. 30.

*“Member States might need to raise taxes in order to carry out fiscal consolidation in any event.<sup>158</sup> Increasing labour taxes – as an alternative to fiscal consolidation via a carbon tax - would be more distortive, hindering job creation and economic activity even more.<sup>159</sup> In addition, the beneficial impact on the energy mix and the environment would not materialise and other measures (possibly costlier) would have to be taken to achieve the climate policy targets. So, the overall results would be worse compared to fiscal consolidation via a carbon tax that combines environmental benefits with certain short to medium term economic costs” (footnotes are included in the original).<sup>160</sup>*

Further work by Pollitt et al. has looked at the impact of carbon taxation on employment when the revenues are used for budget consolidation and are not recycled back into the economy. The authors (who used Cambridge Econometrics’ E3ME model) showed that using carbon taxes to plug fiscal deficits can lead to reduced employment; however, they argue that the increase in unemployment resulting from carbon taxes would be less than if the money were raised through labour taxes. The authors conclude that:

*“Recognising that raising tax revenues typically reduces GDP, the tax portfolio ought to be weighted towards tax bases associated with the lowest macroeconomic costs. This paper has shown that, at both national and European level, energy and carbon taxes (ETS at EU level) perform well in comparison to direct and indirect taxes, when assessing their impacts on GDP and employment. This is due to a combination of factors, but notably the opportunity to reduce the bill for fossil fuel imports as well as different labour market dynamics. The findings for the three case study countries should hold for all countries with a large dependency on imported fuel”.<sup>161</sup>*

The work cited above is based on a detailed report undertaken by Vivid Economics and published in 2012.<sup>162</sup> Interested readers are referred to this report and the cited journal article for further details.

---

<sup>158</sup> “For more details see Monitoring tax revenues and tax reform in the EU Member States 2010, European Commission Taxation papers (working paper 24/2010)”.

<sup>159</sup> “Various studies have shown that taxes on income are usually associated with lower economic growth (and so lower steady-state GDP) and that property and consumption taxes (including environmentally related taxes) are the least detrimental to growth. See e.g.. Johansson, A., Heady, C., Brys, B. and L. Vartia (2008), Taxation and Economic Growth, OECD Economics Department Working Papers, 620, OECD publishing. Arnold, J. (2008), Do Tax Structures Affect Aggregate Economic Growth?: Empirical Evidence from a Panel of OECD Countries, OECD Economics Department Working Papers, No. 643, OECD Publishing. Myles, G. D. (2009), Economic Growth and the Role of Taxation – Aggregate Data, OECD Economics Department Working Papers, No. 714, OECD publishing”.

<sup>160</sup> *Ibid.*, p. 30.

<sup>161</sup> Pollitt, H., Zhao, Y., Ward, J., Smale, R., Krahe, M. and Jacobs, M. (2012) The Potential Role for Carbon Pricing in Reducing European Deficits, Global Policy Essay, Vol. 3 (3), pp. 1-22

<sup>162</sup> Vivid Economics (2012) *Carbon Taxation and Fiscal Consolidation: the Potential of Carbon Pricing to Reduce Europe’s Fiscal Deficits*, Report for the European Climate Foundation and Green Budget Europe, May 2012



The above research was built upon in a subsequent report and further supported the idea that energy taxes may be an efficient way of raising revenue relative to conventional taxes. The authors of the follow on study state:

*“A review of current carbon-energy taxes across a sample of nine EU member states reveals a great discrepancy in the tax rates used within and across countries. Without a common set of signals, various economic problems can emerge, from inappropriate investments in fuels and technologies, to carbon and economic leakage between countries and, ultimately, overall loss of welfare.*

*Raising or adjusting national taxes on energy and carbon can help to correct these discrepancies, while generating useful revenues that can contribute to fiscal re-balancing. The analysis compares such carbon-related taxes with conventional direct and indirect taxes raising similar amounts of revenue. It reveals that carbon fiscal measures can indeed raise significant revenues while having less detrimental macro-economic impact than other tax options”.*<sup>163</sup>

Further research has been undertaken to assess the likely employment impacts of the Commission’s Energy Roadmap 2050. This work looked at wide ranging interventions which included actioned ETS allowances and a carbon tax for sectors not covered by the ETS. This work assumed that revenues would be used to offset labour taxes and concluded that:

*“Despite the differences in GDP results, both models show positive results for employment and both models show quite consistent impacts across scenarios. The E3ME sensitivity analysis showed that the revenue recycling (and choice of method applied) was an important determinant of final outcomes.”*<sup>164</sup>

From the above it would appear that energy taxes can play a key role in helping to reduce carbon emissions, while at the same time provide an efficient means for raising revenues, which can either be used for the purposes of fiscal consolidation or for boosting employment by offsetting the revenue gained against labour taxes.

## 4.2 Transport Taxes

### 4.2.1 Vehicles

There are a range of taxes, which may or may not have environmental underpinnings, that can be applied to vehicles, for example:

- Excise duties levied on motor fuels (in this work these taxes are covered under ‘energy taxes’);

---

<sup>163</sup> Jacobs, M., Ward, J., Smale, R., Krahé, M. and Bassi, S. (2012) *Less Pain, More Gain: the Potential of Carbon Pricing to Reduce Europe’s Fiscal Deficits*, November 2012, Report for Centre for Climate Change Economics and Policy Grantham Research Institute on Climate Change & the Environment, [www.lse.ac.uk/GranthamInstitute/publications/Policy/docs/PP-carbon-pricing-europe-fiscal-deficits.pdf](http://www.lse.ac.uk/GranthamInstitute/publications/Policy/docs/PP-carbon-pricing-europe-fiscal-deficits.pdf), p. 3

<sup>164</sup> Cambridge Econometrics, exergia, Ernst & Young, and Warwick Institute for Employment Research (2013) *Employment Effects of Selected Scenarios from the Energy Roadmap 2050*, Report for DG Energy at the European Commission, October 2013, p. 138

- Sales tax (e.g. VAT);
- Annual registration fees; and
- Import duties on vehicles.

A brief search of the literature did not yield any studies which have aimed to quantify the impact that the introduction of vehicle taxes could have on employment. To the extent that sales, registration, and import taxes act to encourage improvements in environmental performance it could be argued that there may be a slight increase in employment opportunities in Europe. Economic modelling undertaken as part of an economic assessment of the Commission's Transport White Paper, which aims to cut transport emission by 60% by 2050, found that a transition to low-carbon cars and vans could result in an additional 356,000 direct and indirect jobs. The report states:

*"The model results show that a shift to low-carbon cars and vans increases spending on vehicle technology, a sector in which Europe excels, therefore generating direct employment impacts. This shift will also reduce the total cost of running Europe's auto fleet, leading to mildly positive economic impacts including indirect employment".*<sup>165</sup>

This work, however, does not relate explicitly to the above mentioned taxes and it is therefore hard to draw any concrete conclusions about how individual vehicle taxes may impact on employment opportunities within a country.

#### 4.2.2 Aviation

The body of research that has been carried out on the impact of air passenger duties/taxes on economic output and employment appears to be relatively polarised due to heavy lobbying by airlines and the tourism industry in both Europe and abroad. Research conducted in the UK, on behalf of commercial airlines, has stated that such taxes can lead to job losses in the transport and tourism sectors.<sup>166,167,168</sup> For example, an industry commissioned report published by PricewaterhouseCooper (PwC) claims that:

*"Should the rise in output associated with APD [Air Passenger Duty] abolition materialise as our modelling suggest, then it could be possible that almost 60,000 jobs could be created between now [2013] and 2020 [in the UK]".*<sup>169</sup>

---

<sup>165</sup> Cambridge Economics and Ricardo – AEA (2013) *An Economic Assessment of Low Carbon Vehicles*, March 2013, [www.ricardo-aea.com/cms/assets/MediaRelease/Economic-Assessment-Vehicles-FINAL2.pdf](http://www.ricardo-aea.com/cms/assets/MediaRelease/Economic-Assessment-Vehicles-FINAL2.pdf), p. 2

<sup>166</sup> frontier economics (2011) *The Impacts of Proposed Changes in Air Passenger Duty*, Report for Easy Jet, May 2011, [www.frontier-economics.com/publications/the-impacts-of-proposed-changes-in-air-passenger-duty/](http://www.frontier-economics.com/publications/the-impacts-of-proposed-changes-in-air-passenger-duty/)

<sup>167</sup> PricewaterhouseCoopers (2013) *The Economic Impact of Air Passenger Duty*, Report for British Airways, EasyJet, Virgin Atlantic and Ryanair, February 2013

<sup>168</sup> Oxford Economics (2011) *An Alternative APD regime*, Report for American Airlines, Continental/United Airlines and Delta Airlines, July 2011, [www.oxfordeconomics.com/Media/Default/economic-impact/public-policy-assenment/an-alternative-apd-regime.pdf](http://www.oxfordeconomics.com/Media/Default/economic-impact/public-policy-assenment/an-alternative-apd-regime.pdf)

<sup>169</sup> PricewaterhouseCoopers (2013) *The Economic Impact of Air Passenger Duty*, Report for British Airways, EasyJet, Virgin Atlantic and Ryanair, February 2013, p. 2



The claims of the commercial airliners have been contested by the UK Government, who see the passenger duty as an important means of plugging the country's substantial fiscal deficit.

The air passenger duty in the UK has been effective because the country is an island and it is therefore a lot harder for passengers to make use of foreign airports which are not subject to such duties. The Dutch government was forced to abolish its tax on passenger flights ('ticket-tax') after a year (it ran from July 2008 to July 2009) once it was found that significant numbers of passengers were making use of airports in neighbouring countries (the reduction of passenger numbers leaving from Dutch airports was compounded by the onset of the financial crisis in 2008, which, at the time, added further fuel to the opposition against the ticket-tax).<sup>170</sup> Research conducted on this short-lived tax suggested that it led to job losses as a result of reduced passenger numbers and fewer visiting tourists.<sup>171</sup>

A report on the Irish air passenger tax – again commissioned by private airlines – used very high level “*rule of thumb*” assumptions to estimate possible job losses as a result of the Irish air travel tax. The authors of the report estimated that airport and airline job losses could amount to 1,500 to 2,000 across Ireland, with a further 2,000 to 3,000 jobs potentially being lost from the tourism industry as a result of lost revenue.<sup>172</sup>

A number of other studies exist which look at the impact of air passenger taxes, but it is hard to obtain an objective, unbiased view on employment impacts. In addition, detailed ex post assessments of these schemes, which also give due consideration to the environmental costs/benefits, appear to be in short supply. Nevertheless, a slight fall in employment would be expected, particularly if passengers can easily make use of airports in neighbouring countries which do not tax passenger flights.

## 4.3 Pollution and Resource Taxes

### 4.3.1 Waste Taxes

A brief search was conducted on the impacts of landfill tax on employment. Unfortunately, the body of literature in this area appears to be very limited.

Shortly after the landfill tax was implemented in the UK, an *ex ante* assessment of the employment impact of the tax only, as predicted by Cambridge Econometrics, suggested the effect was relatively small. In the case of an escalating tax, with revenue used to fund offsetting reductions in employer social security contributions, net employment generation was estimated at 7,200 in 1997, 21,000 in 2000 and 36,200 in 2005 for the whole UK economy. The study noted, importantly, that if the revenue is not used to offset reductions in employer social security contributions, there is still a net employment

---

<sup>170</sup> KiM Netherlands Institute for Transport Policy Analysis (2011) *Effects of the Air Passenger Tax: Behavioural Responses of Passengers, Airlines and Airports*, Report for Dutch Ministry of Infrastructure and the Environment, February 2011, [www.kimnet.nl/sites/kimnet.nl/files/effects-of-the-air-passenger-tax.pdf](http://www.kimnet.nl/sites/kimnet.nl/files/effects-of-the-air-passenger-tax.pdf)

<sup>171</sup> SEO Economisch Onderzoek (2009) *Implicaties van de Invoering van de Ticket-Tax*, March 2009, [www.seo.nl/pagina/article/implicaties-van-de-invoering-van-de-ticket-tax/](http://www.seo.nl/pagina/article/implicaties-van-de-invoering-van-de-ticket-tax/)

<sup>172</sup> SEO Economisch Onderzoek (2009) *The Implications of the Irish Air Travel Tax*, Report for Aer Lingus, Ryanair, and Cityjet, November 2009, [www.ryanair.com/doc/news/2009/irish\\_air\\_travel\\_tax.pdf](http://www.ryanair.com/doc/news/2009/irish_air_travel_tax.pdf), p. 17

gain. The contribution of the revenue refunding mechanism over the 'tax only' scenario (representing structural adjustment owing to the changes set in place) was estimated at 1,600 in 1997, and still only 4,700 by 2005 under an escalating tax scenario

This resonates with the way in which responses to landfill taxes tend to occur. It is fairly uncontroversial that landfill taxes help to divert waste away from landfill to other forms of residual waste treatment and/or recycling (Figure 4-3).<sup>173,174</sup> Research into the employment intensity of different waste treatment options clearly indicates that, per tonne of waste treated/disposed, landfilling produces the least number of job opportunities. Indeed, the number of job opportunities appear to increase as one moves up the waste hierarchy. For example, for every 10,000 tonnes of waste disposed of in landfill, one job may be created, compared to between 2 and 67 for recycling. Table 4-4 and

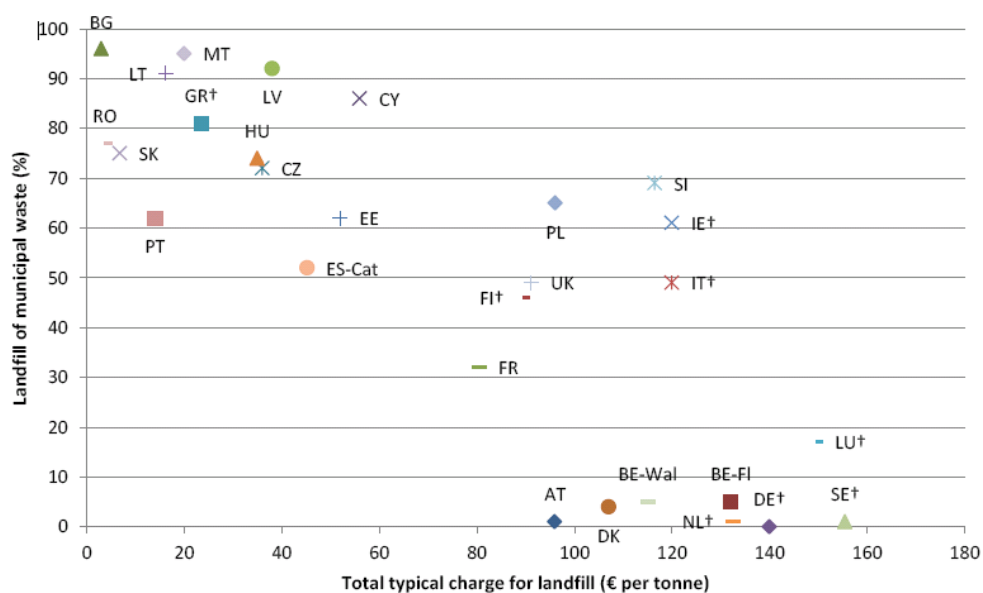
---

<sup>173</sup> Bio Intelligence Service with IEEP, Eunomia, Ecologic, Arcadis and Umweltbundesamt (2012) *Use of Economic Instruments and Waste Management Performances*, April 2012, [http://ec.europa.eu/environment/waste/pdf/final\\_report\\_10042012.pdf](http://ec.europa.eu/environment/waste/pdf/final_report_10042012.pdf)

<sup>174</sup> The individual country reports produced by the EAA have shown how the quantity of waste going to landfill falls significantly with the introduction of well-priced landfill taxes. See: European Environment Agency (2013) *Managing Municipal Solid Waste - a Review of Achievements in 32 European Countries*, February 2013, [www.eea.europa.eu/publications/managing-municipal-solid-waste](http://www.eea.europa.eu/publications/managing-municipal-solid-waste)

Table 4-5 provide a summary of the employment intensities (FTEs per 10,000 tonnes per annum) associated with various waste treatment and disposal operations.

Figure 4-3: Municipal Waste Landfilling and Landfill Costs



• S

Source: Figure 20 in Bio Intelligence Service with IEEP, Eunomia Research & Consulting, Ecologic, Arcadis and Umweltbundesamt (2012) *Use of Economic Instruments and Waste Management Performances*, April 2012, [http://ec.europa.eu/environment/waste/pdf/final\\_report\\_10042012.pdf](http://ec.europa.eu/environment/waste/pdf/final_report_10042012.pdf), p. 55

Table 4-4: Employment Intensities from Various Literature Sources (FTEs per 10,000 tonnes per annum)

Study	Landfill	Incinerator	MBT	Composting Sites	Windrow	In-vessel	AD	MRF	Recycling Collection	Residual Waste Collection	Reprocessing	Reprocessing: Glass/ Aluminium	Reprocessing: Plastics
SWAP, 1997 (UK) <sup>175</sup>								28			3-67	3-11	67
Murray, 1999 (UK) <sup>176</sup>	≈1	≈1							21-40	6	2		
Lepu, 2004 (UK) <sup>177</sup>								18			4-19	4	
Seldman, 2006 (USA) <sup>178</sup>	1	1		4				10			25	26	93
WRAP, 2012 (UK) <sup>179</sup>			5		2		2						
Eunomia, 2012 (EU) <sup>180</sup>					4		2	11					
TBU and Eunomia, 2003 <sup>181</sup>			2 - 3										
University of Glamorgan, 2007 (AU) <sup>182</sup>			5										
Greenpeace, 2009 <sup>183</sup>		5											

<sup>175</sup> Save Waste and Prosper (SWAP) (1999) *Employment in the UK Recycling Industry*, National Recycling Forum.

<sup>176</sup> Murray, R. (1999) *Creating Wealth From Waste*, DEMOS, [www.demos.co.uk/files/Creatingwealthfromwaste.pdf](http://www.demos.co.uk/files/Creatingwealthfromwaste.pdf)

<sup>177</sup> Gray, A., Jones, A., and Percy, S. (2004) *Jobs from Recycling: Report on Stage II of the Research*, Report for Local Economic Policy Unit (Lepu), August 2004, [http://warr.org/446/1/Jobs\\_from\\_recycling\\_-\\_Report.pdf](http://warr.org/446/1/Jobs_from_recycling_-_Report.pdf)

<sup>178</sup> Seldman, N. (2006) *Recycling Means Business*. PhD Institute for Local Reliance, Waste to Wealth Program, [www.ilsr.org/recycling/recyclingmeansbusiness.html](http://www.ilsr.org/recycling/recyclingmeansbusiness.html)

<sup>179</sup> Urban Mines and Walker Resource Management (2012) *A Survey of the UK Organics Recycling Industry in 2010*, Report for WRAP, [www.organics-recycling.org.uk/uploads/article2439/ASORI%20Final%20Report%202010.pdf](http://www.organics-recycling.org.uk/uploads/article2439/ASORI%20Final%20Report%202010.pdf)

<sup>180</sup> Eunomia's micro study on employment conducted as part of the European Reference Model on Municipal Waste Management, [www.wastemodel.eu](http://www.wastemodel.eu)

<sup>181</sup> TBU and Eunomia (2003) *Cool Waste Management*, Report for Greenpeace, [www.greenpeace.org.uk/MultimediaFiles/Live/FullReport/5574.pdf](http://www.greenpeace.org.uk/MultimediaFiles/Live/FullReport/5574.pdf)

<sup>182</sup> University of Glamorgan (2007) *Kahlenberg (ZAK) MBT Plant*, [www.walesadcentre.org.uk/Controls/Document/Docs/Kahlenberg\\_Comp\\_F.pdf](http://www.walesadcentre.org.uk/Controls/Document/Docs/Kahlenberg_Comp_F.pdf)

Study	Landfill	Incinerator	MBT	Composting Sites	Windrow	In-vessel	AD	MRF	Recycling Collection	Residual Waste Collection	Reprocessing	Reprocessing: Glass/ Aluminium	Reprocessing: Plastics
Cottica & Kaurild, 1995 <sup>184</sup>	≈1	2-4											
DETR/DTI, 1999 (UK) <sup>185</sup>								15-30					
European Commission, 2006 <sup>186</sup>											12		
Various											16	3 -5	70

Notes: Figures are rounded to nearest integer. It is important to note that whilst Seldman's study was published in 2006, the data was collected in 1997.

<sup>183</sup> Greenpeace (2009) *Incineracion de Residuos: Malos Humos para el Clima*, November 2009, [www.greenpeace.org/espana/Global/espana/report/costas/091124-02.pdf](http://www.greenpeace.org/espana/Global/espana/report/costas/091124-02.pdf)

<sup>184</sup> Cottica & Kaurild (1995) *The Costs, Environmental Benefits, and Direct Employment Implication of Greening Municipal Waste Management in Europe: An Engineering Estimation*, NOMISA, Bologna

<sup>185</sup> Cited in Waste Watch, (1999) *Jobs from Waste: Employment Opportunities in Recycling*, <http://wasteonline.brix.fatbeehive.com/resources/WasteWatch/JobsFromWaste.htm>

<sup>186</sup> European Commission (2006) *Report from the Commission to the Council and the European Parliament on the Implementation of Directive 94/62/EC on Packaging and Packaging Waste and its Impact on the Environment as well as on the functioning of the Internal Market*, [www.europa.be/download\\_protected\\_file.php?file=109](http://www.europa.be/download_protected_file.php?file=109)

Table 4-5 - Employment Intensity of Recycling from Friends of the Earth Report, 2010 (FTEs per 10,000 tonnes per annum)

Material	2004	2020	Average	Source
Glass	7.5	7.5	8	European Data
Paper	35	18	27	European Data
Plastic	156	93	125	European Data
Iron & Steel	54	54	54	European Data
Aluminium	110	110	110	European Data
Wood	7.5	7.5	8	European Data
Textiles	50	50	50	European Data
Biowaste	13	4	9	European Data
Mixed Metal	65.2	65.2	65	European Data
WEEE	-	-	400	UK Data
Furniture	-	-	140	UK Data

Source: Friends of the Earth (2010) *More Jobs, Less Waste: Potential for Job Creation Through Higher Rates of Recycling in the UK and EU*, September 2010, [www.foe.co.uk/sites/default/files/downloads/jobs\\_recycling.pdf](http://www.foe.co.uk/sites/default/files/downloads/jobs_recycling.pdf)

Recent work by Cambridge Econometrics investigated the likely impacts of waste taxes on GDP and employment in the European Union. As part of this work they looked at seven scenarios:

1. A tax of €50 per tonne on municipal waste to landfill;
2. Number 1 + €50 per tonne tax on waste from construction waste to landfill;
3. Number 2 + €50 per tonne tax on other mineral waste to landfill;
4. Number 3 + €50 per tonne tax on all other waste to landfill;
5. A tax of €50 per tonne on discharges to water;
6. A tax of €25 per tonne on waste that is incinerated without energy recovery; and
7. Number 4+5+6 (i.e. all of the above).

The modelling assumed that the mining sector was compensated in full for all of the taxes on mineral waste. For all of the other taxes it was assumed that the revenues were used to offset labour taxes (employers' social contributions). The results of the modelling are summarised in Table 4-6. It is important to note that the modelling takes a very broad macroeconomic approach and used very crude estimates to model waste flows and how they may be altered as a result of the taxes. For example, it was assumed that 50% of all non-mining waste diverted from landfill would go to incineration and the other 50% would be recycled/recovered. The authors of the report acknowledged that this is an *"arbitrary figure"* that could be improved upon in the future.<sup>187</sup>

**Table 4-6: Cambridge Econometrics Summary Results for the EU28 in 2020 (Unless Stated Otherwise all Figures shown as % Difference from Baseline)**

Parameter	Scenario						
	1	2	3	4	5	6	7
Revenue (€2005 million)	3,689	5,276	30,627	30,966	2,842	648	34,680
GDP	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Employment	0.01	0.02	0.04	0.04	0.00	0.00	0.04
Household Consumption	-0.01	0.00	0.01	0.01	0.00	0.00	0.00
Investment	-0.01	-0.01	-0.01	-0.01	0.00	0.00	-0.01
Exports	0.00	0.00	-0.03	-0.03	-0.01	0.00	-0.03
Imports	0.00	0.00	-0.01	-0.01	0.00	0.00	-0.01
Consumer Prices	0.01	0	0.02	0.02	0.01	0	0.03
Waste Generation	-1.53	-2.36	-10.28	-10.47	-0.78	-0.42	-11.67

Source: Cambridge Econometrics (2013) *Modelling Milestones for Achieving Resource Efficiency: Economic Analysis of Waste Taxes*, Report for DG Environment of the European Commission, November 2013, [http://ec.europa.eu/environment/enveco/resource\\_efficiency/pdf/Task%203-waste.pdf](http://ec.europa.eu/environment/enveco/resource_efficiency/pdf/Task%203-waste.pdf), Table 4.1, p. 17.

In terms of the impact on employment Cambridge Econometrics notes that there is:

---

<sup>187</sup> Cambridge Econometrics (2013) *Modelling Milestones for Achieving Resource Efficiency: Economic Analysis of Waste Taxes*, Report for DG Environment of the European Commission, November 2013, [http://ec.europa.eu/environment/enveco/resource\\_efficiency/pdf/Task%203-waste.pdf](http://ec.europa.eu/environment/enveco/resource_efficiency/pdf/Task%203-waste.pdf), footnote 9, p. 13

*“...a small but noticeable increase in employment. The potential 0.04% increase in total EU employment translates to around 100,000 jobs. This is driven by the use of the revenues to reduce labour taxes and lower the cost of employment; although there will be some new jobs in the waste processing sector, the net increase in employment comes from a range of different economic sectors”.<sup>188</sup>*

Given the employment intensities discussed above (Table 4-4 and

---

<sup>188</sup>*Ibid.*, p. 18.



Table 4-5) it is clear that the degree to which waste is pushed up the hierarchy will have a significant impact on employment. Some of the high level assumptions made as part of Cambridge Econometric's modelling may not accurately reflect the actual levels of material recovery/recycling that may be achieved as a result of landfill and incineration taxes which will no doubt force materials up the waste hierarchy. The figure of 100,000 jobs may therefore be a conservative estimate.

The above analysis shows that there can be employment benefits derived from waste taxes in Europe.

#### 4.3.2 Taxes on Aggregates

The Danish Raw Materials Tax was introduced in 1990 and at the time of an extensive review by ECOTEC et al in 2001 it had been held steady at DKK5.00 per m<sup>3</sup>. In terms of the tax's impact on Employment ECOTEC et al state that:

*"No figures are available but the effect of the tax is so minimal that no effects would be expected unless coming from the recycling of demolition wastes (used for construction and at sea), but this is mainly due to the waste tax".*<sup>189</sup>

With regards to Sweden's aggregates tax the authors of the above report state the following:

*"It is unknown to what extent the Gravel tax has affected the aggregates industry. Whilst gravel pits may have shut, the overall labour involved with the industry may have remained stable. It seems likely that the relatively low labour intensity of the industry would make it likely that the net impact of the tax might be positive in employment terms as the use of these funds for public expenditure would be more employment intensive".*<sup>190</sup>

Again the rate of Sweden's aggregate tax was very low at the time the review was undertaken and had also been held constant at SEK5.00 (€0.57) since it started in 1996 and the time of the review in 2000.<sup>191</sup>

ECOTEC et al examined other resource taxes, such as the Danish Water Supply Tax<sup>192</sup> and the Dutch Groundwater Tax<sup>193</sup>, but reported that no information was available on the impact that these tax have had on employment. However, with regards to the Danish tax, ECOTEC et al do report that although the impacts have not been quantified, anecdotal evidence suggests that:

*"The tax has a positive influence on employment, in particular for sanitary engineering companies, which renovate water installations. New products have*

---

<sup>189</sup> ECOTEC, CESAM, CLM, University of Gothenburg, UCD, and IEEP (2001) *Study on the Economic and Environmental Implications of the Use of Environmental Taxes and Charges in the European Union and its Member States*, Report for DG Environment, European Commission, April 2001, [http://ec.europa.eu/environment/enveco/taxation/pdf/ch1t4\\_overview.pdf](http://ec.europa.eu/environment/enveco/taxation/pdf/ch1t4_overview.pdf), p. 193.

<sup>190</sup> *Ibid.*, p. 205.

<sup>191</sup> *Ibid.*, p. 198.

<sup>192</sup> *Ibid.*, p. 73.

<sup>193</sup> *Ibid.*, p. 70.

*been developed and are being marketed such as new types of water-saving sanitations, in particular low-flush toilets”.<sup>194</sup>*

Efforts were made to identify more recent studies on the employment impacts of resource taxes; however, information on this subject is sparse and it was not possible to gather a robust database as part of this limited review.

#### 4.3.3 Pesticide Taxes

Denmark introduced a pesticide tax in 1996 as part of a broader strategy of reducing the amount of pesticide use in the country. The tax rate in 1998 was 53.85% of the retail price for insecticides and 33.33% of the retail price for fungicides and herbicides (no differentiation was made on the basis of toxicity). Writing in 2001 ECOTEC et al report the following:

*“Given the marginal nature of changes thus far, the (expected) implications for employment would not be expected to be significant. Demand for pesticides (measured in tonnes) has fallen but this reflects, in part, changes unrelated to the pesticides tax per se. Note that since, as we understand the situation, the majority of Danish production of pesticides is exported, the employment impact on domestic industry of any tax-related reduction in demand is also likely to be small”.<sup>195</sup>*

Under more extreme forms of taxes one would expect greater job losses and ECOTEC et al cite Bichel’s (1999) work on this. They report that:

*“Banning the use of pesticides in Denmark would reduce the employment in the agricultural sector by 16000 employees. Reducing pesticide consumption by 80% would reduce employment by 8000 employees. The optimisation scenario 3 (approximately 50% reduction in use) would have no or very limited employment effects given a 10 year implementation period. This suggests that given the tax’s broad intention to refund revenue to the sector through land tax reductions, the current level of tax would not affect employment significantly”.<sup>196</sup>*

#### 4.3.4 Taxes/Charges on Single Use Carrier Bags

It is widely reported that the implementation of a tax on single use carrier bags can result in a significant reduction in the number of bags being issued by retailers.<sup>197,198</sup> There is

---

<sup>194</sup> *Ibid.*, p. 73.

<sup>195</sup> *Ibid.*, p. 367.

<sup>196</sup> *Ibid.*, p. 367. At the time farming employed around 84,000 people in Denmark – 3.5% of the workforce.

<sup>197</sup> See, for example: Eunomia Research & Consulting (2011) *A Comparative Study on Economic Instruments Promoting Waste Prevention*, Report for Bruxelles Environnement, December 2011, [www.ibgebim.be/uploadedFiles/Contenu\\_du\\_site/Professionnels/Formations\\_et\\_s%C3%A9minaires/Waste\\_Prevention\\_Conference/Formulaire\\_WPC/Waste%20Prevention%20Final%20Report%2008.11.2011%202.pdf?langtype=2060](http://www.ibgebim.be/uploadedFiles/Contenu_du_site/Professionnels/Formations_et_s%C3%A9minaires/Waste_Prevention_Conference/Formulaire_WPC/Waste%20Prevention%20Final%20Report%2008.11.2011%202.pdf?langtype=2060), p. 91

<sup>198</sup> Welsh Government (2012) *Reduction in Single-use Carrier Bags*, Date Published: 3<sup>rd</sup> July 2012, Date Accessed: 18<sup>th</sup> August 2014, Available at: [http://wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/substance/carrierbags/reduction/?lang=en](http://wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/substance/carrierbags/reduction/?lang=en)

very limited data on the employment intensity associated with the production of single use carrier bags, and thus it is very difficult to understand what the marginal job losses may be for a given reduction in the use of single-use carrier bags. Work undertaken by Eunomia – based on fairly high level assumptions – suggests that 15 FTEs are employed in the production of every thousand tonnes of plastic carrier bags. The employment rate for single use paper bags is slightly lower at 1.5 FTEs per thousand tonnes.<sup>199</sup> This work fed into the Commission’s Impact Assessment to reduce the consumption of lightweight plastic carrier bags in Europe, which estimated that an outright ban on such bags by all EU Member States could reduce employment by 1,641 FTEs relative to the baseline scenario.<sup>200</sup> If, as an alternative, a prevention target was set with economic instruments – that is, taxes/charges – being used to drive changes in consumer behaviour, it was estimated that employment would fall by 1,340 FTEs across Europe. These figures are relatively small and in the context of the work being undertaken here – which focuses on individual Member States – the impact will likely only be a fraction of this. This, however, does not take into account indirect job losses, but these are also likely to be limited.

#### 4.3.5 Air Pollution Taxes

An early study carried out in 2001 suggested that the Swedish tax on NO<sub>x</sub> is likely to have had a negligible impact on employment:

*“It is possible to argue that the NO<sub>x</sub> charge has increased the demand for abatement technologies significantly in some sectors, and, hence, more people would be employed in the abatement technology sector, but these effects are likely to be small at least in the short and medium term. The employment effects at firm level are probably also of negligible size. Finally, SEPA’s [Swedish Environmental Protection Agency] administration of the charge implies no significant employment effects (0.3% of revenues of the NO<sub>x</sub> charge are administration costs, and this allows roughly two people to be employed full-time). To sum up, the effects on employment from the NO<sub>x</sub> charge are negligible”.*<sup>201</sup>

The authors of this report reviewed NO<sub>x</sub> taxes in three countries and concluded by saying that given the low rate of the taxes in each country there were no “traceable effects regarding effects on internal market, trade impacts, employment effects, competitiveness effects”.<sup>202</sup> This work has been followed up by more recent studies

---

<sup>199</sup> Eunomia Research & Consulting (2012) *Assistance to the Commission to Complement an Assessment of the Socio-economic Costs and Benefits of Options to Reduce the Use of Single-use Plastic Carrier Bags in the EU*, Report for European Commission Directorate-General for the Environment, October 2012, [http://ec.europa.eu/environment/waste/packaging/pdf/study\\_options.pdf](http://ec.europa.eu/environment/waste/packaging/pdf/study_options.pdf), p. 13

<sup>200</sup> European Commission (2013) Executive Summary of the Impact Assessment Accompanying the Document Proposal for a Directive of the European Parliament and of the Council Amending Directive 94/62/EC on Packaging and Packaging Waste to Reduce the Consumption of Lightweight Plastic Carrier Bags, SWD(2013) 443 final, November 2013, <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52013SC0443>, p. 5

<sup>201</sup> ECOTEC, CESAM, CLM, University of Gothenburg, UCD, and IEEP (2001) *Study on the Economic and Environmental Implications of the Use of Environmental Taxes and Charges in the European Union and its Member States*, Report for DG Environment, European Commission, April 2001, [http://ec.europa.eu/environment/enveco/taxation/pdf/ch1t4\\_overview.pdf](http://ec.europa.eu/environment/enveco/taxation/pdf/ch1t4_overview.pdf), p. 58

<sup>202</sup> *Ibid.*, p. 65.

which have also shown that taxes on emission to air are likely to have a negligible impact on employment. For example, Ščasný *et al*, who studied the Czech Republic, have shown that under a scenario of revenue recycling a tax on particulates, sulphur dioxides, nitrous oxides, and volatile organic compounds could increase employment by 0.1% against the baseline scenario. Where revenue from the tax is not recycled back into the economy – that is, where it is used for fiscal consolidation – these authors showed that there was likely to be a very slight negative impact on employment.<sup>203</sup>

#### 4.3.6 Water Abstraction/Usage Charges/Taxes

There is a growing focus within Europe on the effective implementation of costs recovery programmes to ensure that water is used more sustainably across all sectors of the economy (including households).<sup>204,205</sup> There are some concerns that the implementation of charges on large-scale users of water resources, such as agriculture, mining and industry, could, by impacting on profit margins, have a negative impact on job numbers. However, research undertaken in South Africa has shown that water charging can help to improve water efficiency while also improve economic growth and employment if the revenue is used to offset other taxes.<sup>206</sup>

Writing in 2001 ECOTEC *et al* report on the Danish water supply tax by stating that:

*“The tax has a positive influence on employment, in particular for sanitary engineering companies, which renovate water installations. New products have been developed and are being marketed such as new types of water-saving sanitations, in particular low-flush toilets. However, the impacts cannot be quantified. And no analysis is available on the net effects of the employment effects of the tax, i.e. taking into account losses in employment related to “old” technology production”.*<sup>207</sup>

The report does not quantify the employment impacts of the tax, possibly because of the difficulty associated with doing this in practice.

Reporting on the abandonment of the Dutch groundwater tax in 2011, Schuerhoff *et al* state that, despite claims of double dividend returns, no evidence could be found for the

---

<sup>203</sup> Ščasný, M., Píša, V., Pollitt, H., and Chewpreecha, U. (2009) Analyzing Macroeconomic Effects of Environmental Taxation in the Czech Republic with the Econometric E3ME Model, Vol.59, No.5, pp.460 – 491

<sup>204</sup> See for example: European Environment Agency (2013) *Assessment of Cost Recovery Through Water Pricing*, September 2013, <http://www.eea.europa.eu/publications/assessment-of-full-cost-recovery/download>

<sup>205</sup> ARCADIS, InterSus, Fresh Thoughts Consulting, Eco Logic, and TYP SA (2012) *The Role of Water Pricing and Water Allocation in Agriculture in Delivering Sustainable Water Use in Europe*, Report for European Commission Directorate-General for the Environment, February 2012, [www.enorasis.eu/uploads/files/Water%20Governance/role\\_water\\_pricing.pdf](http://www.enorasis.eu/uploads/files/Water%20Governance/role_water_pricing.pdf)

<sup>206</sup> Letsoalo, A., Blignaut, J., de Wet, T., de Wit, M., Hess, S., Tol, R., and van Heerden, J. (2007) Triple Dividends of Water Consumption Charges in South Africa, Vol.43, pp.1–11

<sup>207</sup> ECOTEC, CESAM, CLM, University of Gothenburg, UCD, and IEEP (2001) *Study on the Economic and Environmental Implications of the Use of Environmental Taxes and Charges in the European Union and its Member States*, Report for DG Environment, European Commission, April 2001, [http://ec.europa.eu/environment/enveco/taxation/pdf/ch1t4\\_overview.pdf](http://ec.europa.eu/environment/enveco/taxation/pdf/ch1t4_overview.pdf), p. 71

tax generating additional employment opportunities or helping to raise wages by offsetting income taxes. The authors report that:

*“This lack of an empirical result does not mean that the GWT had no effect on the margin; it’s just difficult to measure the impact of a small tax on a single input for operations affected by many taxes on many inputs”.<sup>208</sup>*

#### 4.3.7 Taxes on Chemical Fertilizers

The use of fertilisers are associated with extensive environmental damages arising from both their production and use – by one estimate, the external costs associated with the use of nitrogen fertilisers in Europe can be as much as 60% of the market price of the fertiliser.<sup>209</sup> Taxes on fertilisers can act as a clear mechanism for internalising these costs; however, they can pose a significant burden on farmers. For example, von Blottnitz *et al* conclude that:

*“A tax equal to the external cost would be so large as to create serious problems for farmers and should be avoided in favour of tradable permits that are issued free. It would be especially perverse to make farmers pay a tax equal to the total external cost, since a large portion is caused by the producers of the fertilizer”.<sup>210</sup>*

These authors do not calculate the actual number of job losses, but it can be assumed that they would likely be substantial if the full external costs were suddenly to be internalised through the use of a tax. There is an extensive body of literature on the use of taxes in relation to the improved use of fertilisers within the agriculture sector. However, there is less focus on how these taxes have impacted on- and off-farm employment opportunities in the European context.

---

<sup>208</sup> Schuerhoff, M., Weikard, H., and Zetland, D. (2013) The Life and Death of the Dutch Groundwater Tax, *Water Policy*, Vol.15, No.6, pp.1064–1077

<sup>209</sup> von Blottnitz, H., Rabl, A., Boiadjev, D., Taylor, T., and Arnold, S. (2006) Damage Costs of Nitrogen Fertilizer in Europe and their Internalization, *Journal of Environmental Planning and Management*, Vol.49, No.3, pp.413–433

<sup>210</sup> *Ibid.* p. 428.

## 5.0 Bulgaria

During the course of the study the latest data available from official sources was sought, namely the TAXUD Taxes in Europe database, energy excise duty tables and the OECD database on environmental taxes and charges. This was supplemented by national data sources where possible. Due to the number of taxes and countries involved, the central case for energy excise duties has been the rates published by TAXUD giving the position as of 1<sup>st</sup> July 2014. Planned future increases may not be fully captured in this analysis and therefore, the projected increase in revenues would effectively incorporate any revenue from increased rates in early 2015 or shortly thereafter.

### 5.1 Energy Taxes

Excise duties for energy in Bulgaria, as of 1<sup>st</sup> July 2014 are as follows:<sup>211</sup>

- Petrol:
  - Leaded petrol:
    - Leaded petrol is forbidden from sale in Bulgaria.
    - Rate (2014): BGN 830.00 (€424.38) per 1,000 litres of fuel.
  - Unleaded petrol:
    - Rate (2014): BGN 710.00 (€363.02) per 1,000 litres of fuel.
    - Unleaded petrol containing minimum 4% biofuel: BGN 688.00 (€351.77) per 1,000 litres of fuel.<sup>212</sup>
- Gas oil (diesel):
  - Gas oil used as a propellant or for industrial or commercial use:
    - Rate (2014): BGN 645.00 (€329.79) per 1,000 litres of fuel.
    - Under a voucher system, farmers are entitled to a BGN 310.00 (€158.50) discount per 1,000 litres of fuel.<sup>213</sup>
  - Gas oil used for heating, both business and non-business use:
    - Rate (2014): BGN 50.00 (€25.56) per 1,000 litres of fuel.
- Kerosene:
  - Kerosene used as a propellant or for industrial or commercial use:

---

<sup>211</sup> European Commission - Taxation and Customs Union (2014) Excise Duty Tables: Part II - Energy Products and Electricity, July 2014, [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/excise\\_duties/energy\\_products/rates/excise\\_duties-part\\_ii\\_energy\\_products\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/excise_duties/energy_products/rates/excise_duties-part_ii_energy_products_en.pdf)

<sup>212</sup> Ministry of Finance (Bulgaria) (no date) Excise Duties and Tax Warehouses Act, no date, <http://www.minfin.bg/document/12064:2>

<sup>213</sup> Council of Ministers (Republic of Bulgaria) (2014) Minister Grekov: The Distribution of Vouchers for Reduced Excise Duty on Diesel to Farmers Started, accessed 20 September 2014, <http://www.government.bg/cgi-bin/e-cms/vis/vis.pl?s=001&p=0234&n=437&g=>



- Rate (2014): BGN 645.00 (€329.79) per 1,000 litres of fuel.
- Kerosene used for heating, both business and non-business use:
  - Rate (2014): BGN 50.00 (€25.56) per 1,000 litres of fuel.
- Heavy fuel oil:
  - Heavy fuel oil used for heating, both business and non-business use:
    - Rate (2014): BGN 50.00 (€25.56) per 1,000 kg of fuel.
- Liquefied Petroleum Gas (LPG):
  - Propellant and industrial or commercial use:
    - Rate (2014): BGN 340.00 (€173.84) per 1,000 kg of fuel.
  - LPG for heating use (business and non-business):
    - Rate (2014): BGN 0.00 (€0.00) per 1,000 kg of fuel.
- Natural gas:
  - When used as a propellant or for industrial or commercial use:
    - Rate (2014): BGN 0.85 (€0.43) per GJ of fuel.
    - This rate is below the EU Directive minimum and Bulgaria has applied to the European Commission to use a provision in the Directive allowing lower rates of the tax on natural gas when less than 15% of the total energy consumption is natural gas.<sup>214</sup>
  - Natural gas used for heating (business use):
    - Rate (2014): BGN 0.60 (€0.31) per GJ of fuel.
  - Natural gas used for heating (non-business use):
    - Rate (2014): BGN 0.00 (€0.00) per GJ of fuel.
- Coal and Coke:
  - Heating (business and non-business use):
    - Rate (2014): BGN 0.60 (€0.31) per GJ of fuel.
- Electricity:
  - Business and non-business use:
    - Rate (2014): BGN 2.00 (€1.02) per MWh.
    - Household usage of electricity is exempt from the excise duty.
- Revenue: The total revenue of all excise duties on energy products in 2012, the latest year for which figures are available were BGN 1.95 billion (€995 million),

---

<sup>214</sup> Sofia News Agency (2013) Bulgaria Asks EC to Keep Reduced Excise Rate on Natural Gas for Motor-Fuel Use, accessed 20 September 2014, <http://www.novinite.com/articles/153735/Bulgaria+Asks+EC+to+Keep+Reduced+Excise+Rate+on+Natural+Gas+for+Motor-Fuel+Use>

equivalent to 2.5% of GDP. This total revenue is broken down into the following constituent parts:<sup>215</sup>

- BGN 1.90 billion (€972 million) from fuels;
- BGN 33 million (€17 million) from electricity;
- BGN 6.1 million (€3.1 million) from coal and coke; and
- BGN 6.1 million (€3.1 million) from natural gas.

## 5.2 Transport Taxes (Excluding Transport Fuels)

- There is no vehicle registration tax in Bulgaria.
- Circulation (Road) Tax:<sup>216 217</sup>
  - All vehicles, aircraft and ships pay an annual circulation tax to the relevant local Municipality.
  - The range of rates of the tax is set by the government, with each Municipality able to determine the level they wish to charge within this range.
  - For passenger cars, the rate is set according to the engine power and age of the vehicle. These are the following:
    - Engine power up to 37 kW: BGN 0.34 (€0.17) – BGN 1.02 (€0.52) per kW
    - Engine power from 37 kW to 55 kW: BGN 0.40 (€0.20) – BGN 1.20 (€0.61) per kW
    - Engine power from 55 kW to 74 kW: BGN 0.54 (€0.28) – BGN 1.62 (€0.83) per kW
    - Engine power from 74 kW to 110 kW: BGN 1.10 (€0.56) – BGN 3.30 (€1.69) per kW
    - Engine power over 110 kW: BGN 1.23 (€0.63) – BGN 3.69 (€1.89) per kW
    - The rates above are multiplied by a specific coefficient which depends on the age of the vehicle. For vehicles older than 14 years, the coefficient is 1.4, for vehicles between 5 and 14 years old the coefficient is 1.5; for vehicles less than 5 years old, it is 2.8.
  - Rates for motorcycles are based on the engine size and are the following:

---

<sup>215</sup> Eurostat (2014) Revenue Data by Individual Tax (National Tax List), accessed 4 August 2014, [http://ec.europa.eu/taxation\\_customs/taxation/gen\\_info/economic\\_analysis/tax\\_structures/article\\_5985\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/gen_info/economic_analysis/tax_structures/article_5985_en.htm)

<sup>216</sup> European Commission (2014) Taxes in Europe Database, Accessed 3 September 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)

<sup>217</sup> Republic of Bulgaria, Local Taxes and Fees Act (Закон за местните данъци и такси), Chapter 2, Section IV, Transport Vehicle Tax.



- Up to 125 cc: BGN 12.00 (€6.14) – BGN 36.00 (€18.41)
  - From 125 cc to 250 cc: BGN 25.00 (€12.78) – BGN 75.00 (€38.35)
  - From 250 cc to 350 cc: BGN 35.00 (€17.90) – BGN 105.00 (€53.69)
  - From 350 cc to 490 cc: BGN 50.00 (€25.57) – BGN 150.00 (€76.70)
  - From 490 cc to 750 cc: BGN 75.00 (€38.35) – BGN 225.00 (€115.04)
  - Over 750 cc: BGN 100.00 (€51.13) – BGN 300.00 (€153.39)
  - The rate for buses is BGN 50.00 (€25.57) – BGN 150.00 (€76.70) for buses with up to 22 seats and BGN 100.00 (€51.13) – BGN 300.00 (€153.39) for buses with more than 22 seats. Lorries up to 12 tonnes pay BGN 10.00 (€5.11) – BGN 30.00 (€15.34) per tonne of maximum permissible weight. Lorries above 12 tonnes pay according to the number of axles and maximum permissible weight, with rates ranging from BGN 30.00 (€15.34) to 3,150.00 (€1,610.59).
  - As of 1 January 2013, electric vehicles are exempt from this tax.<sup>218</sup>
  - For vehicles with engine power up to 74 kW, the following rate reductions apply:
    - Vehicles fitted with catalytic converters which do not conform to Euro III, Euro IV, Euro V and Euro VI emissions standards: 20% – 40%
    - Vehicles conforming to emissions standards Euro III and Euro IV: 50%
    - Vehicles conforming to emissions standards Euro V and Euro VI: 60%
  - Revenue in 2012 (the latest year for which figures are available) was BGN 180 million (€92 million), equivalent to 0.23% of GDP.
- Other Taxes:
- Bulgaria implemented an aircraft noise tax in November 2012. This tax is levied on all aircraft traffic at one of five international airports in Bulgaria.<sup>219</sup>

---

<sup>218</sup> Ministry of Finance (Bulgaria) (no date) *Transport Vehicle Tax*, accessed 21 September 2014, <http://www.minfin.bg/en/page/779>

<sup>219</sup> Ministry of Transport (Bulgaria) (2012) *Ordinance on the taxes for use of public airports and navigational services in Bulgaria*, 30<sup>th</sup> November 2012, [http://caa.gateway.bg/upload/docs/NAREDBA\\_za\\_taksite\\_za\\_izpolzvane\\_na\\_letisata\\_za\\_obsestveno\\_polz\\_vane\\_i\\_za\\_aeronavigacionno\\_obs\\_lujvane.pdf](http://caa.gateway.bg/upload/docs/NAREDBA_za_taksite_za_izpolzvane_na_letisata_za_obsestveno_polz_vane_i_za_aeronavigacionno_obs_lujvane.pdf)

- The tax rate is calculated as a multiple of a “base noise unit” (set at EUR 3.74 since 01.01.2013). The multiplier used varies according to the maximum takeoff weight of the aircraft (helicopters and aircraft under 9 tonnes MTOW are exempt) as well the time of the day of the takeoff or landing and the noise categorization of each aircraft type.
- The revenue from this tax is used by the airport to fund noise-monitoring and noise limitation activities.
- Revenue for the 1-year period from July 2013 to June 2014 for Sofia airport is estimated at BGN 641 thousand (€328 thousand), equivalent to 0.0008% of GDP. The other 4 Bulgarian international airports may be expected to generate significantly less revenue from the noise tax, based on traffic volumes.<sup>220</sup>
- Bulgaria also uses a road vignette system, where cars must pay an annual fee to use public highways. The rate depends on the type of the vehicle (with heavy goods vehicles paying a much higher rate than passenger vehicles), the validity period of the vignette and, for some vehicles, the emissions class. From 1 January 2014, annual vignette fees range from €34 for passenger vehicles to €665 for heavy goods vehicles with emissions classes Euro 0, Euro I or Euro II.<sup>221</sup>

### 5.3 Pollution and Resource Taxes

The following section outlines the pollution and resources taxes in Bulgaria.

➤ Landfill tax:<sup>222</sup>

- Bulgaria is one of the most recent EU Member States to impose a tax on landfilling waste, having introduced the tax from 1 January 2011.
- Rates have increased each year from 2011 through 2014. The current rate for all waste types (including municipal waste and construction and demolition waste) is BGN 22 (€11.25) per tonne, with plans to increase this rate to BGN 95 (€48.57) by 2020.<sup>223</sup>

---

<sup>220</sup> Sofia Airport (2014) *Airport Taxes Income and Expenses*, 28<sup>th</sup> February 2014, [http://www.sofia-airport.bg/UserFiles/%D0%9F%D1%80%D0%B8%D0%BB%D0%BE%D0%B6%D0%B5%D0%BD%D0%B8%D0%B5%203\\_%D0%A0%D0%B0%D0%B7%D1%85%D0%BE%D0%B4%D0%B8%20%D0%B8%20%D0%9F%D1%80%D0%B8%D1%85%D0%BE%D0%B4%D0%B8.pdf](http://www.sofia-airport.bg/UserFiles/%D0%9F%D1%80%D0%B8%D0%BB%D0%BE%D0%B6%D0%B5%D0%BD%D0%B8%D0%B5%203_%D0%A0%D0%B0%D0%B7%D1%85%D0%BE%D0%B4%D0%B8%20%D0%B8%20%D0%9F%D1%80%D0%B8%D1%85%D0%BE%D0%B4%D0%B8.pdf)

<sup>221</sup> Road Infrastructure Agency (Bulgaria) (2014) *Vignette Stickers*, accessed 21 September 2014, <http://www.api.bg/index.php/en/vinetni-stikeri>

<sup>222</sup> European Topic Centre on Sustainable Consumption and Production (2012) *Overview of the Use of Landfill Taxes in Europe*, Report for European Environment Agency, April 2012, [http://scp.eionet.europa.eu/publications/WP2012\\_1/wp/WP2012\\_1](http://scp.eionet.europa.eu/publications/WP2012_1/wp/WP2012_1), pp. 24-25.

<sup>223</sup> MOEW (2013) *Landfill Tax Ordinance 7/2013*, [http://www.moew.government.bg/files/file/Waste/Legislation/Naredbi/waste/NAREDBA\\_7\\_ot\\_19.12.2013\\_g\\_za\\_reda\\_i\\_nachina\\_za\\_izchislqvane\\_i\\_opredelqne\\_razmera\\_na\\_obezpecheniqta\\_i\\_otchisleniqta\\_izis\\_kvani\\_pri\\_deponirane\\_na\\_otpadaci.pdf](http://www.moew.government.bg/files/file/Waste/Legislation/Naredbi/waste/NAREDBA_7_ot_19.12.2013_g_za_reda_i_nachina_za_izchislqvane_i_opredelqne_razmera_na_obezpecheniqta_i_otchisleniqta_izis_kvani_pri_deponirane_na_otpadaci.pdf)

- Landfill tax is paid on a quarterly basis by municipalities to the Regional Inspectorates for Environment and Water.
  - Total revenues in 2012 amounted to BGN 27.4 million (€14 million), equivalent to 0.035% of GDP.<sup>224</sup>
- Single use bag levy:<sup>225 226</sup>
- Bulgaria has imposed a product tax on single use plastic bags since October 2011. The tax was first imposed at a rate of BGN 0.15 (€0.08) per bag.<sup>227</sup> Since then it has increased annually to the current rate (2014), which is BGN 0.55 (€0.28) per bag. All producers and importers of plastic bags are required to pay the tax, the cost of which is usually passed on to the consumer.
  - Revenues from the plastic bag tax are not known.
- Although there are no further pollution and resources taxes in Bulgaria, there are a number of additional relevant charges. These include the following:
- Municipal waste collection charges for households and companies, based on the value of the property, are intended to cover the direct costs of collection and treatment only, not externalities associated with these activities. Rates vary across municipalities.<sup>228</sup> Revenues from the charges amount to BGN 463 million (€237 million) in 2012, equivalent to 0.59% of GDP.<sup>229</sup> This is among the most significant sources of revenue for many municipalities. These charges are out of scope of this work, but have been included here for completeness.
  - Environmental product fees (under a producer responsibility scheme) are also paid by producers of certain items within six waste streams, including packaging materials, batteries, WEEE and vehicles. These can be avoided by producers arranging collection and recycling of a specific percentage of the waste associated with their products; most producers and importers are members of a producer responsibility scheme and thus pay a licence

---

<sup>224</sup> MOEW (2013) *Landfill Tax Ordinance 7/2013*, [http://www.moew.government.bg/files/file/Waste/Legislation/Naredbi/waste/NAREDBA\\_7\\_ot\\_19.12.2013\\_g\\_za\\_reda\\_i\\_nachina\\_za\\_izchislqvane\\_i\\_opredelqne\\_razmera\\_na\\_obezpecheniqt\\_a\\_i\\_otchisleniqt\\_a\\_izis\\_kvani\\_pri\\_deponirane\\_na\\_otpadaci.pdf](http://www.moew.government.bg/files/file/Waste/Legislation/Naredbi/waste/NAREDBA_7_ot_19.12.2013_g_za_reda_i_nachina_za_izchislqvane_i_opredelqne_razmera_na_obezpecheniqt_a_i_otchisleniqt_a_izis_kvani_pri_deponirane_na_otpadaci.pdf)

<sup>225</sup> Earth Policy Institute (2014) Plan B Updates: The Downfall of the Plastic Bag: A Global Picture, accessed 3 September 2014, [http://www.earth-policy.org/plan\\_b\\_updates/2013/update123](http://www.earth-policy.org/plan_b_updates/2013/update123)

<sup>226</sup> Adamowski, J. (2012) Bulgaria to Increase Plastic Bag Tax by 233%, accessed 22 September 2014, <http://www.europeanplasticsnews.com/subscriber/headlines2.html?id=1643>

<sup>227</sup> Using the average exchange rate for 2011.

<sup>228</sup> BiPRO, Arcadis, and Enviroplan (2012) Support to Member States in Improving Waste Management Based on Assessment of Member States' Performance - Roadmap for Bulgaria, Report for European Commission - DG Environment, 2012, [http://ec.europa.eu/environment/waste/framework/pdf/BG\\_Roadmap\\_FINAL.pdf](http://ec.europa.eu/environment/waste/framework/pdf/BG_Roadmap_FINAL.pdf), pp. 5-6.

<sup>229</sup> Ministry of Environment and Water of Bulgaria (2014) *National Waste Management Plan (draft)*, [www.moew.government.bg/?show=html&hid=173](http://www.moew.government.bg/?show=html&hid=173)

fee to these.<sup>230</sup> Current rates (2014) vary from BGN 0.13 (€0.07) per kg of metal-based packaging material to BGN 2.33 (€1.19) per kg of plastics.<sup>231</sup> Total revenues for the product fees in 2013 amount to BGN 2.1 million (€1.1 million), equivalent to 0.0027% of GDP.<sup>232</sup>

- Finally, some previous studies suggest that taxes on water abstraction and waste water were due to be implemented in 2013, following the publication of the National Strategy for Management and Development of the Water Sector in 2012.<sup>233</sup> It is not known whether these taxes have been implemented, though progress updates on water management reported in Bulgaria's 2014 National Reform Programme indicate that it is unlikely that they have been implemented.<sup>234</sup>
- Water Abstraction Charges:
  - Water abstraction and use is charged at volumetric rates in Bulgaria. The Water Act, which was first enacted in 1999 provides the regulatory foundation for fees which can be charged on water abstraction of surface water and groundwater and on waste water discharge.<sup>235</sup> Despite this, no uniform pricing structure exists across the country.
  - The foundation for new (higher) rates was introduced in an amendment to the Water Act in 2011 as rates had previously remained the same since they were first introduced more than ten years previously.<sup>236</sup> The charges depend on the customer type, the type of water abstracted and is either area based (for irrigation) or volumetric. The charge is made up of two elements, the abstraction fee and the water supply charge; charges do not ensure full cost recovery.<sup>237</sup> The rates for volumetric based charges are provided in Table 5-1.

Table 5-1: Water Abstraction Tax Rate

Tax Type	Water Usage	Tax Rate (BGN per m <sup>3</sup> )	Tax Rate (€ per m <sup>3</sup> )
Surface water	Drinking water	0.02	0.01

<sup>230</sup> IEEP (2013) Steps to Greening Country Report: Bulgaria, Report for the European Commission, p.19

<sup>231</sup> See <http://www.ecopack.bg/en/why-choose-ecopack/178/view/>

<sup>232</sup> EMEPA (2013) *Report of the Company for Management Activities 2013*, <http://pudoos.bg/%D0%BE%D1%82%D1%87%D0%B5%D1%82%D0%B8/>

<sup>233</sup> IEEP (2013) Steps to Greening Country Report: Bulgaria, Report for the European Commission, pp. 6-7

<sup>234</sup> Republic of Bulgaria (Ministry of Finance) (2014) *Europe 2020: National Reform Programme - 2014 Update*, April 2014, [http://ec.europa.eu/europe2020/pdf/csr2014/nrp2014\\_bulgaria\\_en.pdf](http://ec.europa.eu/europe2020/pdf/csr2014/nrp2014_bulgaria_en.pdf), pp.95-97.

<sup>235</sup> Ministry of Environment and Water (2013) *Water Act*, [http://www.moew.government.bg/files/file/Water/Legislation/Zakoni/English\\_versions/Water\\_act.pdf](http://www.moew.government.bg/files/file/Water/Legislation/Zakoni/English_versions/Water_act.pdf)

<sup>236</sup> IEEP (2013) Steps to Greening Country Report: Bulgaria, Report for the European Commission, pp. 6-7

<sup>237</sup> ARCADIS, InterSus, Fresh Thoughts Consulting, Eco Logic, and TYP SA (2012) *The Role of Water Pricing and Water Allocation in Agriculture in Delivering Sustainable Water Use in Europe*, Report for European Commission Directorate-General for the Environment, February 2012, [www.enorasis.eu/uploads/files/Water%20Governance/role\\_water\\_pricing.pdf](http://www.enorasis.eu/uploads/files/Water%20Governance/role_water_pricing.pdf)

Tax Type	Water Usage	Tax Rate (BGN per m <sup>3</sup> )	Tax Rate (€ per m <sup>3</sup> )
abstraction	Irrigation of agricultural crops, livestock, aquaculture	0.001	0.0005
	Cooling	0.0003	0.0002
	Industrial water	0.045	0.023
	Other purposes	0.065	0.033
			0.01
	Own drinking water supply	0.75	0.38
	Cooling	0.0008	0.0004
	Irrigation of agricultural crops, livestock, aquaculture	0.01	0.005
	Industrial water supply and own drinking water supply, when water used for production of food, pharmaceuticals and cosmetics	0.07	0.036
	Other purposes	0.16	0.082
	Self-abstraction for human consumption	0.75	0.38

Source: Ministry of Environment and Water (2012) *Tariff of Fees for Water Use*, 1<sup>st</sup> January 2012

#### ➤ Other Water Taxes

- Water pollution taxes are also in place.<sup>238</sup> A tax rate of BGN 0.005 (€0.0026) per m<sup>3</sup> for discharge to surface water bodies applies. From 2021 onwards the tax rate will be increased to BGN 0.020 (€0.010) per m<sup>3</sup>. The tax rate for discharge to groundwater bodies is dependent on a number of variables according to the following equation.

$$T = K_i \times \sum (M_i \times E_i)$$

Where:

- T = total annual tax in BGN
- K = coefficient depending on the chemical status of the groundwater body that gets the wastewater (ranges from 1 to 100)
- M = pollution load in kg per year
- E = tax in BGN per kg or BGN per 1 degree C or BGN per m<sup>3</sup>
- i = pollutant
- The tax rates can range from a maximum of BGN 1 (€0.51) per kg of pollutant to a minimum of BGN 0.0001 (€0.000051) per kg of pollutant.

---

<sup>238</sup> Ministry of Environment and Water (2012) *Tariff of Fees for Water Use*, 1<sup>st</sup> January 2012

- A tax also applies to the extraction of inert materials from water bodies. The current tax rate is BGN 1 (€0.51) per m<sup>3</sup> of inert materials.<sup>239</sup>
- The total revenue from all water taxes in 2013 amounts to BGN 51.4 million (€26.3 million), equivalent to 0.066% of GDP. This is the single most important revenue source for EMEPA (Enterprise for Management of Environmental Protection activities, a fund operated by the Ministry of Environment and Water).<sup>240</sup>

#### ➤ Water Consumption Charges

- Residential and commercial consumers are charged for the consumption of water. Different prices are charged in different cities. For example, in Sofia a volumetric pricing system is in place, made up of the following three components:
  - Water supply: BGN 0.99 (€0.51) per m<sup>3</sup>;
  - Sewerage collection: BGN 0.20 (€0.10) per m<sup>3</sup>; and
  - Wastewater treatment: BGN 0.28 (€0.14) per m<sup>3</sup>.
- For residential and commercial consumers the tariffs are regulated for each individual water and wastewater operators (a total of 62 including more than 20 regional companies, some municipal companies, 1 private operator in Sofia and several large industrial companies who treat municipal water) by the state regulator: the State Commission for Energy and Water Regulation (SCEWR).
- The tariffs are calculated taking into account the “necessary annual income” for each company to operate without a loss, the metered volumes of supplied water and collected and treated wastewater (supplied drinking water is metered at the household while wastewater is only metered at central collectors and wastewater treatment plants, if at all, or is calculated based on the supplied water), as well as certain allowances for drinking water losses and sewerage groundwater infiltration. Industrial companies sign individual contracts with their water and wastewater operators, which also use SCEWR-regulated tariffs for treatment of wastewater. These are much higher and depend on the level of pollution of the wastewater.

## 5.4 Modelled Changes in Tax Base

The modelled change in the tax base for each of the suggested reforms to the tax system are shown in the table and figures below.

---

<sup>239</sup> Ministry of Environment and Water (2012) *Tariff of Fees for Water Use*, 1<sup>st</sup> January 2012

<sup>240</sup> EMEPA (2013) *Report of the Company for Management Activities Environmental Protection in 2013*, February 4<sup>th</sup> 2013, [http://pudoos.bg/wp-content/uploads/2014/03/GOD-OT4ET-2013\\_FINAL.doc](http://pudoos.bg/wp-content/uploads/2014/03/GOD-OT4ET-2013_FINAL.doc)

Table 5-2: Change in Energy Tax Base

Fuel Type	Units	Baseline	After Tax Increase	Change
Gas Oil	million litres	993	979	-14
Petrol	million litres	319	319	0
Kerosene	million litres	95	95	0
LPG	thousand tonnes	157	141	-16
Heavy Fuel Oil	thousand tonnes	32	31	-1
Natural Gas	TJ (GCV)	21,973	20,481	-1,492
Coal	thousand tonnes	1,309	1,303	-6
Electricity	GWh	12,941	12,941	0

Figure 5-1: Change in Internal Passenger Flights, flights per year

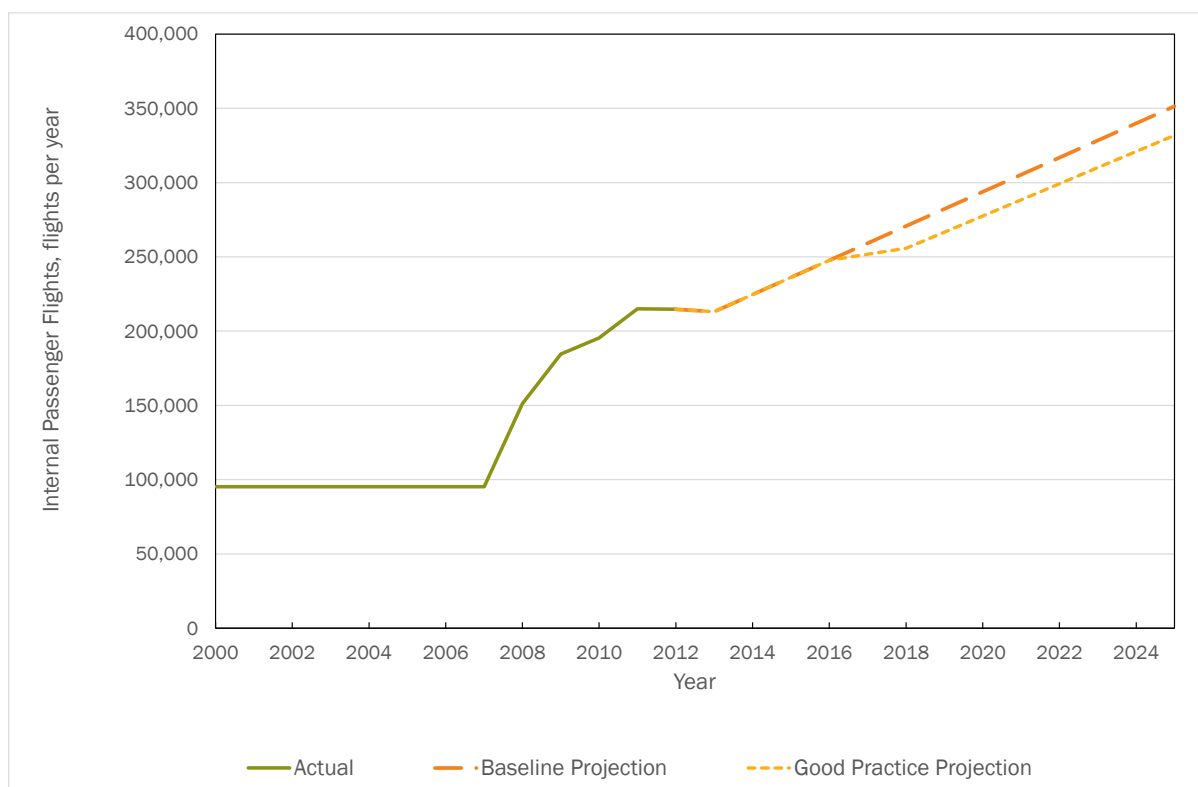


Figure 5-2: Change in Intra-EU Passenger Flights, flights per year

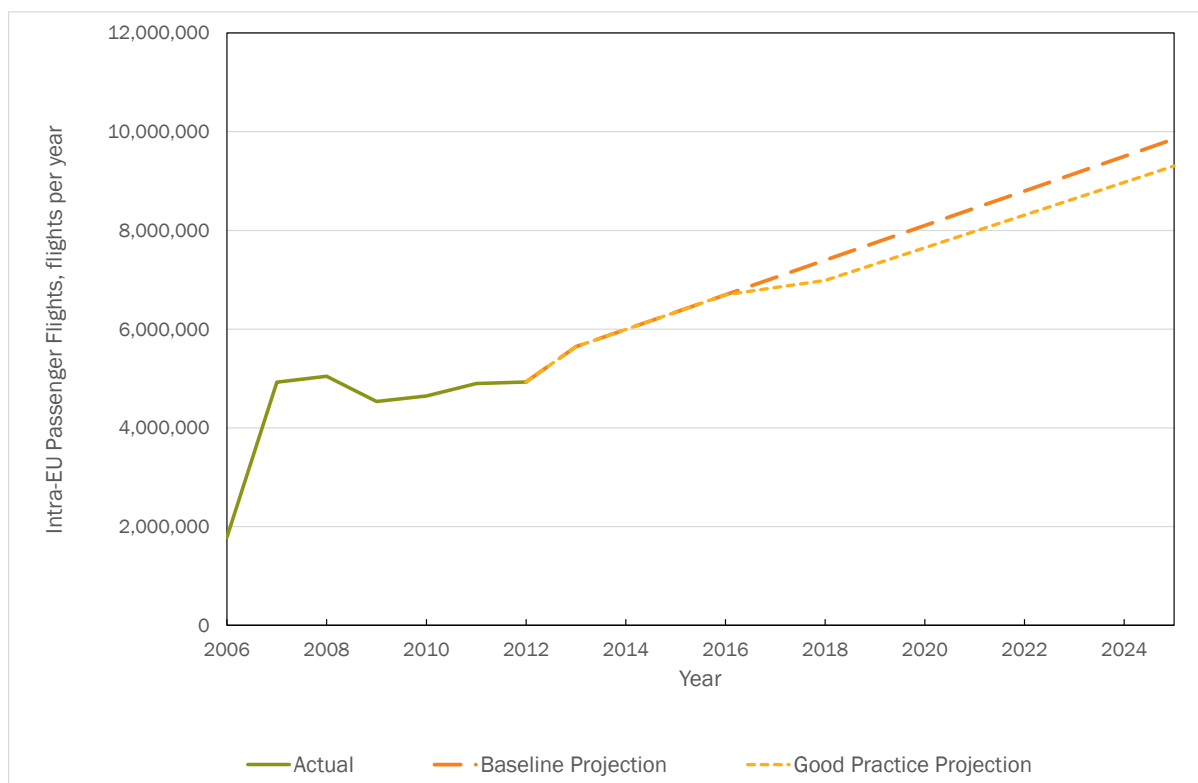




Figure 5-3: Change in Extra-EU Passenger Flights, flights per year

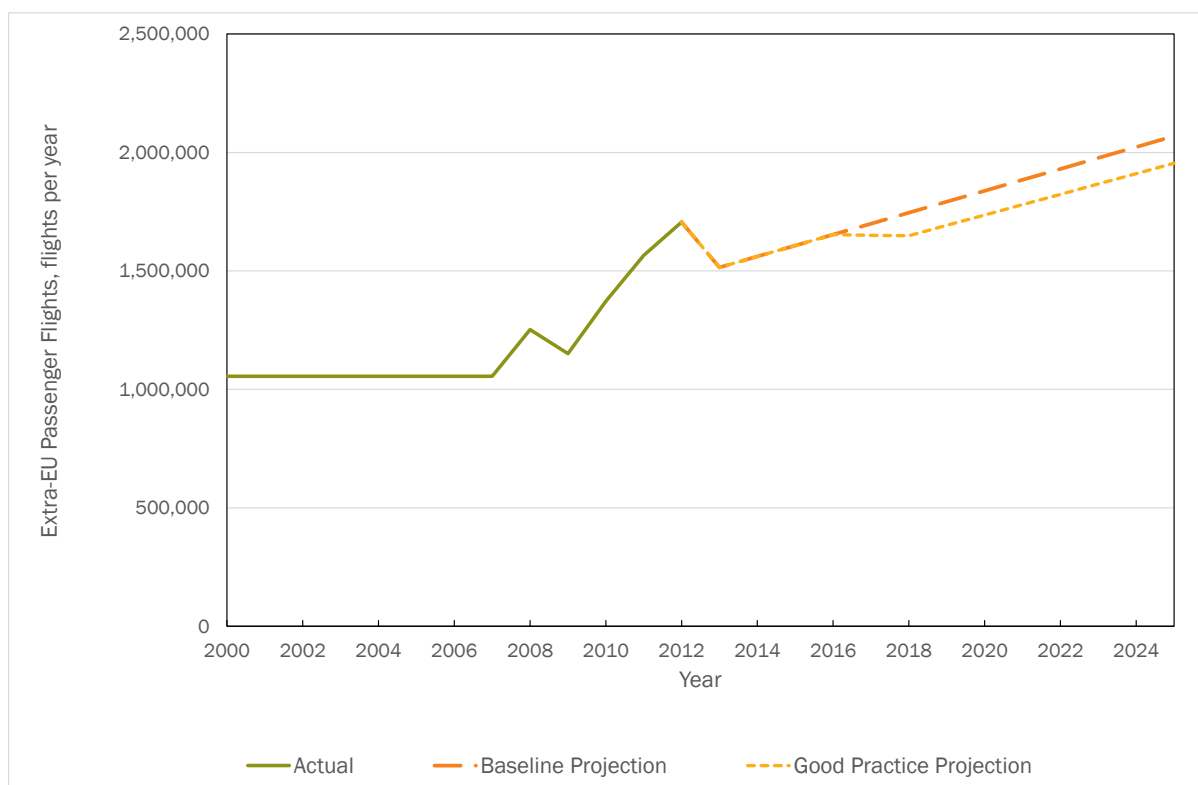


Figure 5-4: Change in Internal Air-freight, tonnes



Figure 5-5: Change in Intra-EU Air-freight, tonnes

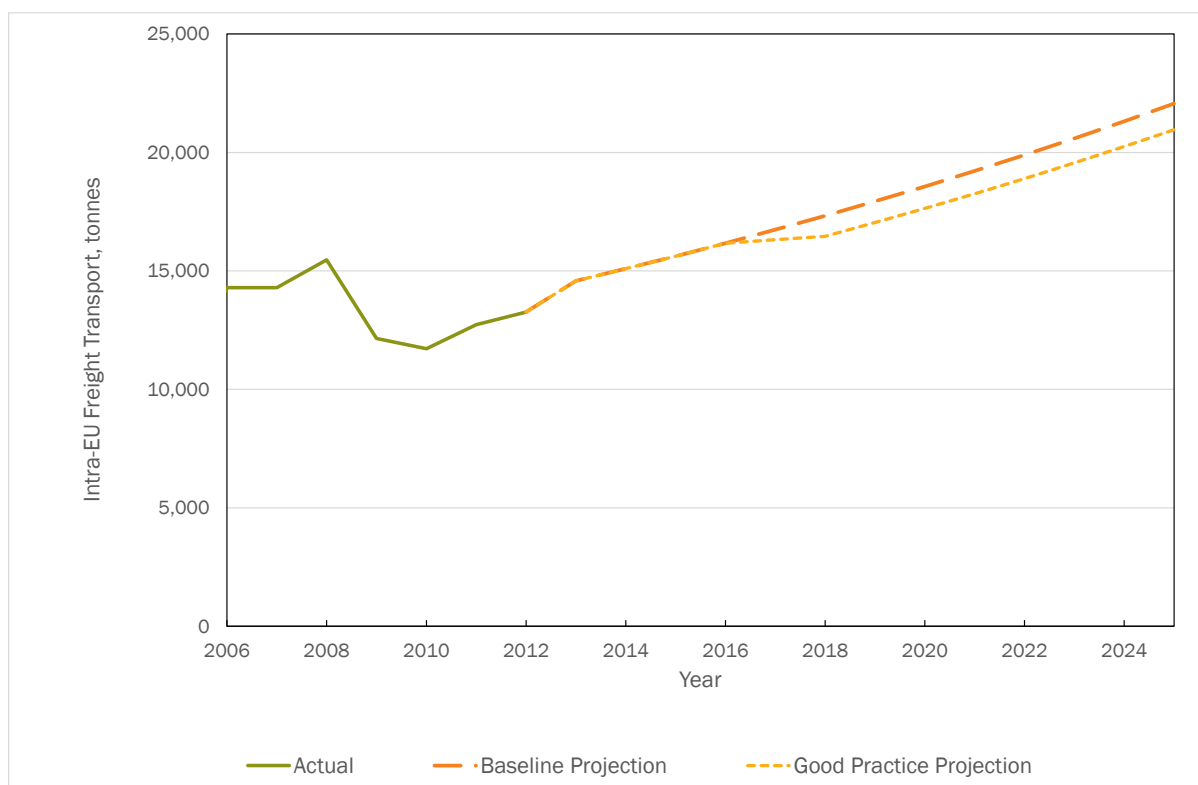


Figure 5-6: Change in Extra-EU Air-freight, tonnes



Figure 5-7: Change in Non-Hazardous Waste Landfilled, thousand tonnes

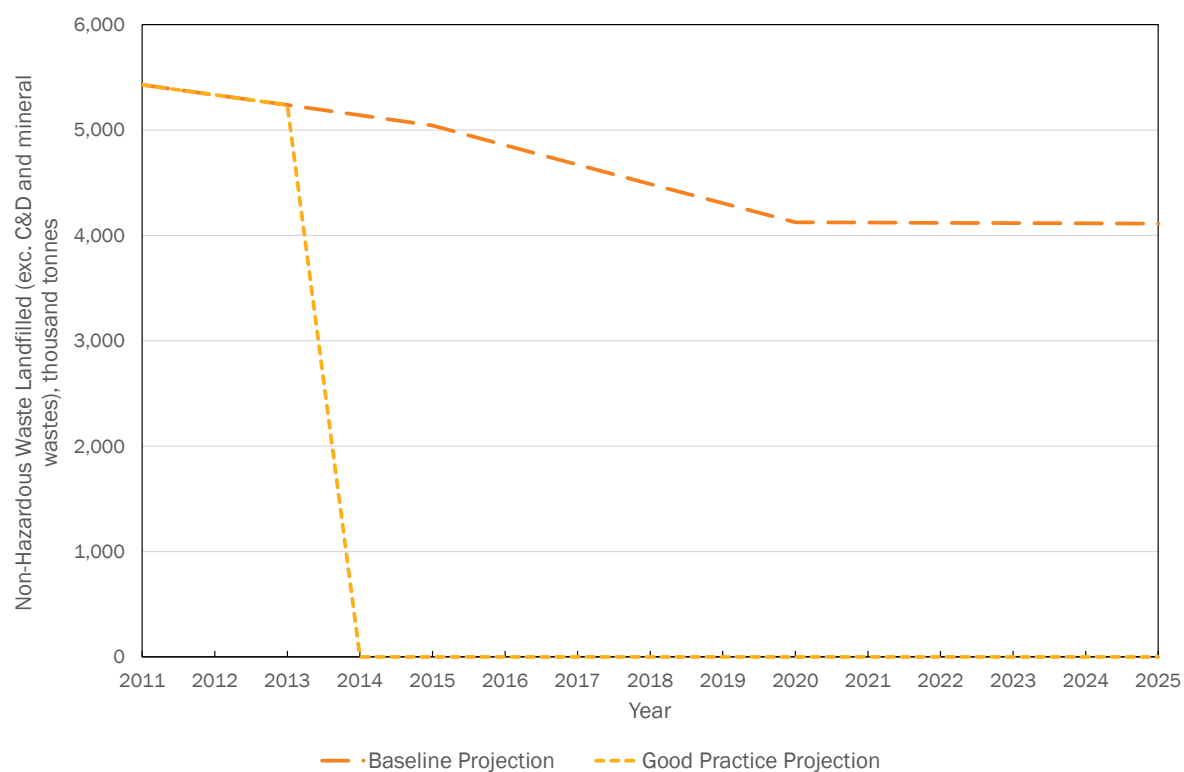


Figure 5-8: Change in MBT/ Incineration, thousand tonnes

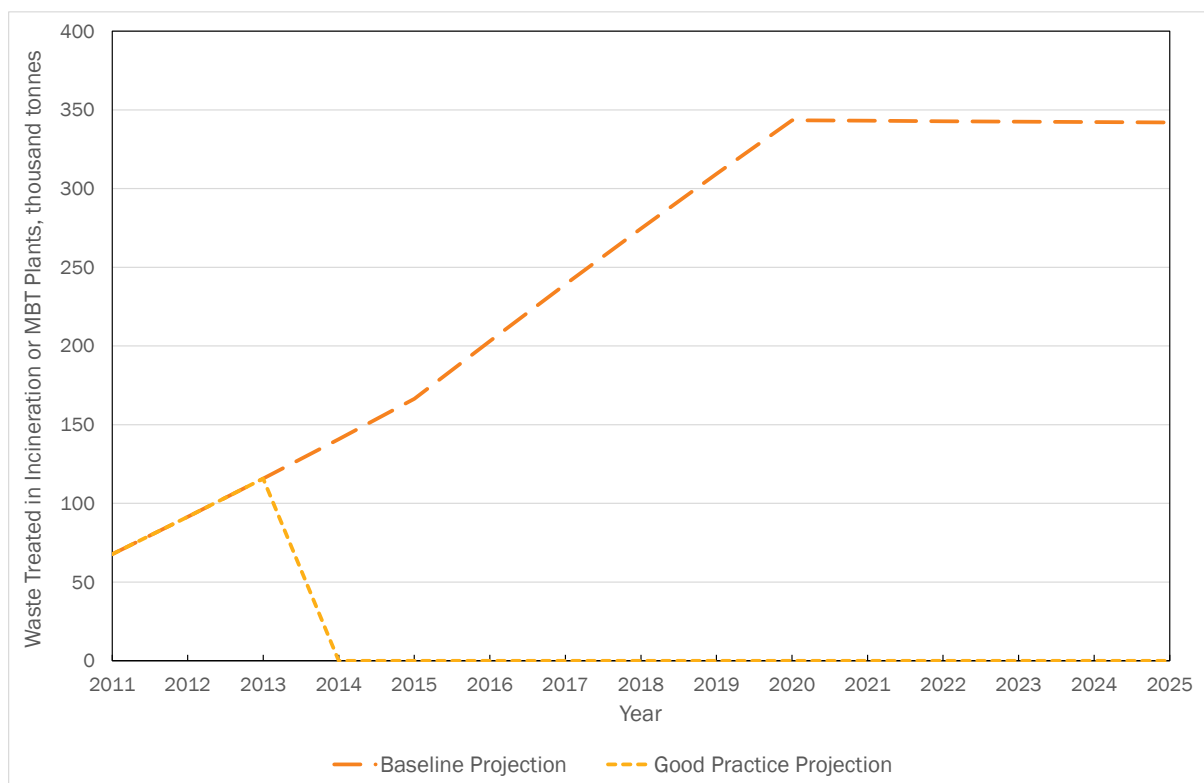


Figure 5-9: Change in SOx Emissions, tonnes

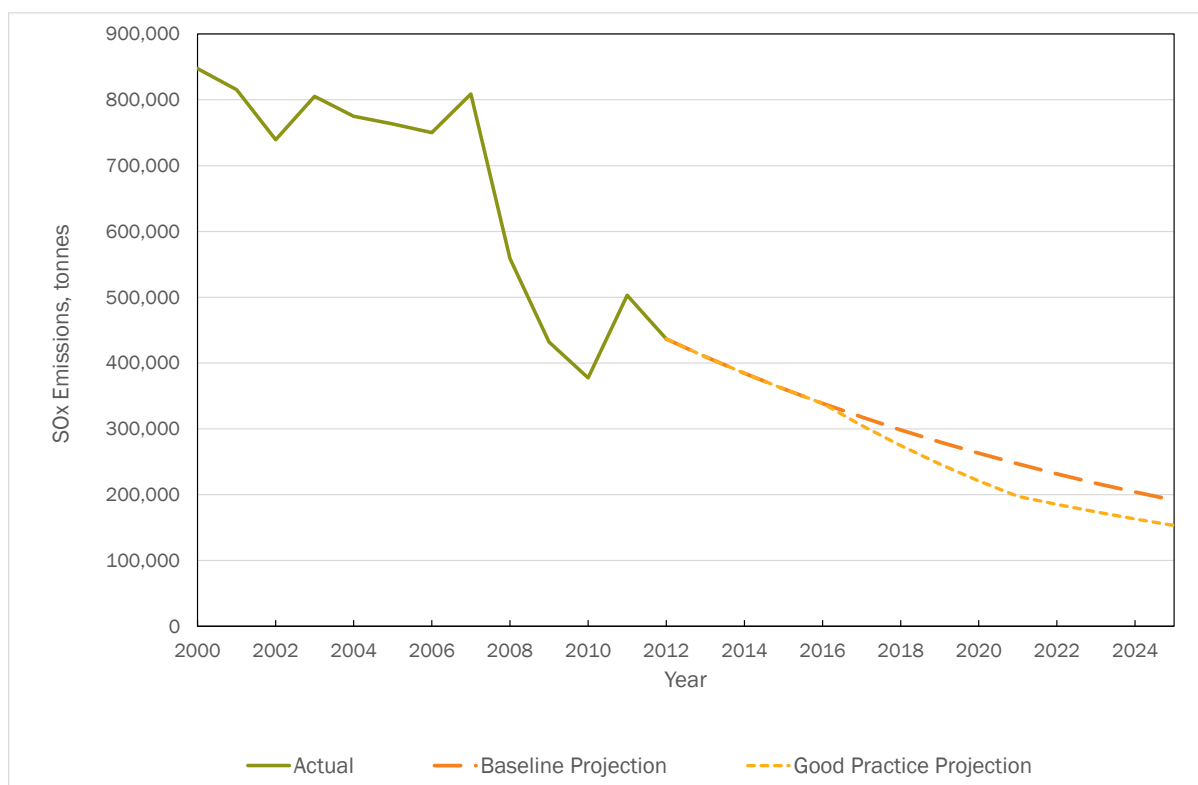


Figure 5-10: Change in NOx Emissions, tonnes



Figure 5-11: Change in PM<sub>10</sub> Emissions, tonnes

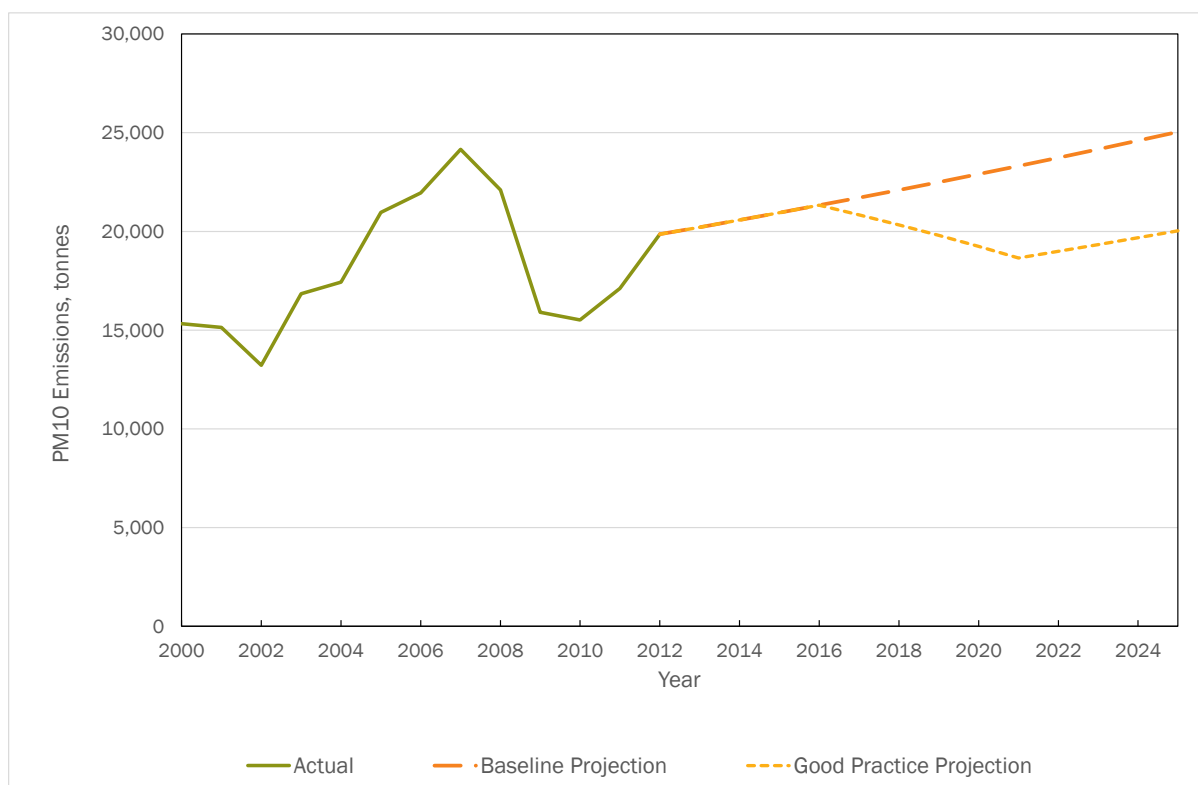


Figure 5-12: Change in Groundwater Abstraction – Public Supply, million cubic metres

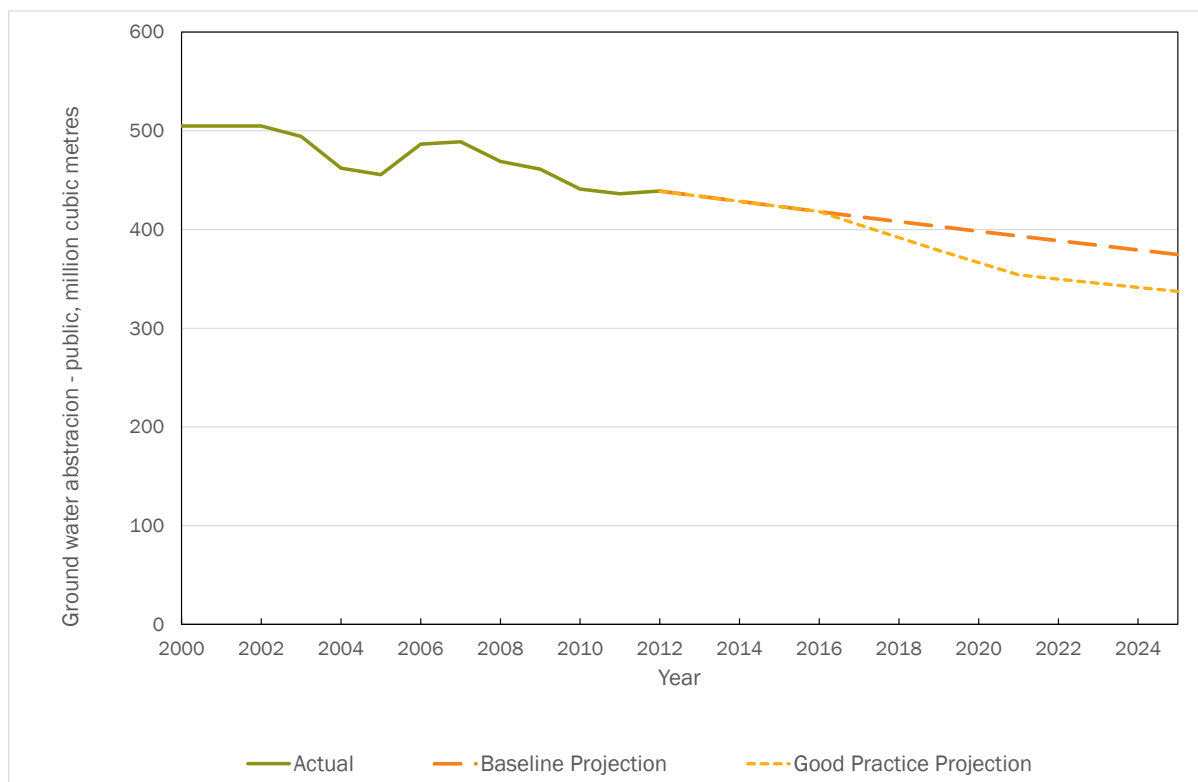


Figure 5-13: Change in Groundwater Abstraction – Manufacturing, million cubic metres

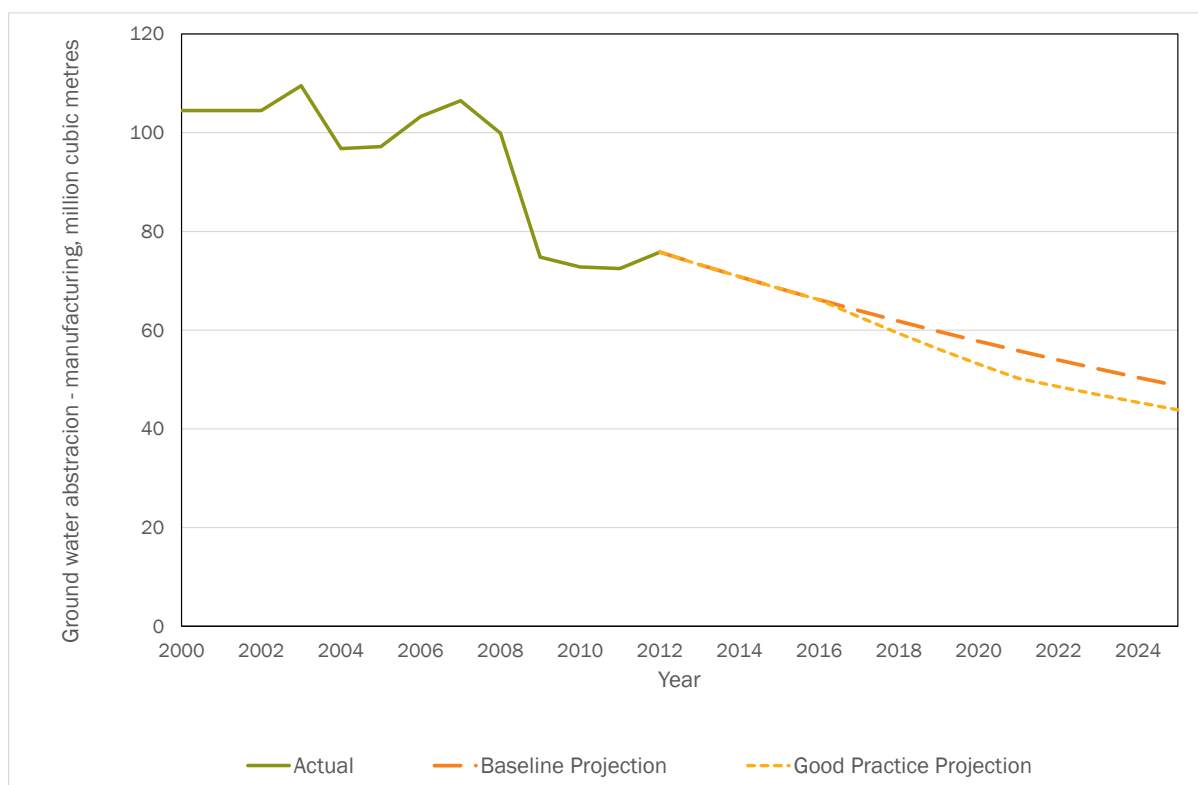


Figure 5-14: Change in Groundwater Abstraction – Agriculture, million cubic metres

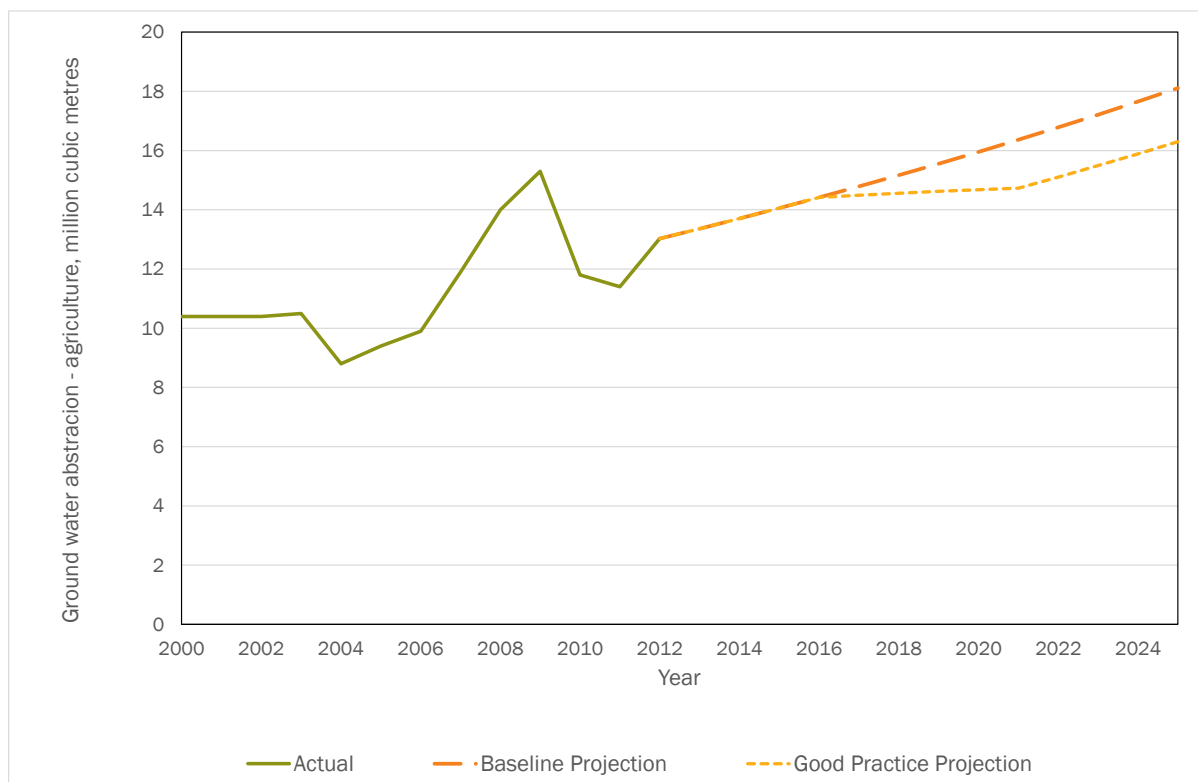


Figure 5-15: Change in Surface Water Abstraction – Public Supply, million cubic metres

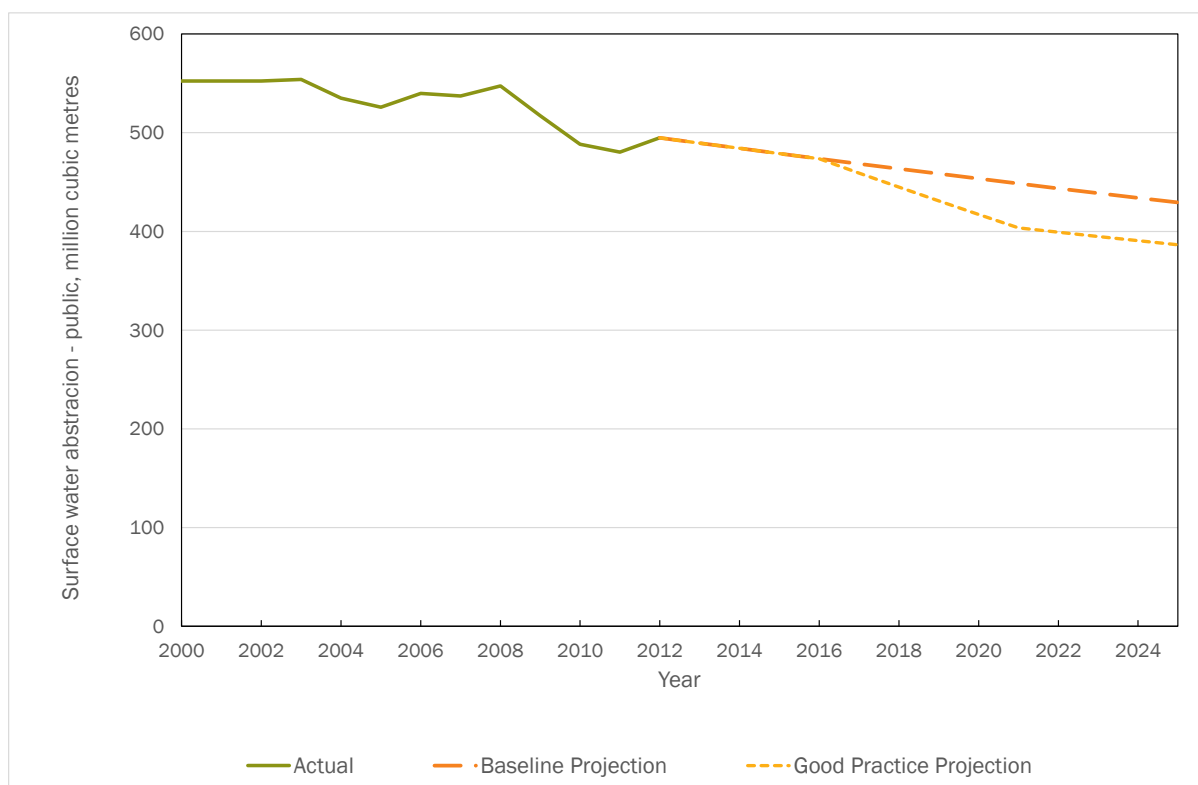


Figure5-16: Change in Surface Water Abstraction – Manufacturing, million cubic metres

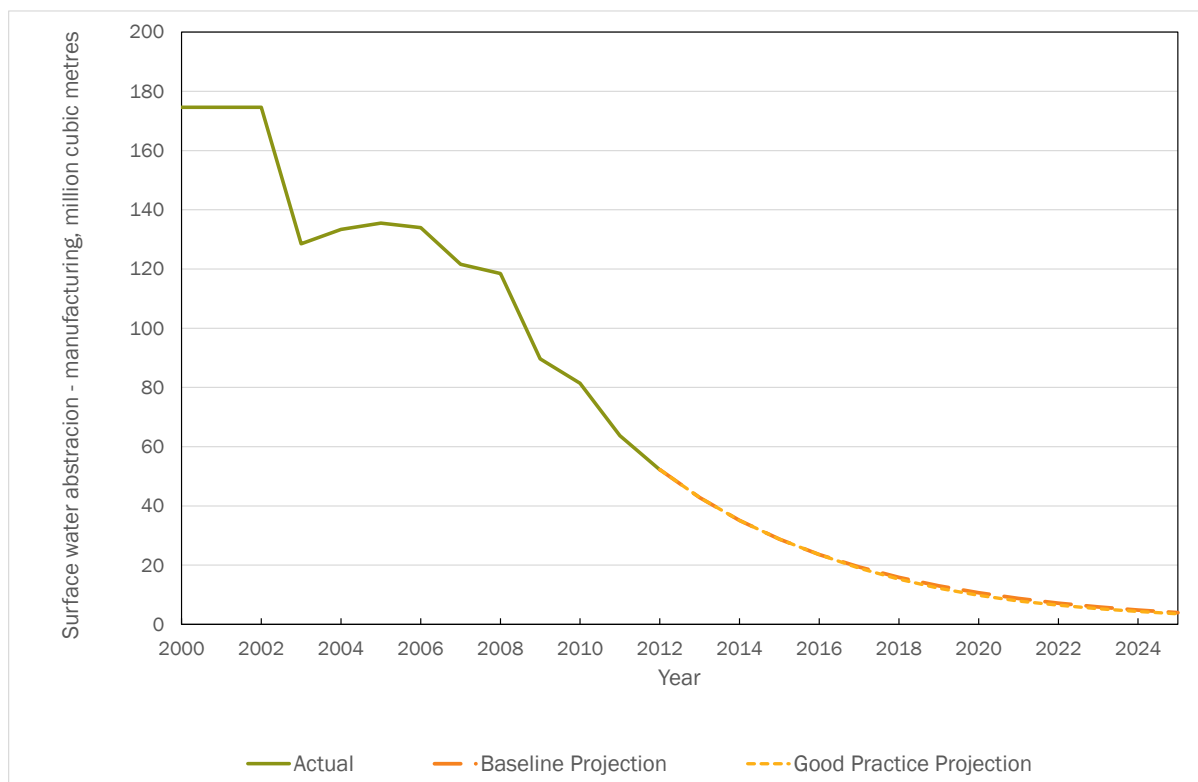


Figure 5-17: Change in Surface Water Abstraction – Agriculture, million cubic metres

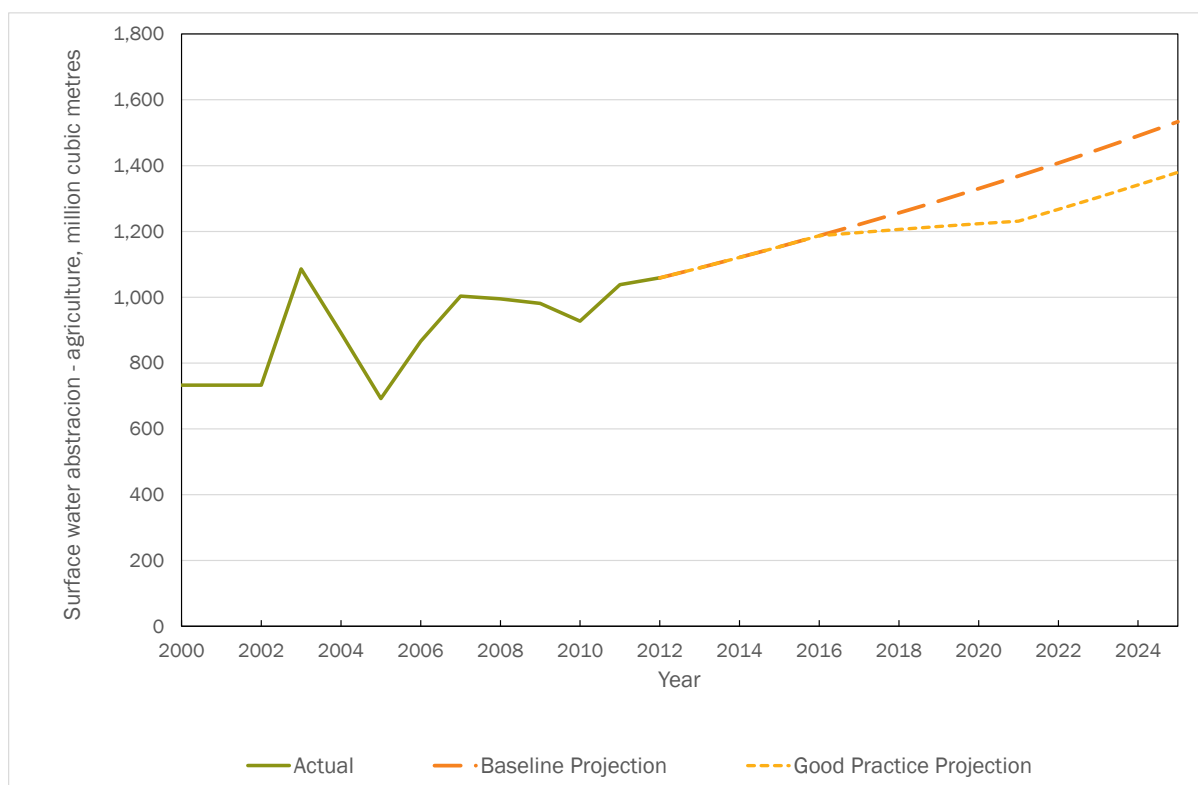


Figure 5-18: Change in Active Ingredients in Pesticides, tonnes

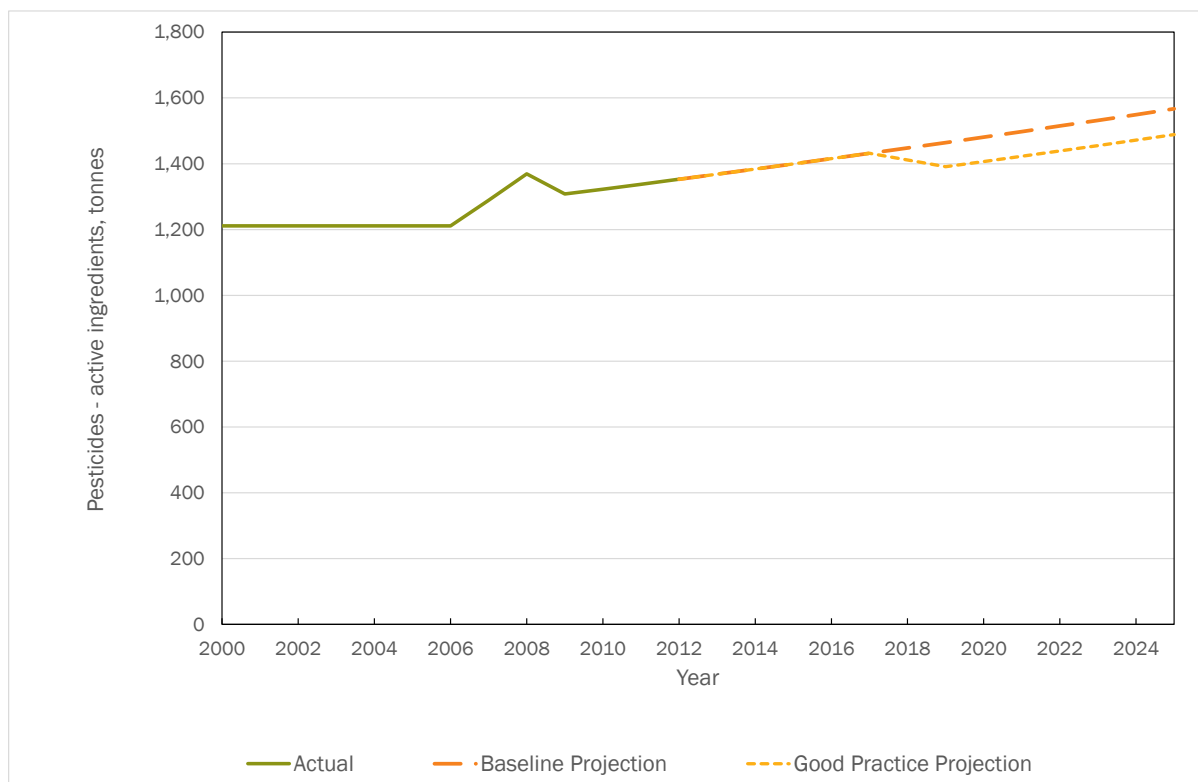




Figure 5-19: Change in Non-organic Nitrogen Sales of Fertilisers, tonnes



Figure 5-20: Change in Aggregates Extraction, thousand tonnes

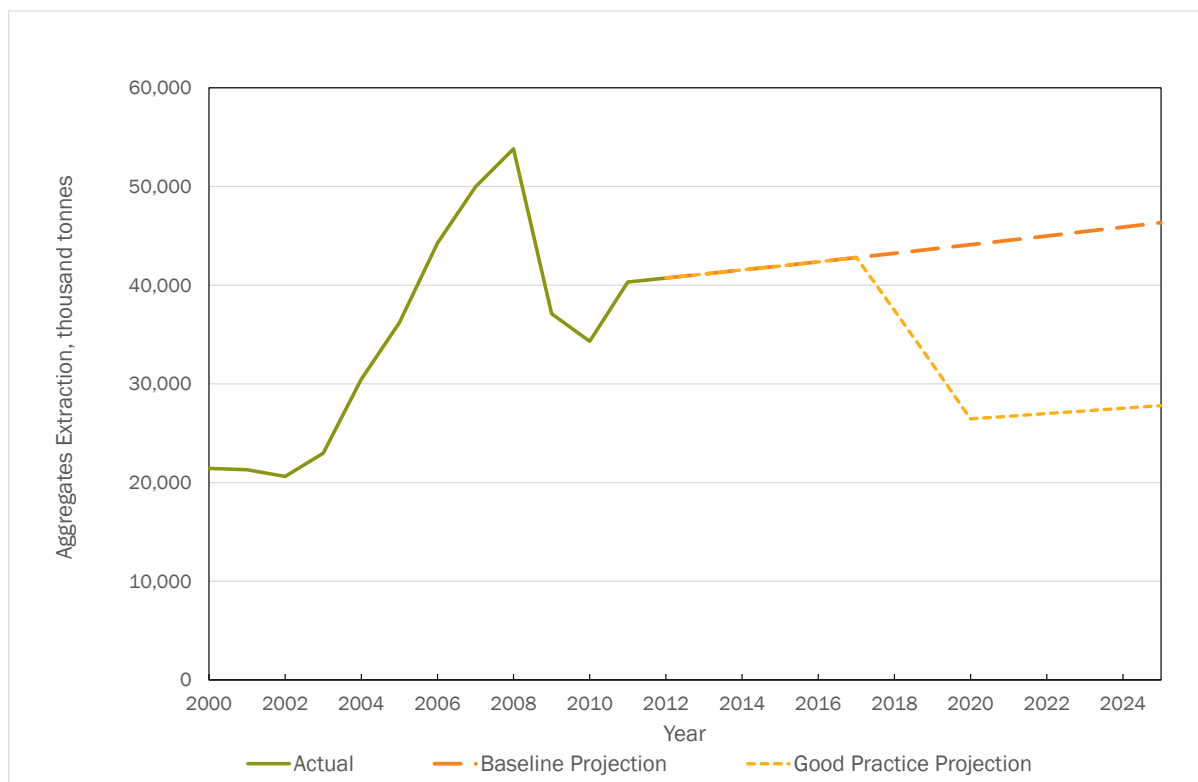


Figure 5-21: Change in Paper & Card Packaging Generation, thousand tonnes

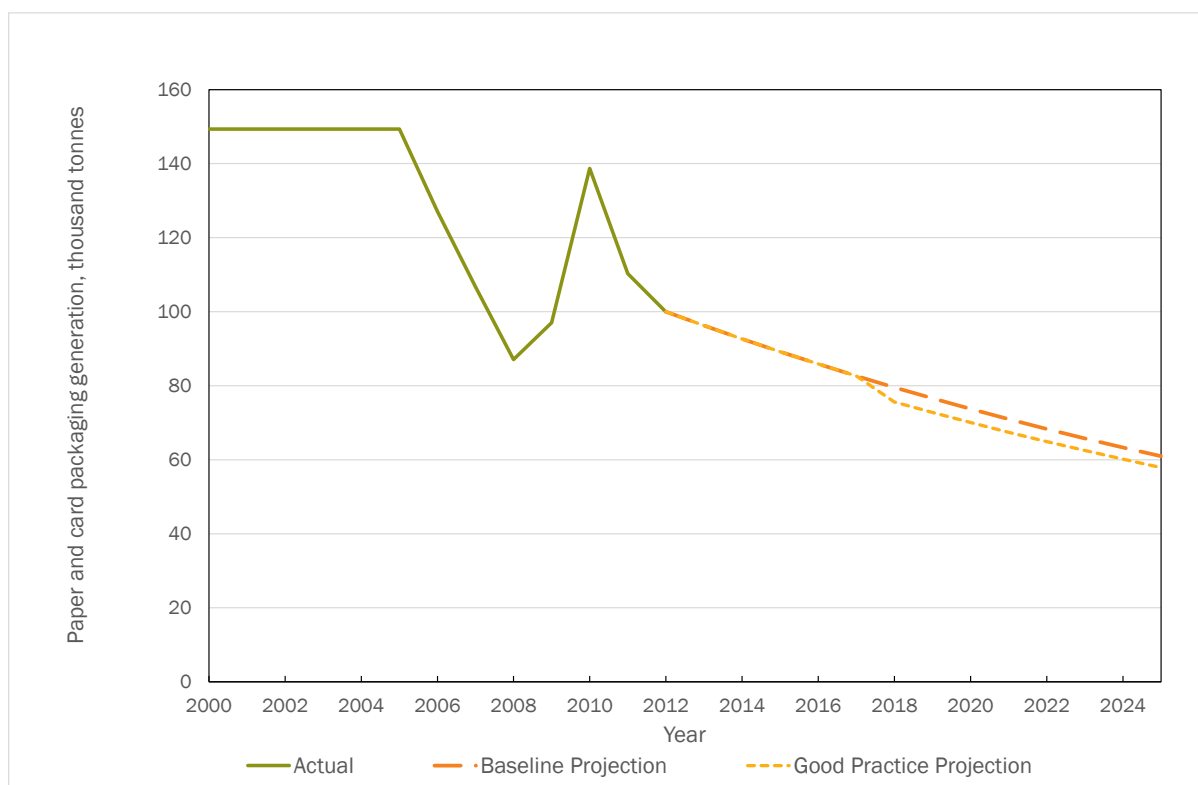


Figure 5-22: Change in Plastic Packaging Generation, thousand tonnes

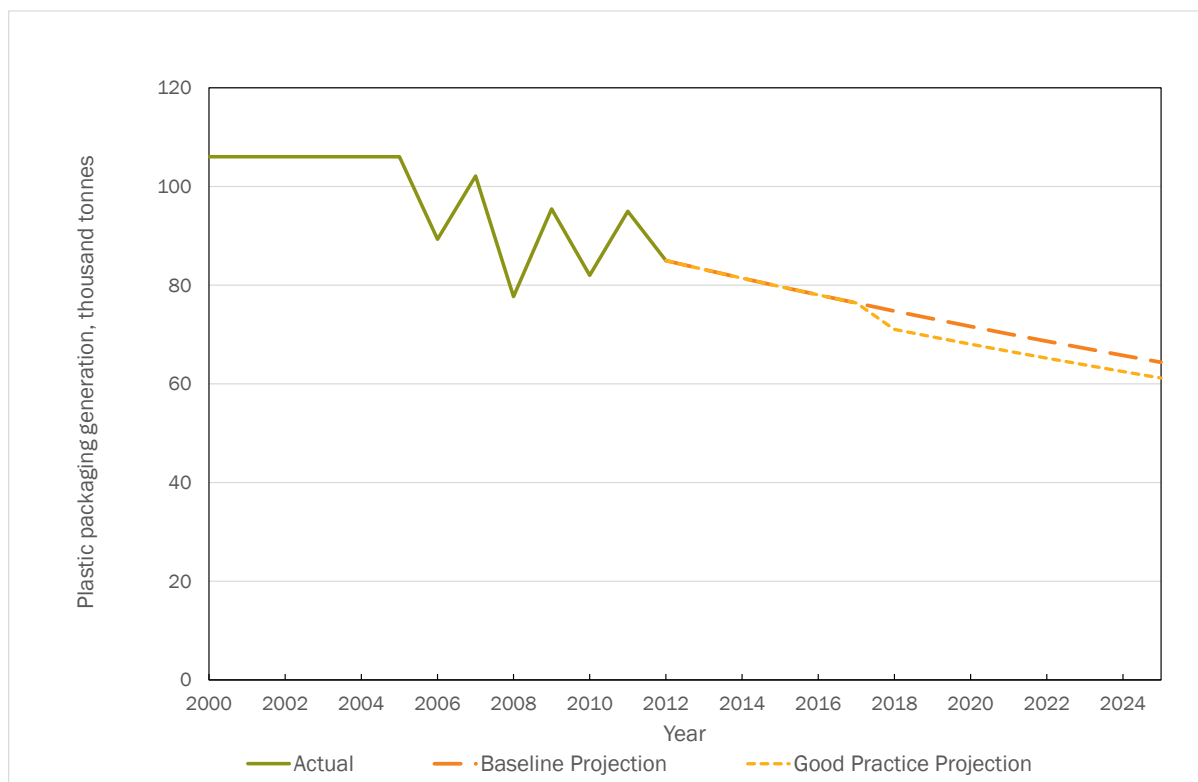


Figure 5-23: Change in Wood Packaging Generation, thousand tonnes

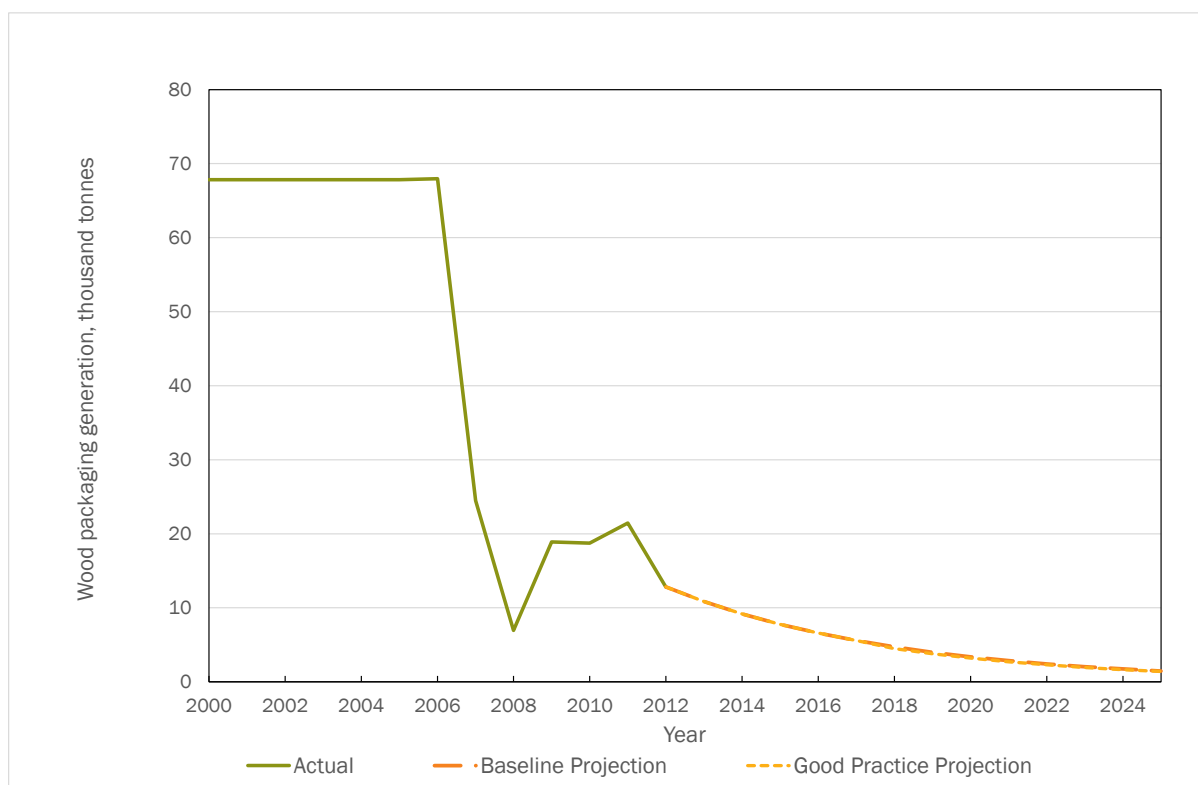


Figure 5-24: Change in Metal Packaging Generation, thousand tonnes

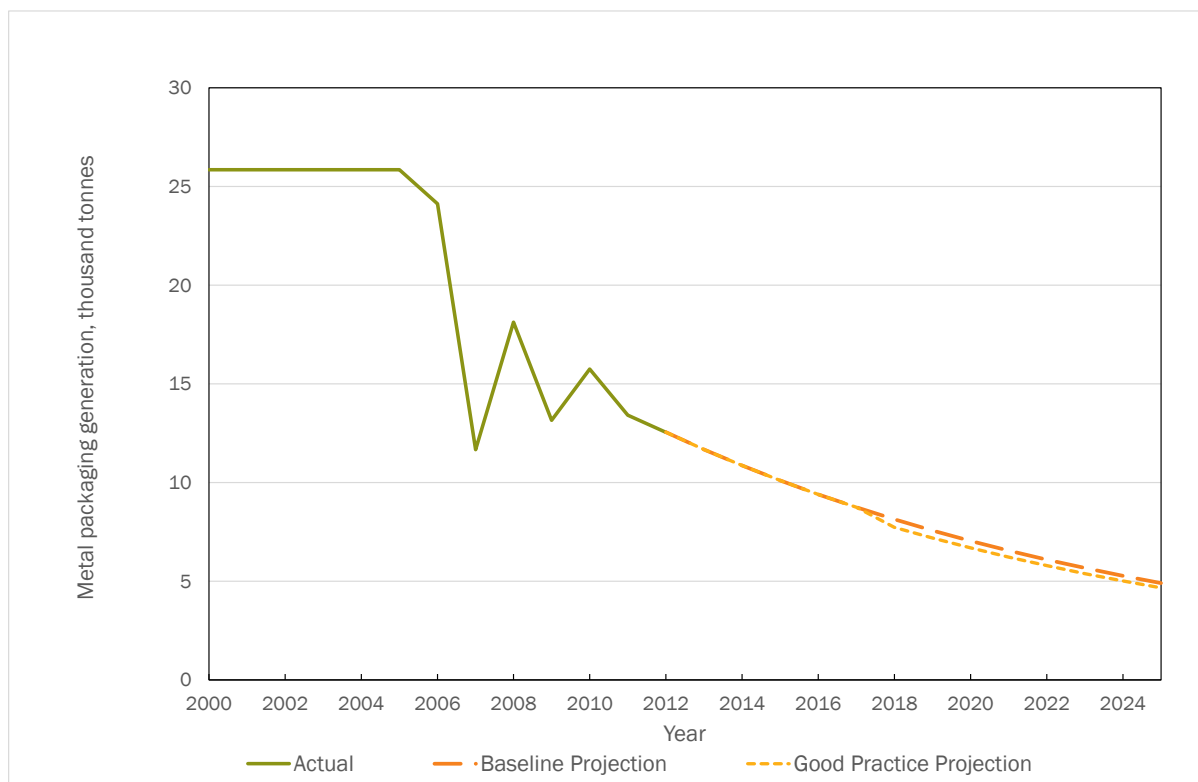


Figure 5-25: Change in Glass Packaging Generation, thousand tonnes

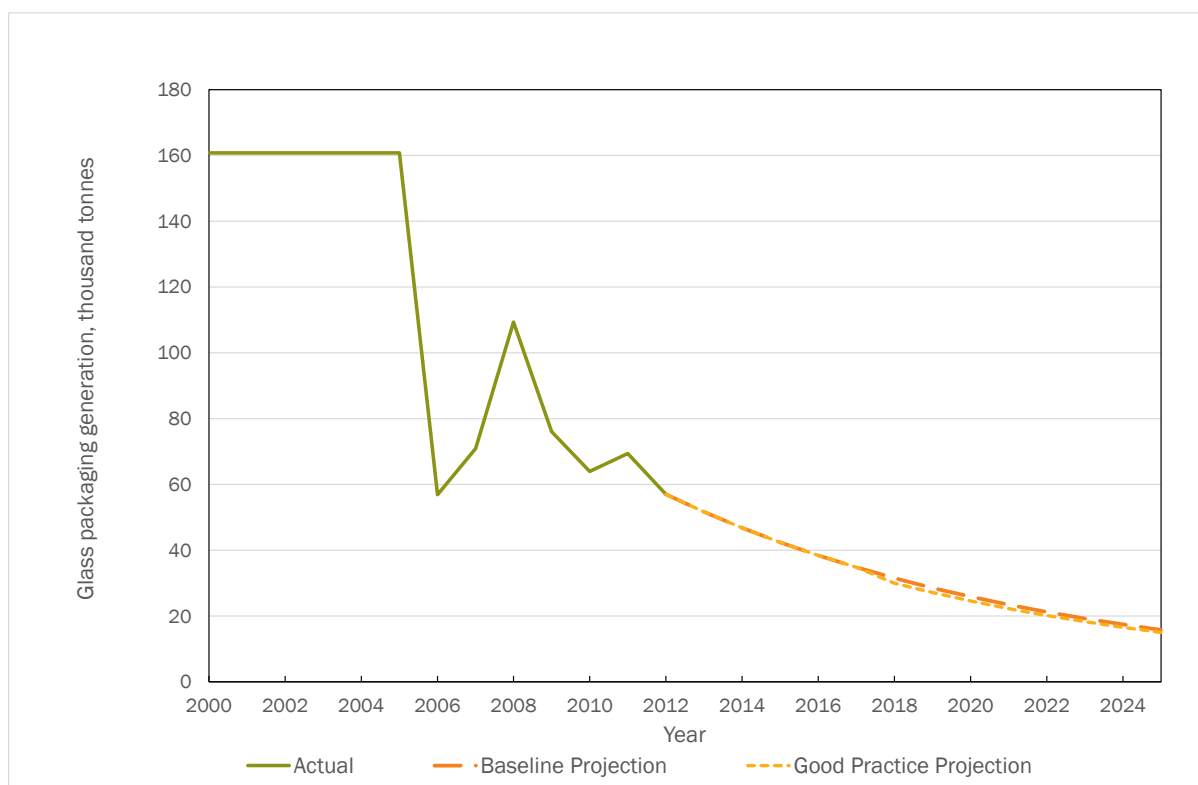
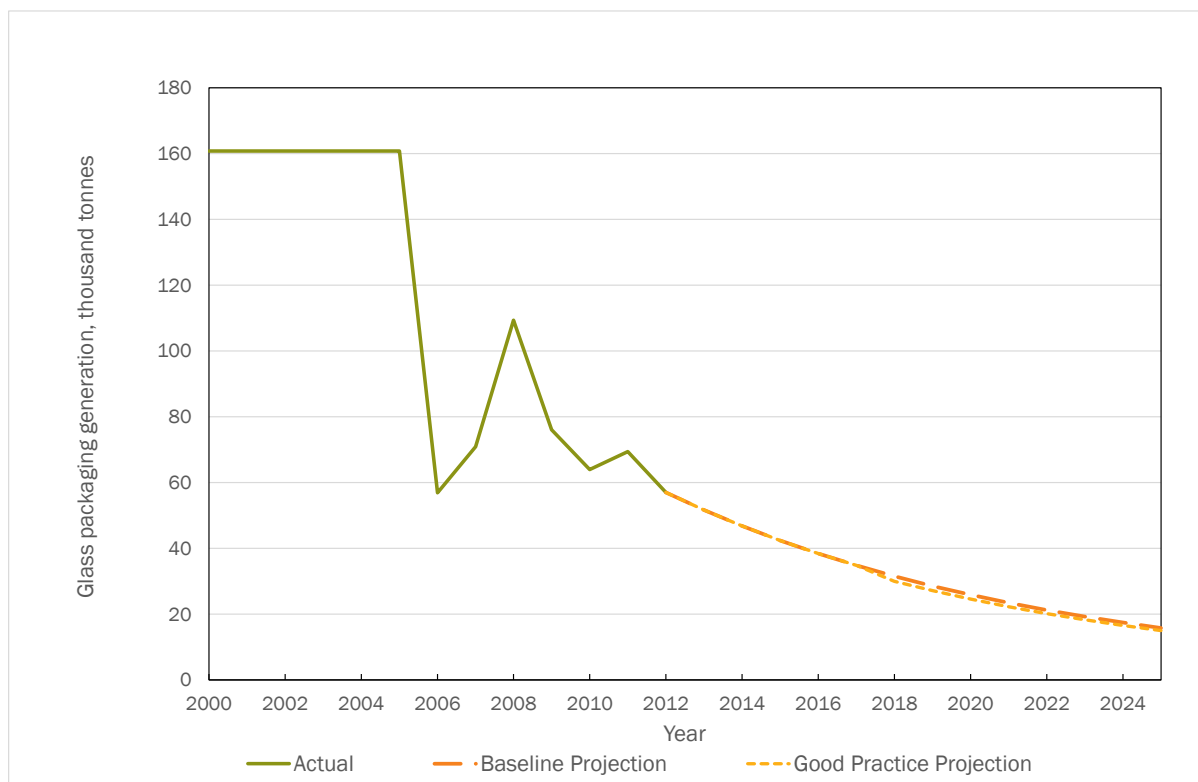


Figure 5-26: Change in Consumption of Single Use Carrier Bags, million bags



## 5.5 Full Revenue Outputs

A summary of the full revenue outputs for each of the suggested reforms to the tax system are presented in the table below.

Table 5-3: Revenue Outturns from Model, million BGN (real 2014 terms)

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Energy Taxes	Transport fuels	0	0	44	87	128	169	208	247	285	285	285
	C&I / Heating	0	0	76	151	151	151	151	151	151	151	151
	Electricity	0	0	0	0	0	0	0	0	0	0	0
	<b>Sub-total Energy, million BGN</b>	0	0	120	238	280	320	360	399	437	437	437
	<b>Sub-total Energy, % GDP</b>	0.0%	0.0%	0.1%	0.3%	0.3%	0.4%	0.4%	0.5%	0.5%	0.5%	0.5%
Transport Taxes (excluding transport fuels)	Vehicle Taxes	0	0	0	0	0	0	0	0	0	0	0
	Passenger Aviation Tax	0	0	252	510	531	552	573	593	614	635	656
	Freight Aviation Tax	0	0	0	0	0	0	0	0	0	0	0
	<b>Sub-total Transport, million BGN</b>	0	0	252	510	531	552	573	594	614	635	656
	<b>Sub-total Transport, % GDP</b>	0.0%	0.0%	0.3%	0.6%	0.6%	0.7%	0.7%	0.7%	0.7%	0.8%	0.8%
Pollution and Resource Taxes	Landfill Tax - Non-haz (excl. C&D)	0	21	41	60	79	47	9	9	9	9	9
	Landfill Tax - Inerts (C&D)	0	0	0	0	0	0	0	0	0	0	0
	Incineration /MBT Tax	0	1	3	6	8	9	9	9	9	9	9

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Air Pollution Tax	0	183	336	462	565	646	591	568	546	526	507
	Water Abstraction Tax	0	4	7	11	14	17	17	17	17	17	17
	Waste Water Tax	0	12	23	33	32	32	32	32	32	32	32
	Pesticides Tax	0	0	7	14	14	14	14	14	14	14	15
	Aggregates Tax	0	0	201	176	150	124	125	127	128	129	131
	Packaging Tax	0	0	16	14	14	13	13	12	12	12	11
	Single Use Bag Tax	0	0	0	0	0	0	0	0	0	0	0
	Fertiliser Tax	0	0	0	0	0	0	0	0	0	0	0
	<b>Sub-total Pollution &amp; Resource, million BGN</b>	0	221	634	776	876	903	810	788	768	749	732
	<b>Sub-total Pollution &amp; Resource, % GDP</b>	0.0%	0.3%	0.8%	0.9%	1.0%	1.1%	1.0%	0.9%	0.9%	0.9%	0.9%
Total Revenue Stream	<b>Total, million BGN</b>	0	221	1,006	1,525	1,686	1,775	1,743	1,781	1,819	1,821	1,824
	<b>Total, % GDP</b>	0.0%	0.3%	1.2%	1.8%	2.0%	2.1%	2.1%	2.1%	2.2%	2.2%	2.2%

## 6.0 Cyprus

During the course of the study the latest data available from official sources was sought, namely the TAXUD Taxes in Europe database, energy excise duty tables and the OECD database on environmental taxes and charges. This was supplemented by national data sources where possible. Due to the number of taxes and countries involved, the central case for energy excise duties has been the rates published by TAXUD giving the position as of 1st July 2014. Planned future increases may not be fully captured in this analysis and therefore, the projected increase in revenues would effectively incorporate any revenue from increased rates in early 2015 or shortly thereafter.

### 6.1 Energy Taxes

In Cyprus, the following excise duties on energy currently apply.<sup>241</sup> Many of these rates increased significantly in 2013 as a part of fiscal consolidation measures undertaken by the government in order to eliminate its budget deficit as required by the Economic Adjustment Programme that has been implemented since April 2013:

➤ **Petrol:**

- Leaded petrol:
  - Rate (2014): €421.00 per 1,000 litres of fuel
- Unleaded petrol:
  - Rate (2014): €479.00 per 1,000 litres of fuel

➤ **Gas oil (diesel):**

- When gas oil is used as a propellant or for industrial/commercial use, one rate applies:
  - Rate (2014): €450.00 per 1,000 litres of fuel
  - When rate gas oil is used as a motor fuel in a stationary motor, a reduced rate applies: €124.73 per 1,000 litres of fuel.
- When gas oil is used for heating (business and non-business use), a different rate applies:
  - Rate (2014): €124.73 per 1,000 litres of fuel
- Full exemptions from excise duty apply for gas oil used in certain machineries in agricultural, horticultural and piscicultural works and in forestry.

➤ **Kerosene:**

- For kerosene the same rates apply as for gas oil:

---

<sup>241</sup> European Commission - Taxation and Customs Union (2014) *Excise Duty Tables: Part II - Energy Products and Electricity*, July 2014, [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/excise\\_duties/energy\\_products/rates/excise\\_duties-part\\_ii\\_energy\\_products\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/excise_duties/energy_products/rates/excise_duties-part_ii_energy_products_en.pdf)



- Rate (2014): €450.00 per 1,000 litres of fuel for propellant or industrial/commercial use
- When kerosene is used as a motor fuel in a stationary motor, a reduced rate applies: €124.73 per 1,000 litres of fuel.
- Rate (2014): €124.73 per 1,000 litres of fuel for heating, both business and non-business use.
- Full exemptions from excise duty apply for kerosene used in certain machineries in agricultural, horticultural and piscicultural works and in forestry.
- **Heavy fuel oil:**
  - Heating for business and non-business use are taxed the same.
    - Rate (2014): €15.00 per 1,000 kg of fuel
- **Liquefied Petroleum Gas (LPG):**
  - For propellant and industrial/commercial use:
    - Rate (2014): €125.00 per 1,000 kg of fuel
  - LPG for heating, both business and non-business use, is not taxed.
- **Natural Gas:**
  - All uses of natural gas are taxed at the same rate:
    - Rate (2014): €2.60 per GJ
- **Coal and Coke:**
  - Both business and non-business use of coal and coke for heating is taxed at the same rate:
    - Rate (2014): €0.31 per GJ
  - Other uses of coal and coke are not taxed.<sup>242</sup>
- **Electricity:**
  - No excise duty is applied to electricity in Cyprus, however a levy is applied to all uses of electricity (see below for further details). For the purposes of the Energy Tax Directive, Cyprus is considered to be taxing electricity above the minimum rate specified in the Directive, due to the existence of this levy.
- General exemptions to the excise duties include the following:<sup>243</sup>

---

<sup>242</sup> European Commission (2014) *Taxes in Europe Database*, Accessed 14 August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)

<sup>243</sup> Customs & Excise Department (Cyprus) (no date) *Excise Duties - Frequently Asked Questions*, accessed 12 September 2014, <http://www.mof.gov.cy/mof/Customs/customs.nsf/All/722042670E887148C2257BF10032FAD1?OpenDocument>

- Fuels used by the armed forces;
  - Fuels used for the purpose of air and sea navigation (the latter within EU waters only);
  - Fuels used for the production of electricity (minimum 100 MWh per annum);
  - For agricultural, horticultural and piscicultural works and in forestry; and
- Revenue from all excise duties on energy products in 2012 (the latest year for which figures are available): €317 million (equivalent to 1.8% of GDP)<sup>244</sup>
- **Electricity levy ('Tax on Energy Conservation (Funds)'):**<sup>245</sup>
- A levy is applied to all uses of electricity. The income from this levy is dedicated to supporting renewable electricity and energy conservation projects (through the Special Fund for Renewable Energy Sources and Energy Conservation).
  - The levy is collected by the Electricity Authority of Cyprus.
  - Rate: €5.00 per MWh.<sup>246</sup>
  - Revenue from the Electricity Levy in 2012 (the latest year for which figures are available): €21 million (equivalent to 0.12% of GDP).<sup>247</sup>

## 6.2 Transport Taxes (Excluding Transport Fuels)

- **Registration Tax / Vehicle Excise Duty (Φόροι κατανάλωσης):**<sup>248</sup>
- Cars imported into Cyprus are required to pay excise duty (registration tax) before being registered in Cyprus.<sup>249</sup> This is a 'one-off' tax.

---

<sup>244</sup> Eurostat (2014) *Revenue Data by Individual Tax (National Tax List)*, accessed 4 August 2014, [http://ec.europa.eu/taxation\\_customs/taxation/gen\\_info/economic\\_analysis/tax\\_structures/article\\_5985\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/gen_info/economic_analysis/tax_structures/article_5985_en.htm)

<sup>245</sup> Partasides, G. (2013) *Feed-In Tariff Specifications, Features, Amendments, and Current and Future Challenges in Cyprus*, paper given at Third IRENA Assembly Meeting: Workshop on Renewable Energy Policies, 12 January 2013, <https://www.irena.org/DocumentDownloads/2013/January/Workshop/Country%20Case%20Study%20-%20Cyprus%20-%20George%20Partasides.pdf>

<sup>246</sup> European Commission - Taxation and Customs Union (2014) *Excise Duty Tables: Part II - Energy Products and Electricity*, July 2014, [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/excise\\_duties/energy\\_products/rates/excise\\_duties-part\\_ii\\_energy\\_products\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/excise_duties/energy_products/rates/excise_duties-part_ii_energy_products_en.pdf)

<sup>247</sup> Eurostat (2014) *Revenue Data by Individual Tax (National Tax List)*, accessed 4 August 2014, [http://ec.europa.eu/taxation\\_customs/taxation/gen\\_info/economic\\_analysis/tax\\_structures/article\\_5985\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/gen_info/economic_analysis/tax_structures/article_5985_en.htm)

<sup>248</sup> Customs & Excise Department (Cyprus) (2013) *Vehicles from Member States of the European Union - On Payment of Excise Duties and VAT*, accessed 31 August 2014, <http://www.mof.gov.cy/mof/Customs/customs.nsf/All/505369EB35BEDE8B422579040055CC92?OpenDocument>

<sup>249</sup> This is in addition to customs duties, which vehicles from outside the EU must also pay.

- The level of taxation is based on the CO<sub>2</sub> emissions, engine capacity or, in the case of a few specific vehicles, the value of the vehicle.
- Prior to September 2013, the tax rate was mainly based on engine capacity and to a lesser extent on CO<sub>2</sub> emissions.
- Electric vehicles and hybrids are exempt from the excise duty, as are trucks, buses and vehicles with more than 9 seats.
- The level of the duty is reduced for used vehicles according to specific measures issued by the Customs Department. This takes the age, type, condition and mileage of the vehicle into account and is also applicable to motorcycles.
- The basic rates of the excise duty are outlined in Table 6-1. Additionally, regardless of any relief of the excise duty (in respect of used vehicles) an additional €0.02 per cc of engine capacity is charged for each vehicle.
- Revenue in 2013 (the latest year for which figures are available): €14.8 million (equivalent to 0.09% of GDP). Revenue from vehicle excise duties has steadily decreased since 2008, when they were €133 million (equivalent to 0.78% of GDP).<sup>250</sup>

➤ **Road Tax (for a Circulation License):**<sup>251</sup>

- Cars registered in Cyprus are required to pay an annual 'road tax' in order to receive a circulation license.
- All vehicles are required to pay this tax, including both public and private vehicles.
- Prior to 2014, the rate was determined based on the type of vehicle, engine size and CO<sub>2</sub> emissions.
- The tax was amended with effect from 1 January 2014. Vehicles registered in Cyprus after this date pay according to the CO<sub>2</sub> emissions of the vehicle, whilst vehicles registered prior to this date pay the same rate as prior to 2014 (based on engine size), though with an added malus payment depending on CO<sub>2</sub> emissions and engine size.
- Rates and other discounts and exemptions are outlined in Table 6-2.
- Revenue in 2012 (the latest year for which a total figure is available): €91.9 million (equivalent to 0.52% of GDP).<sup>252</sup> This revenue is derived from €28.6 million received for public use vehicles and €63.3 million for

---

<sup>250</sup> Eurostat (2014) *Revenue Data by Individual Tax (National Tax List)*, accessed 4 August 2014, [http://ec.europa.eu/taxation\\_customs/taxation/gen\\_info/economic\\_analysis/tax\\_structures/article\\_5985\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/gen_info/economic_analysis/tax_structures/article_5985_en.htm)

<sup>251</sup> Cyprus Advanced Driving and Road Safety Network (2014) *Road Tax - Circulation Licence*, accessed 31 August 2014, [http://www.cyprusdriving.net/documents/Road\\_Tax\\_Cyprus.php](http://www.cyprusdriving.net/documents/Road_Tax_Cyprus.php)

<sup>252</sup> Eurostat (2014) *Revenue Data by Individual Tax (National Tax List)*, accessed 4 August 2014, [http://ec.europa.eu/taxation\\_customs/taxation/gen\\_info/economic\\_analysis/tax\\_structures/article\\_5985\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/gen_info/economic_analysis/tax_structures/article_5985_en.htm)

private use vehicles. Revenue for 2013 for public use vehicles was €26.5 million.<sup>253</sup>

Additionally, there are a number of fees and charges relating to transport in Cyprus, all of which are considered 'taxes' within a variety of sources (e.g. they appear in Eurostat's National Tax List and are discussed as taxes in academic literature). This study does not consider these as taxes, but outlines them here for completeness:

➤ **Registration fee for all vehicles since January 2014:** <sup>254</sup>

- Rate: €150 per vehicle.
- Prior to January 2014, this fee was based on the type of vehicle and its engine power and generated a more substantial amount of income.<sup>255</sup>
- The change in fee was due to car owners from other EU member states being charged registration fees twice (once in the country their vehicles was originally registered in and once in Cyprus). Following a series of lawsuits against the Cypriot state the fee was changed and is now the same for all vehicle types and is not paid by owners who have already paid a registration fee in another EU member state.
- Revenue in 2012 (the latest year for which figures are available): €10.4 million (equivalent to 0.06% of GDP). This revenue is derived from €1.6 million received for public use vehicles and €8.8 million for private use vehicles. This is down from €36.5 million total received in 2008 (equivalent to 0.21% of GDP).<sup>256</sup>

➤ **Fees for driving licences and road use permits:**

- Rate: unknown.
- Revenue for driving licences: €1.8 million in 2012 (equivalent to 0.01% of GDP). Revenue for road use permits: €0.3 million in 2012 (equivalent to 0.002% of GDP).<sup>257</sup>

---

<sup>253</sup> European Commission (2014) *Taxes in Europe Database*, Accessed 14 August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)

<sup>254</sup> Τμήμα Οδικών Μεταφορών (Road Transport Department) (no date) *Οχήματα - Τέλος Εγγραφής (Vehicles - Registration Fee)*, accessed 3 September 2014, <http://www.mcw.gov.cy/mcw/RTD/rtd.nsf/All/FFDD4D44F29E862DC2257824002B1F92?OpenDocument>

<sup>255</sup> Adamou, A., and Clerides, S. (2013) Tax Reform in the Cypriot Road Transport Sector, *Cyprus Economic Policy Review*, Vol.7, No.1, pp.87–114

<sup>256</sup> Eurostat (2014) *Revenue Data by Individual Tax (National Tax List)*, accessed 4 August 2014, [http://ec.europa.eu/taxation\\_customs/taxation/gen\\_info/economic\\_analysis/tax\\_structures/article\\_5985\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/gen_info/economic_analysis/tax_structures/article_5985_en.htm)

<sup>257</sup> Eurostat (2014) *Revenue Data by Individual Tax (National Tax List)*, accessed 4 August 2014, [http://ec.europa.eu/taxation\\_customs/taxation/gen\\_info/economic\\_analysis/tax\\_structures/article\\_5985\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/gen_info/economic_analysis/tax_structures/article_5985_en.htm)

➤ **Additional transport ‘taxes’ included within the Eurostat National Tax List include:**<sup>258</sup>

- Ship registration fees (revenue in 2012: €1.3 million, equivalent to 0.007% of GDP);
- Fees for professional licenses of road transporters (revenue in 2012: €0.0 million);
- Ships’ wireless licence fees (revenue in 2012: €0.1 million, equivalent to 0.001% of GDP); and
- Tax on ship management services (revenue in 2012: €1.9 million, equivalent to 0.011% of GDP).

There are no air transport taxes in Cyprus.

**Table 6-1: Vehicle Excise Duty (Cyprus, 2014)** <sup>259</sup>

Category A <sup>1</sup>			
CO <sub>2</sub> Emissions (g per km)	Minimum	Tax Rate Calculation	Maximum
Up to and including 120	N/A	€0.00	N/A
121 – 150	€25.00	€25 per additional g per km CO <sub>2</sub> emissions above 120	€750.00
151 – 180	€800.00	€750 + €50 per additional g per km CO <sub>2</sub> emissions above 150	€2,250.00
181 and above	€2,650.00	€2250 + €400 per additional g per km CO <sub>2</sub> emissions above 180	None
Category B <sup>2</sup>			
Tax Rate Calculation			
€0.26 per cc (engine size)			
Category C <sup>3</sup>			
Tax Rate Calculation			
15% of the value of the vehicle			

<sup>258</sup> Ibid.

<sup>259</sup> Customs & Excise Department (Cyprus) (2013) *Vehicles from Member States of the European Union - On Payment of Excise Duties and VAT*, accessed 31 August 2014, <http://www.mof.gov.cy/mof/Customs/customs.nsf/All/505369EB35BEDE8B422579040055CC92?OpenDocument>

Motorcycles	
Engine Capacity (cc)	Tax Rate
600 – 1,000	€1.71 per cc
1,001 and above	€2.56 per cc
<p>Notes:</p> <p>1. Category A includes “motor vehicles classified under CN 8703 21 – 8703 90 (excluding ambulances and hearses as well as pick-up type vehicles with two rows of seats known as double cabins) and Van type motor vehicles classified under CN 8704 with a Gross Vehicle Weight not exceeding 2032 kgs and a net cargo area not exceeding 2 cubic meters.”</p> <p>2. Category B includes “motor vehicles classified under CN 8703 &amp; 8704 with two rows of seats, known as “double cabin”, with a maximum Gross Vehicle Weight not exceeding 3.5 tonnes.”</p> <p>3. Category C includes: “motor vehicles of the “go-kart” type; amphibious motor vehicles, of a gross weight not exceeding 1,000 kg, having three rows of wheels, six-wheel drive and which can transport two to four persons; motor vehicles of the “hovercraft” type designed to travel both on water and on land; motorized caravans of CN Code 8703; old vehicles as specified in the Motor Vehicles and Road Traffic Law of 1972 as amended; and vehicles with four wheels, having the appearance of a motor cycle and which are not registered for the purposes to be driven on public roads.”</p>	

Table 6-2: Annual Road Tax (Cyprus, 2014)<sup>260</sup>

Vehicles registered after 1 January 2014			
CO <sub>2</sub> emissions (g per km)	Minimum	Tax Rate Calculation	Maximum
Up to and including 120	€10.00	€0.50 per g per km CO <sub>2</sub>	€60.00
121 – 150	€63.00	€60 + €3 per additional g per km CO <sub>2</sub> emissions above 120	€150.00
151 – 180	€153.00	€150 + €3 per additional g per km CO <sub>2</sub> emissions above 150	€240.00
181 and above	€248.00	€240 + €8 per additional g per km CO <sub>2</sub> emissions above 180	None
Vehicles (except vans) registered prior to 1 January 2014 <sup>1</sup>			
Basic Tax Rate			
Engine capacity (cc)	Minimum	Tax Rate Calculation	Maximum
Up to and including	~ €10	€0.04272 per cc	~ €62

<sup>260</sup> Cyprus Advanced Driving and Road Safety Network (2014) *Road Tax - Circulation Licence*, accessed 31 August 2014, [http://www.cyprusdriving.net/documents/Road\\_Tax\\_Cyprus.php](http://www.cyprusdriving.net/documents/Road_Tax_Cyprus.php)

1,450			
1,451 – 1,650	~ €87	€0.05980 per cc	~ €99
1,651 – 2,050	~ €198	€0.11960 per cc	~ €246
2,051 – 2,250	~ €297	€0.14523 per cc	~ €326
2,251 and above	~ €443	€0.19649 per cc	None
Vans with a Gross Weight of up to 3.5 tonnes			
Basic Tax Rate			
Engine capacity (cc)	Minimum	Tax Rate Calculation	Maximum
Up and including 1,650	Unknown	€0.05 per cc	€82.50
1,651 and above	€165.10	€0.10 per cc	€299.00
Malus for all vehicles registered prior to 1 January 2014			
Engine Capacity (cc)	CO <sub>2</sub> Emissions (g per km)	Tax Rate	
Up to and including 2,250	Up to and including 100	€12.00	
	101 and above	€22.00	
2,251 and above	N/A	€32.00	
Notes:			
1. Certain types of vehicles are eligible for discounts or maximum tax rate ceilings: <sup>261</sup>			
a. Rates for heavy trucks (up to 12 tonnes) are discounted by 55% - 65%.			
b. Rates for taxis and many types of heavy vehicles are discounted by 65%.			
c. Public buses and tractors are exempt from the tax.			

### 6.3 Pollution and Resource Taxes

There are no pollution or resources taxes in Cyprus, apart from property and land ownership taxes which are not considered in this study.

Although no waste taxes are in place, there are charges for municipal waste disposal. Across all municipalities, the rate does not depend on the amount of waste produced; however, in some areas the rate does depend on the size of the household; in other areas they are flat-rate for all households. As an example, the rate in the municipality in

---

<sup>261</sup> Cyprus Advanced Driving and Road Safety Network (no date) *Cyprus Road Tax Rates*, no date, [http://www.cyprusdriving.net/documents/Road\\_Tax\\_Rates\\_Cyprus.pdf](http://www.cyprusdriving.net/documents/Road_Tax_Rates_Cyprus.pdf)



Nicosia is €159 per household, whereas the rate in Strovolos ranges from €30 to €141 per household.

Additionally, there are also some producer responsibility schemes in place, such as fees for packaging waste (ranging from €21.28 for aluminium to €105.89 for plastic), WEEE and batteries.<sup>262</sup> However, these are out of scope of this work.

➤ **Water Abstraction Charge:**

- Due to its dry climate, Cyprus has a long history of charging for water, with a specific water abstraction charge introduced in 1984, around the same time as when water distribution systems were installed in households. Initially it was charged on a fixed rate basis, but has since been changed to a banded volumetric basis.<sup>263</sup>
- Rates were increased in 2004 following Cyprus' accession to the EU. Following this, prices for irrigation water were standardised across all regions. Prices for water used for irrigation depend on whether they come from a state or private source and what their final use is. Prices (for state sources, using untreated surface water) range from €0.05 - €0.34 per m<sup>3</sup>.<sup>264</sup> Example domestic charges in Nicosia from 1<sup>st</sup> April 2012 are provided in Table 6-3.
- Cost recovery for state owned irrigation infrastructure is reported to be around 40%.<sup>265</sup> A report from 2004 estimated that the level of cost recovery following the rate increases in 2004 would be around 77% by 2007 for irrigation water and 73% by 2005 for domestic water.<sup>266</sup> The national River Basin Management Plan of 2011 revised these to 96% for domestic water and 56% for irrigation water – 41% for state owned

---

<sup>262</sup> IEEP (2013) *Steps to Greening Country Report: Cyprus*, Report for the European Commission, p.11

<sup>263</sup> Ecorys, Cambridge Econometrics, and Cowi (2011) *The Role of Market-Based Instruments in Achieving a Resource Efficient Economy*, Report for European Commission - DG Environment, October 2011, [http://ec.europa.eu/environment/enveco/taxation/pdf/role\\_marketbased.pdf](http://ec.europa.eu/environment/enveco/taxation/pdf/role_marketbased.pdf)

<sup>264</sup> See Table 12 in ARCADIS, InterSus, Fresh Thoughts Consulting, Eco Logic, and TYP SA (2012) *The Role of Water Pricing and Water Allocation in Agriculture in Delivering Sustainable Water Use in Europe*, Report for European Commission Directorate-General for the Environment, February 2012, [www.enorasis.eu/uploads/files/Water%20Governance/role\\_water\\_pricing.pdf](http://www.enorasis.eu/uploads/files/Water%20Governance/role_water_pricing.pdf), p. 98

<sup>265</sup> ARCADIS, InterSus, Fresh Thoughts Consulting, Eco Logic, and TYP SA (2012) *The Role of Water Pricing and Water Allocation in Agriculture in Delivering Sustainable Water Use in Europe*, Report for European Commission Directorate-General for the Environment, February 2012, [www.enorasis.eu/uploads/files/Water%20Governance/role\\_water\\_pricing.pdf](http://www.enorasis.eu/uploads/files/Water%20Governance/role_water_pricing.pdf), p. 81

<sup>266</sup> Delft Hydraulics, Enveco S.A., and D. Argyropoulos & Associates (2004) *Volume 12: Assessment of the Current Levels of Cost Recovery of Water Services*, Report for Ministry of Agriculture, Natural Resources and Environment (Cyprus), December 2004, [http://www.cyprus.gov.cy/moa/wdd/wdd.nsf/0/5200107061E29326C22573750039A08B/\\$file/Volume%2012%20-%20Assessment%20of%20the%20current%20levels%20of%20cost%20recov%20E2%80%A6.pdf](http://www.cyprus.gov.cy/moa/wdd/wdd.nsf/0/5200107061E29326C22573750039A08B/$file/Volume%2012%20-%20Assessment%20of%20the%20current%20levels%20of%20cost%20recov%20E2%80%A6.pdf), page vi



irrigation and 61% for other irrigation infrastructure. Cost recovery for recycled water was estimated at 34%.<sup>267</sup>

Table 6-3: Domestic Water Prices in Nicosia from 1<sup>st</sup> April 2012 (Cyprus, 2014)<sup>268</sup>

Fixed Charge: €7.00 per m <sup>3</sup>	
Bi-Monthly Consumption-Based Charge	
Consumption (m <sup>3</sup> )	Charge (per m <sup>3</sup> )
1 – 10	€0.90
11 – 20	€1.05
21 – 30	€1.25
31 – 40	€1.40
41 – 50	€2.20
51 – 60	€2.90
61 – 70	€3.60
71 – 80	€3.80
81 and above	€5.00

## 6.4 Modelled Changes in Tax Base

The modelled change in the tax base for each of the suggested reforms to the tax system are shown in the table and figures below.

Table 6-4: Change in Energy Tax Base

Fuel Type	Units	Baseline	After Tax Increase	Change
Gas Oil	million litres	274	271	-3
Petrol	million litres	272	272	0
Kerosene	million litres	184	184	0

<sup>267</sup> Τμήμα Αναπτύξεως Υδάτων (Water Development Department of the Republic of Cyprus), *River Basin Management Plan of Cyprus*, March 2011, [http://www.moa.gov.cy/moa/wdd/wdd.nsf/all/1AE1F4E1B33E432CC22578AF002C0E71/\\$file/ANNEX-L\\_low.pdf](http://www.moa.gov.cy/moa/wdd/wdd.nsf/all/1AE1F4E1B33E432CC22578AF002C0E71/$file/ANNEX-L_low.pdf)

<sup>268</sup> Συμβούλιο Υδατοπρομήθειας Λευκωσίας (Water Board of Nicosia) (no date) *Τέλη νερού (Water Charges)*, accessed 5 September 2014, <http://www.wbn.org.cy/index.php/2014-02-09-23-32-44>

Fuel Type	Units	Baseline	After Tax Increase	Change
LPG	thousand tonnes	0	0	0
Heavy Fuel Oil	thousand tonnes	15	14	-1
Natural Gas	TJ (GCV)	0	0	0
Coal	thousand tonnes	1,344	1,333	-11
Electricity	GWh	0	0	0

Figure 6-1: Change in Internal Passenger Flights, flights per year

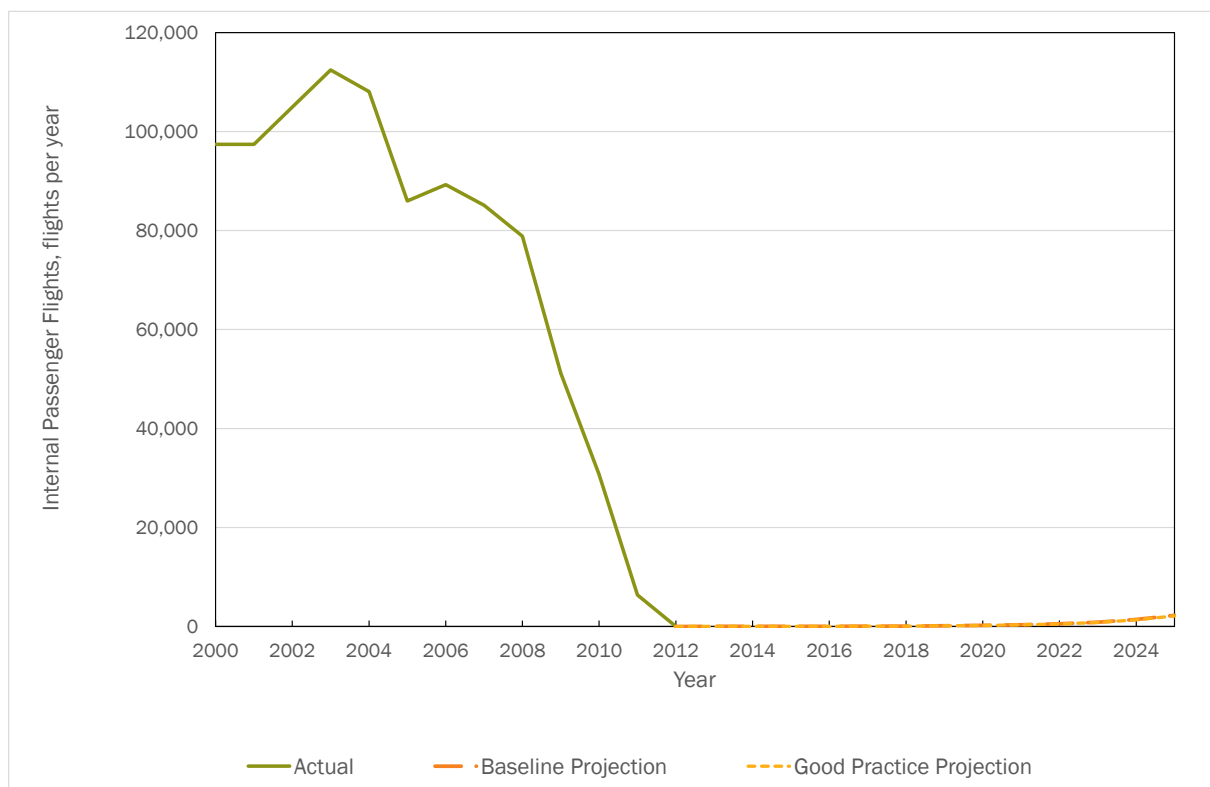


Figure 6-2: Change in Intra-EU Passenger Flights, flights per year

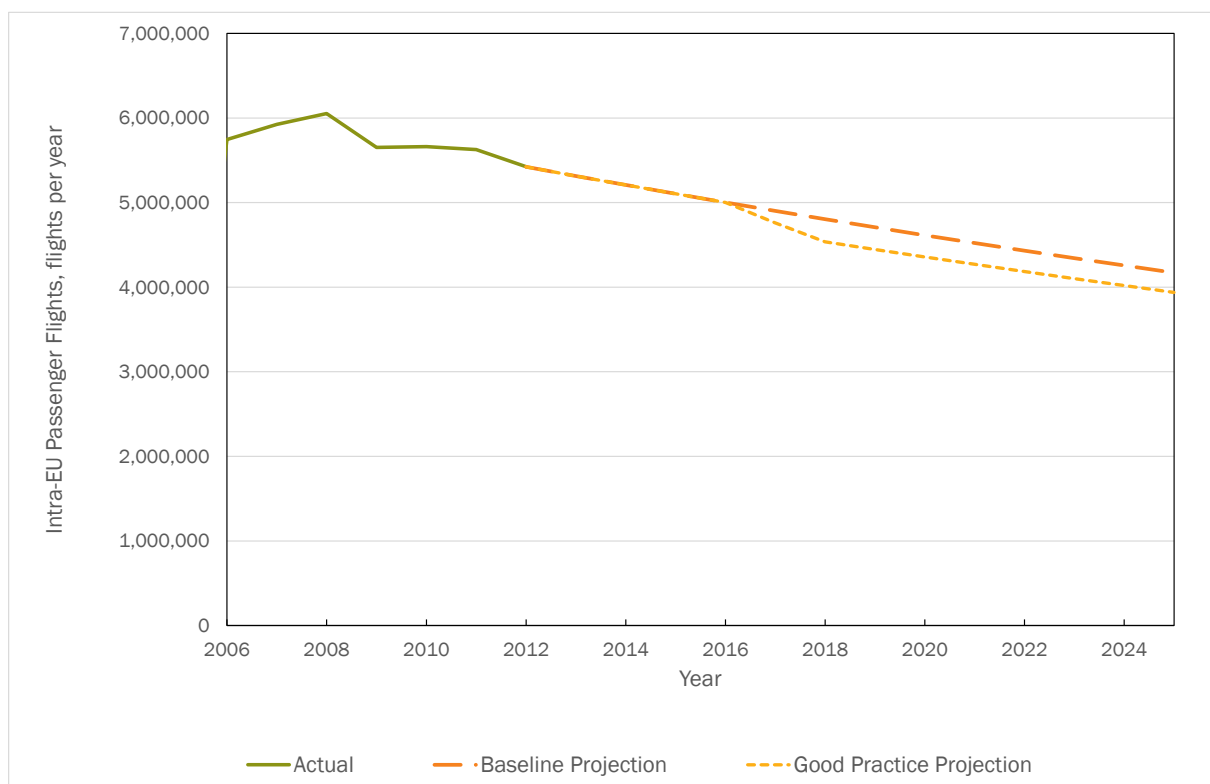


Figure 6-3: Change in Extra-EU Passenger Flights, flights per year

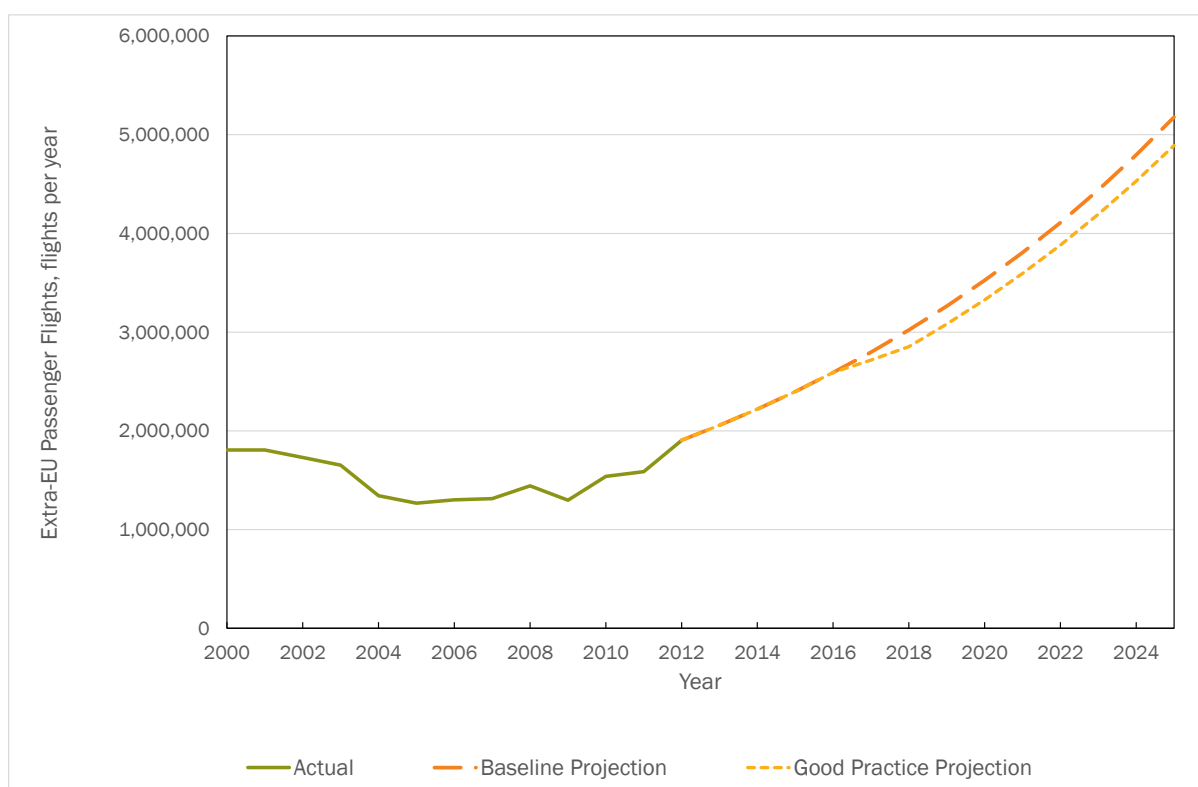


Figure 6-4: Change in Internal Air-freight, tonnes

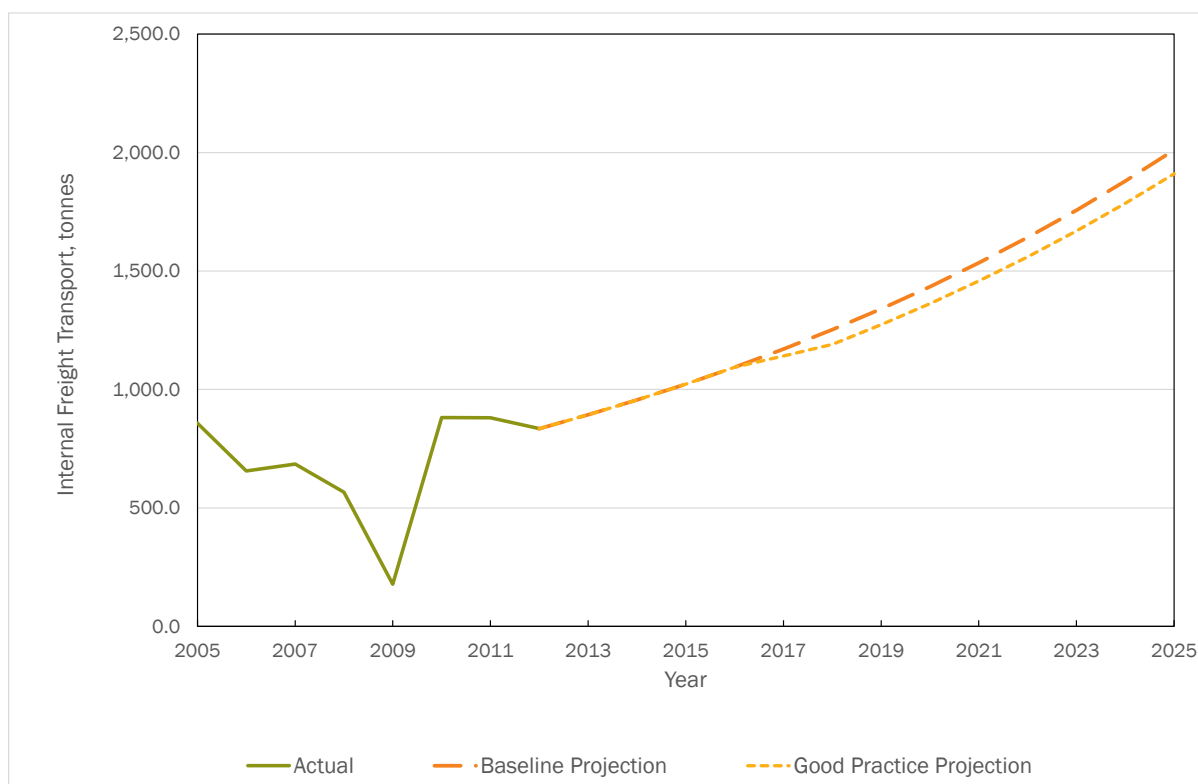


Figure 6-5: Change in Intra-EU Air-freight, tonnes

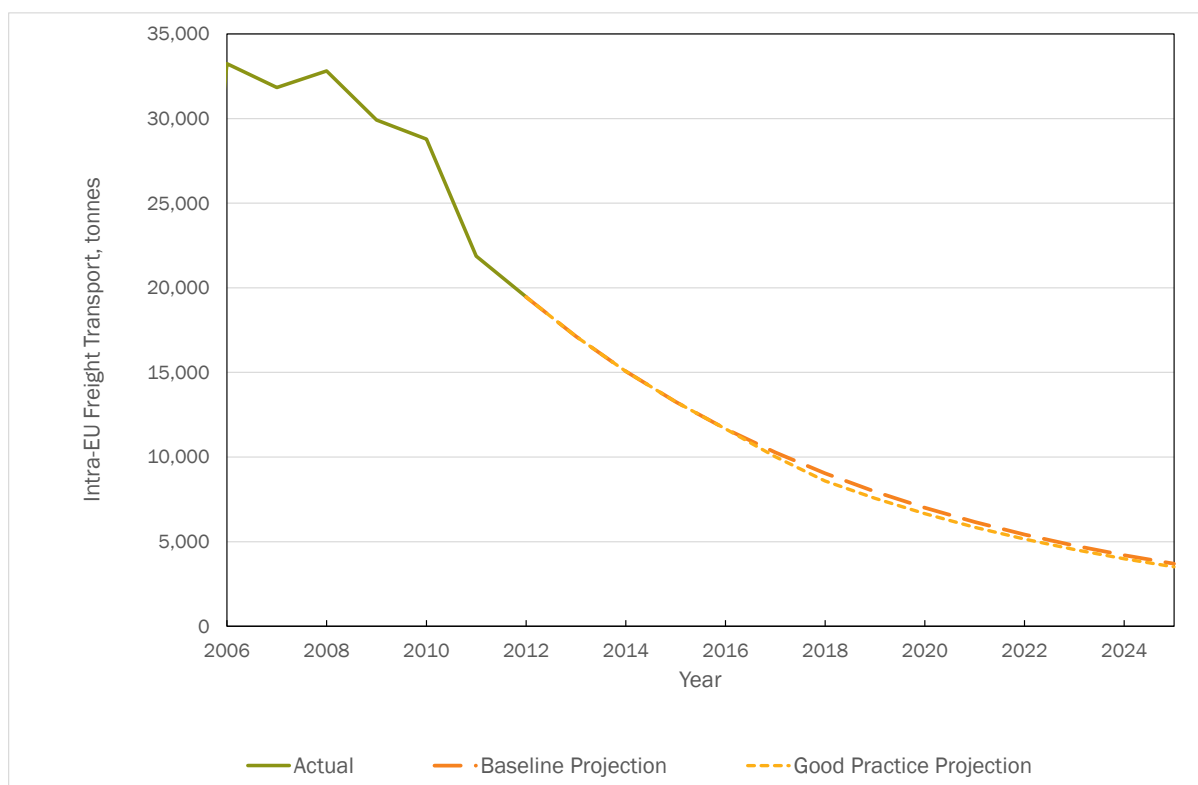


Figure 6-6: Change in Extra-EU Air-freight, tonnes

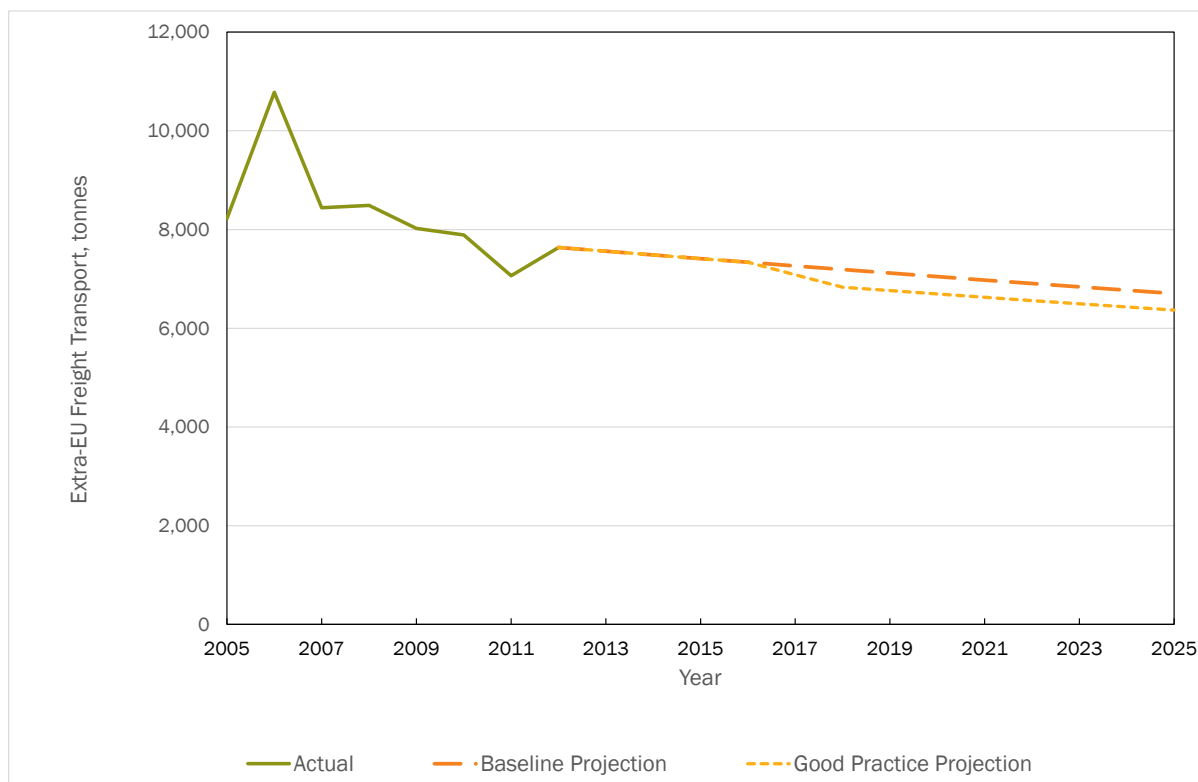


Figure 6-7: Change in Non-Hazardous Waste Landfilled, thousand tonnes

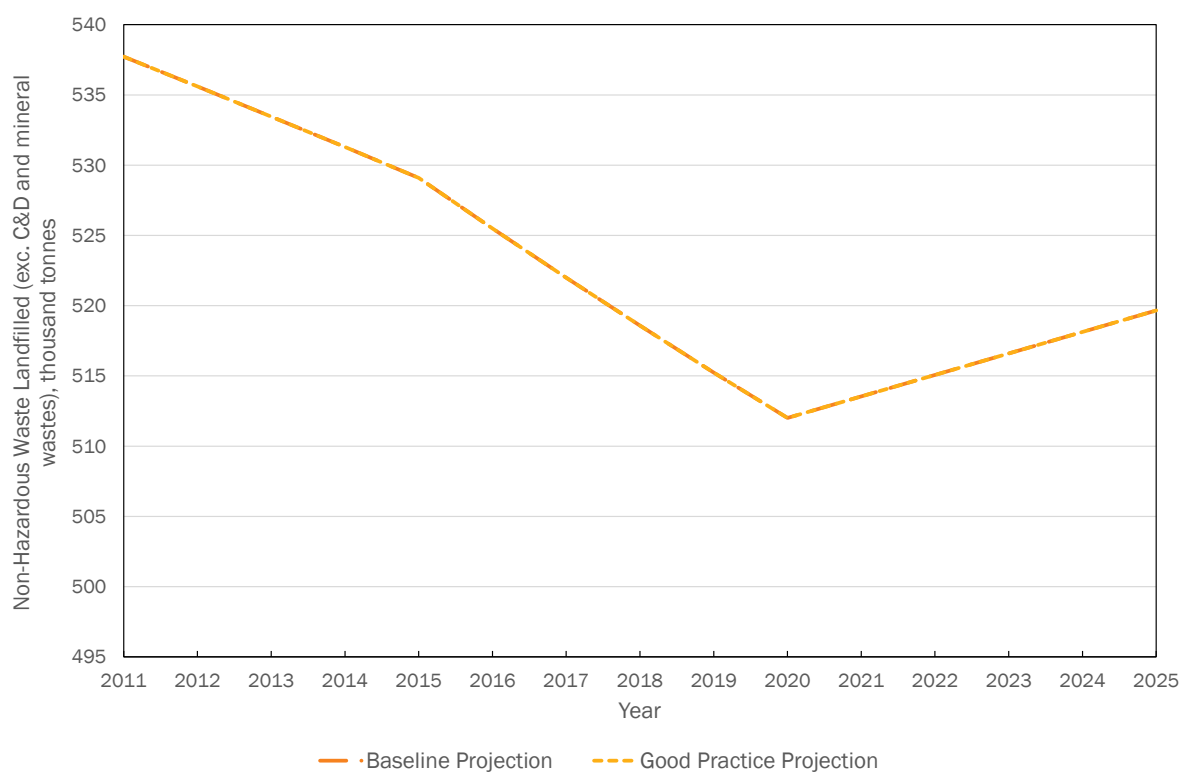


Figure 6-8: Change in MBT/ Incineration, thousand tonnes

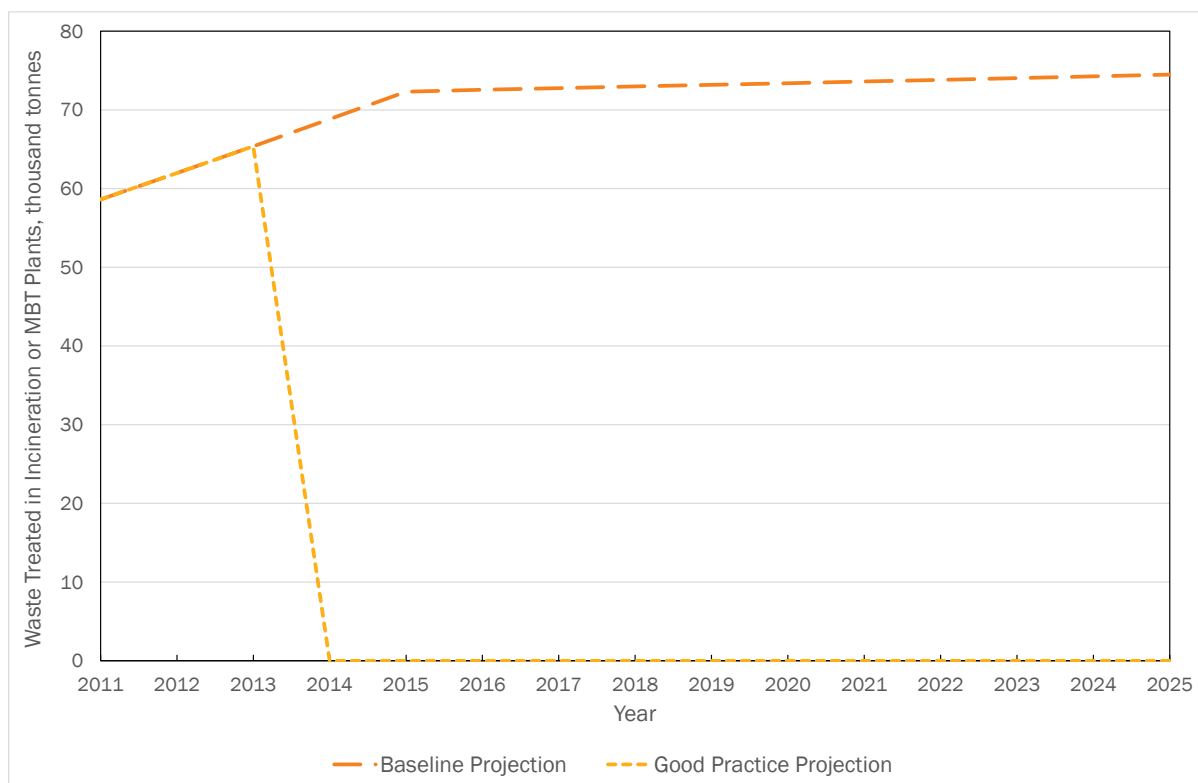


Figure 6-9: Change in SOx Emissions, tonnes

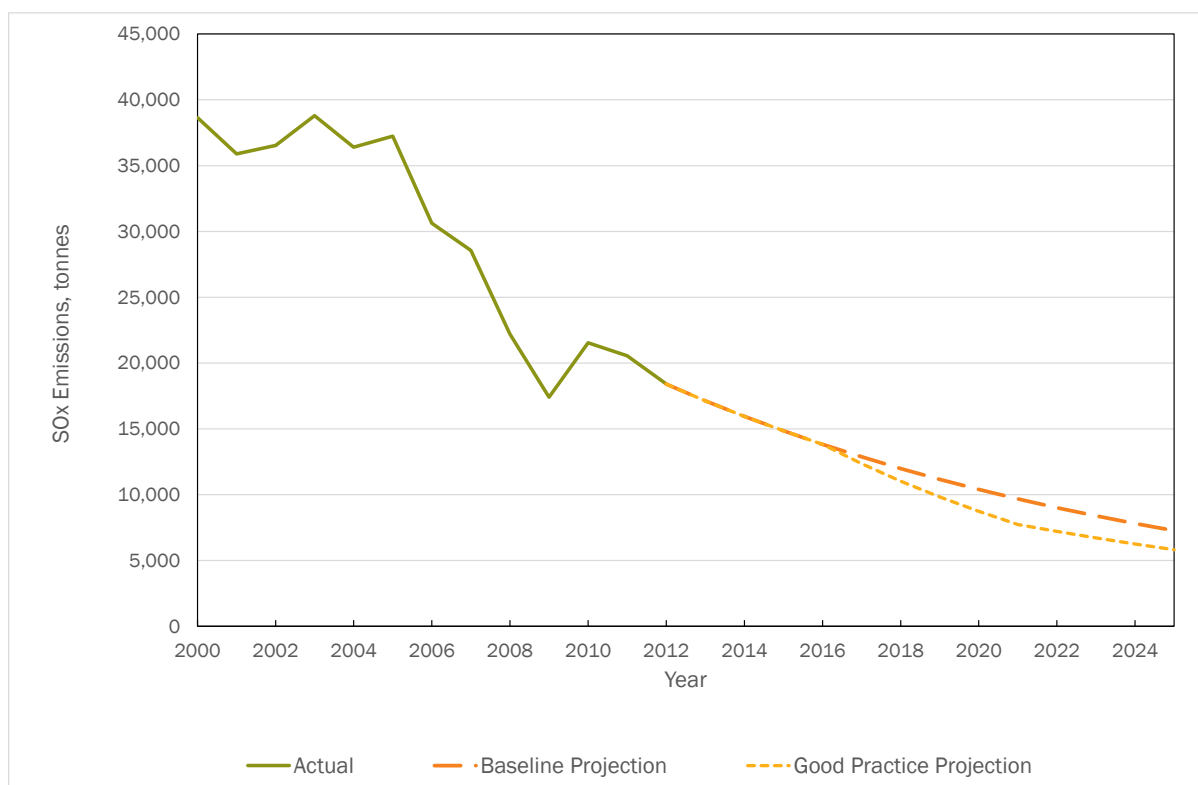


Figure 6-10: Change in NOx Emissions, tonnes



Figure 6-11: Change in PM<sub>10</sub> Emissions, tonnes

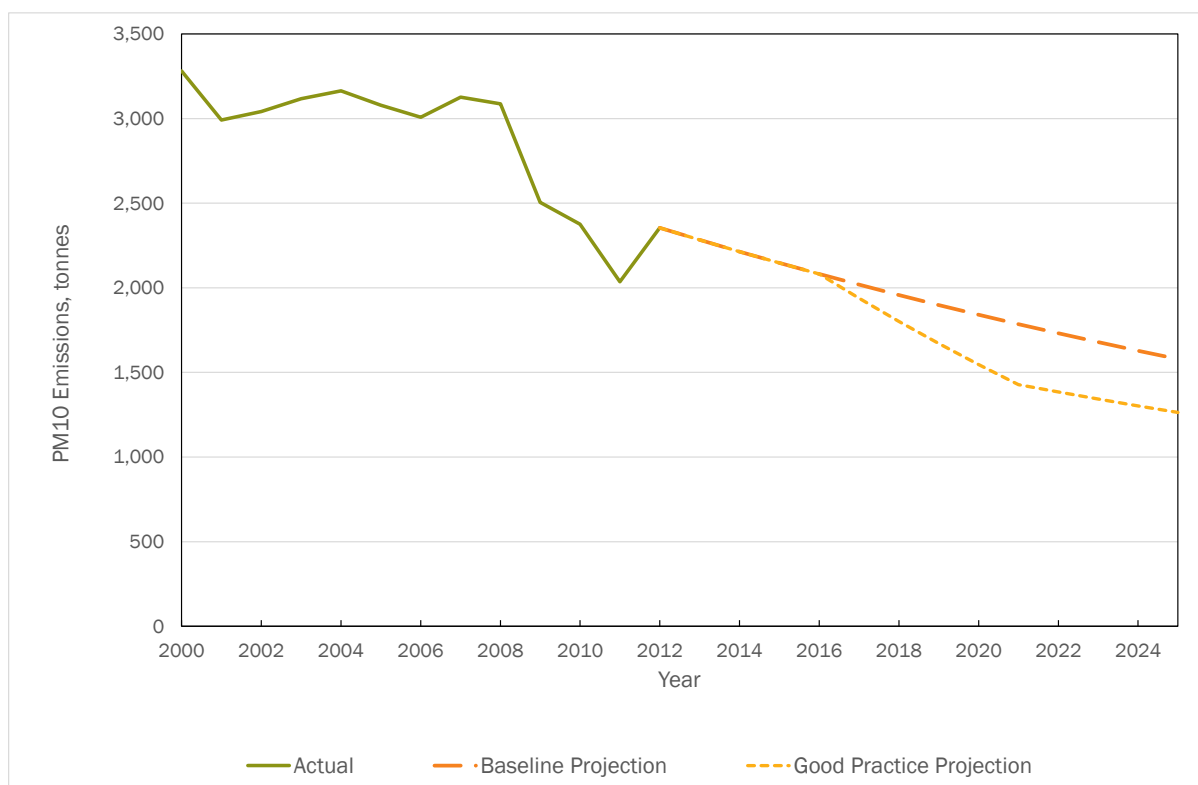


Figure 6-12: Change in Groundwater Abstraction – Public Supply, million cubic metres

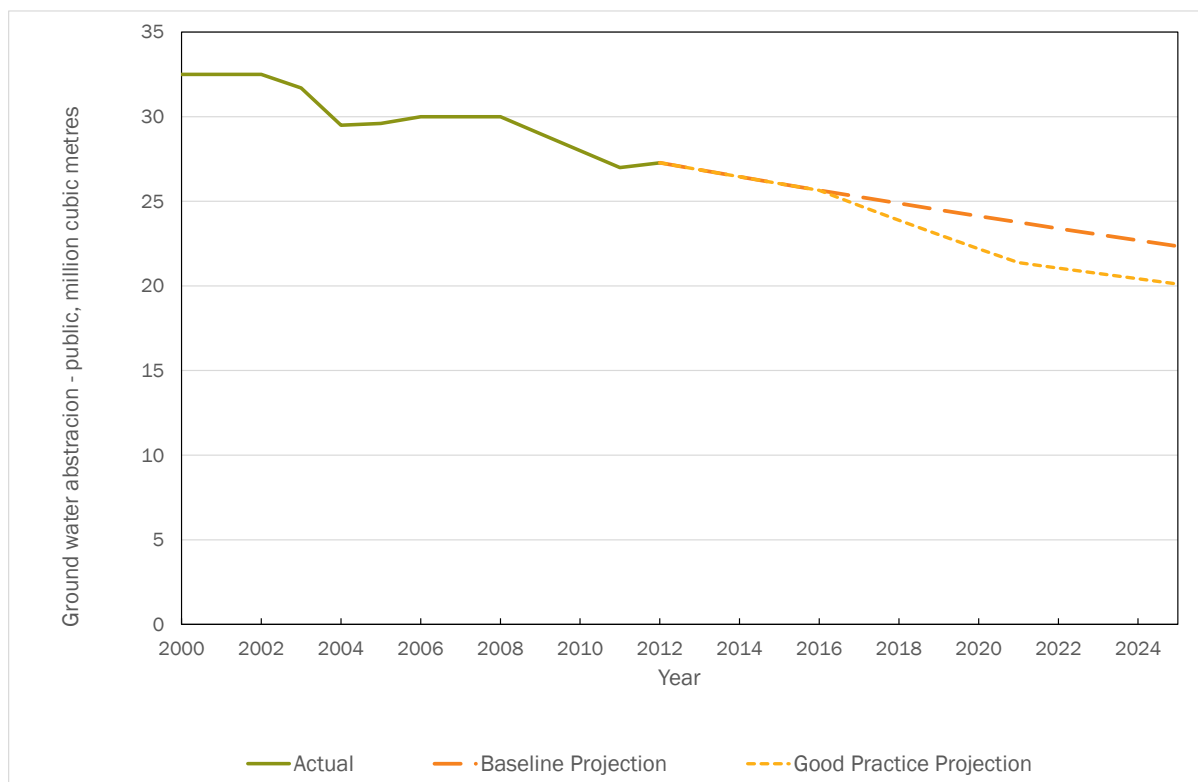




Figure 6-13: Change in Groundwater Abstraction – Manufacturing, million cubic metres

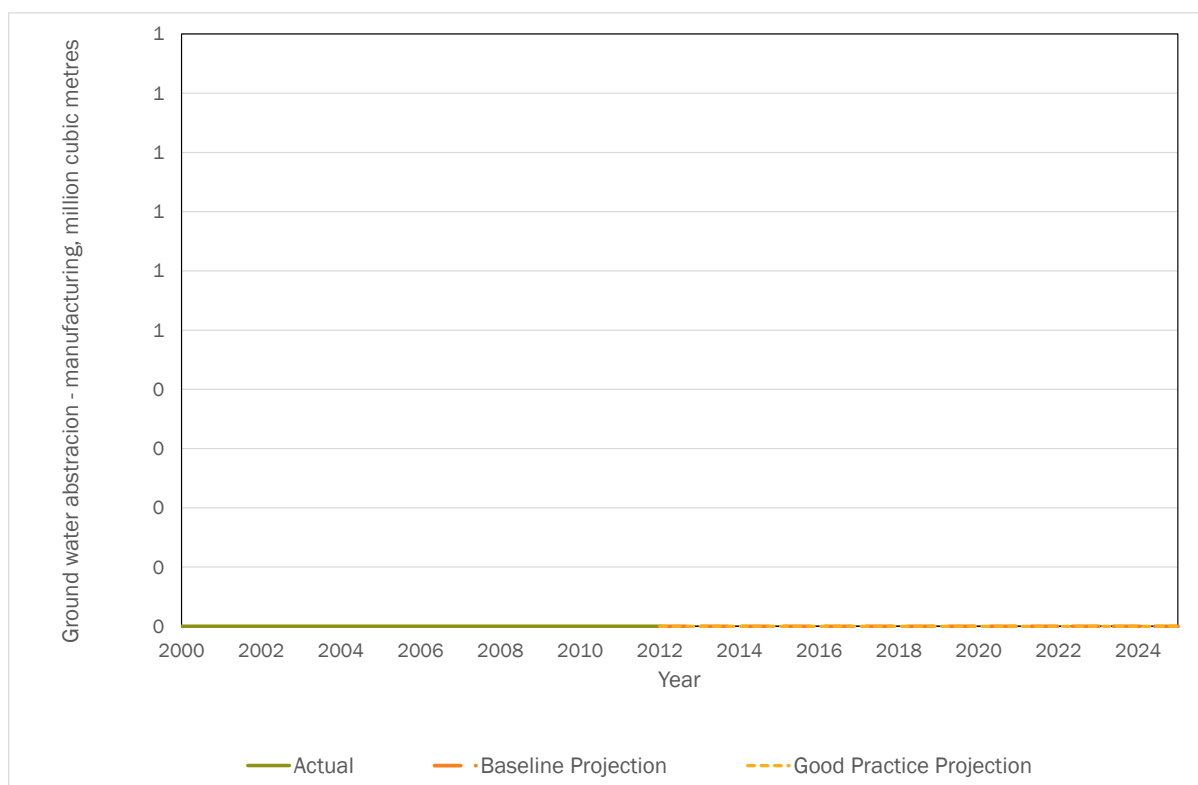


Figure 6-14: Change in Groundwater Abstraction – Agriculture, million cubic metres

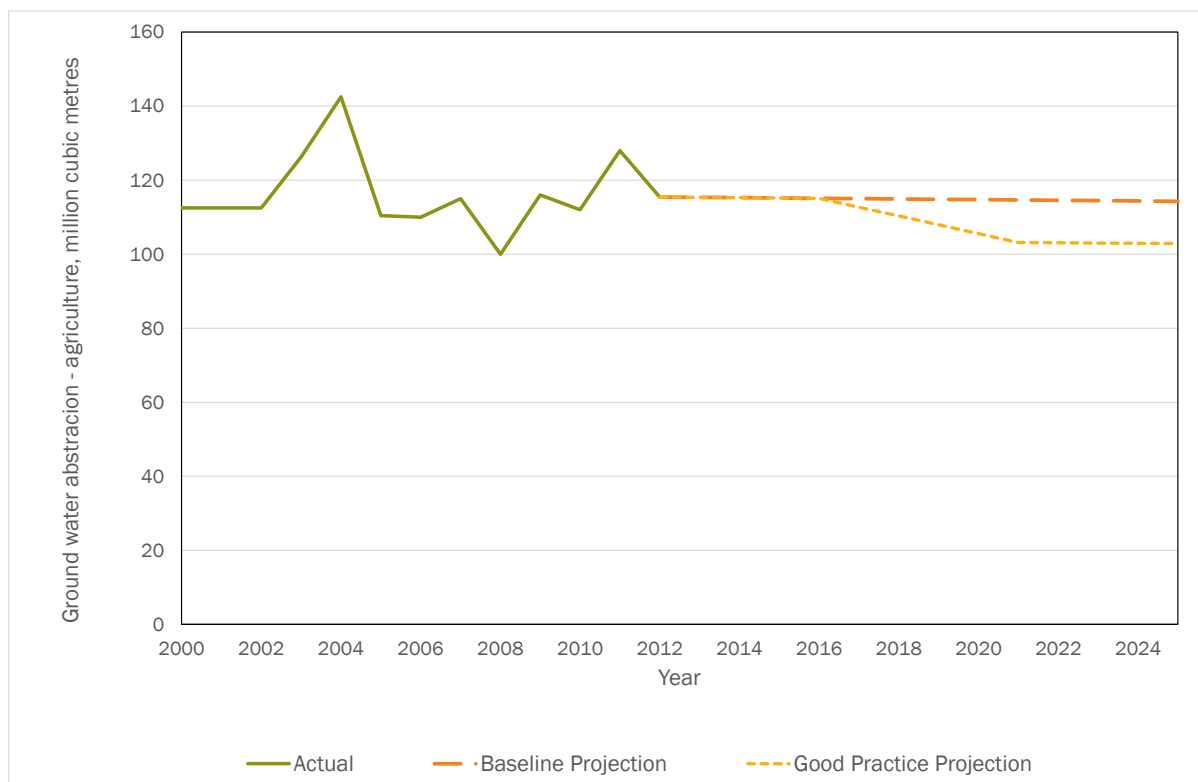


Figure 6-15: Change in Surface Water Abstraction – Public Supply, million cubic metres

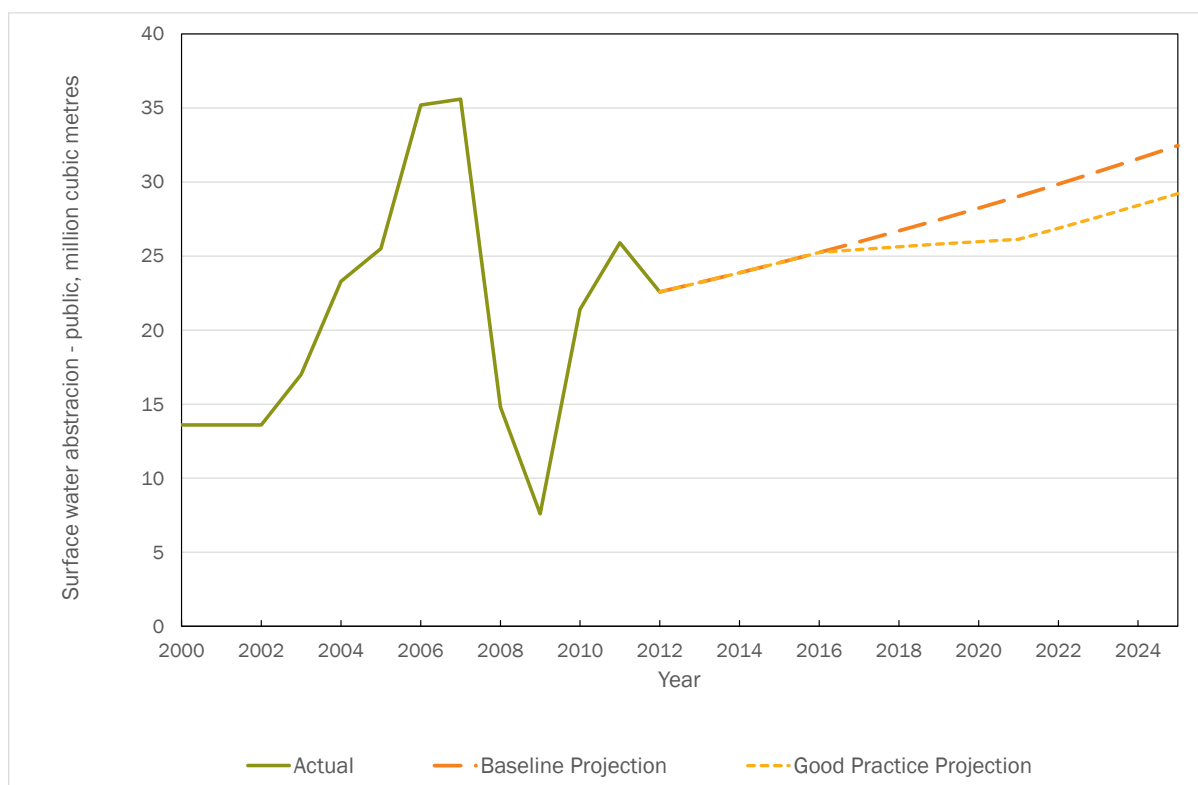


Figure 6-16: Change in Surface Water Abstraction – Manufacturing, million cubic metres

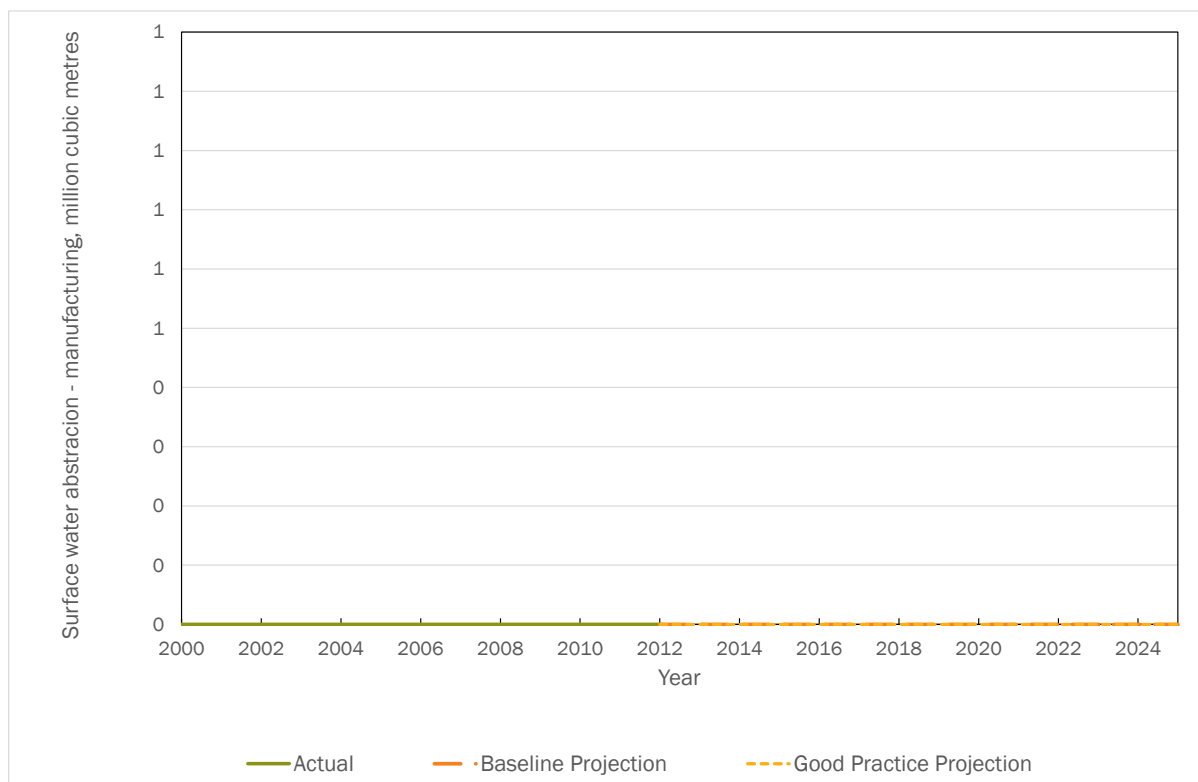


Figure 6-17: Change in Surface Water Abstraction – Agriculture, million cubic metres



Figure 6-18: Change in Active Ingredients in Pesticides, tonnes

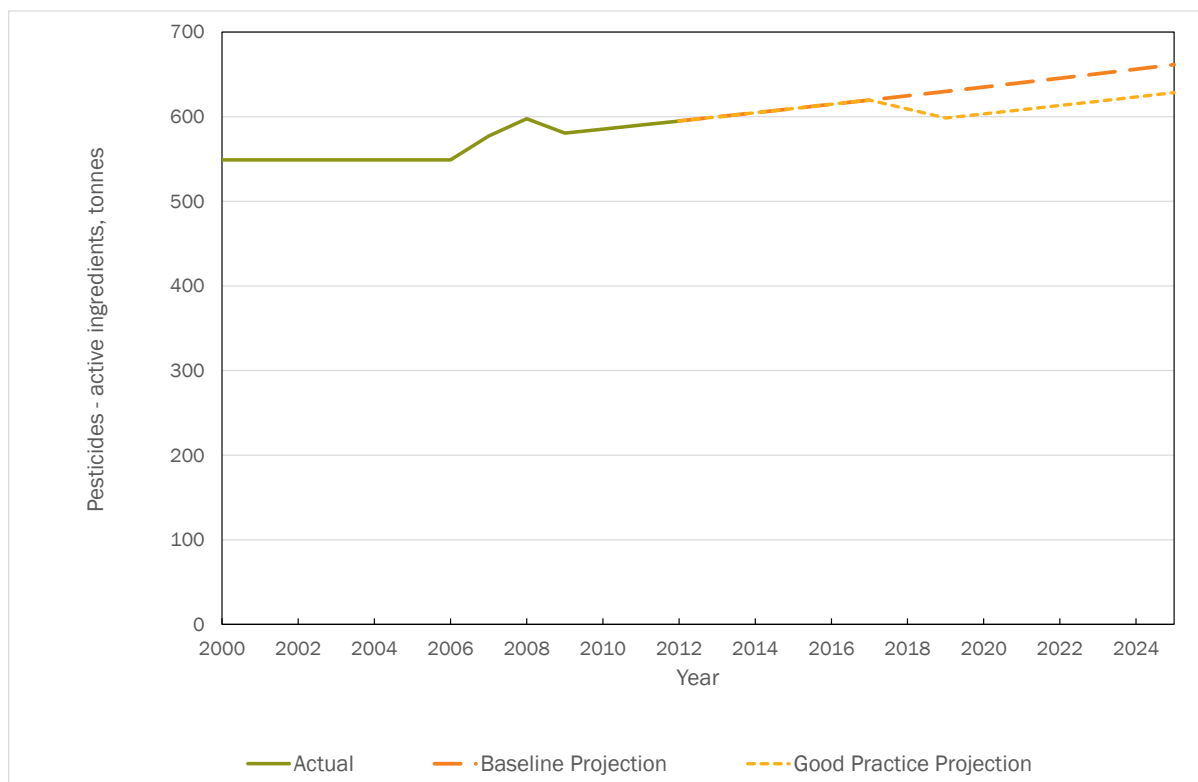


Figure 6-19: Change in Non-organic Nitrogen Sales of Fertilisers, tonnes



Figure 6-20: Change in Aggregates Extraction, thousand tonnes

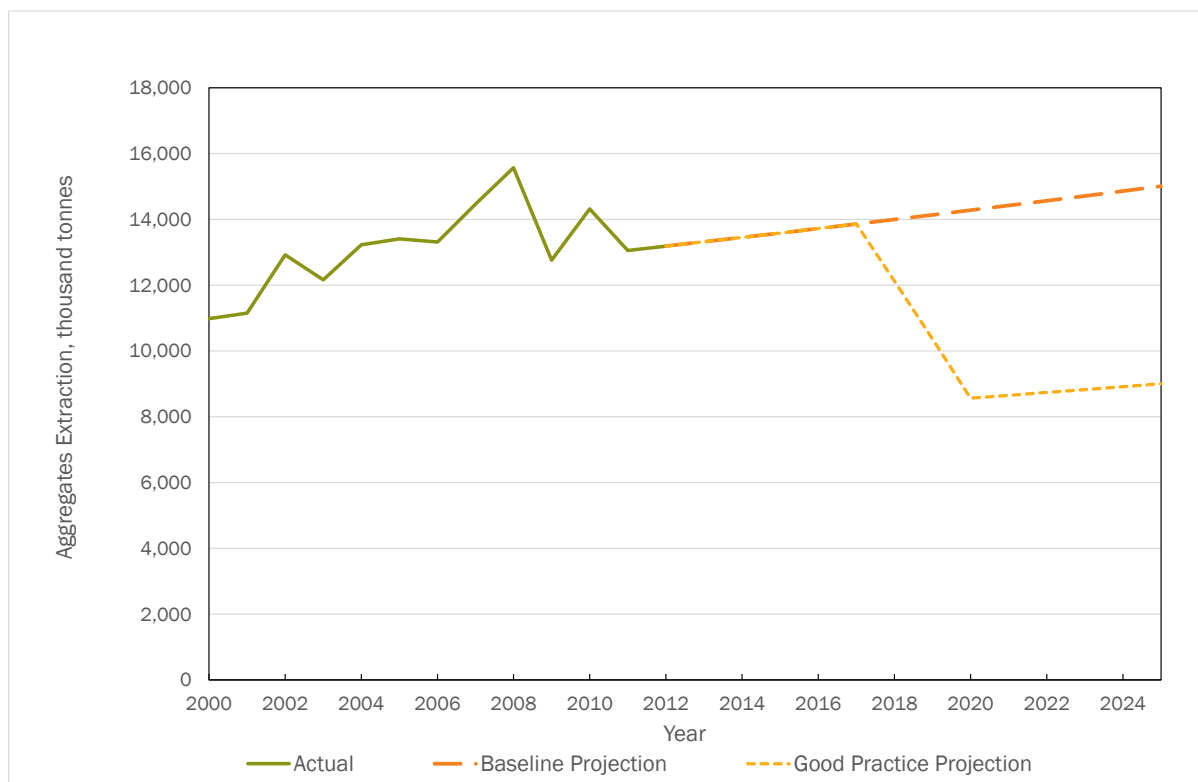


Figure 6-21: Change in Paper & Card Packaging Generation, thousand tonnes

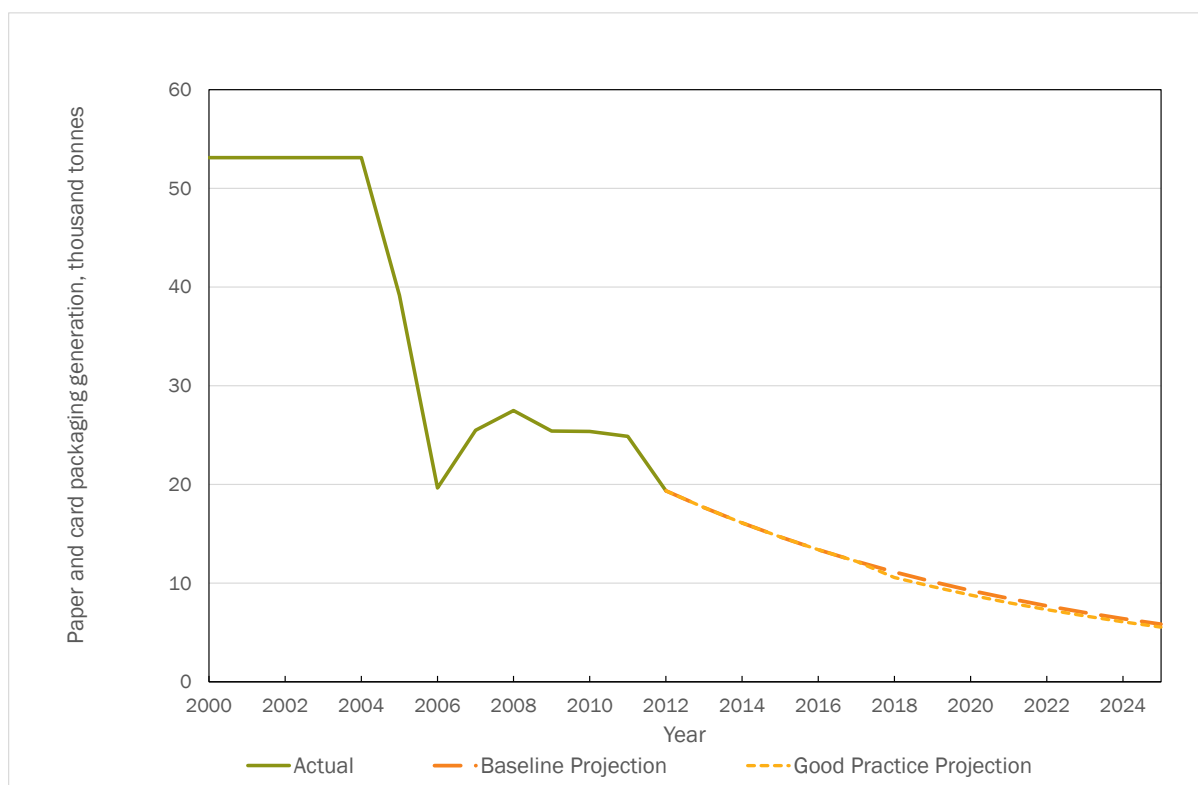


Figure 6-22: Change in Plastic Packaging Generation, thousand tonnes

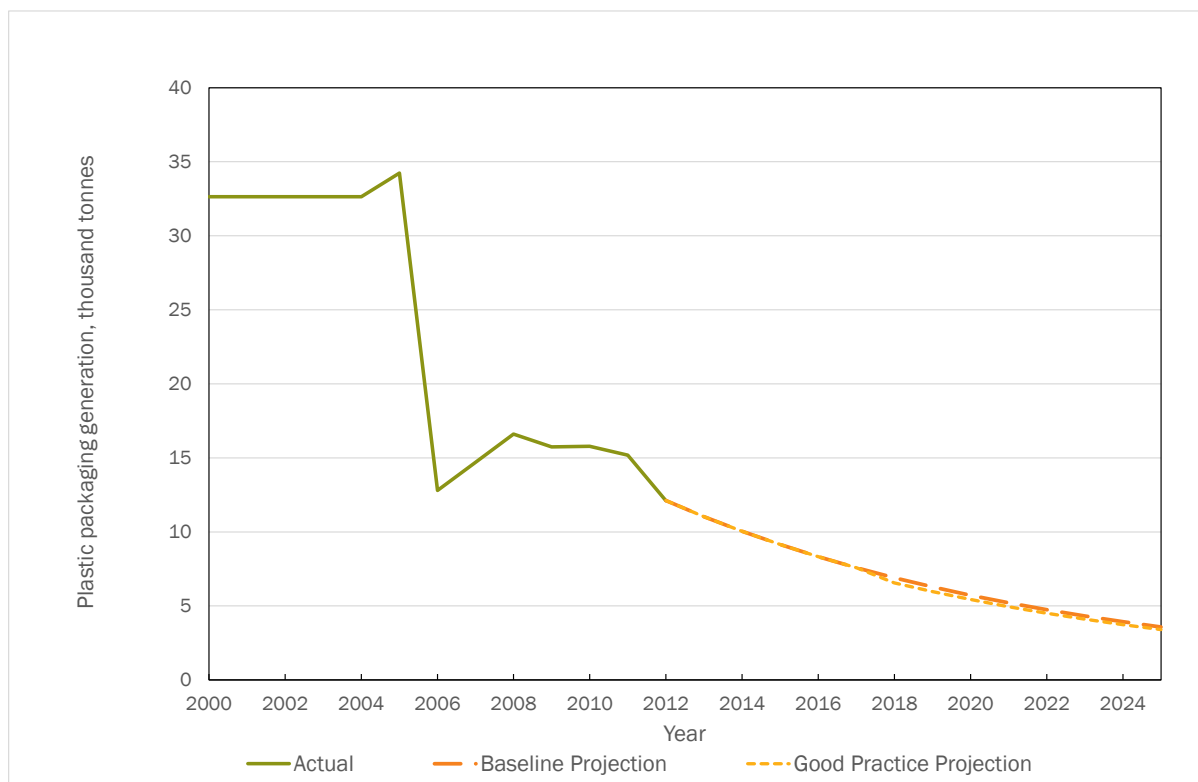


Figure 6-23: Change in Wood Packaging Generation, thousand tonnes

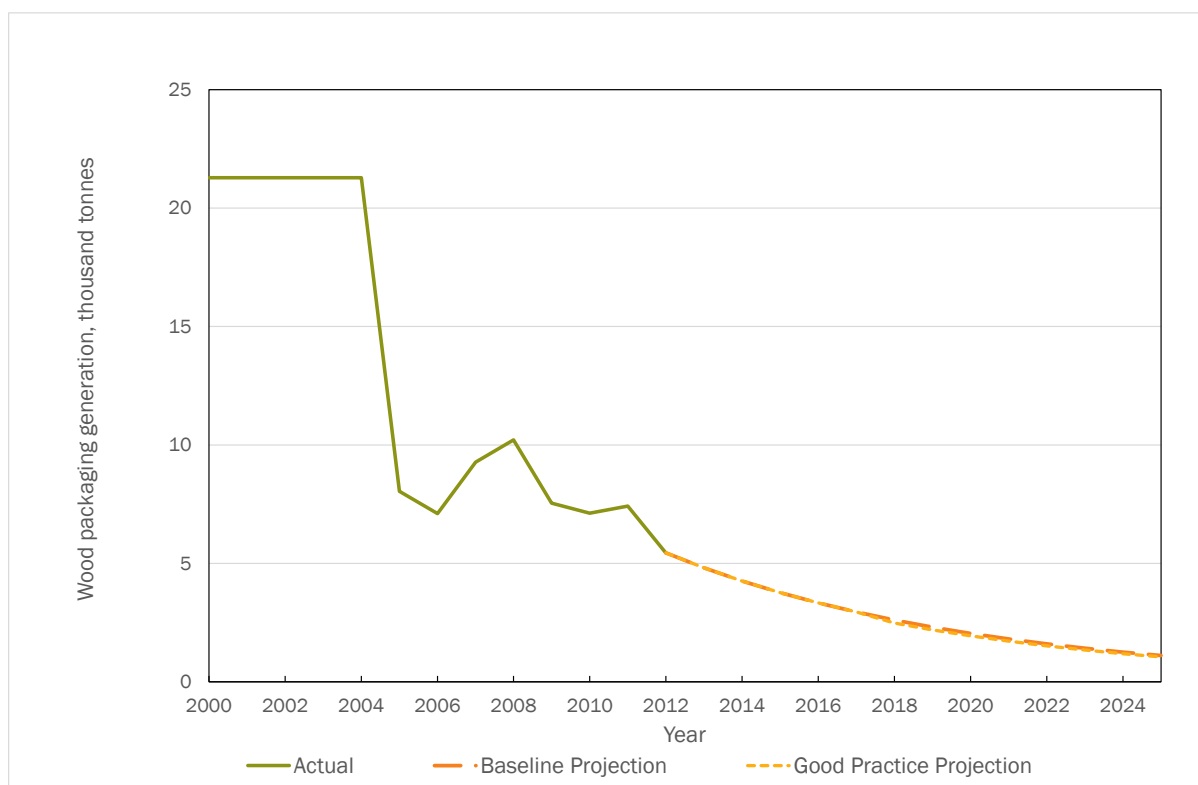


Figure 6-24: Change in Metal Packaging Generation, thousand tonnes

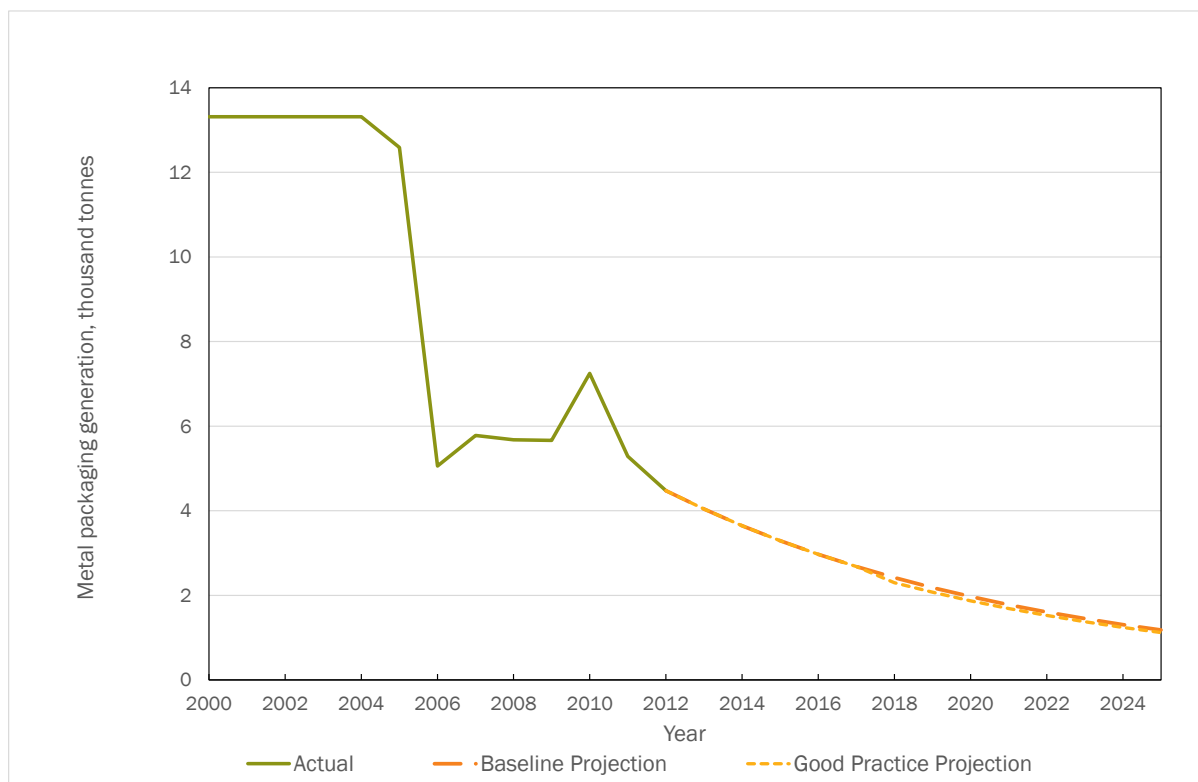


Figure 6-25: Change in Glass Packaging Generation, thousand tonnes

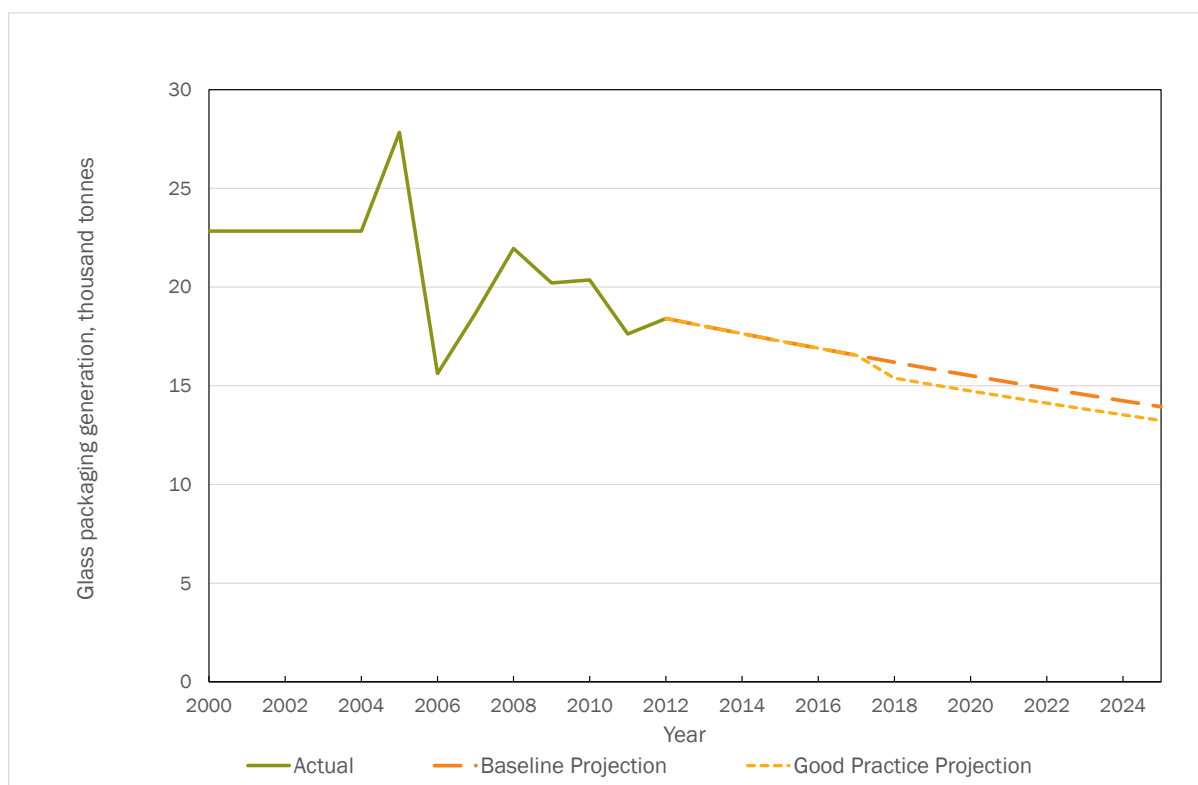
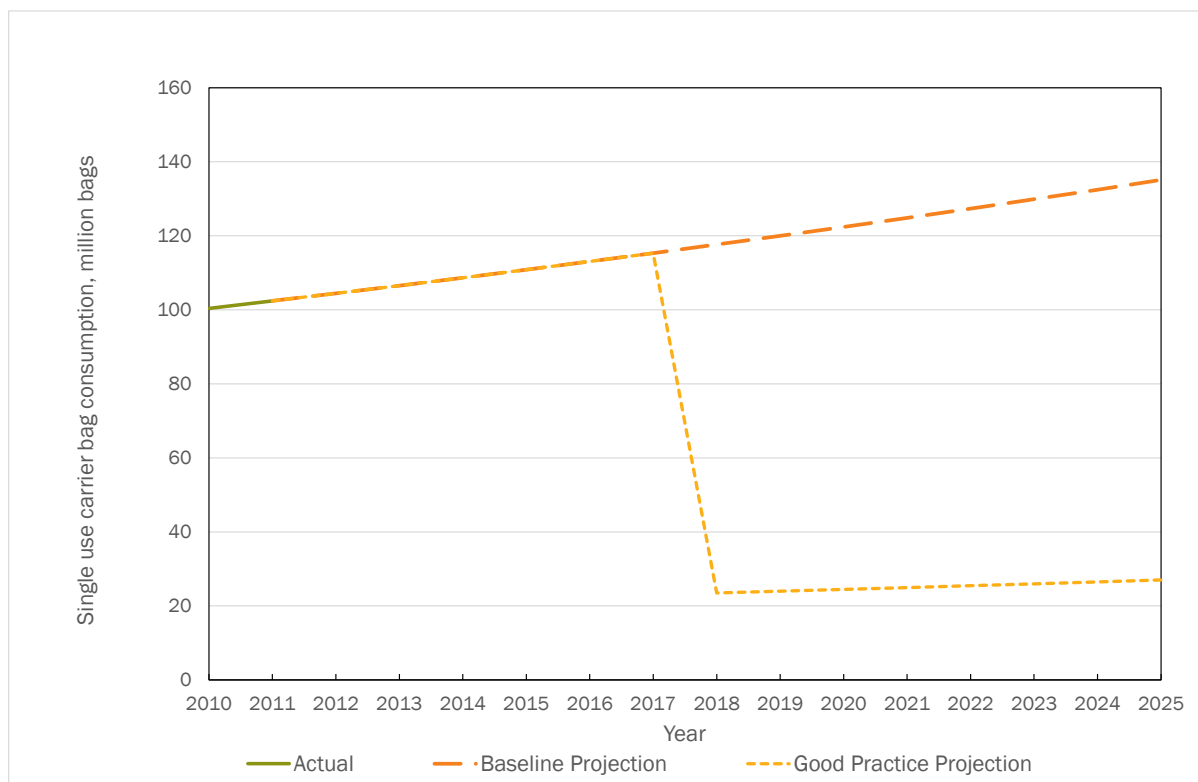


Figure 6-26: Change in Consumption of Single Use Carrier Bags, million bags



## 6.5 Full Revenue Outputs

A summary of the full revenue outputs for each of the suggested reforms to the tax system are presented in the table below.



Table 6-5: Revenue Outturns from Model, million EUR (real 2014 terms)

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Energy Taxes	Transport fuels	0	0	3	7	10	13	17	20	23	23	23
	C&I / Heating	0	0	15	31	46	61	76	92	107	107	107
	Electricity	0	0	0	0	0	0	0	0	0	0	0
	<i>Sub-total Energy, million EUR</i>	0	0	19	37	56	74	93	111	130	130	130
	<i>Sub-total Energy, % GDP</i>	0.0%	0.0%	0.1%	0.2%	0.3%	0.5%	0.6%	0.7%	0.8%	0.8%	0.8%
Transport Taxes (excluding transport fuels)	Vehicle Taxes	0	0	0	0	0	0	0	0	0	0	0
	Passenger Aviation Tax	0	0	107	207	205	203	201	200	198	196	195
	Freight Aviation Tax	0	0	0	0	0	0	0	0	0	0	0
	<i>Sub-total Transport, million EUR</i>	0	0	107	207	205	203	201	200	198	197	195
	<i>Sub-total Transport, % GDP</i>	0.0%	0.0%	0.7%	1.3%	1.3%	1.3%	1.2%	1.2%	1.2%	1.2%	1.2%
Pollution and Resource Taxes	Landfill Tax - Non-haz (excl. C&D)	0	8	15	21	21	21	21	21	21	21	21
	Landfill Tax - Inerts (C&D)	0	0	0	0	0	0	0	0	0	0	0
	Incineration /MBT Tax	0	0	1	1	1	1	1	1	1	1	1

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Air Pollution Tax	0	6	11	15	19	22	20	20	19	19	18
	Water Abstraction Tax	0	6	11	17	22	27	26	27	27	27	27
	Waste Water Tax	0	0	1	1	1	1	1	1	1	1	1
	Pesticides Tax	0	0	3	6	6	6	6	6	6	6	6
	Aggregates Tax	0	0	33	29	25	21	21	21	21	21	22
	Packaging Tax	0	0	1	1	1	1	1	1	1	1	1
	Single Use Bag Tax	0	10	10	2	2	2	2	2	2	2	2
	Fertiliser Tax	0	0	0	0	0	0	0	0	0	0	0
	<b>Sub-total Pollution &amp; Resource, million EUR</b>	0	30	87	94	98	102	100	100	100	100	100
	<b>Sub-total Pollution &amp; Resource, % GDP</b>	0.0%	0.2%	0.5%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Total Revenue Stream	<b>Total, million EUR</b>	<b>0</b>	<b>30</b>	<b>212</b>	<b>338</b>	<b>359</b>	<b>379</b>	<b>394</b>	<b>411</b>	<b>428</b>	<b>426</b>	<b>425</b>
	<b>Total, % GDP</b>	<b>0.0%</b>	<b>0.2%</b>	<b>1.3%</b>	<b>2.1%</b>	<b>2.2%</b>	<b>2.4%</b>	<b>2.4%</b>	<b>2.5%</b>	<b>2.7%</b>	<b>2.6%</b>	<b>2.6%</b>

## 7.0 Denmark

During the course of the study the latest data available from official sources was sought, namely the TAXUD Taxes in Europe database, energy excise duty tables and the OECD database on environmental taxes and charges. This was supplemented by national data sources where possible. Due to the number of taxes and countries involved, the central case for energy excise duties has been the rates published by TAXUD giving the position as of 1<sup>st</sup> July 2014. Planned future increases may not be fully captured in this analysis and therefore, the projected increase in revenues would effectively incorporate any revenue from increased rates in early 2015 or shortly thereafter.

### 7.1 Energy Taxes

#### ➤ Energy Taxes:

- In Denmark there are excise duties on fuels and electricity. These taxes are shown in Table 7-1, which shows how they compare to the recommended minimum rates in the existing ETD and the EU-28 average and median rates.<sup>269</sup> The tax rates include the CO<sub>2</sub>-tax, for which the standard rate is DKK 90 per ton CO<sub>2</sub> (€12.08).

Table 7-1: Excise Duties on Fuels and Electricity in Denmark

Excise Duty	Unit	Rate Applied in Denmark (1€=7.4582DKK)	Existing ETD Minimum	EU-28 Average	EU-28 Median
<b>Motor Fuels - Propellant</b>					
Unleaded Petrol	€ per 1000 litres	€595.99	€359	€519	€509
Gas Oil (Diesel)	€ per 1000 litres	€405.59	€330	€427	€405
Kerosene	€ per 1000 litres	€454.13	€330	€440	€405
Liquid Petroleum Gas	€ per 1000 kg	€502.80	€125	€209	€180
Natural Gas	€ per GJ	€10.13	€2.60	€3.03	€2.66
<b>Motor Fuels – Industry / Commercial Use</b>					
Gas Oil (Diesel)	€ per 1000 litres	€81.04	€21	€221	€163
Kerosene	€ per 1000 litres	€80.39	€21	€283	€330
Liquid Petroleum Gas	€ per 1000 kg	€94.66	€41	€126	€125
Natural Gas	€ per GJ	€14.03	€0.30	€1.76	€1.50

<sup>269</sup> European Commission (2013) *Taxes in Europe Database*, Accessed 13<sup>th</sup> December 2013, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)

Excise Duty	Unit	Rate Applied in Denmark (1€=7.4582DKK)	Existing ETD Minimum	EU-28 Average	EU-28 Median
<b>Heating – Business Use</b>					
Gas Oil (Diesel)	€ per 1000 litres	€404.92	€21	€221	€163
Kerosene	€ per 1000 litres	€404.92	€0.00	€270	€330
Heavy Fuel Oil	€ per 1000 kg	€462.58	€15	€70	€25
Liquid Petroleum Gas	€ per 1000 kg	€502.80	€0.00	€82	€40
Natural Gas	€ per GJ	€81.47	€0.15	€1.36	€0.46
Coal and Coke	€ per GJ	€11.76	€0.15	€1.27	€0.31
<b>Heating – Non-Business Use</b>					
Gas Oil (Diesel)	€ per 1000 litres	€404.92	€21	€179	€125
Kerosene	€ per 1000 litres	€404.92	€0.00	€279	€330
Heavy Fuel Oil	€ per 1000 kg	€462.58	€15	€85	€26
Liquid Petroleum Gas	€ per 1000 kg	€502.80	€0	€111	€42
Natural Gas	€ per GJ	€81.47	€0.3	€2.04	€0.94
Coal and Coke	€ per GJ	€11.76	€0.3	€1.77	€0.32
<b>Electricity</b>					
Business Use	€ per MWh	€0.54	€0.5	€8.42	€1.03
Non-Business Use	€ per MWh	€111.69	€1.0	€14.53	€2.06

Sources: European Commission - Taxation and Customs Union (2014) Excise Duty Tables: Part II - Energy Products and Electricity, July 2014,  
[http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/excise\\_duties/energy\\_products/ra tes/excise\\_duties-part\\_ii\\_energy\\_products\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/excise_duties/energy_products/ra tes/excise_duties-part_ii_energy_products_en.pdf)

- There is a reduced rate for motor fuels used for agricultural purposes. The rate reflects the CO<sub>2</sub>-tax, whereas no energy tax applies. Among Member States with such reduced rates for motor fuels used by agriculture Denmark's has one of the lowest rates, e.g. of €59.13 for diesel.<sup>270</sup> The reduced motor fuel rate for diesel also applies for railways along with a reduced rate for coal.

<sup>270</sup> Cf. TAXUD tables.

- Prior to the exemption of ETS-installations from CO<sub>2</sub>-tax there was a very extensive set of arrangements available to allow reductions for energy-intensive industries. These arrangements are still available, though in an amended way, for the very limited number of energy-intensive non-ETS installations subject to CO<sub>2</sub>-tax (e.g. some greenhouses).
- Fuels and electricity for business use heating are in principle subject to the same tax rates as households and the domestic sector. However, from 1.1.2012 it has been possible to receive a partial refund of metered electricity consumption, presently at a rate of DKK 0.42 (€0.06).

## 7.2 Transport Taxes (Excluding Transport Fuels)

### ➤ Registration Taxes:

- A bonus-malus adjustment complements the registration tax, pending on energy-efficiency (Table 7-2).

Table 7-2: Adjustment in Registration Tax for Passenger Cars and Other Vehicles Based on Relative Fuel Efficiency

Type of Vehicle	Threshold	Reduction for Fuel Efficiency Below Threshold	Penalty for Fuel Inefficiency Above Threshold
Petrol vehicles	16 km per l	€536 per km per l	€134 per km per l
Diesel vehicles	18 km per l	€536 per km per l	€134 per km per l

- For the ad-valorem registration tax, the costs for certain security devices can be deducted; these include >3 airbags, ESP and ABS. There is a penalty for cars with no or only one airbag.
- For light-duty vehicles (<4 tonnes) there is an ad-valorem registration tax at 50% of the list price above €2,300. A reduced registration tax at 30% (maximised at €7,624) applies for such vehicles (>2.5 tonnes) which are fit for goods transport by not having a window behind the driver's seat and in which there are no passenger seats behind the driver.<sup>271</sup>
- The following vehicles are exempt from registration tax: freight vehicles larger than four tonnes; passenger vehicles and LDV used by state institutions; all fire engines, ambulances and hearses; vehicles owned by the royal family.
- Electric and hydrogen vehicles are exempt from registration tax until end of 2015.

---

<sup>271</sup> <https://www.skat.dk/SKAT.aspx?oID=1947292>

- Passenger vehicles that are used combined for private and business purposes can have the registration tax reduced to 50%, provided that a set of complex regulations are complied with.

➤ **Circulation Taxes:**

- The circulation tax for passenger vehicles ('grøn ejer-afgift') and light duty vehicles is dependent on relative energy efficiency. Diesel vehicles are subject to a surtax ('udligningsafgift'), which partly offsets the advantage conveyed with lower taxation of diesel motor fuel relative to petrol. Same exemptions apply as for registration tax. Rates are shown in Table 7-3.

**Table 7-3: Circulation Tax Rates According to Energy Efficiency of Vehicles**

Petrol (km per l)	Diesel km per l	Annual Tax	Surtax Diesel
	>32.1	0	€32
	28.1-32.1	0	€150
	25-28.1	0	€268
>20	22.5-25	€78	€293
18.2-20	20.5-22.5	€150	€322
16.7-18.2	18.8-20.5	€223	€346
15.4-16.7	17.3-18.8	€298	€376
14.3-15.4	16.1-17.3	€370	€403
13.3-14.3	15-16.1	€443	€432
12.5-13.3	14.1-15	€515	€464
11.8-12.5	13.2-14.1	€588	€494
11.1-11.8	12.5-13.2	€660	€526

*Note: Converted from DKK to €. Further categories defined in legislation*

➤ **Road user charging for heavy-duty vehicles:**

- There is a road user charge for heavy-duty vehicles (>12 tonnes), which is part of the Eurovignette scheme in which Denmark participates. The rates are shown in Table 7-4.

**Table 7-4: Road User Charges for Heavy-Goods Vehicles Greater than 12 Tonnes**

Number of Axles	Exhaust	Annual	Monthly	Weekly	Daily
Two or three	Euro 0	€960	€96	€26	€8
	Euro 1	€850	€85	€23	€8
	Euro 2+	€750	€75	€20	€8

Number of Axles	Exhaust	Annual	Monthly	Weekly	Daily
Three or more	Euro 0	€1,550	€155	€41	€8
	Euro 1	€1,400	€140	€37	€8
	Euro 2+	€1,250	€125	€33	€8

- Exempt from road user charge are vintage lorries older than 35 years; military and defence vehicles; fire engines; state rescue services; police and road services.
- Duty vehicles less than 12 tonnes are not subject to the road user charge, but to a weight-based circulation tax.<sup>272</sup>

### 7.3 Pollution and Resource Taxes

#### ➤ Packaging taxes:

- To complement the deposit-refund system for beverage containers in Denmark a volume-related packaging tax has been in place for more than two decades. It relates to drinking containers containing beer, carbonated drinks, liquor, wine, ice-tea and mineral water. Different sizes are subject to different tax rates, according to the specific packaging material (Table 7-5).
- A producer, filler or importer pays the tax the first time the container is placed on the market. With a glass bottle which is reusable, say 30 times, the tax per fill is equivalent to 1/30 of the tax. The tax therefore favours reuse over recycling. It has a lower rate for cardboard based on life-cycle analysis demonstrating its lesser burdens.

Table 7-5: Denmark's Packaging Tax

Volume of Container	Containers of cardboard/laminates	Containers of other materials (e.g. glass, plastic, metals)	Containers in deposit-refund system
	Rate DKK (EUR) per Container		
Volume < 10 cl	0.08 (0.01)	0.13 (0.02)	0.05 (0.01)
10 cl to 40 cl	0.15 (0.02)	0.25 (0.03)	0.10 (0.01)
40 cl to 60 cl	0.25 (0.03)	0.40 (0.05)	0.16 (0.02)
60 cl to 110 cl	0.50 (0.07)	0.80 (0.11)	0.32 (0.04)
110 to 160 cl	0.75 (0.10)	1.20 (0.16)	0.48 (0.06)

<sup>272</sup> <http://www.skm.dk/skattetal/satser/satser-og-beloebsgraenser/vaegtafgiftsloven/#tabel4>

Volume of Container	Containers of cardboard/laminates	Containers of other materials (e.g. glass, plastic, metals)	Containers in deposit-refund system
	Rate DKK (EUR) per Container		
Volume > 160 cl	1.00 (0.13)	1.60 (0.21)	0.64 (0.09)

➤ **PVC tax**

- Certain product groups are subject to taxation according to contents of PVC. Product groups not mentioned in the law are liable too, when PVC exceeds 10% of product weight. The law provides definitions of phthalates. There is a border-tax adjustment whereby the tax is refunded for exports.

**Table 7-6: Rates for the Danish PVC Tax**

Product Group	Tax with Phthalates	Tax with Other Softeners
	DKK (EUR) per kg	
Soft pipes Tape and adhesives Roof-folios Membrane folios Roof plates Roof windows	3.50 (0.47)	1.40 (0.19)
PVC floor or wall cover Floor cork	0.30 (0.04)	0.16 (0.02)
Other floor and wall cover	3.00 (0.40)	1.60 (0.22)
Gloves PVC-protection Rain wear	3.60 (0.50)	1.08 (0.14)
Pipes for rain run-off	0.25 (0.03)	0.10 (0.01)
<i>Note: there are other product groups covered by the law.</i>		

➤ **Waste tax:**

- Denmark taxes the deposition of waste to landfill on a per tonne basis. There are two rates – one for hazardous waste (introduced in 2012) and one for all other types of waste (including both municipal and construction and demolition waste).
- The tax has been imposed since 1987 with a rate that has increased



several times. The current rate for non-hazardous waste (2014) is DKK 475.00 (€63.67) per tonne. The same rate is paid for waste that is deposited in a landfill temporarily prior to incineration.

- The rate for hazardous waste is DKK 160.00 (€21.44) per tonne.
- The revenue from the landfill tax in 2013 was DKK 155 million (€20.8 million).
- The Danish waste tax on incineration was abolished on 1 January 2014 due to incineration of waste being taxed through energy taxation.

➤ **Pesticides tax:**

- The use of pesticides is taxed in Denmark. This is done on an estimated impact basis, i.e. on the basis of the degree of harm caused by the chemicals in the pesticide.
- Previously, the tax used to be an ad-valorem tax according to the type of pesticide but due to a change of law in 2013, the rate is now determined based on the sum-product of four parameters, each of which is multiplied by the pesticide's impact rating in the respective area:
  - Human health impact: DKK 107 (€14.34) per kg pesticide.
  - Environmental toxicity: DKK 107 (€14.34) per kg pesticide.
  - Environmental behaviour: DKK 107 (€14.34) per kg pesticide.
  - Base rate: DKK 50 (€6.70) per kg pesticide.
- The revenue from the pesticides tax was DKK 659 million (€88.3 million) in 2013.

Table 7-7: Pesticide Tax Rates

Tax Rates	June 30, 2013	From July 1, 2013	2014
Plant protection			
	Charge of price tag value excl. VAT		Pay per view. kg or litre plant protection
Chemical agents for disinfecting soil in order to plant	35 per cent.	-	-
Chemical agents for controlling plant growth excluding algae growth	25 per cent.	-	-
Chemical agents for controlling plant diseases	25 per cent.	-	-
Chemical agents for controlling plant growth except for the actual plant nutrients and soil conditioners	25 per cent.	-	-
The charge is the sum of the charges calculated in accordance with no. 1-4	-	107 kr.	107 kr.
1 Health charge, per. kg. or liter plant protection times the product's health impact per. kg or liter of medium	-	107 kr.	107 kr.

Tax Rates	June 30, 2013	From July 1, 2013	2014
2 Environmental Impact Fee, per. kg. or l active substance times the product's environmental impact load per. kg. or liters agent		107 kr.	107 kr.
3 Environmental Behaviour Effect, per. kg. or l active substance times the product's environmental performance load per. kg or liter of medium		50 kr.	50 kr.
4 Base charge, per. kg or liter of active substance			
Chemical biocides			
	Tax on the taxable value excl. VAT <sup>1) 2)</sup>		
Chemical biocides for controlling insects, etc.. except means to combat pests in wood	35 per cent.	40 per cent.	40 per cent.
Chemical biocides to deter insects, etc.. and wild mammals and birds.	25 per cent.	30 per cent.	30 per cent.
Chemical biocides to combat fungi and pests in wood	3 per cent.	3 per cent.	3 per cent.
Chemical biocides to control the growth of algae	3 per cent.	3 per cent.	3 per cent.
Chemical biocides for control of slime-forming organisms in pulp	3 per cent.	3 per cent.	3 per cent.
Chemical biocides to control rats, mice, voles, moles and rabbits	3 per cent.	3 per cent.	3 per cent.
Microbiological plant	3 per cent.	3 per cent.	3 per cent.

Notes:

1) If an agent is involved in several categories, paid the highest tax rate

2) When selling directly to consumers fixed charge value to the product's normal wholesale price. If there is a general wholesale price, the taxable value by selling directly to the consumer or by transfer to a private retailer product's retail price less 20 per cent.

#### ➤ Aggregates (Extraction) Tax:

- Any extraction of materials from the ground for a commercial purpose is taxed on a per volume basis. Furthermore, imported extracted materials are also subject to taxation under the same law.
- Materials subject to taxation under this law include: sand, clay, chalk, granite, limestone, and granite.
- The law on the extraction tax sets out the weight-volume conversion factor for each material, but the tax rate is flat on a per volume basis for all materials: DKK 5.00 (€0.67) per m<sup>3</sup>.
- The revenue from the aggregates tax was DKK 134 million (€17.96 million).

#### ➤ Air pollution taxes:

- There are several air pollution taxes in Denmark, each related to a separate compound.
- Sulphur: The tax is paid based on the amount of sulphur in the energy product that is combusted and subsequently released into the atmosphere:
  - Pollution related to fossil-fuel based energy products, such as gas oil, natural gas and coal, which have a sulphur content that exceeds 0.05% is taxed at the rate of DKK 22.60 (€3.03) per kg sulphur.
  - Industrial plants that burn biomass or waste materials in boilers which are larger than 1,000 kW pay according to the amount of sulphur dioxide emitted: DKK 11.30 (€1.51) per kg.
  - Plants that do not know the amount of sulphur dioxide emitted from combusted biomass or waste pay a set rate which ranges from DKK 10.00 (€1.34) per tonne for waste to DKK 44.50 (€5.96) per tonne for wood pellets.
  - Any plants that utilise flue gas desulphurisation or similar technology to mitigate against the release of sulphur are exempt from the tax.
  - The revenue for the sulphur air pollution tax was DKK 52 million (€7.0 million) in 2013.
- NO<sub>x</sub> (nitrogen oxide compounds): Similarly, a tax is paid based on the amount (or assumed amount) of nitrogen oxide released through burning fuels.
  - If the amount of nitrogen oxide is known, the rate is DKK 25.50 (€3.42) per kg NO<sub>x</sub>.
  - Other fuels have individual tax rates associated with them and are based on the volume or tonnage of fuel burnt.
  - Revenue from the nitrogen oxide aspect of the air pollution tax: DKK 875 million (€117 million).

➤ **Nitrogen Fertiliser Tax:**

- Denmark has imposed a tax on nitrogen to improve the efficiency of its use and prevent its escape into the environment.
- The tax base includes the following:
  - Ammonia falling under customs tariff items 2814;
  - Potassium nitrate and calcium nitrate falling under customs tariff items 2834;
  - Ammonium chloride falling under customs tariff items 2827;

- Manures and fertilizers falling under customs tariff items 3102 and 3105; and
- Nitrate in manure which is pulverized, granulated or otherwise processed and which is determined for sale in packages of 50 kg or less.
- The tax rate is DKK 5.0 (€0.67) per kg of nitrogen.
- Most farmers, gardeners and the forestry sector do not pay this tax – the tax is not paid if the total nitrogen content is less than 2% by weight of the manure or fertiliser.
- **Tax on phosphate in feed:**
  - A tax of DKK 4 (€0.54) is applied per kg of mineral phosphates contained in feed phosphates.
- **Tax on CFCs:**
  - The tax rates are presented in Table 7-8.

**Table 7-8: Tax Rates on CFCs**

<b>Tax Rates</b>	<b>2013 DKK per kg</b>	<b>2014 DKK per kg</b>
Chemical substances used in the manufacture and maintenance of district heating pipes, refrigerators, freezers, sealing foam, spray cans, etc..		
Trichlorofluoromethane (CFC-11)	30	30
Dichlorodifluoromethane (CFC-12)	30	30
Trichlorotrifluoroethane (CFC-113)	30	30
Dichlorotetrafluoroethane (CFC-114)	30	30
Chloropentafluoroethane (CFC-115)	30	30
Bromochlorodifluoro (halon-1211)	30	30
Bromotrifluoromethane (halon-1301)	30	30
Dibromotetrafluoroethane (halon-2402)	30	30
HFC-23 (R-23)	600	600
HFC-32 (R-32)	101	101
HFC-41 (R-41)	15	15
HFC 43-10mee (R-43-10mee)	246	246
HFC-125 (R-125)	525	525

Tax Rates	2013 DKK per kg	2014 DKK per kg
HFC-134 (R-134)	165	165
HFC-134a (R-134a)	215	215
HFC-143 (R-143)	50	50
HFC-143a (R-143a)	600	600
HFC-152a (R-152a)	19	19
HFC-227ca (R-227)	483	483
HFC-236fa (R-236-fa)	600	600
HFC-245ca (R-245ca)	96	96
HFC-245fa (R-245fa)	155	155
HFC-365mfc (R-365mfc)	119	119
R-404a (HFC-143a / HFC 125 / 134a)	588	588
R-407 (HFC-32 / HFC-125 / 134a)	266	266
R-410A (HFC-32 / HFC-125)	313	313
R-413A (HFC-134a / PFC-218 / HFC-600a)	308	308
R-507 (HFC-125 / HFC-143a)	598	598
R-508A (HFC-23 / PFC-116)	600	600
R-508B (HFC-23 / PFC-116)	600	600
Sulphur hexafluoride (SF <sub>6</sub> )	600	600
Perfluoromethane (R-14)	600	600
Perfluoroethane (R-116)	600	600
Perfluoropropane (R-218)	600	600
Perfluorocyclobutane	600	600
Perfluorohexane	600	600
Perfluorobutane	600	600
Perfluoropentane	600	600

*Note: Is a taxable substance (HFCs, PFCs and SF<sub>6</sub>) are not subject to the above stated rates shall be paid a fee of DKK 600 per kg.*

➤ **Tax on Batteries:**

- The tax applies to sealed nickel-cadmium batteries. The tax rates are summarised in Table 7-9.

**Table 7-9: Tax Rate for Nickel-Cadmium Batteries**

<b>Tax Rates</b>	<b>2013</b>	<b>2014</b>
Nickel-cadmium loose round cells, single or grouped button cells or fladpak	DKK 6,00	DKK 6,00
Grouped Nickel-Cadmium Cylindrical Cells - At least	DKK 36.00 per Package DKK 6.00 per Cell	DKK 36.00 per Package DKK 6.00 per Cell
Used items: the tax is the same as that of an equivalent new product, but at least	DKK 120 nickel- cadmium battery	DKK 120 nickel- cadmium battery

*Note: The tax rate relates only nickel-cadmium batteries. The number of cells in a package will typically be determined by the number of volts (V), the package can supply divided by 1.2 V. Ex. will a package with a voltage of 9.6 V contain 8 cells.*

➤ **Water abstraction tax (tax on piped distributed water):**

- Water that is abstracted from ground water or received from water works is taxed on a per volume basis.
- If the water is abstracted from own wells and used for specific purposes only, the company can be exempt from the tax – such as a farmer using water for irrigation only.
- The tax rate is made up of two parts: a base rate and an additional drinking water contribution. Both of these are charged on a volumetric basis. The rate has changed over the past few years, increasing since 2012 up through 2017, after which it is due to decrease again:
  - 2012: DKK 5.23 (€0.70) per m<sup>3</sup> (base rate) + DKK 0.67 (€0.09) per m<sup>3</sup> (drinking water contribution): DKK 5.90 (€0.79) per m<sup>3</sup>
  - 2013 - 2014: DKK 5.46 (€0.73) per m<sup>3</sup> (base rate) + DKK 0.67 (€0.09) per m<sup>3</sup> (drinking water contribution): DKK 6.13 (€0.82) per m<sup>3</sup>
  - 2015 - 2017: DKK 5.86 (€0.79) per m<sup>3</sup> (base rate) + DKK 0.67 (€0.09) per m<sup>3</sup> (drinking water contribution): DKK 6.53 (€0.88) per m<sup>3</sup>
  - 2018 - 2019: DKK 6.18 (€0.83) per m<sup>3</sup> (base rate) + DKK 0.00 (€0.00) per m<sup>3</sup> (drinking water contribution): DKK 6.18 (€0.83) per m<sup>3</sup>
- VAT-registered companies can be reimbursed for the water abstraction tax paid on water used for VAT-liable purposes, though not if the water is sold

on to other customers.

- The revenue from the water abstraction tax was DKK 1.58 billion (€212 million) in 2013.

➤ **Waste water tax:**

- A further water-related tax is the waste water tax, which is levied on all releases of waste water into lakes, rivers and the sea. The basis of the tax rate is the amount of active and harmful material in the water:
  - Total Nitrogen content: DKK 30.00 (€4.03) per kg.
  - Total Phosphorus content: DKK 165.00 (€22.15) per kg.
  - Organic material: DKK 16.50 (€2.21) per kg.
- Waste water treatment facilities with at least 15% household waste water pay according to the assumed likely concentration of harmful materials.
- Revenue from the waste water tax was DKK 147 million (€19.7 million).

## 7.4 Modelled Changes in Tax Base

The modelled change in the tax base for each of the suggested reforms to the tax system are shown in the table and figures below.

**Table 7-10: Change in Energy Tax Base**

Fuel Type	Units	Baseline	After Tax Increase	Change
Gas Oil	million litres	668	647	-20
Petrol	million litres	170	170	0
Kerosene	million litres	163	163	0
LPG	thousand tonnes	8	8	0
Heavy Fuel Oil	thousand tonnes	16	16	0
Natural Gas	TJ (GCV)	10,082	10,048	-34
Coal	thousand tonnes	10	10	0
Electricity	GWh	4,852	4,460	-392

Figure 7-1: Change in Internal Passenger Flights, flights per year



Figure 7-2: Change in Intra-EU Passenger Flights, flights per year

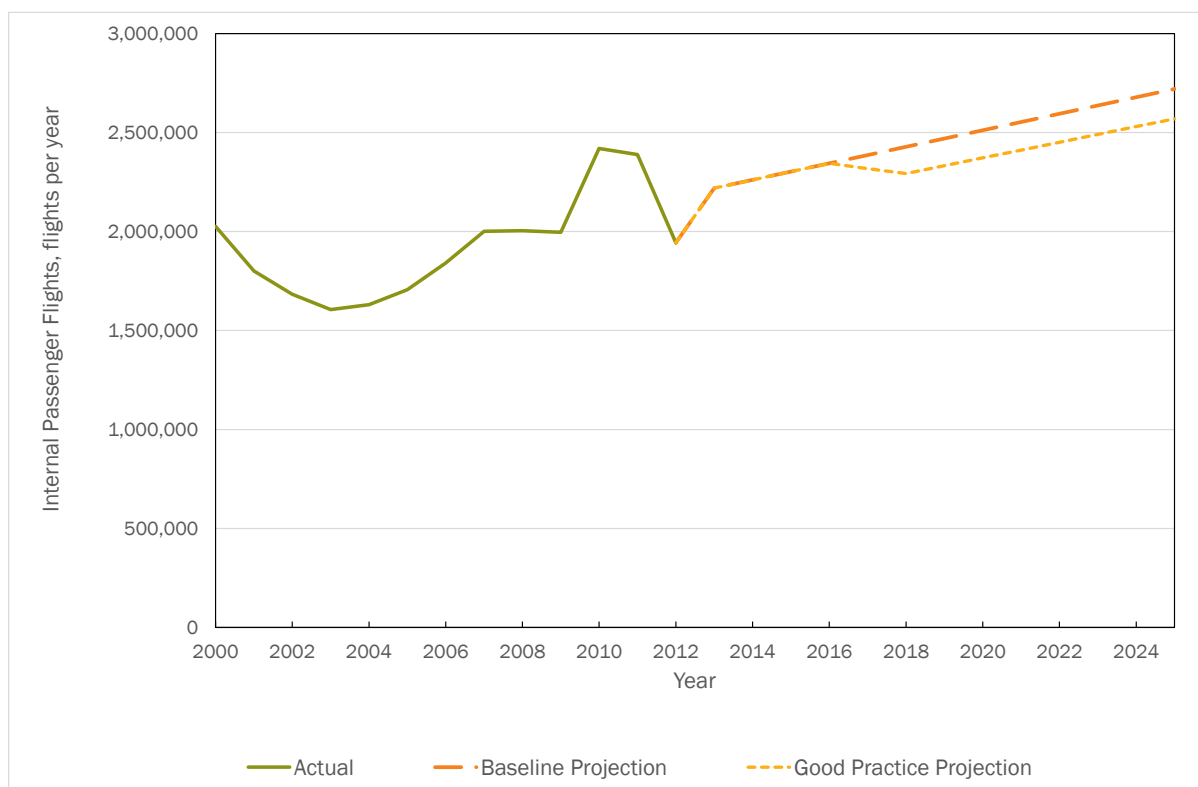




Figure 7-3: Change in Extra-EU Passenger Flights, flights per year

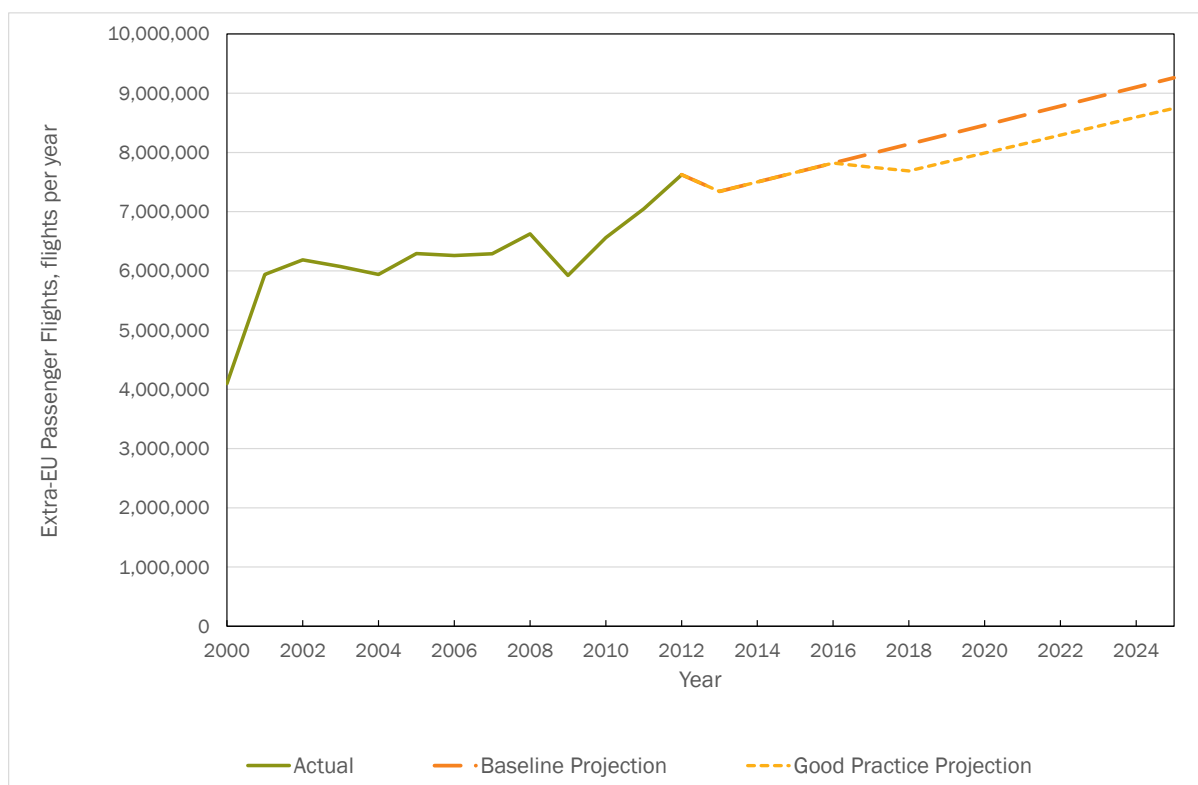


Figure 7-4: Change in Internal Air-freight, tonnes

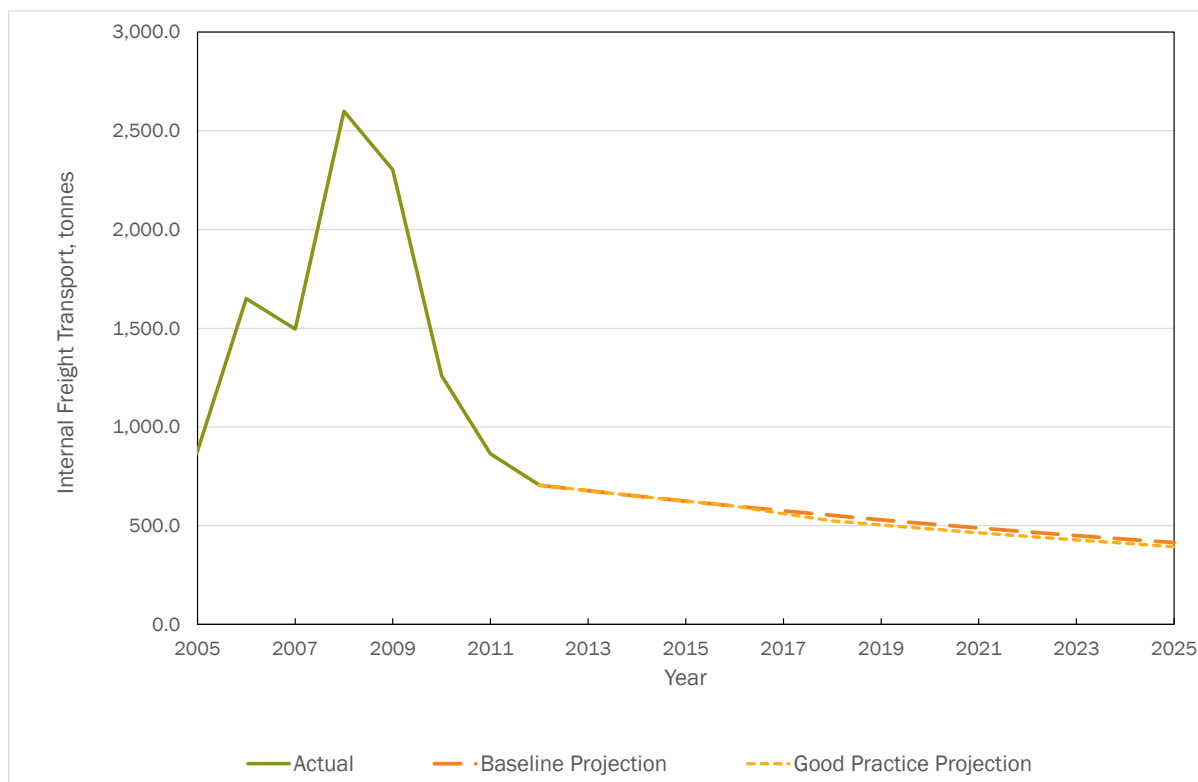


Figure 7-5: Change in Intra-EU Air-freight, tonnes

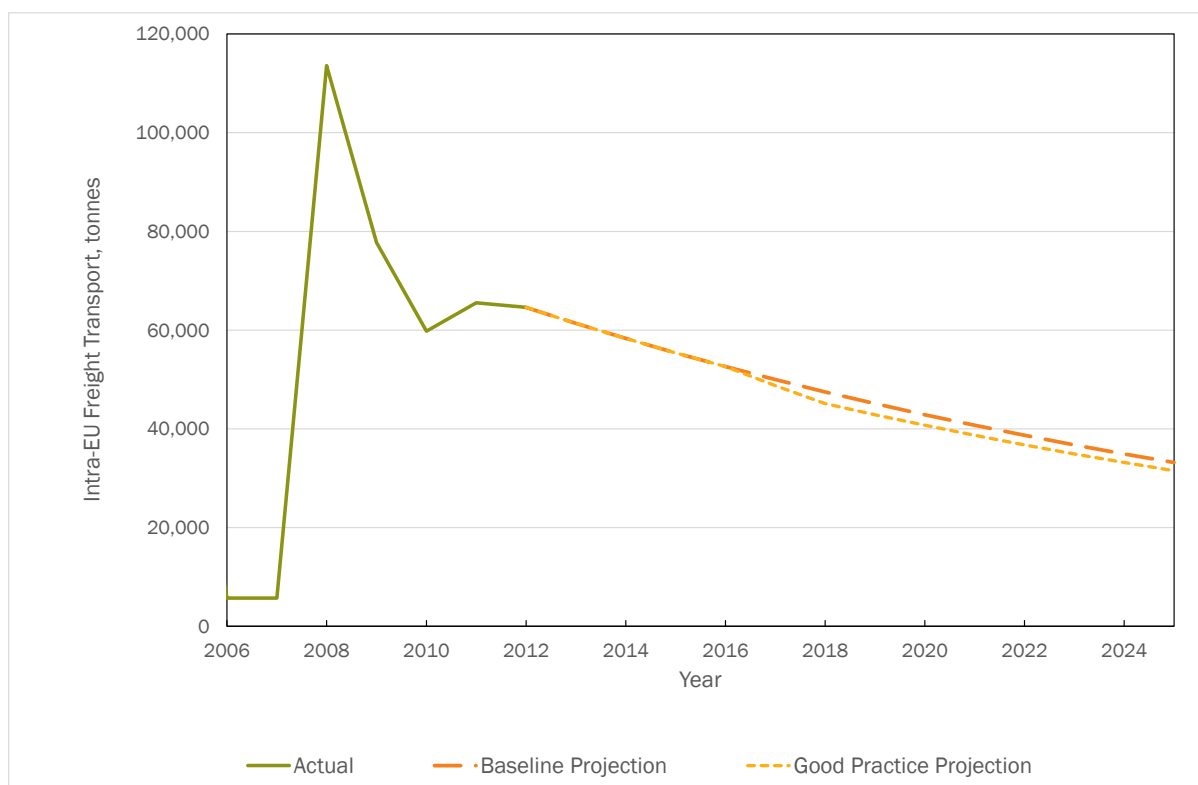


Figure 7-6: Change in Extra-EU Air-freight, tonnes

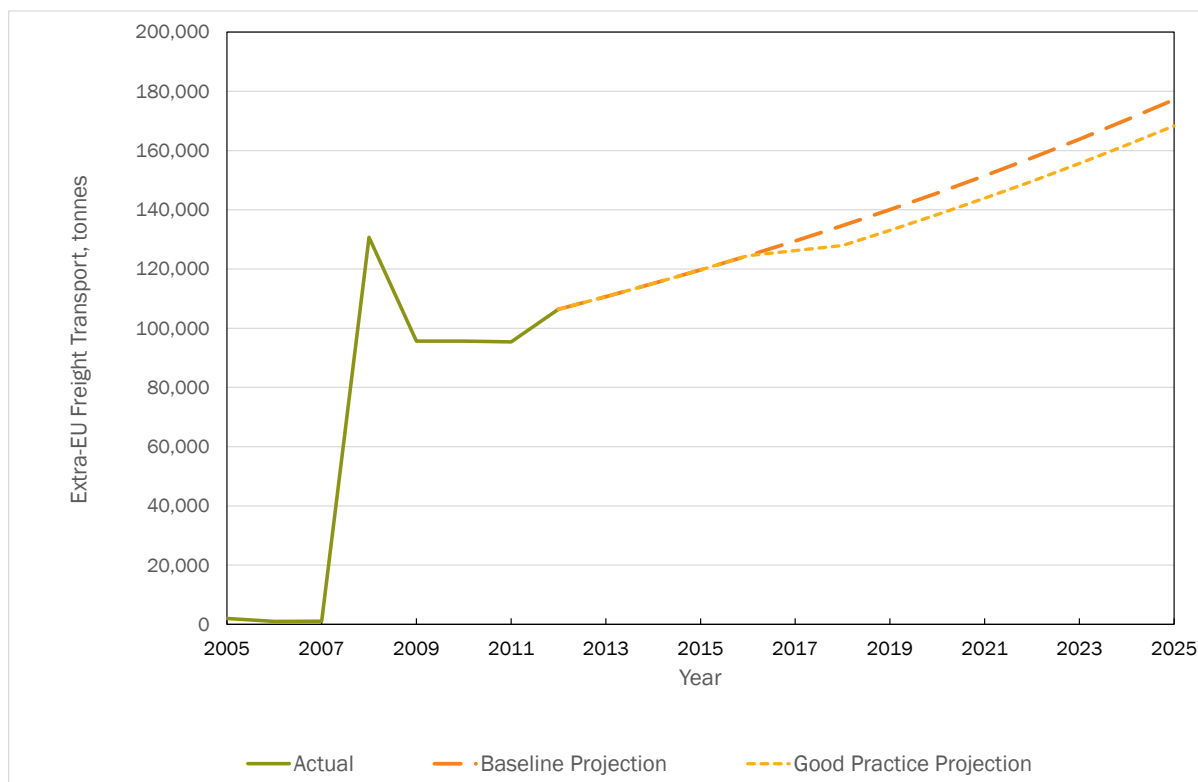


Figure 7-7: Change in Non-Hazardous Waste Landfilled, thousand tonnes

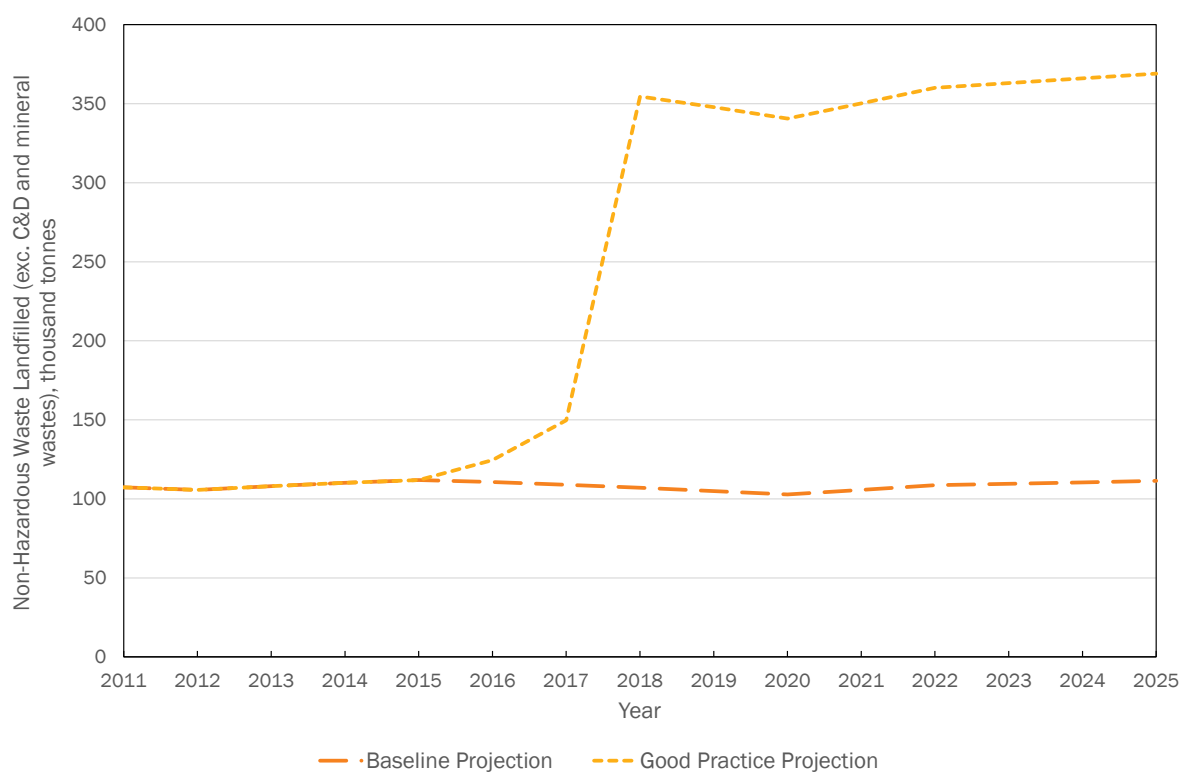


Figure 7-8: Change in MBT/ Incineration, thousand tonnes

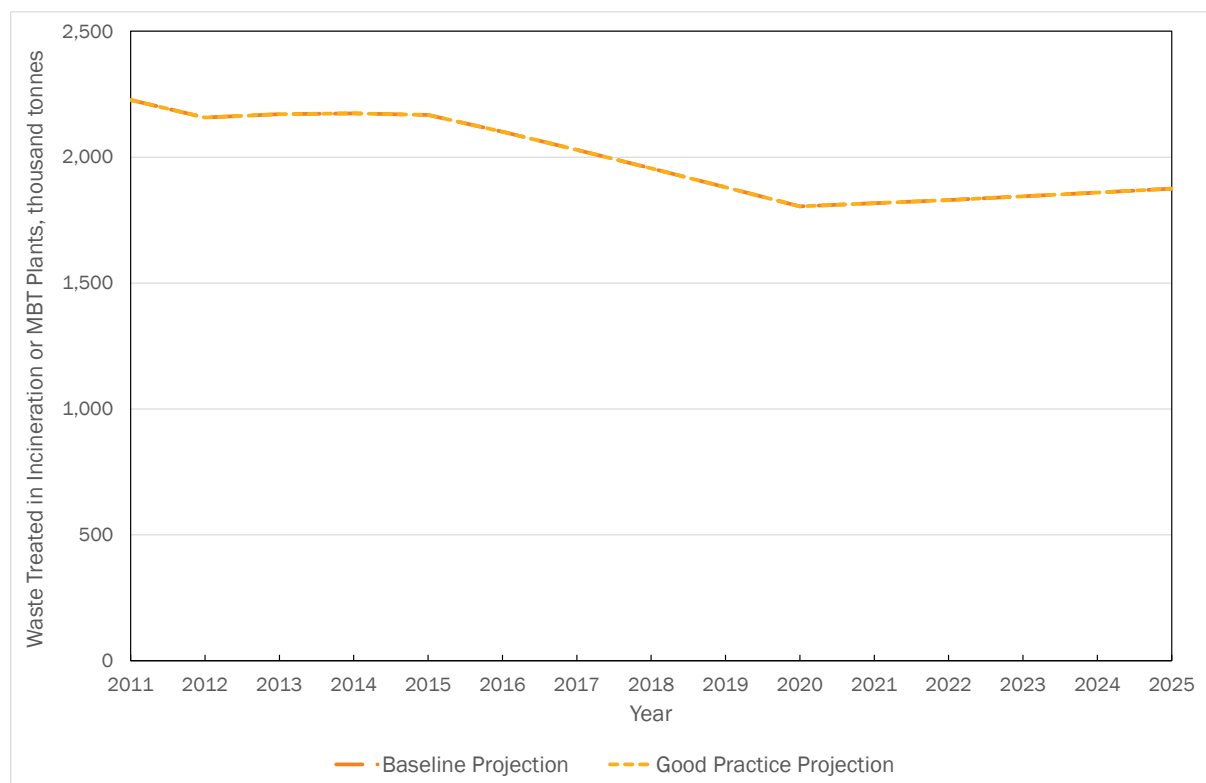


Figure 7-9: Change in SOx Emissions, tonnes

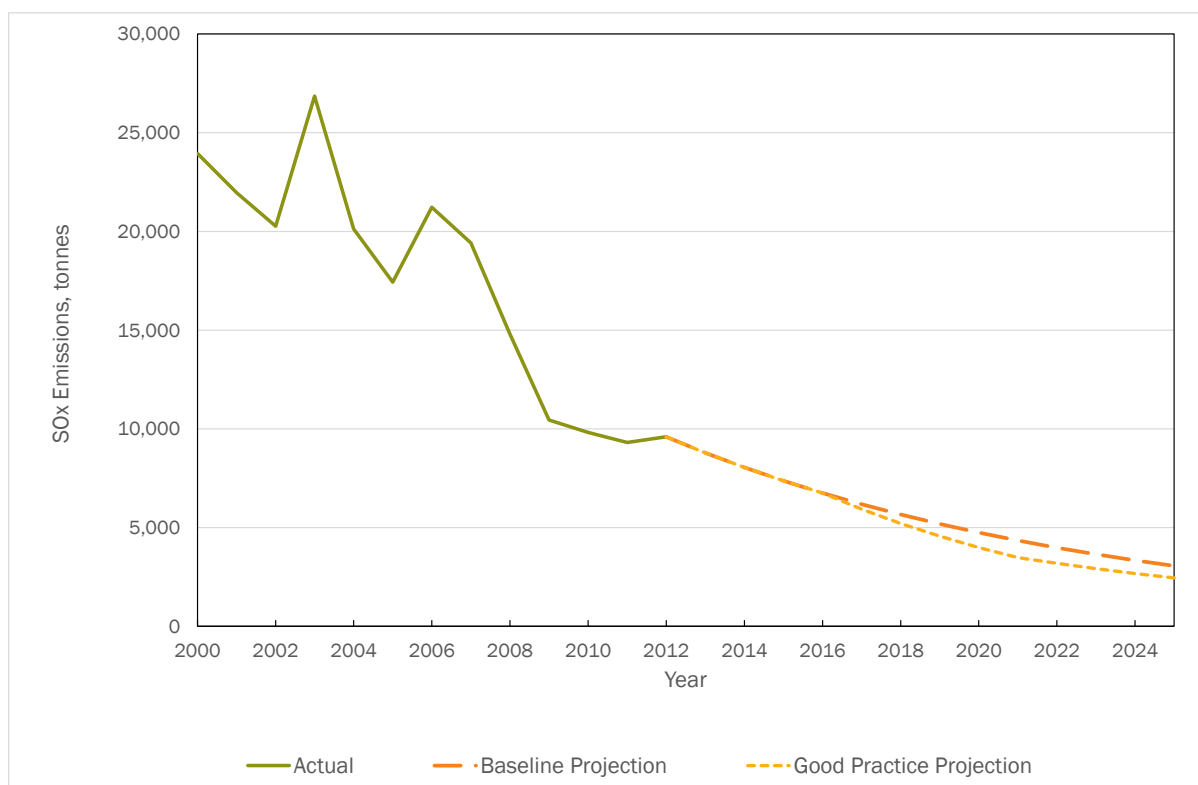


Figure 7-10: Change in NOx Emissions, tonnes



Figure 7-11: Change in PM<sub>10</sub> Emissions, tonnes

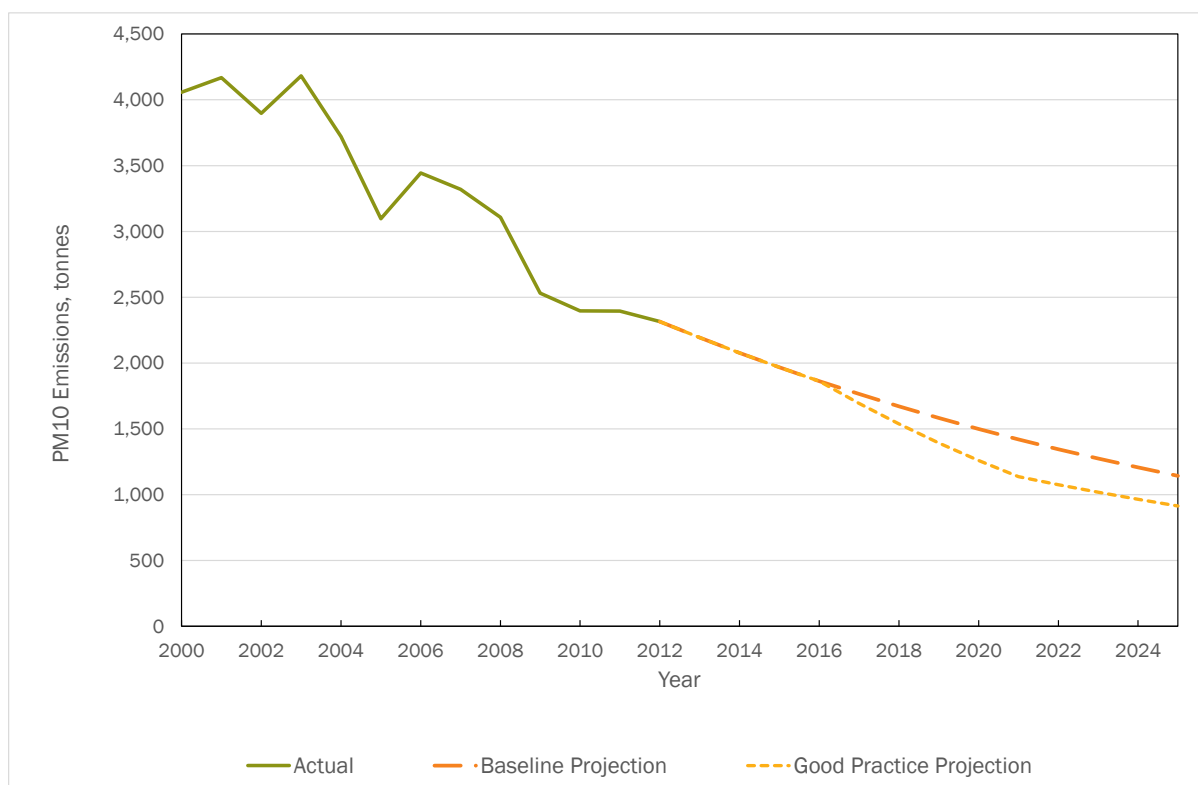


Figure 7-12: Change in Groundwater Abstraction – Public Supply, million cubic metres

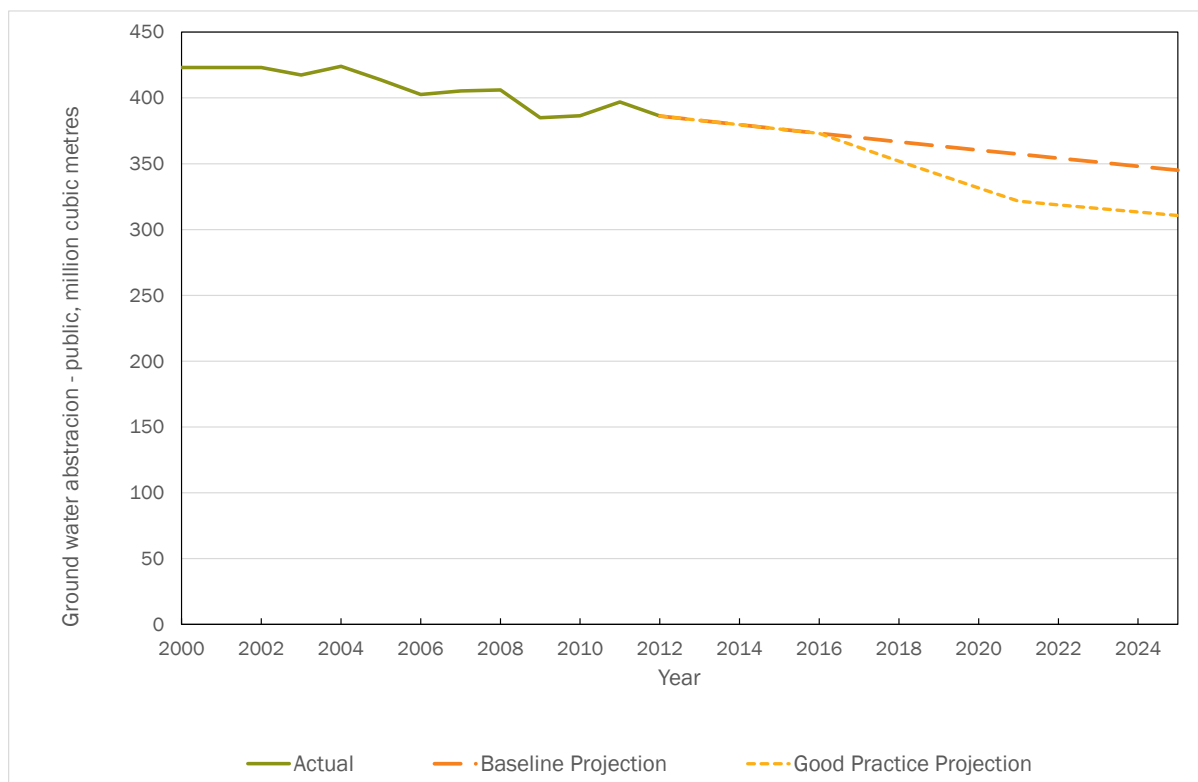


Figure 7-13: Change in Groundwater Abstraction – Manufacturing, million cubic metres

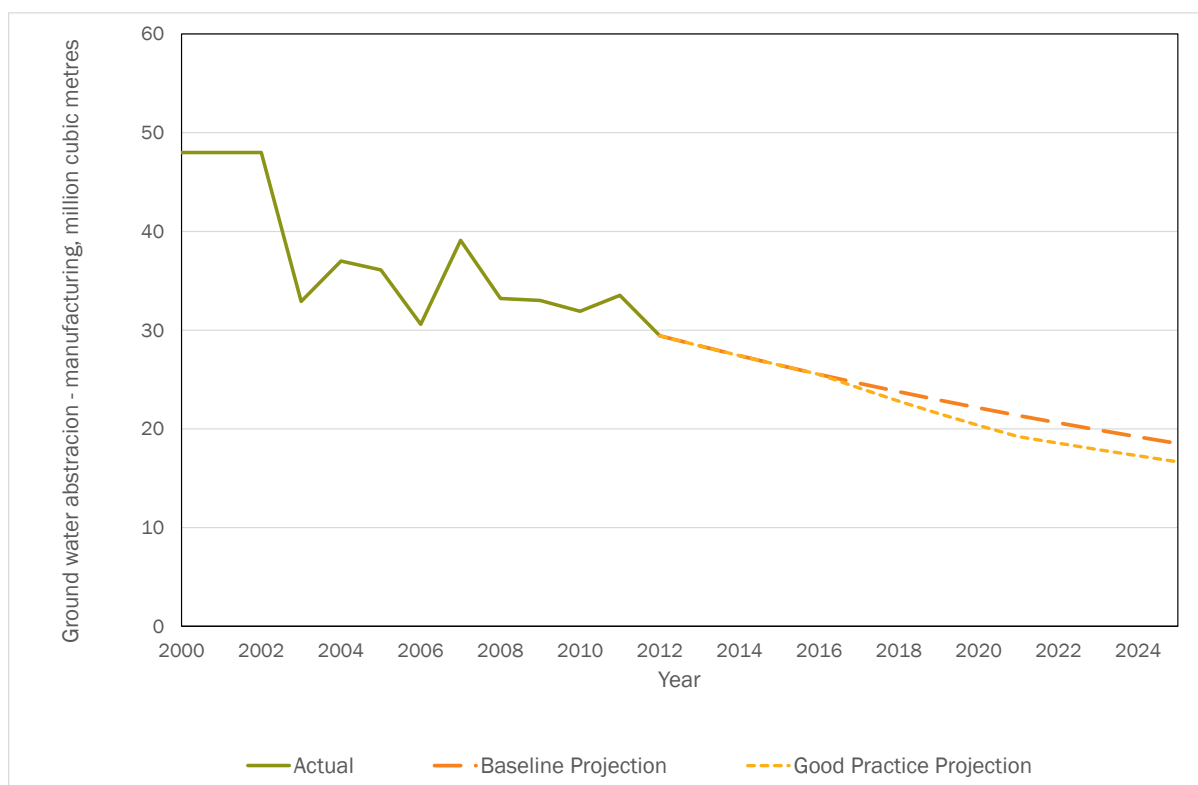


Figure 7-14: Change in Groundwater Abstraction – Agriculture, million cubic metres

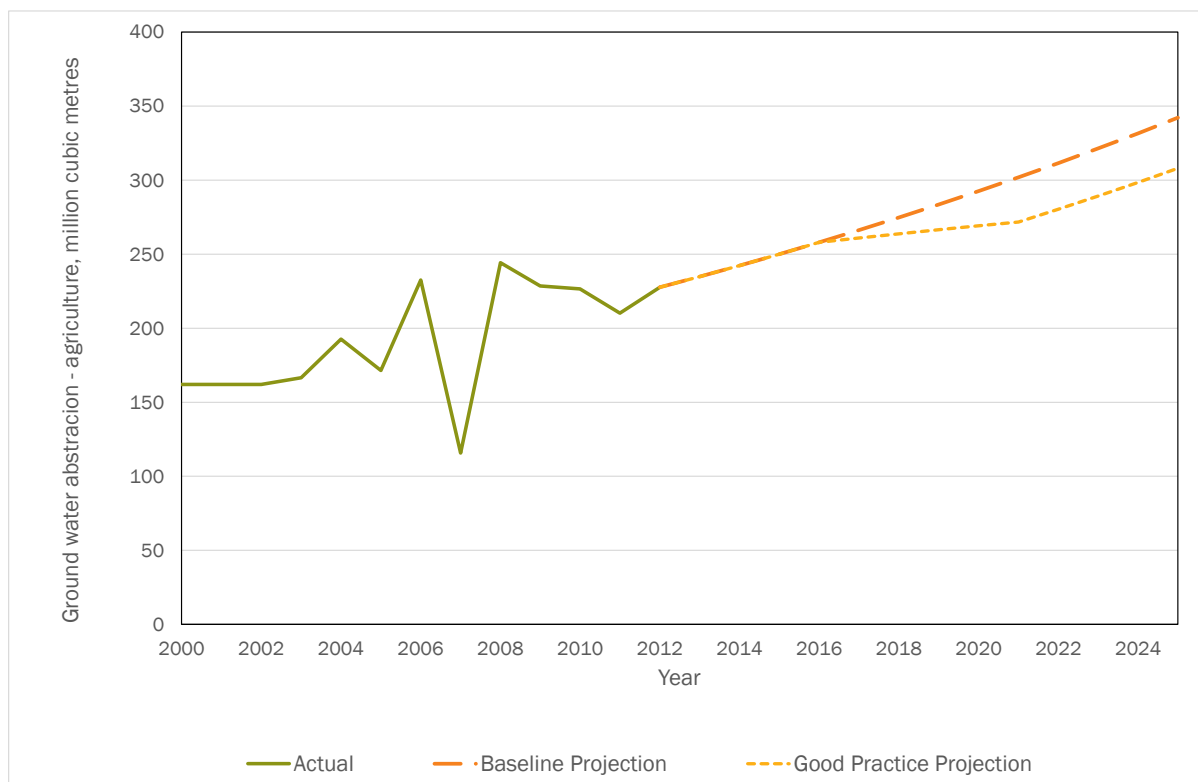


Figure 7-15: Change in Surface Water Abstraction – Public Supply, million cubic metres



Figure 7-16: Change in Surface Water Abstraction – Manufacturing, million cubic metres

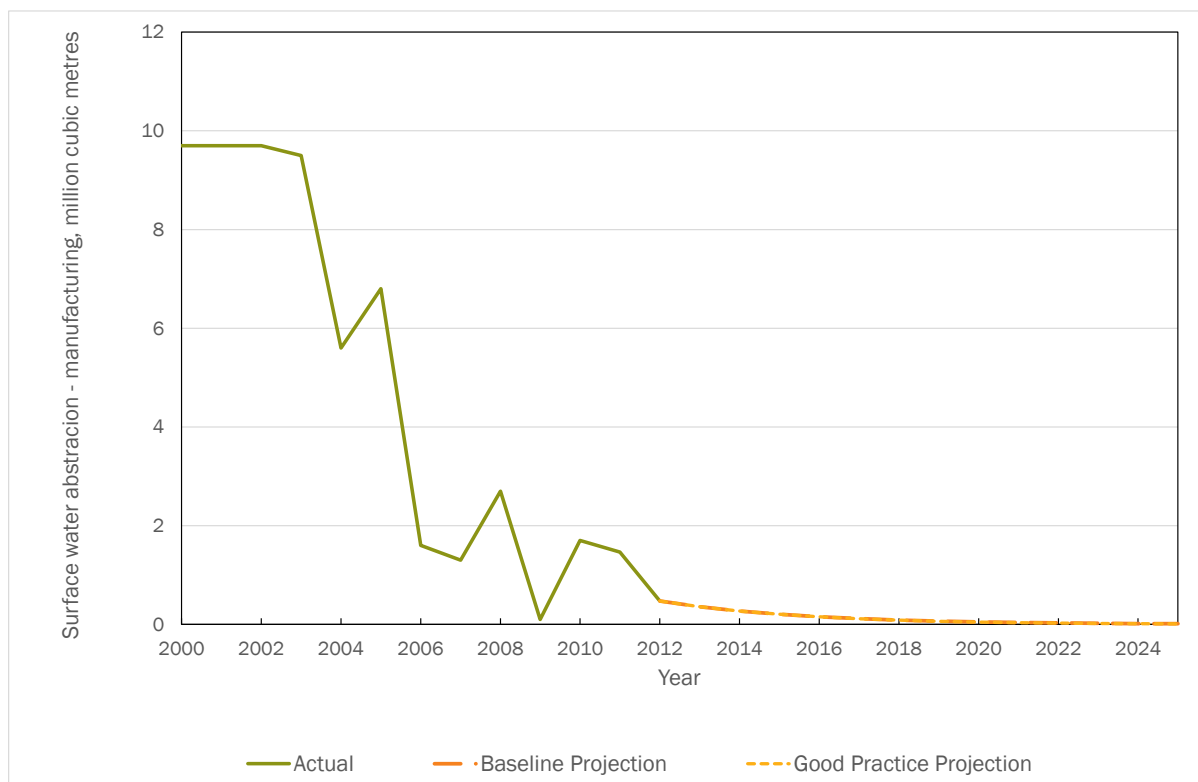


Figure 7-17: Change in Surface Water Abstraction – Agriculture, million cubic metres

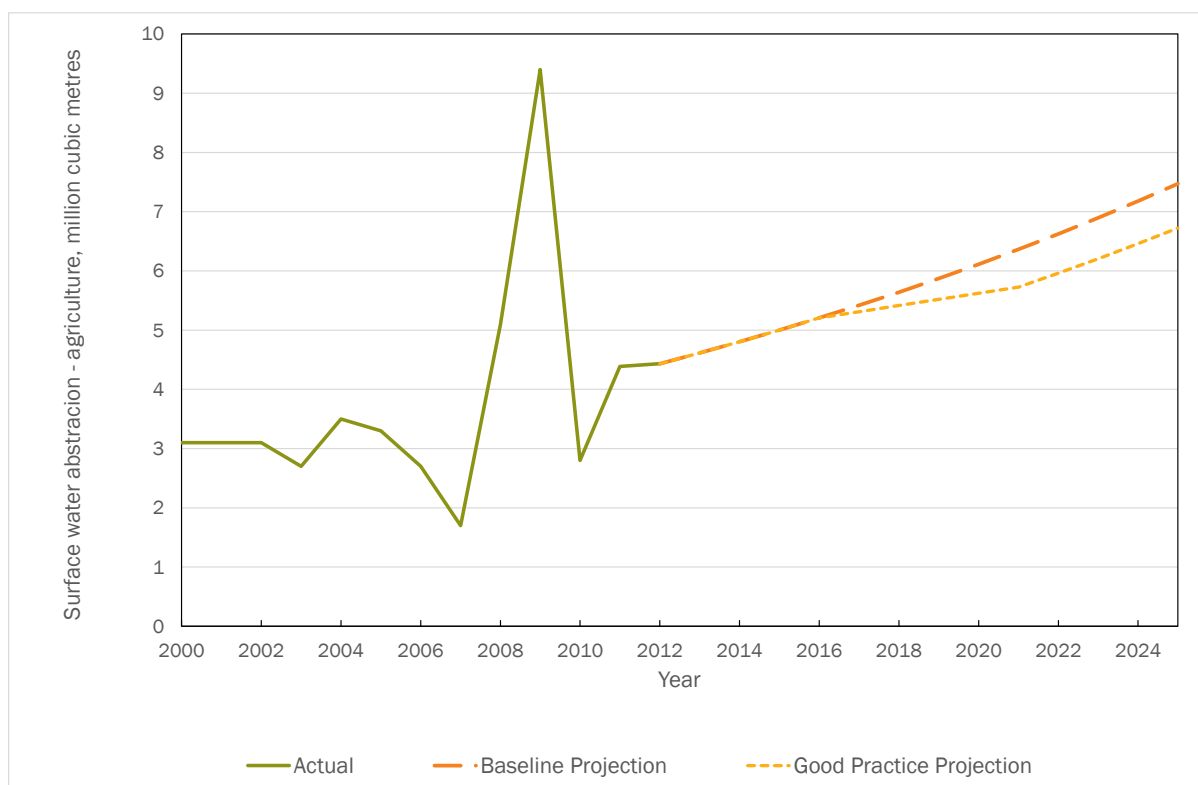


Figure 7-18: Change in Active Ingredients in Pesticides, tonnes

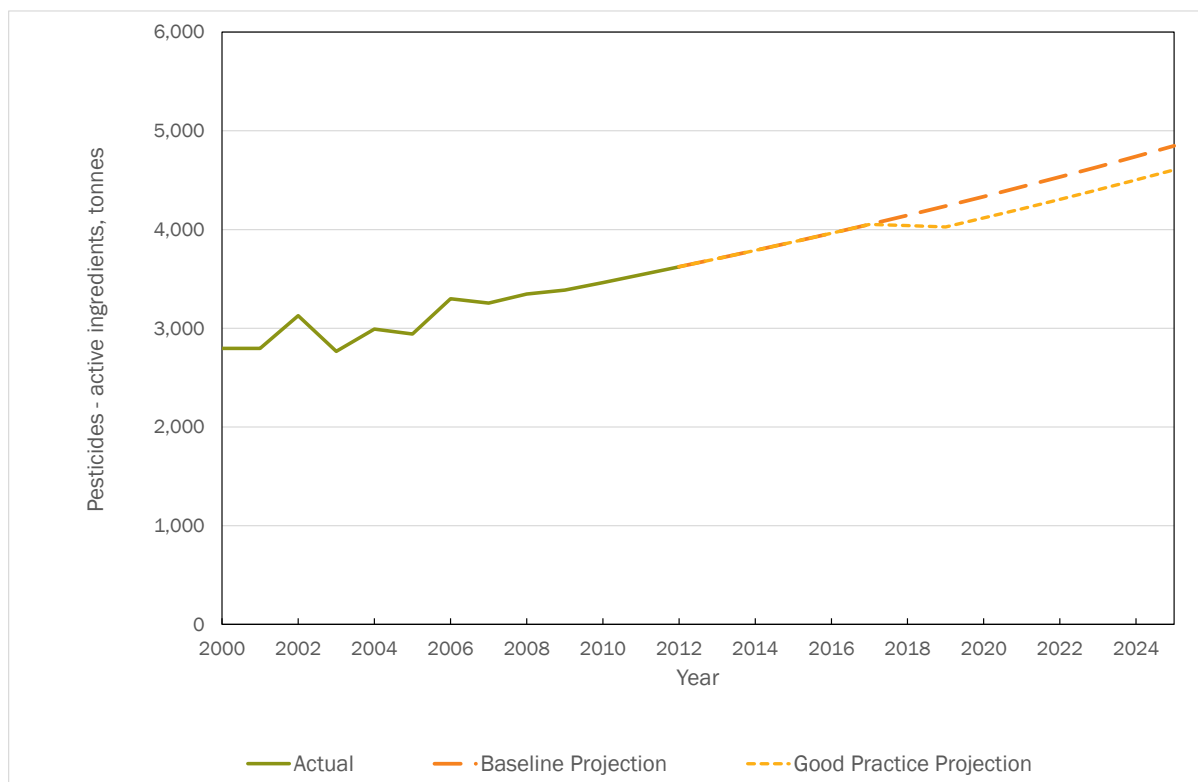




Figure 7-19: Change in Non-organic Nitrogen Sales of Fertilisers, tonnes

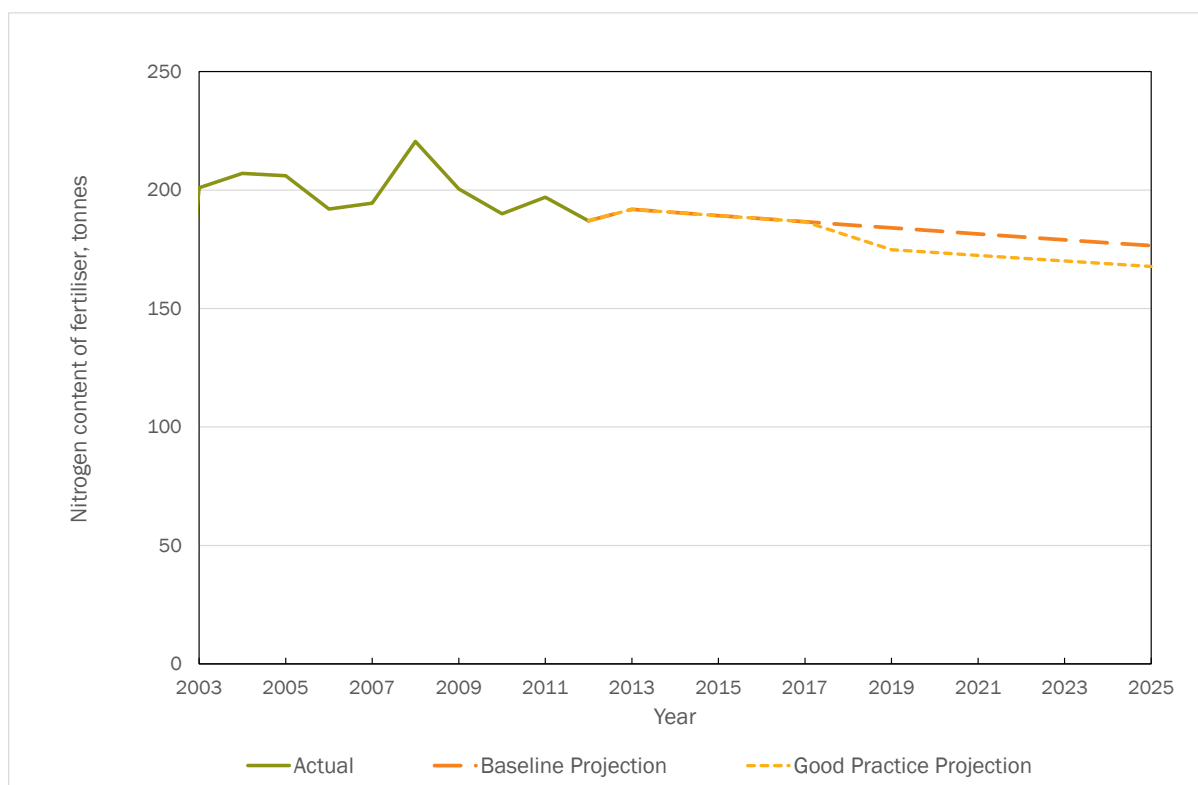


Figure 7-20: Change in Aggregates Extraction, thousand tonnes

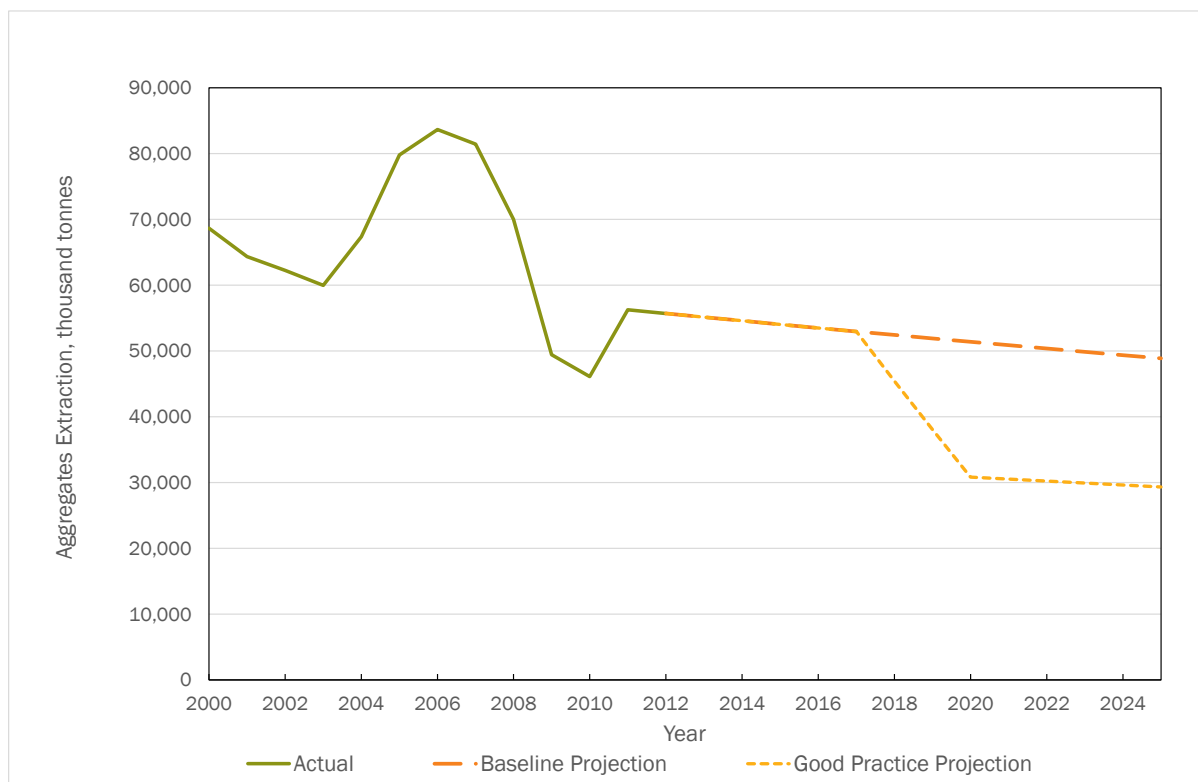


Figure 7-21: Change in Paper & Card Packaging Generation, thousand tonnes

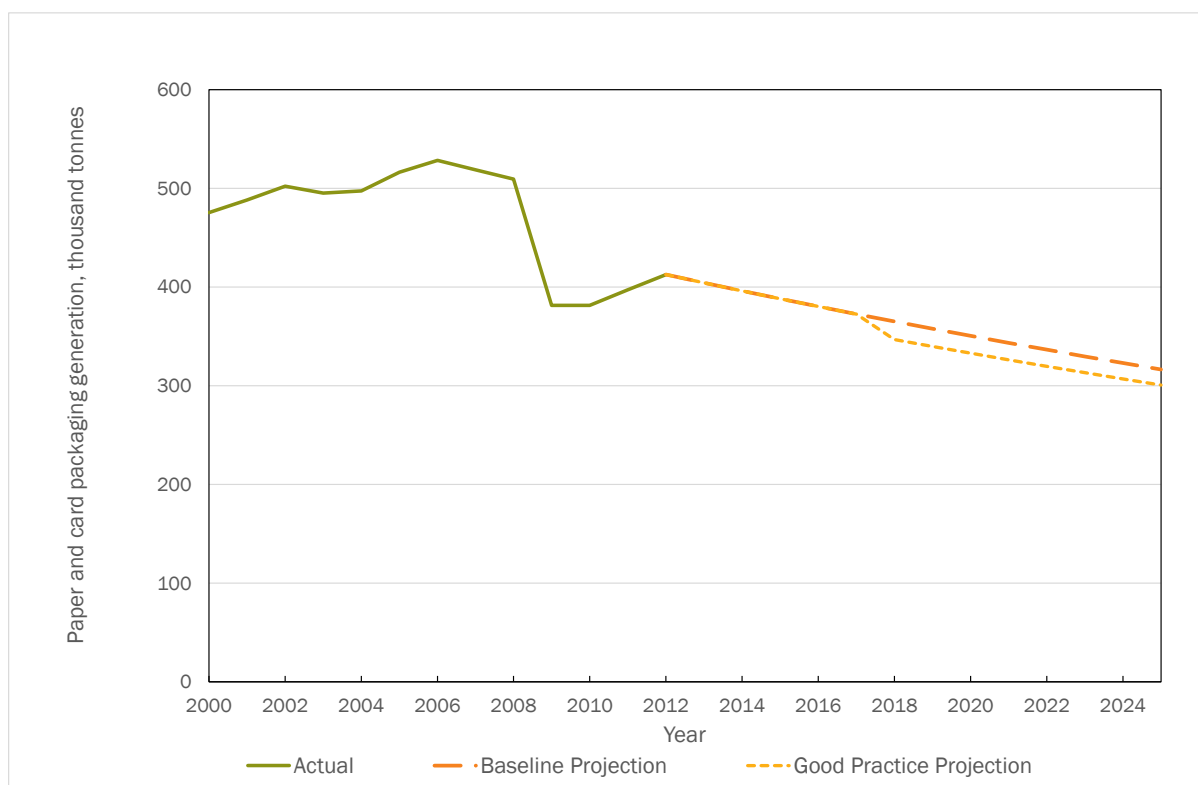


Figure 7-22: Change in Plastic Packaging Generation, thousand tonnes

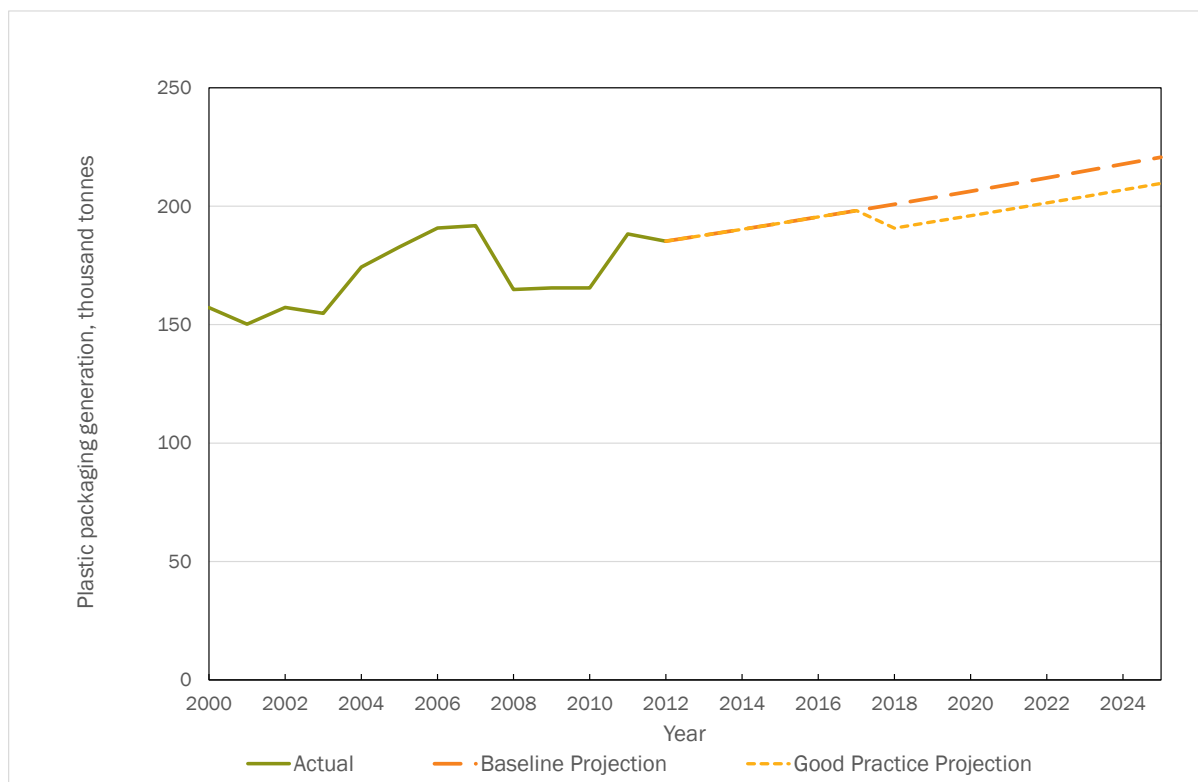


Figure 7-23: Change in Wood Packaging Generation, thousand tonnes

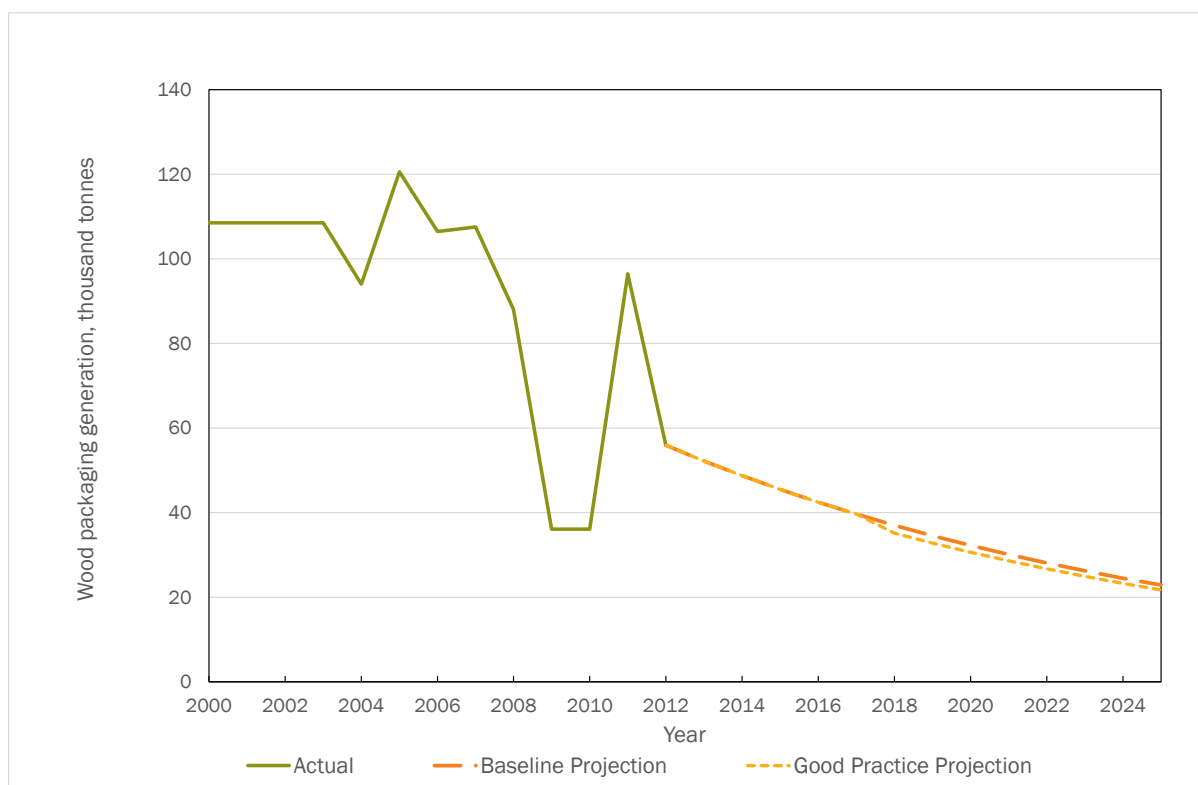


Figure 7-24: Change in Metal Packaging Generation, thousand tonnes

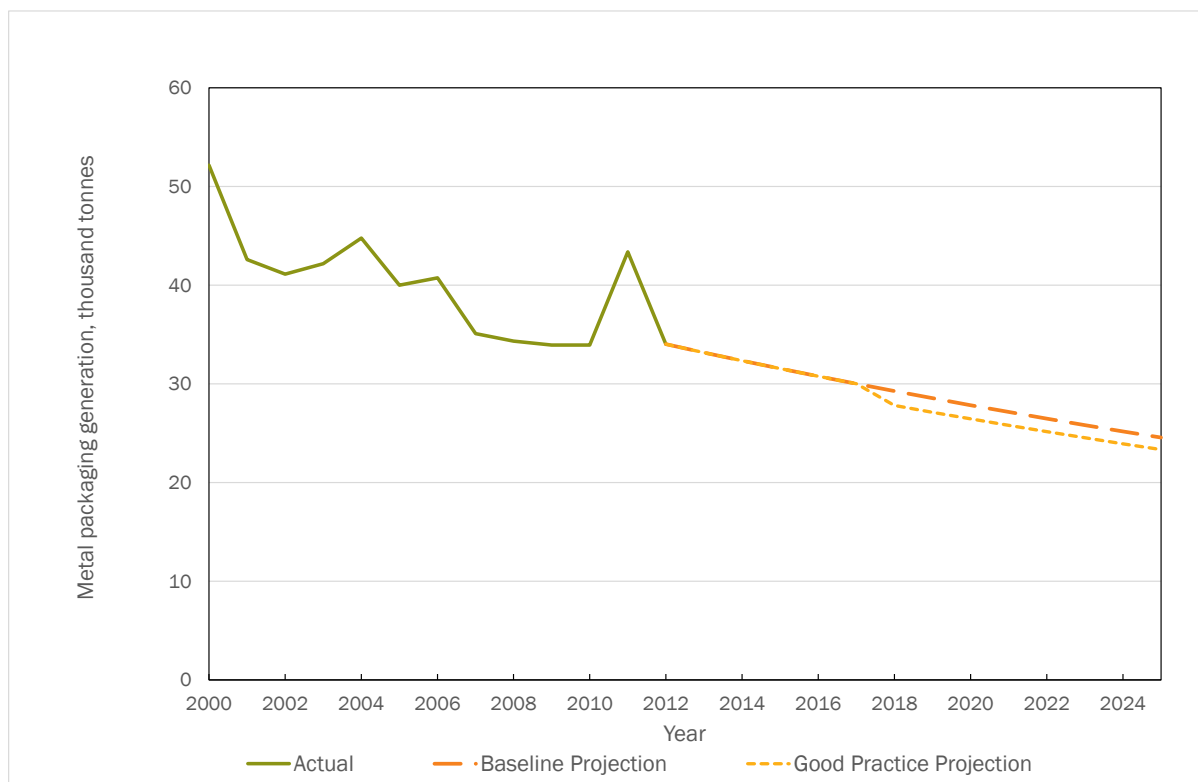


Figure 7-25: Change in Glass Packaging Generation, thousand tonnes

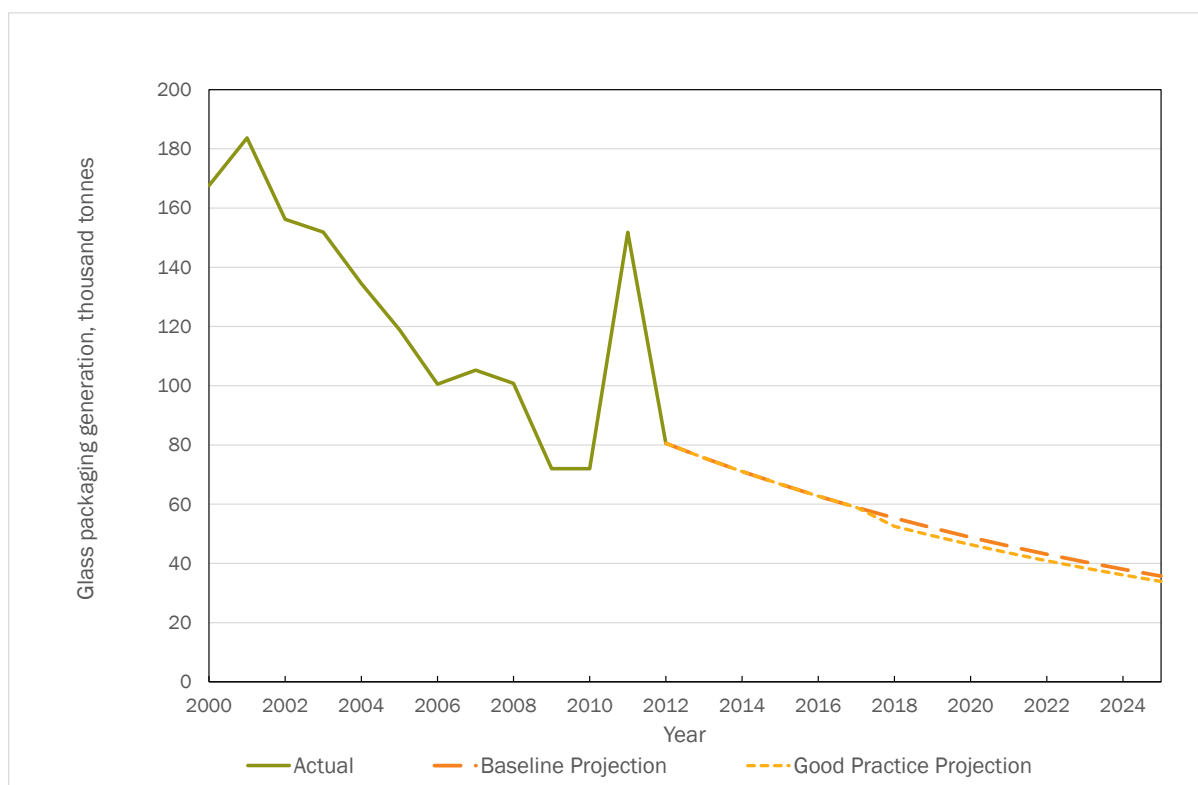
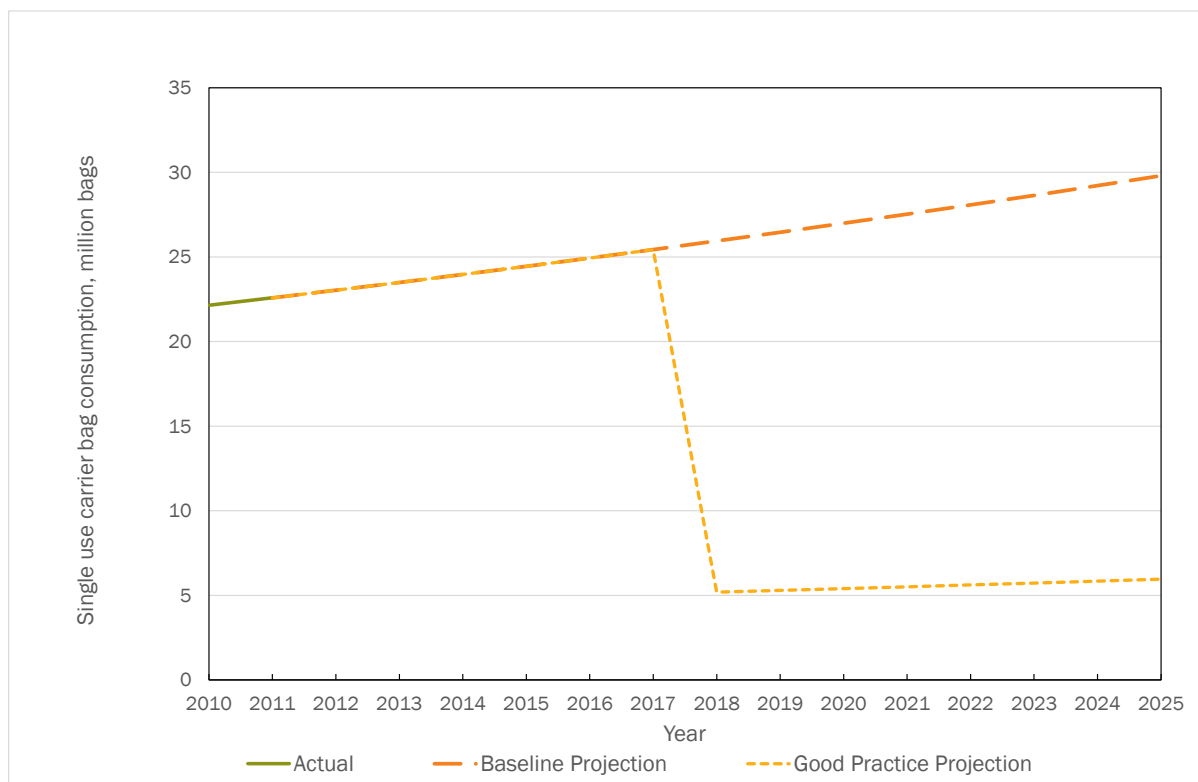


Figure 7-26: Change in Consumption of Single Use Carrier Bags, million bags



## 7.5 Full Revenue Outputs

A summary of the full revenue outputs for each of the suggested reforms to the tax system are presented in the table below.

Table 7-11: Revenue Outturns from Model, million DKK (real 2014 terms)

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Energy Taxes	Transport fuels	0	0	143	285	426	565	704	841	977	977	977
	C&I / Heating	0	0	2	4	6	8	10	12	14	14	14
	Electricity	856	856	856	856	856	856	856	856	856	856	856
	<i>Sub-total Energy, million DKK</i>	856	856	1,001	1,145	1,288	1,429	1,570	1,709	1,847	1,847	1,847
	<i>Sub-total Energy, % GDP</i>	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Transport Taxes (excluding transport fuels)	Vehicle Taxes	0	0	523	1,046	1,568	2,092	2,616	2,616	2,617	2,617	2,618
	Passenger Aviation Tax	0	0	3,300	6,557	6,696	6,835	6,975	7,114	7,253	7,392	7,531
	Freight Aviation Tax	0	0	1	2	2	2	2	2	2	2	2
	<i>Sub-total Transport, million DKK</i>	0	0	3,823	7,604	8,266	8,929	9,592	9,731	9,871	10,011	10,150
	<i>Sub-total Transport, % GDP</i>	0.0%	0.0%	0.2%	0.4%	0.4%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
Pollution and Resource Taxes	Landfill Tax - Non-haz (excl. C&D)	0	0	0	0	0	0	0	0	0	0	0
	Landfill Tax - Inerts (C&D)	0	1	2	3	2	2	2	2	2	2	2
	Incineration /MBT Tax	0	77	145	206	198	190	191	192	194	196	197

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Air Pollution Tax	0	6	11	15	19	21	19	18	17	16	15
	Water Abstraction Tax	0	10	21	31	40	50	49	49	50	51	51
	Waste Water Tax	0	61	118	171	165	165	165	165	165	165	165
	Pesticides Tax	0	0	227	452	450	461	471	482	493	504	515
	Aggregates Tax	0	0	790	657	527	399	395	391	387	383	379
	Packaging Tax	0	0	181	171	170	169	168	168	167	167	166
	Single Use Bag Tax	0	26	26	5	5	6	6	6	6	6	6
	Fertiliser Tax	0	0	0	0	0	0	0	0	0	0	0
	<b>Sub-total Pollution &amp; Resource, million DKK</b>	0	181	1,521	1,711	1,576	1,461	1,466	1,473	1,480	1,488	1,497
	<b>Sub-total Pollution &amp; Resource, % GDP</b>	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Total Revenue Stream	<b>Total, million DKK</b>	<b>856</b>	<b>1,037</b>	<b>6,346</b>	<b>10,460</b>	<b>11,130</b>	<b>11,819</b>	<b>12,627</b>	<b>12,913</b>	<b>13,198</b>	<b>13,346</b>	<b>13,495</b>
	<b>Total, % GDP</b>	<b>0.0%</b>	<b>0.1%</b>	<b>0.3%</b>	<b>0.5%</b>	<b>0.6%</b>	<b>0.6%</b>	<b>0.6%</b>	<b>0.7%</b>	<b>0.7%</b>	<b>0.7%</b>	<b>0.7%</b>

## 8.0 Finland

During the course of the study the latest data available from official sources was sought, namely the TAXUD Taxes in Europe database, energy excise duty tables and the OECD database on environmental taxes and charges. This was supplemented by national data sources where possible. Due to the number of taxes and countries involved, the central case for energy excise duties has been the rates published by TAXUD giving the position as of 1<sup>st</sup> July 2014. Planned future increases may not be fully captured in this analysis and therefore, the projected increase in revenues would effectively incorporate any revenue from increased rates in early 2015 or shortly thereafter.

### 8.1 Energy Taxes

- **Excise Duty on Energy Products (“Nestelmäisten polttoaineiden valmistevero/Accis på flytande bränslen Sähkö ja eräiden polttoaineiden valmistevero/Accis på elström och vissa bränslen”):<sup>273</sup>**
  - An excise duty is levied on transport fuels, heating fuels and electricity. The excise duty is divided into three components: an energy content tax, a CO<sub>2</sub> tax, and an addition surcharge, the strategic stockpile fee which is levied on liquid fuels, electricity, coal, and natural gas. The energy component is largely based on energy content, while the CO<sub>2</sub> component is based on a life-cycle approach to CO<sub>2</sub> emissions.<sup>274</sup>
  - Rates: see Table 8-1 for details of overall standard rates applied. For specific rates of the three components of the excise duty see Table 8-2 and Table 8-3.
  - Main exemptions:<sup>275</sup>
    - Fuels used to generate electricity as an excise duty is levied on electricity.
    - Liquefied petroleum gas.
    - Fuels used in aviation other than private leisure flights.
    - Electricity for direct use in electric rail traffic.

---

<sup>273</sup> DG TAXUD (2014) *Taxes in Europe Database, Finland Excise Duty – Energy Products*, Accessed 27 August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=844/1395070212&taxType=Energy+products+and+electricity](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=844/1395070212&taxType=Energy+products+and+electricity)

<sup>274</sup> Withana, S., ten Brink, P., Kretschmer, B., Mazza, L., Hjerpe, P., Sauter, R., Malou, A., and Illes, A., (2013) Annexes to Final Report - Evaluation of environmental tax reforms: International experiences. A report by the Institute for European Environmental Policy (IEEP) for the State Secretariat for Economic Affairs (SECO) and the Federal Finance Administration (FFA) of Switzerland. Brussels. 2013. [http://ieep.eu/assets/1282/ETR\\_study\\_by\\_IEEP\\_for\\_the\\_Swiss\\_Government - Annexes - 21\\_June\\_2013.pdf](http://ieep.eu/assets/1282/ETR_study_by_IEEP_for_the_Swiss_Government_-_Annexes_-_21_June_2013.pdf)

<sup>275</sup> DG TAXUD (2014) *Taxes in Europe Database, Finland Excise Duty – Energy Products*, Accessed 27 August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=844/1395070212&taxType=Energy+products+and+electricity](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=844/1395070212&taxType=Energy+products+and+electricity)



- Tax rate for fuel peat is lower than its calculated CO<sub>2</sub> emissions are. Note that the government decided in the budget proposal to cancel the next increase (€ 5.9 per MWh) for fuel peat, which should have come into force in 2015. Thus the rate remains at the 2014 level of € 4.9 per MWh.
- Excise duty on electricity is graded into two categories: lower (II) tax category applies for electricity used in industry or server rooms; and higher (I) category applies for all other consumption (households, agriculture, forestry, construction, public administration and services).
- If electricity is produced in a combined heat and power plant the duty is levied on the fuels used for producing heat.<sup>276</sup>
- A reduced rate (fifty per cent) applies for the CO<sub>2</sub> tax on fossil fuels used in combined heat and power production.<sup>277</sup>
- In cases where the excise duty paid by energy-intensive enterprise exceed 0.5% of the company's value added, the company may apply for a refund of 85 per cent of the amount of the excise duties paid. Only the part exceeding €50,000 (as a threshold) of the tax refund is repaid.
- If biofuels fulfil the requirements of the Renewable Energy Sources Directive a reduced rate of the CO<sub>2</sub> tax is applied.<sup>278</sup>
- A refund from the energy content tax is provided for gas oil, heavy fuel oil, biofuel and 1.2 c/kWh for electricity for professional agricultural use.<sup>279</sup>
- Revenue in 2012 (including all excise duties and the stockpile fee) was € 4,000 million (equivalent to 2% of GDP).<sup>280</sup>

Table 8-1: Standard Rates of Excise Duties on Energy Products in Finland<sup>281</sup>

Excise Duty	Unit	Rate Applied in Finland
<b>Transport Fuels</b>		
Unleaded Petrol <sup>1</sup>	€ per 1000 litres	€672.9
Gas Oil (Diesel)	€ per 1000 litres	€496.6
Kerosene	€ per 1000 litres	€731.0

<sup>276</sup> Ibid.

<sup>277</sup> Ibid.

<sup>278</sup> Ibid.

<sup>279</sup> Ibid.

<sup>280</sup> DG TAXUD (2014) *Taxes in Europe Database, Finland Excise Duty – Energy Products*, Accessed 19 August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=844/1395070212&taxType=Energy+products+and+electricity](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=844/1395070212&taxType=Energy+products+and+electricity)

<sup>281</sup> Ibid.

Excise Duty	Unit	Rate Applied in Finland
Liquefied Petroleum Gas	€ per 1000 kg	€0.0
Natural Gas	€ per GJ	€3.18
<b>Motor Fuels – Industry/Commercial use</b>		
Gas Oil (Diesel)	€ per 1000 litres	€163.4
Kerosene	€ per 1000 litres	€731.0
Liquid Petroleum Gas	€ per 1000 kg	€0.0
Natural Gas	€ per GJ	€3.18
<b>Heating – Business Use</b>		
Gas Oil (Diesel)	€ per 1000 litres	€163.4
Kerosene	€ per 1000 litres	€731.0
Heavy Fuel Oil	€ per 1000 kg	€192.1
Liquid Petroleum Gas	€ per 1000 kg	€0.0
Natural Gas	€ per GJ	€3.18
Coal and Coke	€ per GJ	€5.2
Lignite	€ per 1000 kg	€132.71
<b>Heating – Non-Business Use</b>		
Gas Oil (Diesel)	€ per 1000 litres	€163.4
Kerosene	€ per 1000 litres	€731.0
Heavy Fuel Oil	€ per 1000 kg	€192.1
Liquid Petroleum Gas	€ per 1000 kg	€0.0
Natural Gas	€ per GJ	€3.18
Coal and Coke	€ per GJ	€5.2
Lignite	€ per 1000 kg	€ 132.71
<b>Electricity</b>		
Tax category I <sup>2</sup>	€ per MWh	€19.03
Tax category II <sup>3</sup>	€ per MWh	€7.03

Excise Duty	Unit	Rate Applied in Finland
Notes: 1. <i>Leaded petrol is no longer sold in Finland.</i> 2. <i>Applies for private households, agriculture, forestry, construction, public administration and services.</i> 3. <i>Applies for industry and server rooms.</i>		

**Table 8-2: Detailed Excise Duty Rate Structure on Energy Products in Finland as of 1 January 2014<sup>282</sup>**

Product (Currency/Unit)	Energy Content Tax	Carbon Dioxide Tax	Strategic Stockpile Fee	Total
Motor gasoline (c/l)	50.36	16.25	0.68	67.29
Small engine gasoline (c/l)	30.36	16.25	0.68	47.29
Diesel oil (c/l)	30.7	18.61	0.35	49.66
Diesel oil paraffin (c/l)	24	17.58	0.35	41.93
Heavy fuel oil (c/kg)	7.59	11.34	0.28	19.21
Light fuel oil (c/l)	9.3	9.34	0.35	18.99
Light fuel oil. sulphur-free (c/l)	6.65	9.34	0.35	16.34
Kerosene-type jet fuel (c/l)	54.76	17.99	0.35	73.1
Aviation gasoline (c/l)	49.88	16.1	0.68	66.66
Tall oil (c/kg)	19.21	n.a.	0	19.21
Coal, coal bricks, solid fuels produced from coal (€/t)	47.10	84.43	1.18	132.71
Fuel peat (€/MWh)	4.90	n.a.	0	4.90

<sup>282</sup> DG TAXUD (2014) *Taxes in Europe Database, Finland Excise Duty – Energy Products*, Accessed 19 August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=844/1395070212&taxType=Energy+products+and+electricity](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=844/1395070212&taxType=Energy+products+and+electricity)

Product (Currency/Unit)	Energy Content Tax	Carbon Dioxide Tax	Strategic Stockpile Fee	Total
<b>Natural gas (€/MWh)</b>				
Between 1.1.2013 – 31.12.2014	4.45	6.93	0.084	11.464
From 1.1.2015	6.65	6.93	0.084	13.664
<b>Electricity (c/kWh)</b>				
Tax class I <sup>1</sup>	1.89	n.a.	0.013	1.903
Tax class II <sup>2</sup>	0.69	n.a.	0.013	0.703
<sup>1</sup> : Excise duty of the higher (I) tax category is collected on electricity used by private households as well as agriculture, forestry, construction, public administration and services. <sup>2</sup> : Electricity used in industry or server rooms is subject to the lower (II) tax category.				

**Table 8-3: Detailed Excise Duty Rate Structure on Other Energy Products in Finland as of 1<sup>st</sup> January 2014<sup>283</sup>**

Product (Currency/Unit)	Energy Content Tax	Carbon Dioxide Tax	Strategic Stockpile Fee	Total
Bioethanol (c/l)	33.05	10.67	0.68	44.4
Bioethanol R (c/l)	33.05	5.33	0.68	39.06
Bioethanol T (c/l)	33.05	0	0.68	33.73
MTBE (c/l)	40.91	13.21	0.68	54.8
MTBE R (c/l)	40.91	11.75	0.68	53.34
MTBE T (c/l)	40.91	10.3	0.68	51.89
TAME (c/l)	44.06	14.22	0.68	58.96
TAME R (c/l)	44.06	12.94	0.68	57.68
TAME T (c/l)	44.06	11.66	0.68	56.4

<sup>283</sup> DG TAXUD (2014) *Taxes in Europe Database, Finland Excise Duty – Energy Products*, Accessed 19 August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=844/1395070212&taxType=Energy+products+and+electricity](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=844/1395070212&taxType=Energy+products+and+electricity)

Product (Currency/Unit)	Energy Content Tax	Carbon Dioxide Tax	Strategic Stockpile Fee	Total
ETBE (c/l)	42.49	13.72	0.68	56.89
ETBE R (c/l)	42.49	11.18	0.68	54.35
ETBE T (c/l)	42.49	8.64	0.68	51.81
TAEI (c/l)	45.64	14.73	0.68	61.05
TAEI R (c/l)	45.64	12.59	0.68	58.91
TAEI T (c/l)	45.64	10.46	0.68	56.78
Biogasoline (c/l)	50.36	16.25	0.68	67.29
Biogasoline R (c/l)	50.36	8.13	0.68	59.17
Biogasoline T (c/l)	50.36	0	0.68	51.04
Ethanol-diesel (c/l)	13.97	10.9	0.35	25.22
Ethanol-diesel (c/l)	13.97	5.99	0.35	20.31
Ethanol-diesel (c/l)	13.97	1.07	0.35	15.39
Biodiesel oil (c/l)	28.14	17.06	0.35	45.55
Biodiesel oil R (c/l)	28.14	8.53	0.35	37.02
Biodiesel oil T (c/l)	28.14	0	0.35	28.49
Biodiesel oil paraffin (c/l)	24	17.58	0.35	41.93
Biodiesel oil paraffin R (c/l)	24	8.79	0.35	33.14
Biodiesel oil paraffin T (c/l)	24	0	0.35	24.35
Biofuel oil (c/l)	6.65	9.34	0.35	16.34
Biofuel oil R (c/l)	6.65	4.67	0.35	11.67
Biofuel oil T (c/l)	6.65	0	0.35	7
Methanol (c/l)	25.18	8.13	0.68	33.99
Methanol R (c/l)	25.18	4.06	0.68	29.92
Methanol T (c/l)	25.18	0	0.68	25.86

Product (Currency/Unit)	Energy Content Tax	Carbon Dioxide Tax	Strategic Stockpile Fee	Total
<i>R: From renewable energy sources</i>				
<i>T: For transport purposes</i>				

➤ **Windfall-tax on Hydro and Nuclear Power (abolished in 2014):**

- In December 2013, the Power Station Decree (Voimalaitosverolaki 1255/2013) came into force.<sup>284</sup> It covers power stations (hydro, nuclear and wind power), which produce at least one megawatt and were built before 2004. The tax was planned to be applied on a staggered basis (from one megawatt to ten megawatts) with the full tax rate applied for power stations producing ten megawatts and upwards. The tax is not based on electricity produced but on the repurchase value of the power station. For larger power stations the tax was intended to be capped to 1.5% of the repurchase value. Note that the repurchase value was to be adjusted based on the age of the power stations, so that older power stations would pay less than newer ones.
- The tax would have covered 130 hydro power stations, four nuclear power stations and 10 to 15 wind farms. It was estimated that the windfall tax would generate around €50 million a year in revenues. The tax was initially introduced to compensate for the financial benefits power stations receive through the ETS.<sup>285</sup> Nevertheless, besides the planned introduction of the tax in 2014 the tax was cancelled before it could even get off the ground (the tax was never paid, even when it was still in force for some time in 2014).<sup>286</sup>

## 8.2 Transport Taxes (Excluding Transport Fuels)

The existing tax regime on vehicles and cars was not originally intended as a transport policy tool, but rather as a means of generating tax revenue. It has been a significant source of government revenues over the years.<sup>287</sup>

➤ **Vehicle Tax (“Ajoneuvovero/Fordonsskatt”):<sup>288</sup>**

<sup>284</sup> Ministry of State (2013), *Voimalaitosverolaki*, 1255/2013, 31.12.2013, <http://www.edilex.fi/smur/201312551>

<sup>285</sup> YLE (2013), *Vesi- ja ydinvoimalle uusi vero*, 26.9.2013, [http://yle.fi/uutiset/vesi-ja\\_ydinvoimalle\\_uusi\\_vero/6851642](http://yle.fi/uutiset/vesi-ja_ydinvoimalle_uusi_vero/6851642)

<sup>286</sup> Valtioneuvosto (2014) *Programme of Prime Minister Alexander Stubb’s Government*, <http://valtioneuvosto.fi/hallitus/hallitusohjelma/pdf-stubb/en.pdf>

<sup>287</sup> Ministry of Transport and Communications (2014), *Fair and Intelligent Transport, Working Group Final Report*, 21 February 2014,

- The vehicle tax constitutes of two elements, which both are levied annually: 1) a base tax levied on all registered vehicles with a maximum permitted total mass of 3,500 kg under categories N or M (cars, vans, special purpose cars and lorries); and 2) a tax levied on the propelling force of the vehicle. This second component is levied on all vehicles which use fuel other than petrol, i.e. diesel oil, kerosene, LPG or electricity.<sup>289</sup>
- The base-tax component of vehicle tax has been based on CO<sub>2</sub> emissions from 1<sup>st</sup> March 2011. In the case of new vehicles it is based on the levels of CO<sub>2</sub> emissions reported by the vehicle manufacturer, while older vehicles are taxed on the basis of their total mass. If the car does not have emission data in the Vehicular and Driver Data Register, the tax is based on the total mass of the vehicle.<sup>290</sup>
- Both the propelling force tax and the base tax are levied for each day that the vehicles are registered for regular road use.
- The propelling force tax is levied on passenger cars to even out differences in fiscal burden between lower-taxed diesel vehicles and higher-taxed petrol vehicles based on annual total kilometres driven. The propelling force tax is not applied on petrol-fuelled vehicles. The propelling force tax levied on HGVs is not a “balancing tax”, but is intended to meet the requirements of the Euro-vignette Directive.<sup>291</sup>
- Rates:
  - Basic tax rate in € per day=  $0.0001 \text{ EM} * (8.1 + 0.1 * (\text{EM} - 66))$ , where EM = CO<sub>2</sub> g per km<sup>292</sup>
  - For the rate structure of the tax on propelling force component see Table 8-4 above.
  - In 2013, for the base tax, the minimum emissions-based vehicle tax was 43.07€ per 365 days (11.8 cents per day at 0 g per km emissions; in practice this is for electric cars) and the maximum was 606.27€ per 365 days (166.1 cents per day). The lowest vehicle tax calculated on the basis of total mass is 125.93€ per 365 days (34.5 cents per day; total mass up to 1,300 kg) and the

---

<sup>289</sup> DG TAXUD (2014) *Taxes in Europe Database, Finland Motor vehicles tax – Vehicle Tax*, Accessed 27 August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=621/1388754737&taxType=Other+indirect+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=621/1388754737&taxType=Other+indirect+tax)

<sup>290</sup> Trafi, (n.d.) *Structure and amount of tax*, [http://www.trafi.fi/en/road/taxation/vehicle\\_tax/structure\\_and\\_amount\\_of\\_tax](http://www.trafi.fi/en/road/taxation/vehicle_tax/structure_and_amount_of_tax), Accessed 19.9 2014.

<sup>291</sup> Ministry of Transport and Communications (2014), *Fair and Intelligent Transport, Working Group Final Report*, 21 February 2014,

<sup>292</sup> OECD (n.d.) *Database on instruments used for environmental policy, Taxes, fees or charges - Main characteristics for selected countries – Finland*, Accessed 27 August 2014, [http://www2.oecd.org/eoicinst/queries/QueryResult\\_2.aspx?Key=35dc3924-70a4-43f1-8a72-1405dd944048&QryCtx=1&QryFlag=3](http://www2.oecd.org/eoicinst/queries/QueryResult_2.aspx?Key=35dc3924-70a4-43f1-8a72-1405dd944048&QryCtx=1&QryFlag=3)

highest 535.46 € per 365 days (146.7 cents per day; total mass 3,401–3,500 kg).<sup>293</sup>

- Main exemptions: certain cars owned by the state, taxis (to be abolished in 2015) fire engines, ambulances, cars used by foreign diplomatic missions, buses etc.
- €50 is refunded on the tax paid on lorries transported by rail in Finland provided that the transport is partly international and the distance covered is more than 100 km radius.
- Revenue in 2012: €758 million (equivalent to 0.39% of GDP).<sup>294</sup> Of this €434 million is from the base tax and €324 million is from the propelling force tax.
- Revenue in 2013: €866 million (equivalent to 0.44% of GDP).<sup>295</sup>

Table 8-4: Rate Structure of Tax on Propelling Force in Finland (2014)

Tax on propelling force	Unit	Rate applied per day
<b>Passenger cars and dual-purpose cars</b>		
Propelling force solely electricity	100 kg of the total weight or a fraction	1.5 cents
Propelling force electricity and petrol	100 kg of the total weight or a fraction	0.5 cents
Propelling force electricity and diesel	100 kg of the total weight or a fraction	4.9 cents
Propelling force gas	100 kg of the total weight or a fraction	3.1 cents
Propelling force other (e.g. diesel)	100 kg of the total weight or a fraction	5.5 cents
<b>Motor caravans and delivery vans</b>		
All types of motor caravans and delivery vans	100 kg of the total weight or a fraction	0.9 cents
<b>Lorries</b>		

<sup>293</sup> Ministry of Transport and Communications (2014), *Fair and Intelligent Transport, Working Group Final Report*, 21 February 2014,

<sup>294</sup> DG TAXUD (2014) *Taxes in Europe Database, Finland Motor vehicles tax – Vehicle Tax*, Accessed 27 August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=621/1388754737&taxType=Other+indirect+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=621/1388754737&taxType=Other+indirect+tax)

<sup>295</sup> Valtiokonttori (2014), *Valtion tilinpaatos vuodelta 2013*, 9.4.2014, Accessed 19.9.2014 [http://www.valtiokonttori.fi/fi-FI/Tietoa\\_Valtiokonttorista/Media/Valtion\\_tilinpaatos\\_vuodelta\\_2013\(50407](http://www.valtiokonttori.fi/fi-FI/Tietoa_Valtiokonttorista/Media/Valtion_tilinpaatos_vuodelta_2013(50407)



Tax on propelling force	Unit	Rate applied per day
Two axle lorries	Per 100 kg up to 12,000 kg	0.6 cent
	Per 100 kg above 12,000 kg	1.3 cents
Three axle lorries	Per 100 kg	0.8 cents
Four axle lorries	Per 100 kg	0.7 cents
Five or more axle lorries	Per 100 kg	0.6 cents
Lorries with a bogie construction with two axles	Per 100 kg	2.2 cents
Lorries with a bogie construction with three axles	Per 100 kg	1.3 cents
Lorries with a bogie construction with four axles	Per 100 kg	1.2 cents
Lorries with a bogie construction with five or more axles	Per 100 kg	1.0 cents
Lorries with a bogie construction approved and used for the traction of semi-trailers or trailers with two axles	Per 100 kg	2.1 cents
Lorries with a bogie construction approved and used for the traction of semi-trailers or trailers with three axles	Per 100 kg	1.4 cents
Lorries with a bogie construction approved and used for the traction of semi-trailers or trailers with four axles	Per 100 kg	1.3 cents
Lorries with a bogie construction approved and used for the traction of semi-trailers or trailers with five or more axles	Per 100 kg	1.2 cents

Source: DG TAXUD (2014) *Taxes in Europe Database, Finland Motor vehicles tax – Vehicle Tax*, Accessed 27<sup>th</sup> August 2014,  
[http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=621/1388754737&taxType=Other+indirect+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=621/1388754737&taxType=Other+indirect+tax)

➤ **Car Tax** :<sup>296</sup>

- A once-off car tax is tax levied on the first registration for road use of a new car or motorcycle purchased in Finland or a second-hand car or motorcycle imported to the country.
- Car tax is paid by the person who is registered as the owner of the car. Passenger cars, delivery vans, busses weighing less than 1,875 kg and motorcycles are subject to the tax.
- Rates:<sup>297</sup>
  - As with the base tax for the vehicle tax (see above), the tax on passenger cars is based on the CO<sub>2</sub> emissions and the taxable value of the car. The tax rate is between 5 and 50 % depending on the CO<sub>2</sub> emissions declared by the car manufacturer for a combination of city and road driving. In case no CO<sub>2</sub> emission information is available, the tax rate is based on the mass and the energy source of the vehicle.<sup>298</sup>
  - A calculation similar to the above is applied to used imported cars or vans.
  - The tax on motorcycles is detailed in Table 8-5.
  - The taxable value of the car is the vehicle's ordinary retail value on the Finnish car market at the time of taxation.
- Main exemptions:<sup>299</sup>
  - Fire engines, ambulances and lorries, motor caravans with un-laden weight of at least 1,875 kg, cars used by foreign diplomatic missions and consular posts headed by career consular officers, as well as members of their personnel who are not Finnish nationals, three wheeled delivery cycles, cycles for disabled people and mopeds etc.
  - Cars which are used by disabled people can be partly exempted.
- The CO<sub>2</sub> calculation of the tax can be reduced by 9.8% to 21.7% (depending on the weight of a van) provided it weighs more than 2,500 kg and fulfils certain requirements.
- Revenue in 2012: €1,066 million (equivalent to 0.55% of GDP).<sup>300</sup>

---

<sup>296</sup> DG TAUXD (2014) *Taxes in Europe Database, Finland Motor vehicles tax – Car Tax*, Accessed 27 August, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=253/1388754737&taxType=Other+indirect+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=253/1388754737&taxType=Other+indirect+tax)

<sup>297</sup> Ibid.

<sup>298</sup> Ibid.

<sup>299</sup> Ibid.

<sup>300</sup> Ibid.

- Revenue in 2013: €932 million (equivalent to 0.48% of GDP).<sup>301</sup>

**Table 8-5: Car Tax Rate of Motorcycles in Finland (2014)**<sup>302</sup>

Engine Capacity in Cubic Centimetres (cc)	Rate of Tax as a Percentage of Taxation Value (%)
Up to 130	9.8
131-255	12.2
256-355	15.9
356-505	19.5
506-755	22
756 or more	24.4
Electric vehicles in category L	12.2

➤ **Air Traffic Supervision Charge:**<sup>303</sup>

- The charges should be paid by all flight passengers older than 2 years of age. It is fully earmarked for administration purposes.
- Rate in 2012: €1.2 per passenger.
- Revenue in 2010: €6.1 million (equivalent to 0.003% of GDP).<sup>304</sup>

➤ **Railway Tax:**<sup>305</sup>

- The railway tax is used to cover the costs of the building and maintenance of railway infrastructure.
- Rates in 2006:
  - Goods transport for diesel-driven trains: €0.001 per gross tonne-km.

---

<sup>301</sup> Valtiokonttori (2014), *Valtion Tilinpaatos Vuodelta 2013*, 9.4.2014, Accessed 19.9.2014  
[http://www.valtiokonttori.fi/fi-FI/Tietoa\\_Valtiokonttorista/Media/Valtion\\_tilinpaatos\\_vuodelta\\_2013\(50407](http://www.valtiokonttori.fi/fi-FI/Tietoa_Valtiokonttorista/Media/Valtion_tilinpaatos_vuodelta_2013(50407)

<sup>302</sup> DG TAUXD (2014) *Taxes in Europe Database, Finland Motor vehicles tax – Car Tax*, Accessed 27 August,  
[http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=253/1388754737&taxType=Other+indirect+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=253/1388754737&taxType=Other+indirect+tax)

<sup>305</sup> OECD (n.d.) Database on instruments used for environmental policy, Taxes, fees or charges – Main characteristics of selected countries – Finland, Accessed 28 August 2014,  
[http://www2.oecd.org/eoicinst/queries/QueryResult\\_2.aspx?Key=36808684-770f-4ed7-9a3b-5f000506834e&OryCtx=1&OryFlag=3](http://www2.oecd.org/eoicinst/queries/QueryResult_2.aspx?Key=36808684-770f-4ed7-9a3b-5f000506834e&OryCtx=1&OryFlag=3)

- Goods transport for electric trains: €0.0005 per gross tonne-km.
- Investment surtax on the Kerava-Lahti railway: €0.0050 per gross tonne-km (in addition to the basic tax).
- Passenger transport: €0.0001 per gross tonne-km.
- Revenue in 2010: €18 million (equivalent to 0.01% of GDP).<sup>306</sup>

### 8.3 Pollution and Resource Taxes

#### ➤ Waste Tax (“Jätevero/Avfallskatt”):<sup>307</sup>

- Waste Tax is levied on waste deposited at public or private landfill sites and for which reuse and recycling is technically feasible and environmentally justifiable. Waste categories with no technical treatment or utilization alternative to disposal at landfills, or with utilization options that would do more harm than good, are tax exempt.
- Waste tax is paid by landfill site operators. Rate: €50 per tonne of waste in 2013. If the weight of the waste cannot be measured a special conversion coefficient is applied.
- Rate will be €55 per tonne of waste in 2015. The estimated revenue for 2015 is €69 million.<sup>308</sup>
- All waste specified in the tax table appended to the Waste Tax Act (1126/2010) is subject to tax.
- Exemptions:
  - Hazardous waste, waste utilised in the construction of the landfill site not including glass waste and some concrete waste.
  - Mineral waste and waste from inorganic chemical processes
  - Landfill sites where only soil and stone are deposited.
  - Sorted waste which is expected to be recycled or disposed can be stored tax-free for three years.
  - De-inking sludge.
- Revenue in 2012: €56 million (equivalent to 0.029% of GDP).
- Revenue in 2013: €55.8 million (equivalent to 0.029% of GDP).<sup>309</sup>

---

<sup>306</sup> OECD (n.d.) Database on instruments used for environmental policy, Taxes, fees or charges – Revenues raised by environmentally related taxes for selected countries – Finland, Accessed 28 August 2014, [http://www2.oecd.org/eoinst/queries/QueryResult\\_3.aspx?Key=1e14c362-3df6-452d-a8c7-a3706593e75e&QryCtx=2&QryFlag=3#](http://www2.oecd.org/eoinst/queries/QueryResult_3.aspx?Key=1e14c362-3df6-452d-a8c7-a3706593e75e&QryCtx=2&QryFlag=3#)

<sup>307</sup> DG TAXUD (2014) *Taxes in Europe Database, Finland Landfill Tax*, Accessed 27 August, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=252/1388754737&taxType=Other+indirect+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=252/1388754737&taxType=Other+indirect+tax)

<sup>308</sup> Valtiovarainministerio (2014), *Hallitus esittää useita muutoksia verolakeihin*, 138/2014. 15.9.2014, Accessed 19.9.2014. [http://www.vm.fi/vm/fi/03\\_tiedotteet\\_ja\\_puheet/01\\_tiedotteet/20140915Hallit/name.jsp](http://www.vm.fi/vm/fi/03_tiedotteet_ja_puheet/01_tiedotteet/20140915Hallit/name.jsp)

➤ **Excise Duty on Certain Beverage Packages:**<sup>310</sup>

- This excise duty is levied on retail packages made of various materials for alcoholic beverages, soft drinks, water and certain other beverages.
- Rates in 2014: 51 cents per litre of packaged product.<sup>311</sup>
- Exemptions:<sup>312</sup>
  - Small beverage manufacturers where the amount of beverages released for consumption does not exceed 50,000 litres.
  - Liquid packaging board containers.
  - Packages which are part of a package deposit system and can be recovered.
- Revenue in 2012: €15 million (equivalent to 0.007% of GDP).<sup>313</sup>
- Revenue in 2013: €15 million (equivalent to 0.007% of GDP).<sup>314</sup>

➤ **Fertiliser Tax (abolished in 1994):**

- In 1994 when Finland joined the EU the fertiliser tax was abolished. When the tax was in place between 1976 and 1994, its primary goal was not to deal with environmental problems but to lower production levels of cereals for export and to provide funds to financially support export subsidies. The rate of the tax in 1994 was €0.44 per kg of nitrogen in the fertiliser.<sup>315</sup>

➤ **Pesticide Fee (abolished in 2007):**

- Between 1988 and 2006 a pesticide registration fee was levied on the pesticide industry in Finland. The revenues from the fee were used to finance the administrative costs of registering new pesticides.<sup>316</sup>

➤ **Water Level Regulation Charge:**

- Water abstraction charges are levied by municipal authorities.<sup>317</sup>

---

<sup>309</sup> Valtiokonttori (2014), *Valtion tilinpaatos vuodelta 2013*, 9.4.2014, Accessed 19.9.2014  
[http://www.valtiokonttori.fi/fi-FI/Tietoa\\_Valtiokonttorista/Media/Valtion\\_tilinpaatos\\_vuodelta\\_2013/50407](http://www.valtiokonttori.fi/fi-FI/Tietoa_Valtiokonttorista/Media/Valtion_tilinpaatos_vuodelta_2013/50407)

<sup>310</sup> DG TAXUD (2014) *Taxes in Europe Database, Finland Excise Duty – Beverage Packages*, Accessed 27 August,  
[http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=246/1388754737&taxType=Other+indirect+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=246/1388754737&taxType=Other+indirect+tax)

<sup>311</sup> Ibid

<sup>312</sup> Ibid.

<sup>313</sup> Ibid.

<sup>314</sup> Valtiovarainministerio (2014), *Hallitus esittää useita muutoksia verolakeihin*, 138/2014. 15.9.2014, Accessed 19.9.2014. [www.vm.fi/vm/fi/03\\_tiedotteet\\_ja\\_puheet/01\\_tiedotteet/20140915Hallit/name.jsp](http://www.vm.fi/vm/fi/03_tiedotteet_ja_puheet/01_tiedotteet/20140915Hallit/name.jsp)

<sup>315</sup> Ecotec et al (2001) *Study on Environmental Taxes and Charges in the EU*, Chapter 9: Fertiliser Taxes, [http://ec.europa.eu/environment/enveco/taxation/pdf/ch9\\_fertilisers.pdf](http://ec.europa.eu/environment/enveco/taxation/pdf/ch9_fertilisers.pdf)

<sup>316</sup> OECD (2009) *Environmental Performance Reviews: Finland*,

- The rate of the charge is separately set for every case via an environmental permit procedure.<sup>318</sup>
- **Water Protection Charge (abolished in 2000):**
  - Water protection charges had to be paid by industry and fish farms nevertheless the charge was removed under the Environmental Protection Act 2000 and a permit system was introduced in 2006.<sup>319</sup>
- **Water User Charges:**<sup>320</sup>
  - The water user charge is based on the amount of water consumed. Furthermore, fixed components are paid by users.
  - Average rate in February 2011: €1.51 per m<sup>3</sup>.
  - Revenue in 2010: €385.1 million (equivalent to 0.21% of GDP).<sup>321</sup>
- **Wastewater User Charges:**
  - Rate: The rate of the charge is based on water consumption or on the volume and quality of waste water. Furthermore, fixed components, such as a connection charge or a meter charge, are added to the volume based charge. The average rate in February 2011 was €2.28 per m<sup>3</sup> in total.<sup>322</sup>
  - Revenue in 2010: €516 million (equivalent to 0.28% of GDP).<sup>323</sup>
  - The consumer tariff covers the capital, operation and maintenance costs of water provision. In the irrigation sector, almost all water systems are constructed and operated by individual farmers; therefore there is no common pricing policy for irrigation. For industries obtaining their water

<sup>317</sup> EEA (2013) Assessment of cost recovery through water pricing, EEA Technical Report, No 16/2013, <http://www.eea.europa.eu/publications/assessment-of-full-cost-recovery>

<sup>318</sup> OECD (n.d.) Database on instruments used for environmental policy, Taxes, fees or charges – Main characteristics of selected countries – Finland, Accessed 28 August 2014, [http://www2.oecd.org/ecoinstr/queries/QueryResult\\_2.aspx?Key=36808684-770f-4ed7-9a3b-5f000506834e&QryCtx=1&QryFlag=3](http://www2.oecd.org/ecoinstr/queries/QueryResult_2.aspx?Key=36808684-770f-4ed7-9a3b-5f000506834e&QryCtx=1&QryFlag=3)

<sup>319</sup> Nordic Council of Ministers (2006) The Use of Economic Instruments in the Nordic and Baltic Environmental Policy 2001-2005, TemaNord 2006:525, National Environmental Research Institute, Denmark, <http://norden.diva-portal.org/smash/get/diva2:701846/FULLTEXT01.pdf>

<sup>320</sup> Ibid.

<sup>321</sup> OECD (n.d.) Database on instruments used for environmental policy, Taxes, fees or charges – Revenues raised by environmentally related taxes for selected countries – Finland, Accessed 28 August 2014, [http://www2.oecd.org/ecoinstr/queries/QueryResult\\_3.aspx?Key=1e14c362-3df6-452d-a8c7-a3706593e75e&QryCtx=2&QryFlag=3#](http://www2.oecd.org/ecoinstr/queries/QueryResult_3.aspx?Key=1e14c362-3df6-452d-a8c7-a3706593e75e&QryCtx=2&QryFlag=3#)

<sup>322</sup> OECD (n.d.) Database on instruments used for environmental policy, Taxes, fees or charges – Main characteristics of selected countries – Finland, Accessed 28 August 2014, [http://www2.oecd.org/ecoinstr/queries/QueryResult\\_2.aspx?Key=36808684-770f-4ed7-9a3b-5f000506834e&QryCtx=1&QryFlag=3](http://www2.oecd.org/ecoinstr/queries/QueryResult_2.aspx?Key=36808684-770f-4ed7-9a3b-5f000506834e&QryCtx=1&QryFlag=3)

<sup>323</sup> OECD (n.d.) Database on instruments used for environmental policy, Taxes, fees or charges – Revenues raised by environmentally related taxes for selected countries – Finland, Accessed 28 August 2014, [http://www2.oecd.org/ecoinstr/queries/QueryResult\\_3.aspx?Key=1e14c362-3df6-452d-a8c7-a3706593e75e&QryCtx=2&QryFlag=3#](http://www2.oecd.org/ecoinstr/queries/QueryResult_3.aspx?Key=1e14c362-3df6-452d-a8c7-a3706593e75e&QryCtx=2&QryFlag=3#)

through the public piped water supply system, the charge is based on water consumption.<sup>324</sup>

## 8.4 Modelled Changes in Tax Base

The modelled change in the tax base for each of the suggested reforms to the tax system are shown in the table and figures below.

**Table 8-6: Change in Energy Tax Base**

Fuel Type	Units	Baseline	After Tax Increase	Change
Gas Oil	million litres	4,313	4,112	-201
Petrol	million litres	1,563	1,563	0
Kerosene	million litres	776	776	0
LPG	thousand tonnes	0	0	0
Heavy Fuel Oil	thousand tonnes	385	384	0
Natural Gas	TJ (GCV)	26,172	25,228	-944
Coal	thousand tonnes	133	133	0
Electricity	GWh	71,667	68,774	-2,893

---

<sup>324</sup> EMWIS (2008), Water pricing in some EU countries, <http://www.emwis.org/topics/waterpricing/water-pricing-some-eu-countries>

Figure 8-1: Change in Internal Passenger Flights, flights per year

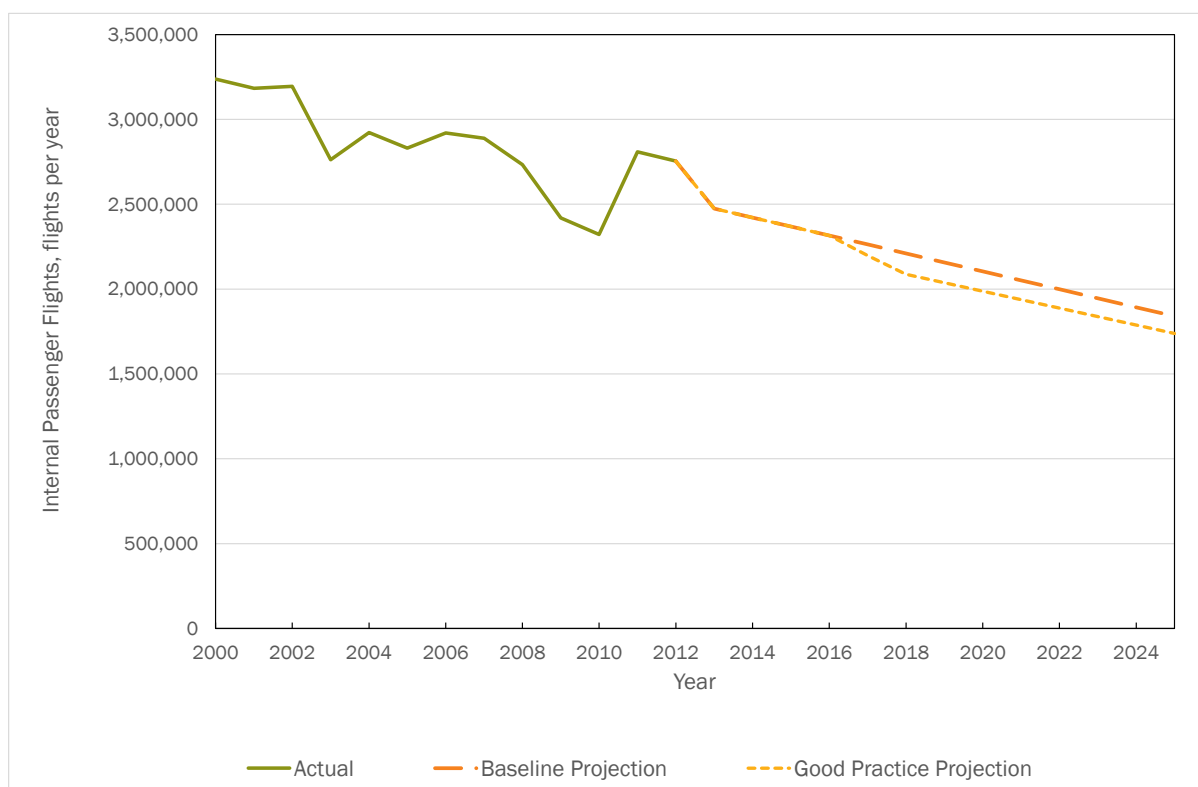


Figure 8-2: Change in Intra-EU Passenger Flights, flights per year

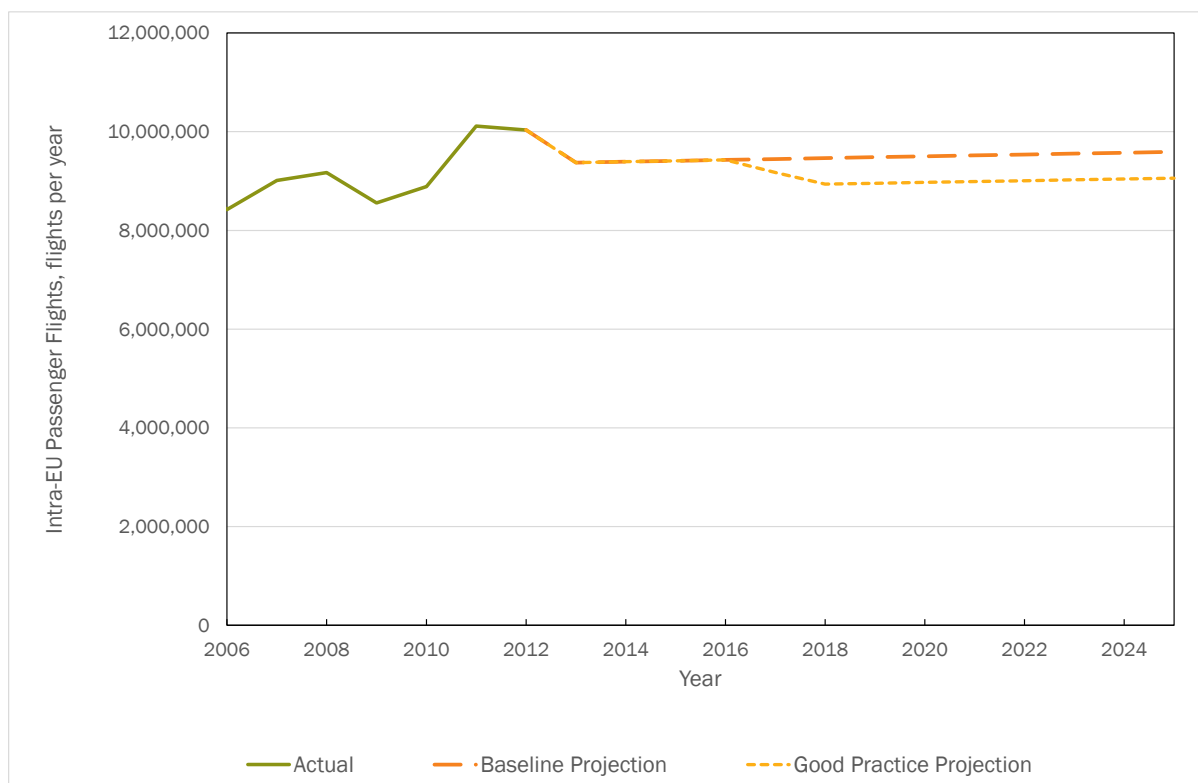




Figure 8-3: Change in Extra-EU Passenger Flights, flights per year

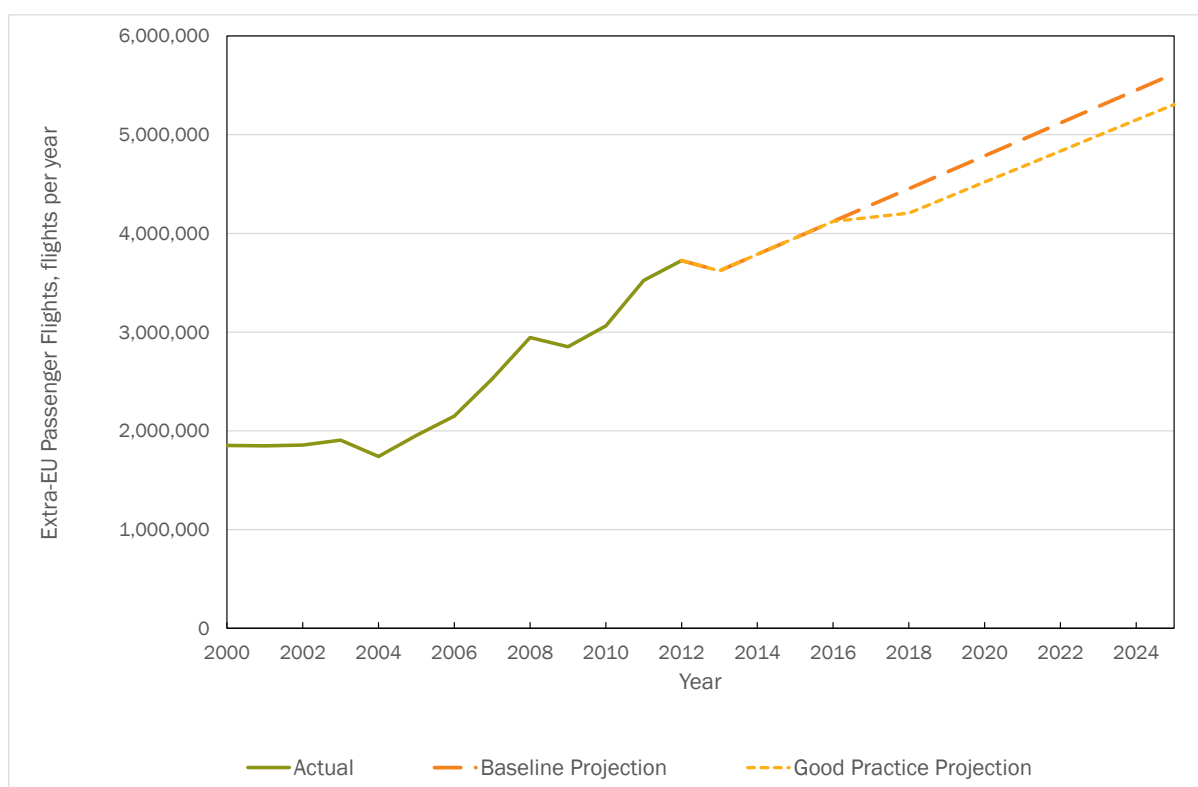


Figure 8-4: Change in Internal Air-freight, tonnes

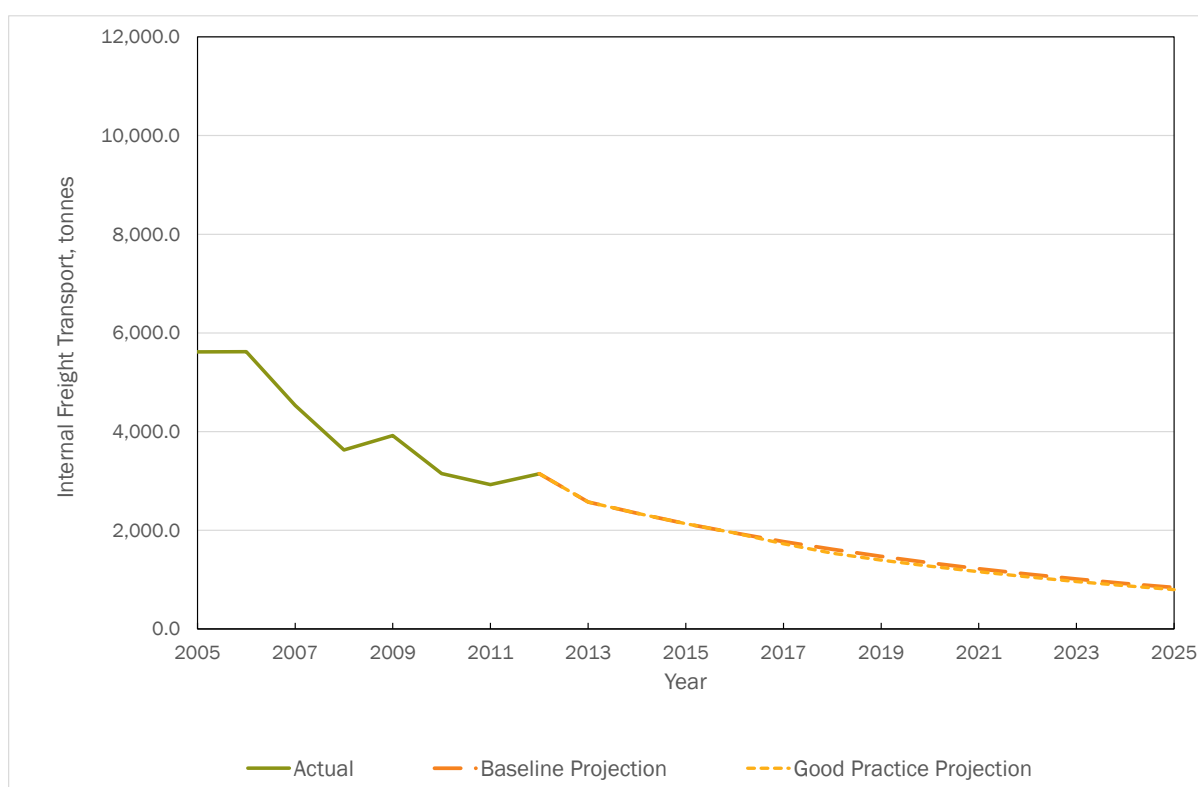


Figure 8-5: Change in Intra-EU Air-freight, tonnes

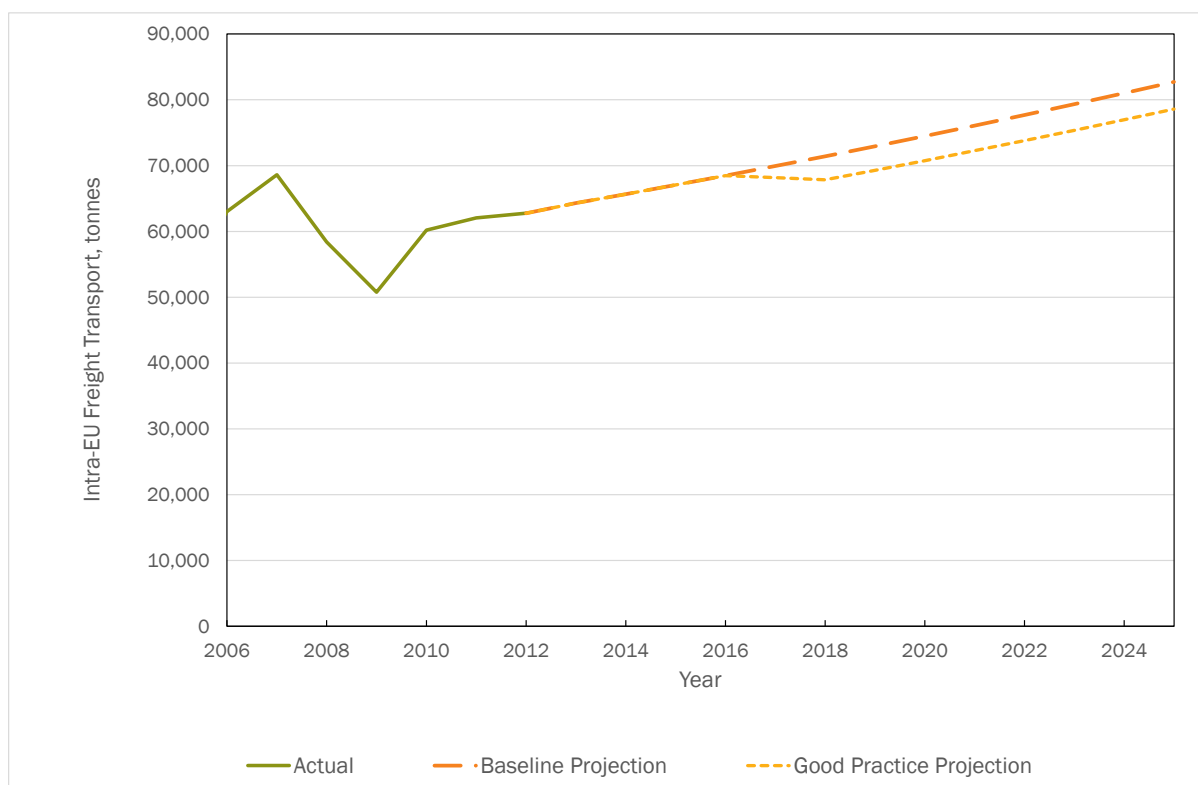


Figure 8-6: Change in Extra-EU Air-freight, tonnes

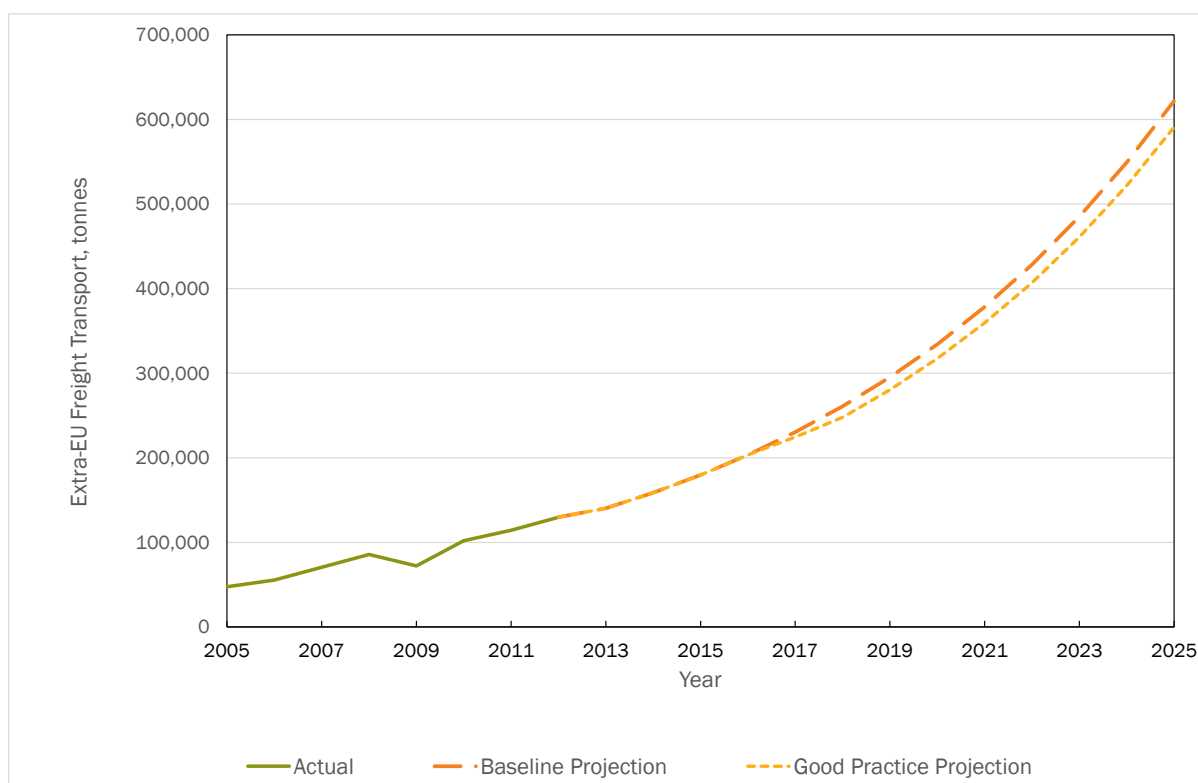


Figure 8-7: Change in Non-Hazardous Waste Landfilled, thousand tonnes

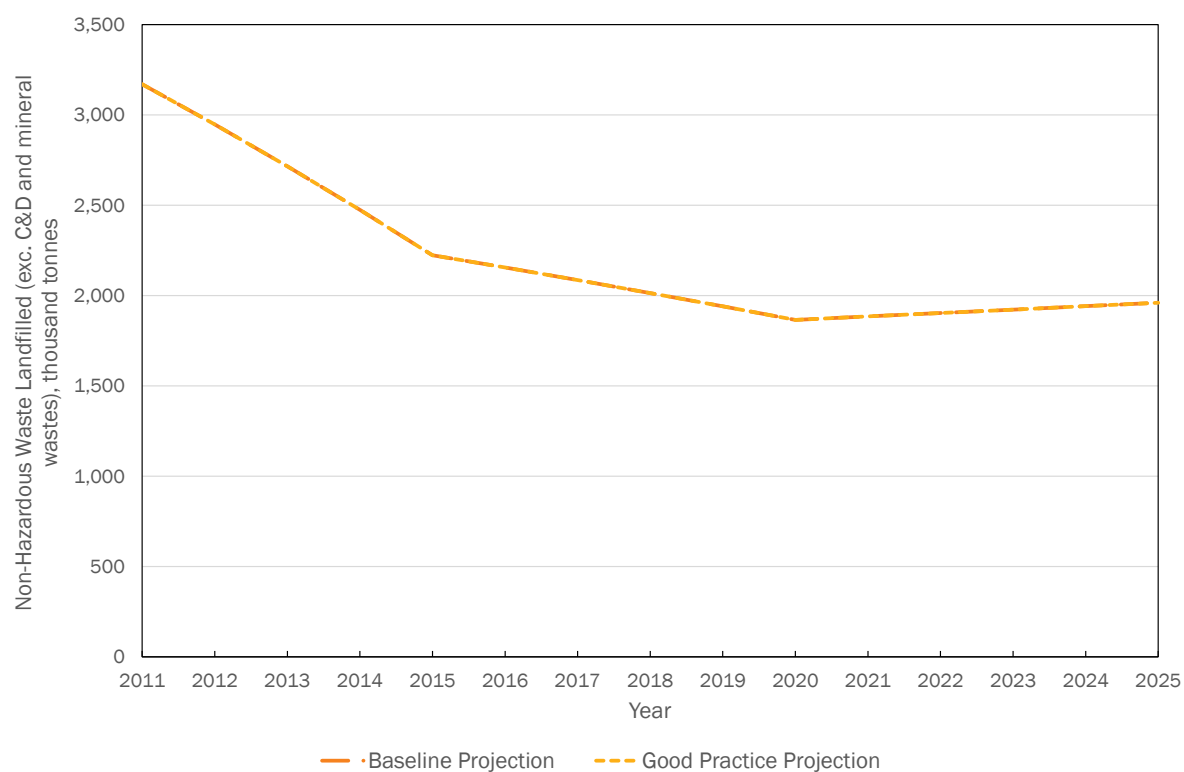


Figure 8-8: Change in MBT/ Incineration, thousand tonnes

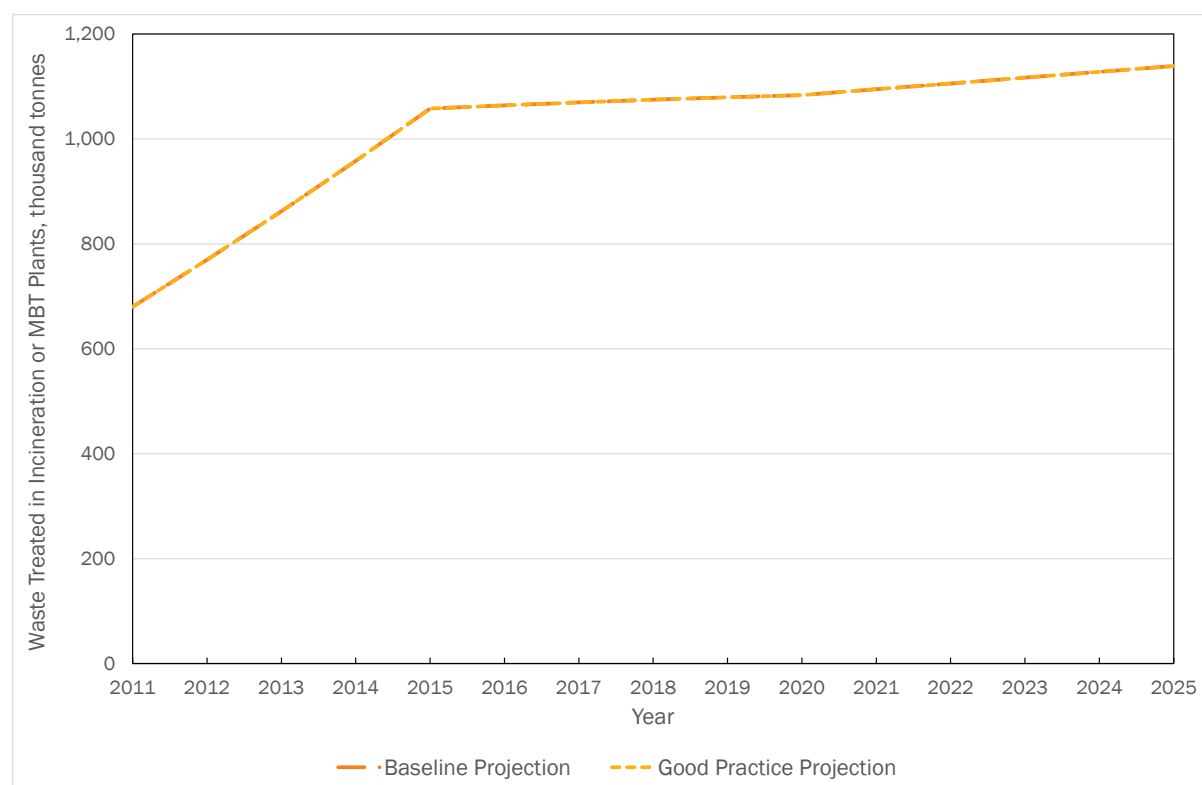


Figure 8-9: Change in SOx Emissions, tonnes

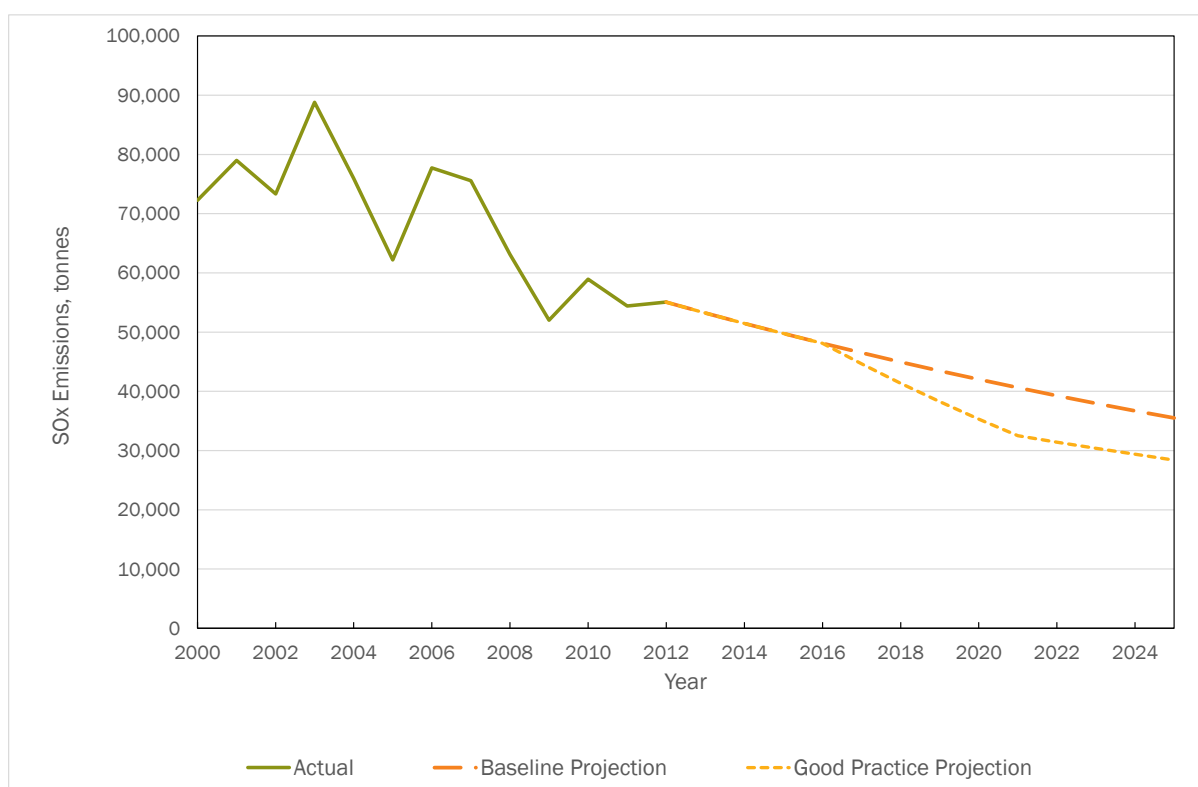


Figure 8-10: Change in NOx Emissions, tonnes

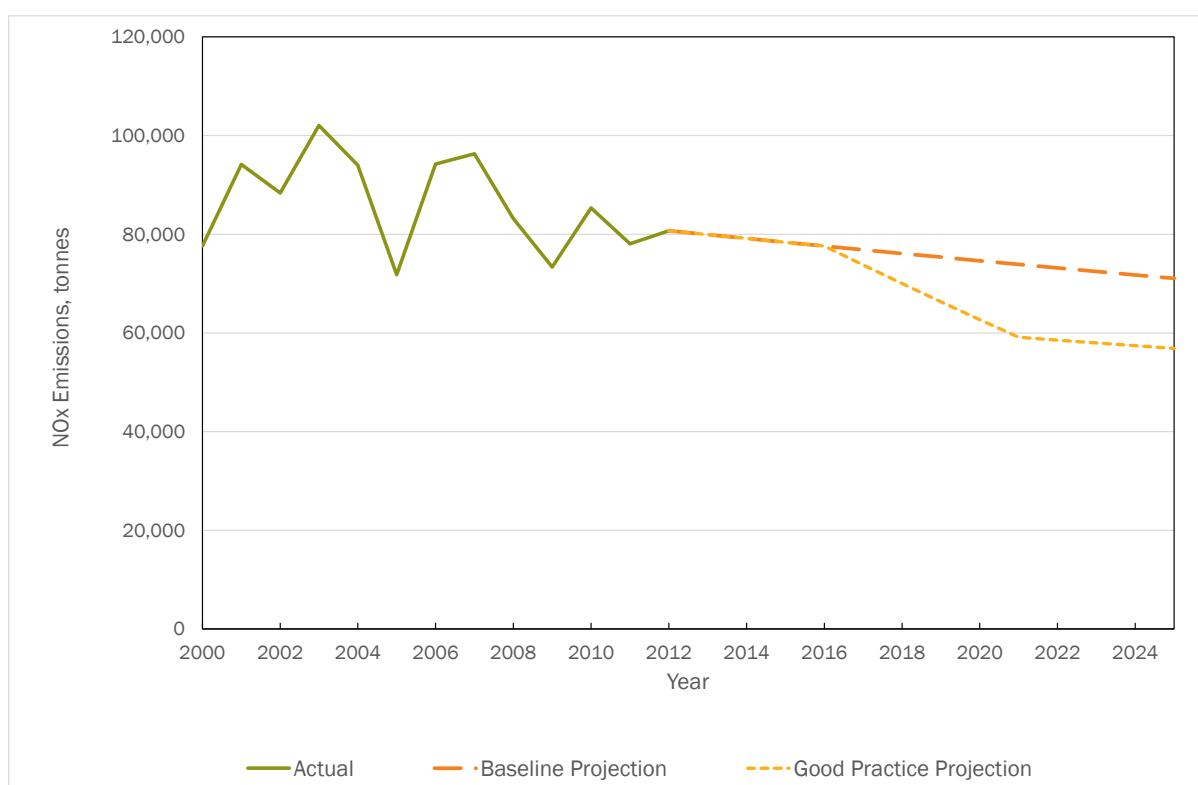


Figure 8-11: Change in PM<sub>10</sub> Emissions, tonnes

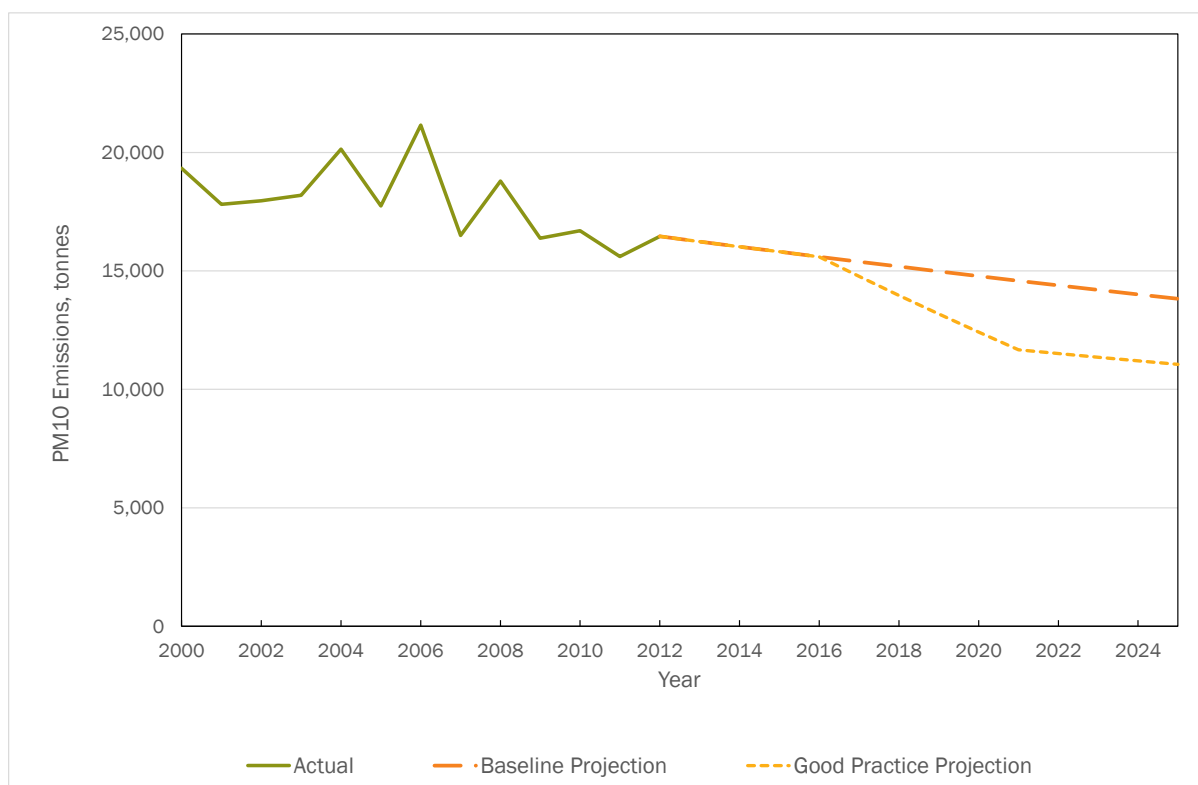


Figure 8-12: Change in Groundwater Abstraction – Public Supply, million cubic metres

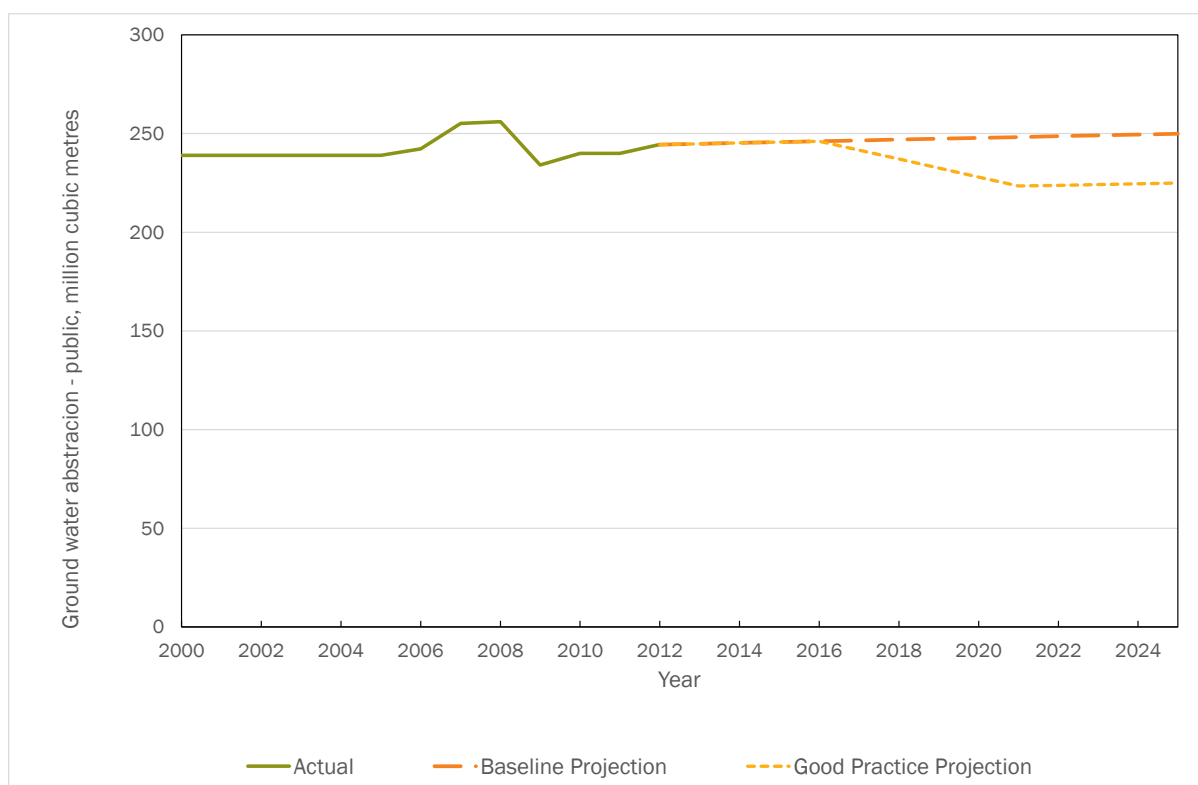


Figure 8-13: Change in Groundwater Abstraction – Manufacturing, million cubic metres

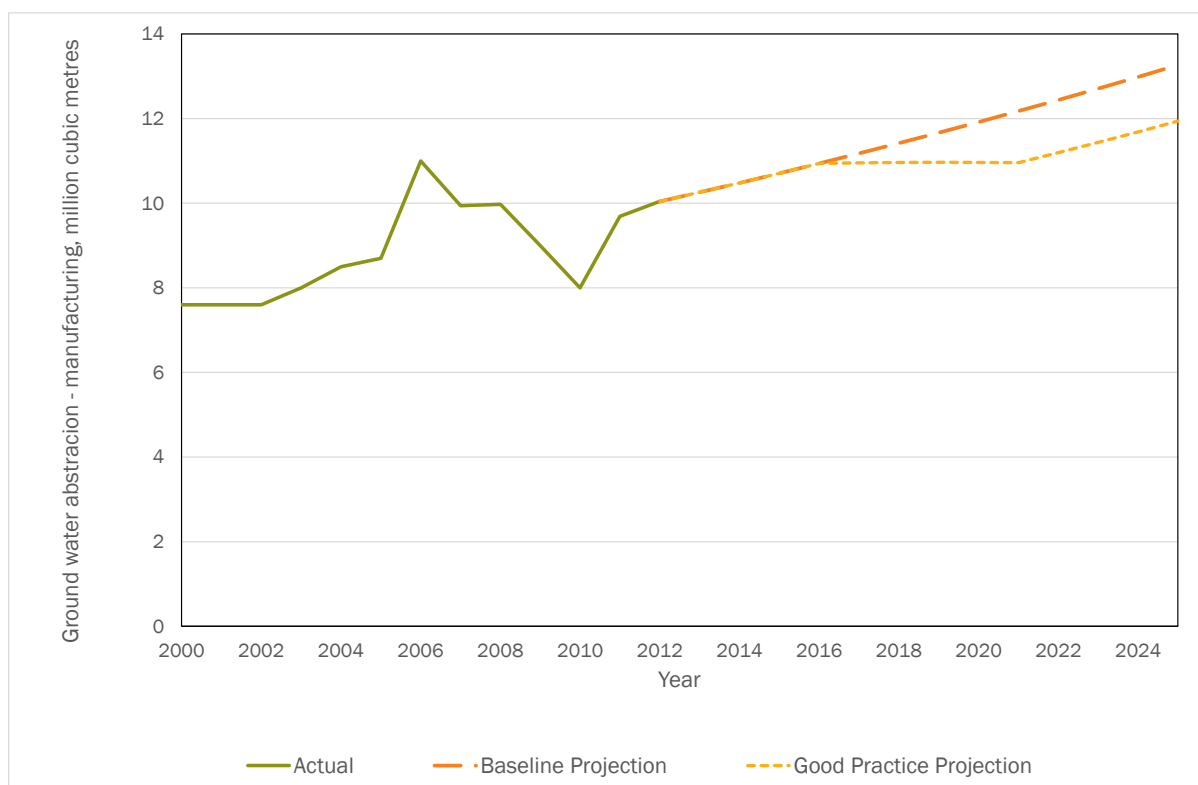


Figure 8-14: Change in Groundwater Abstraction – Agriculture, million cubic metres

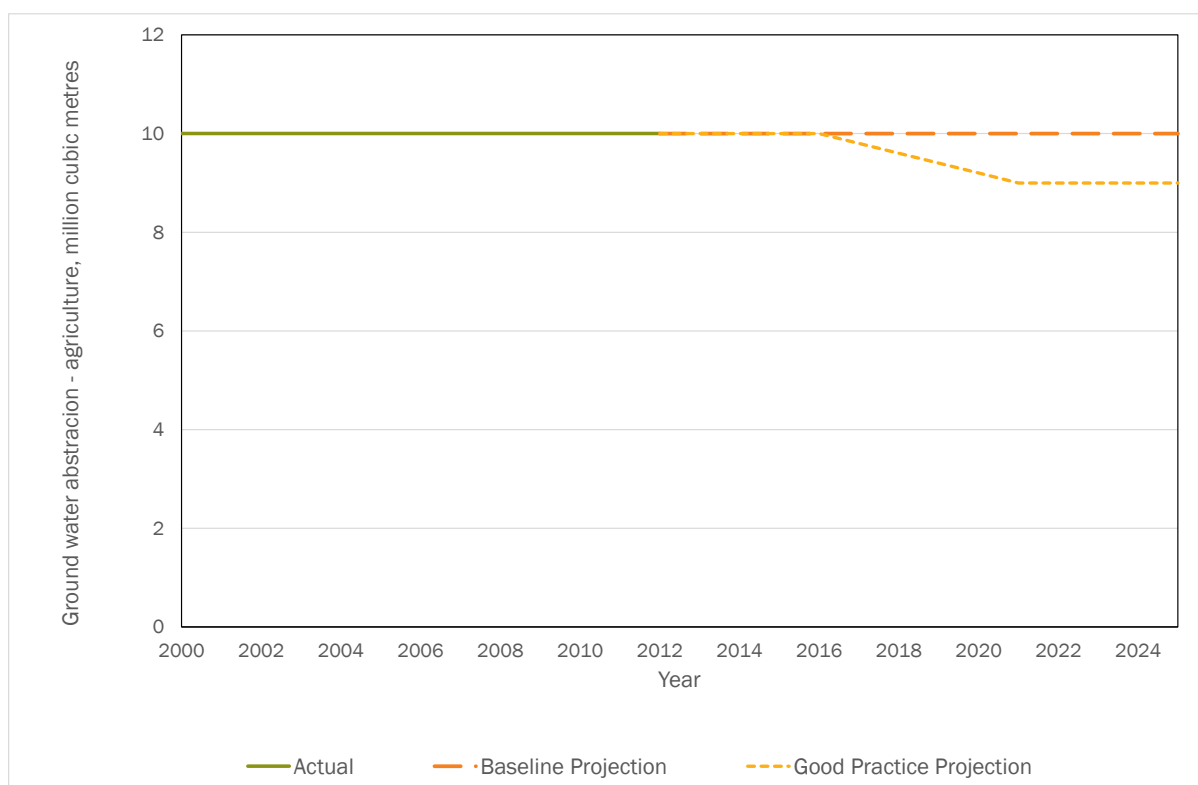


Figure 8-15: Change in Surface Water Abstraction – Public Supply, million cubic metres

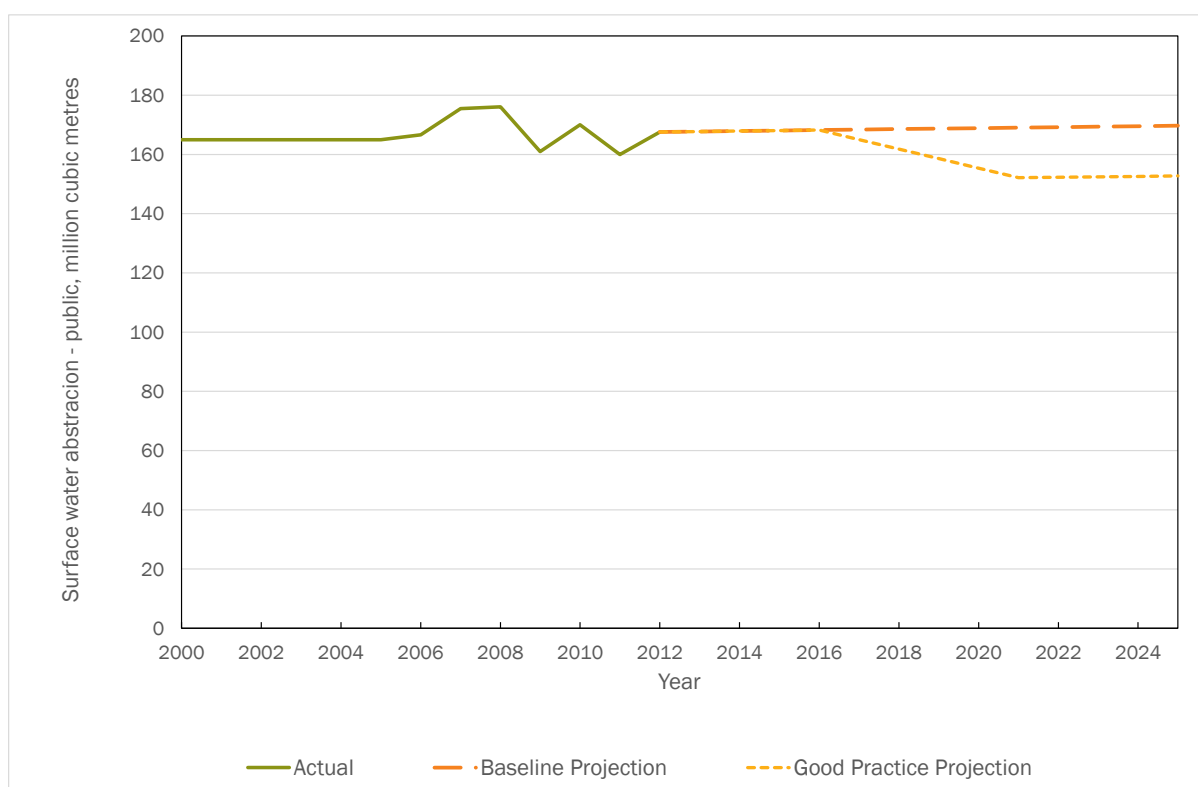


Figure8-16: Change in Surface Water Abstraction – Manufacturing, million cubic metres

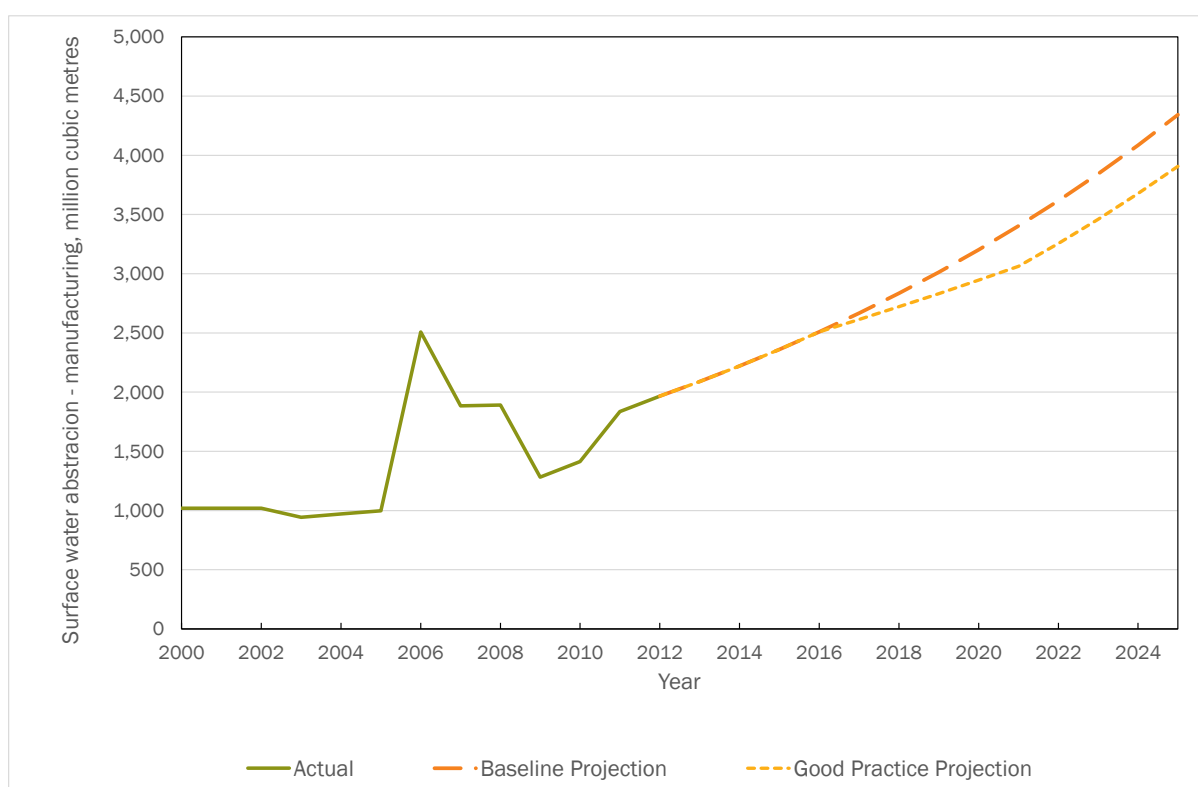


Figure 8-17: Change in Surface Water Abstraction – Agriculture, million cubic metres

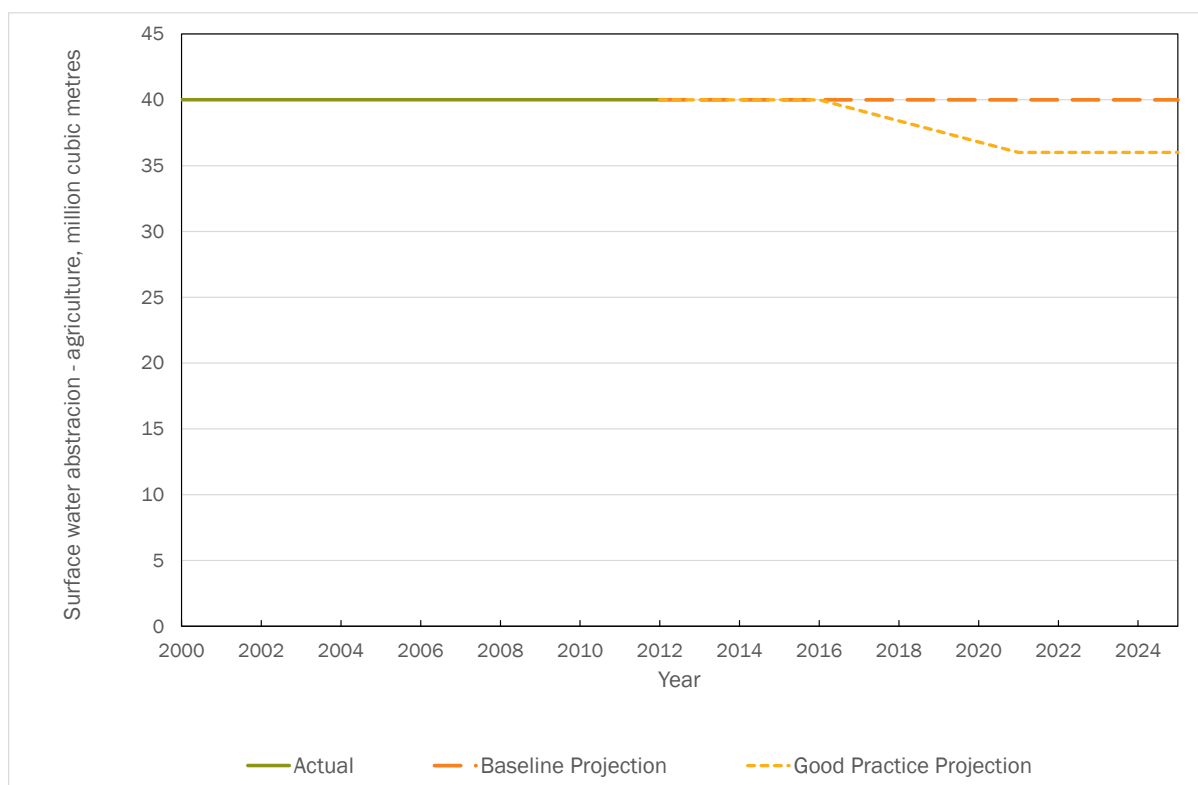


Figure 8-18: Change in Active Ingredients in Pesticides, tonnes





Figure 8-19: Change in Non-organic Nitrogen Sales of Fertilisers, tonnes



Figure 8-20: Change in Aggregates Extraction, thousand tonnes

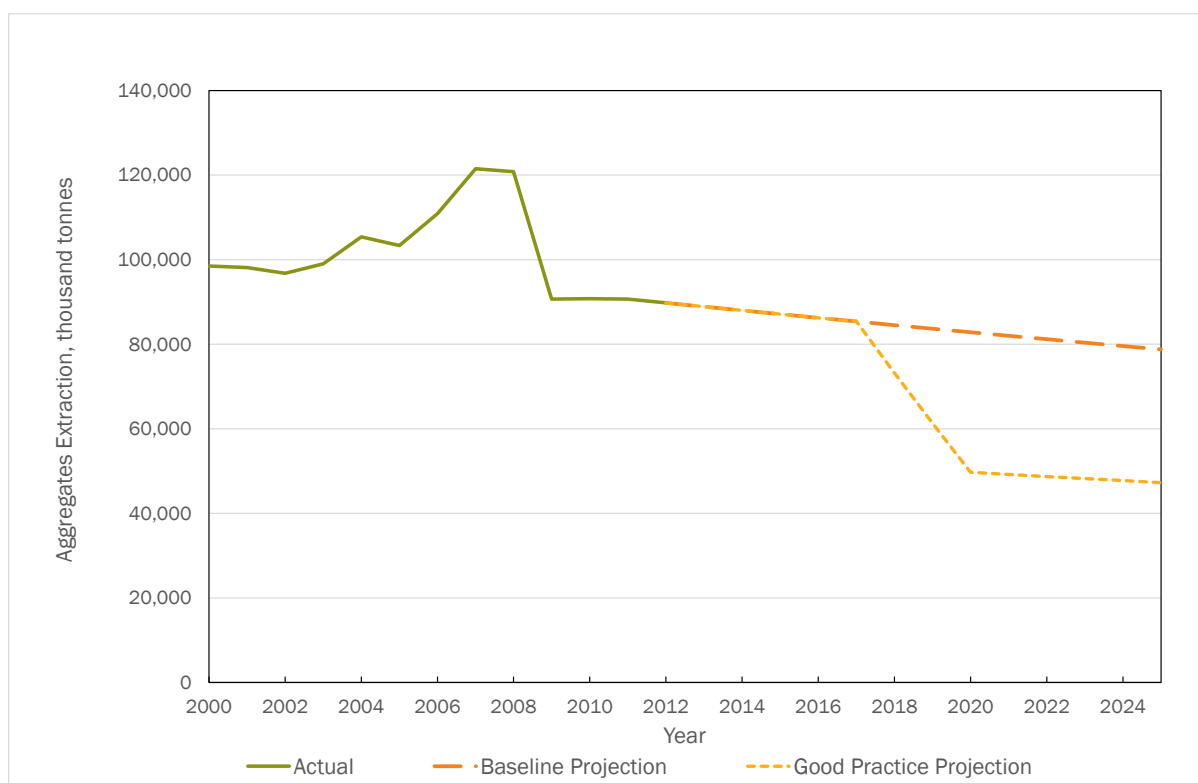


Figure 8-21: Change in Paper & Card Packaging Generation, thousand tonnes

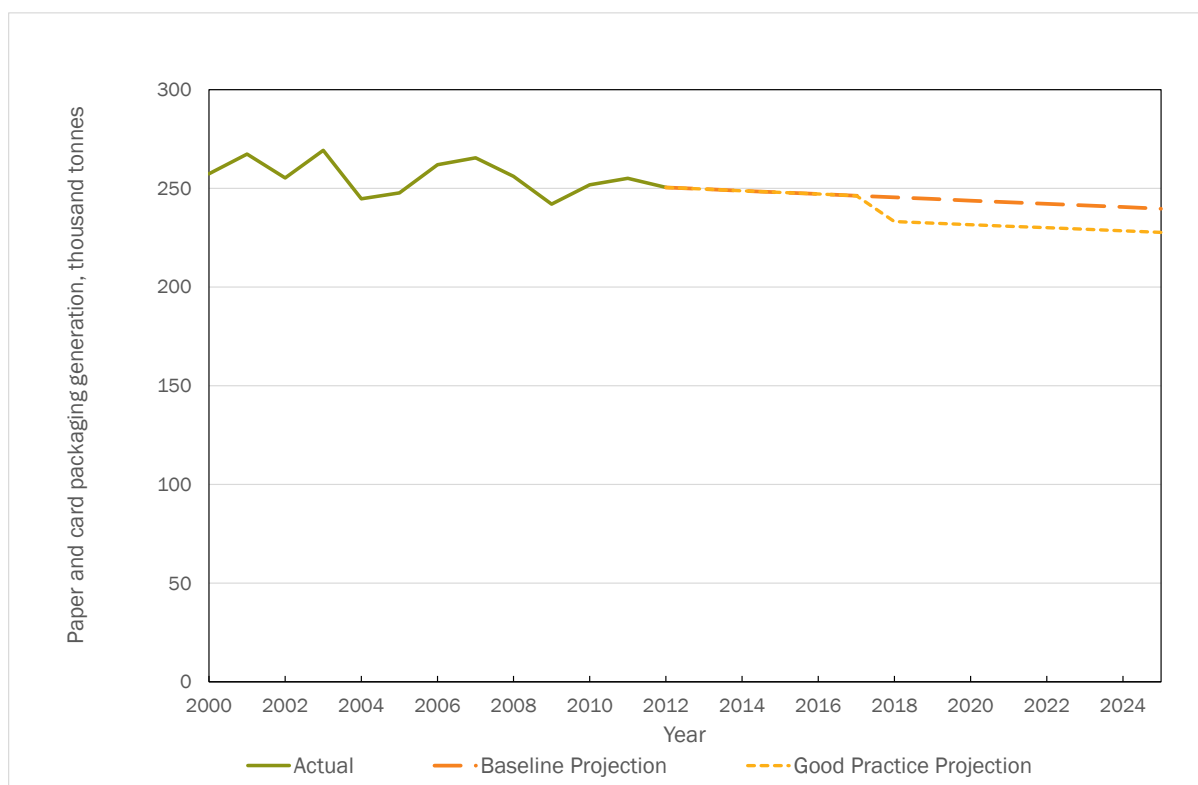


Figure 8-22: Change in Plastic Packaging Generation, thousand tonnes

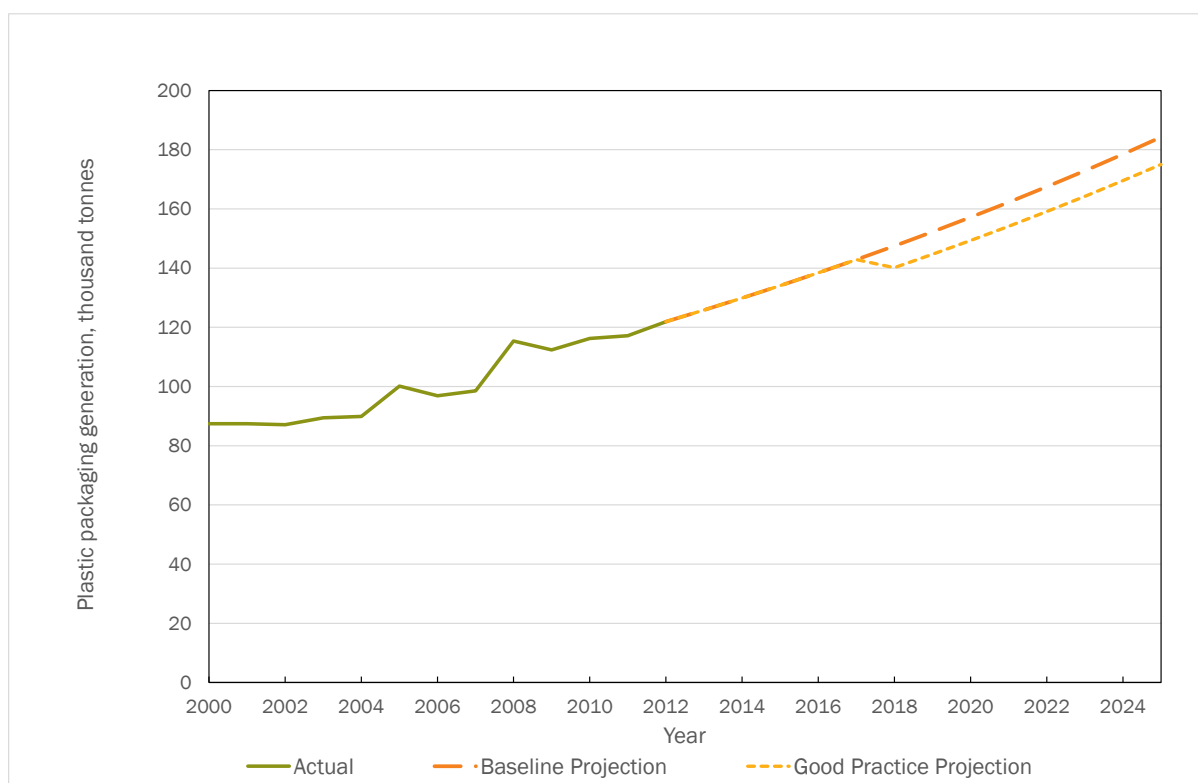


Figure 8-23: Change in Wood Packaging Generation, thousand tonnes

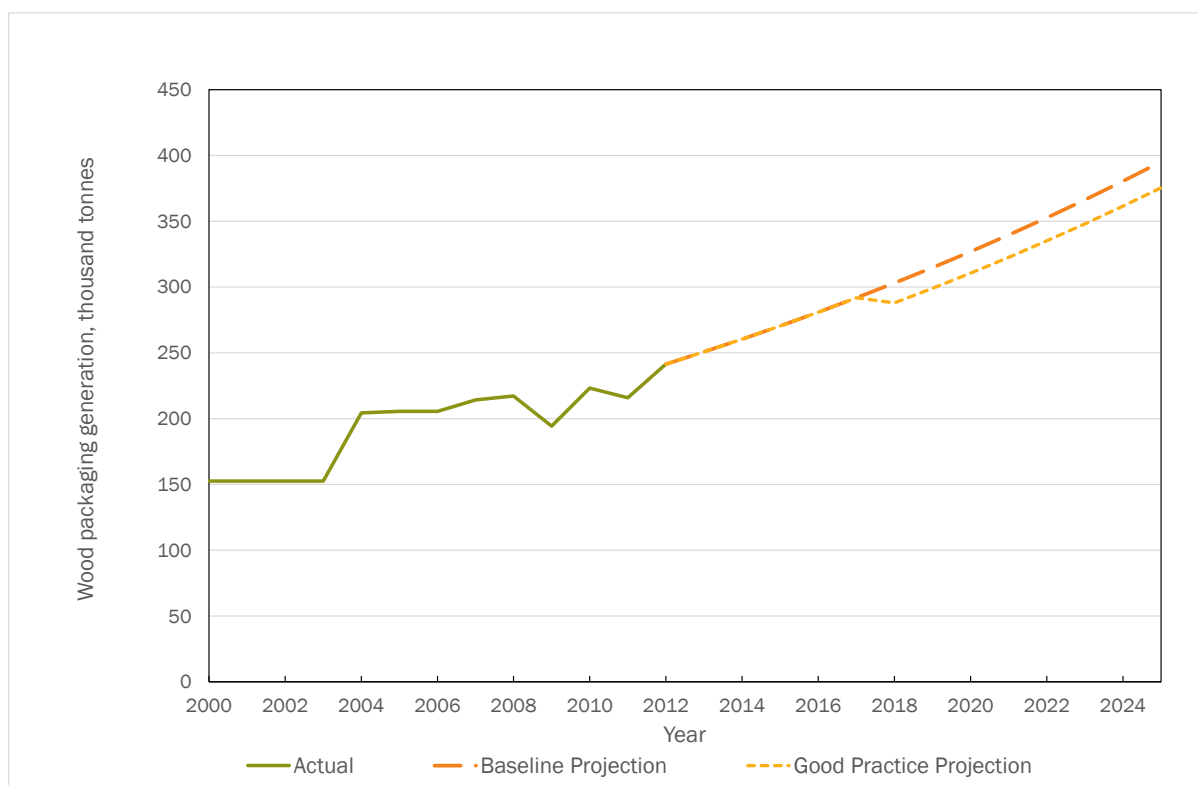


Figure 8-24: Change in Metal Packaging Generation, thousand tonnes

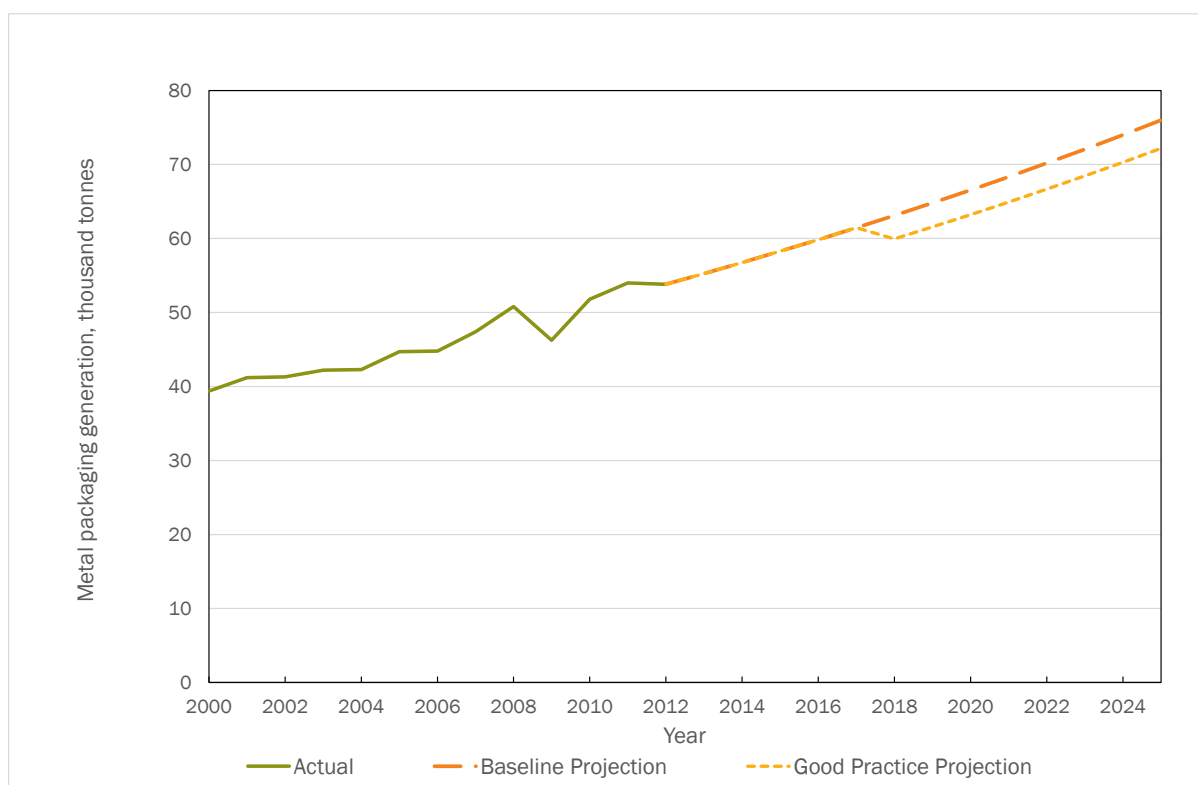


Figure 8-25: Change in Glass Packaging Generation, thousand tonnes

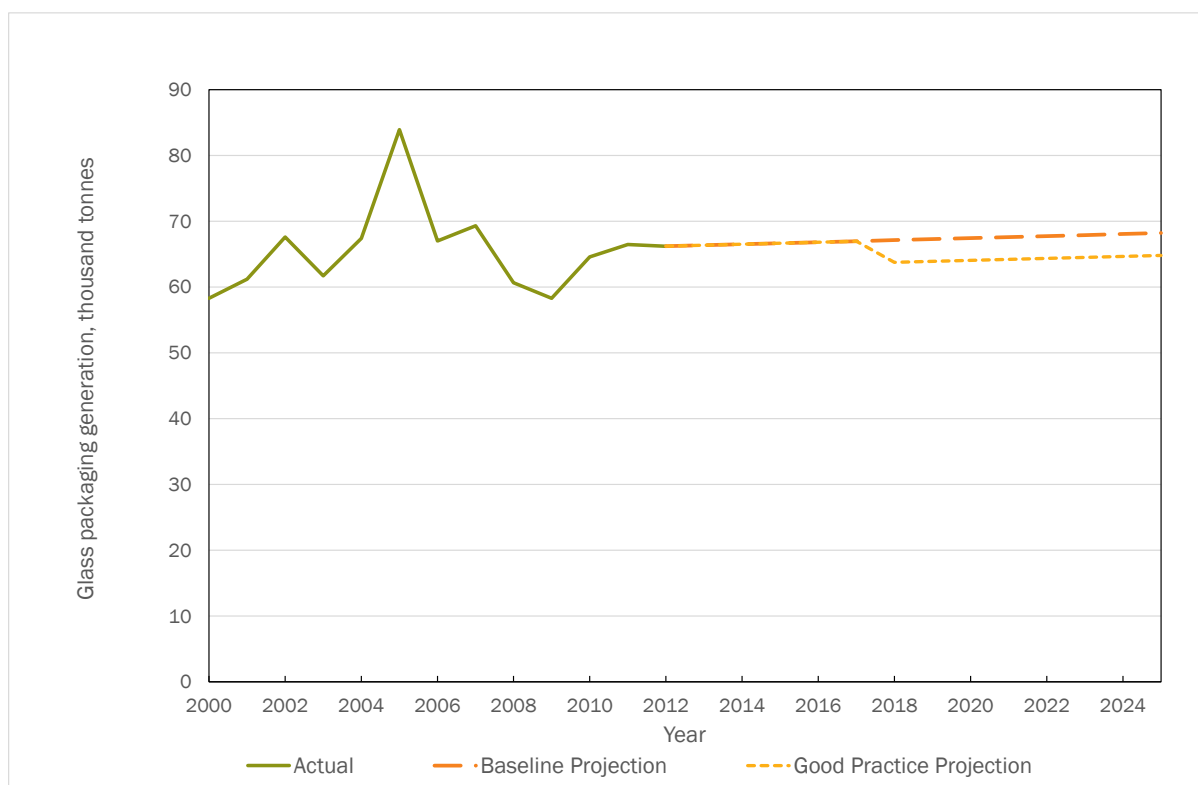
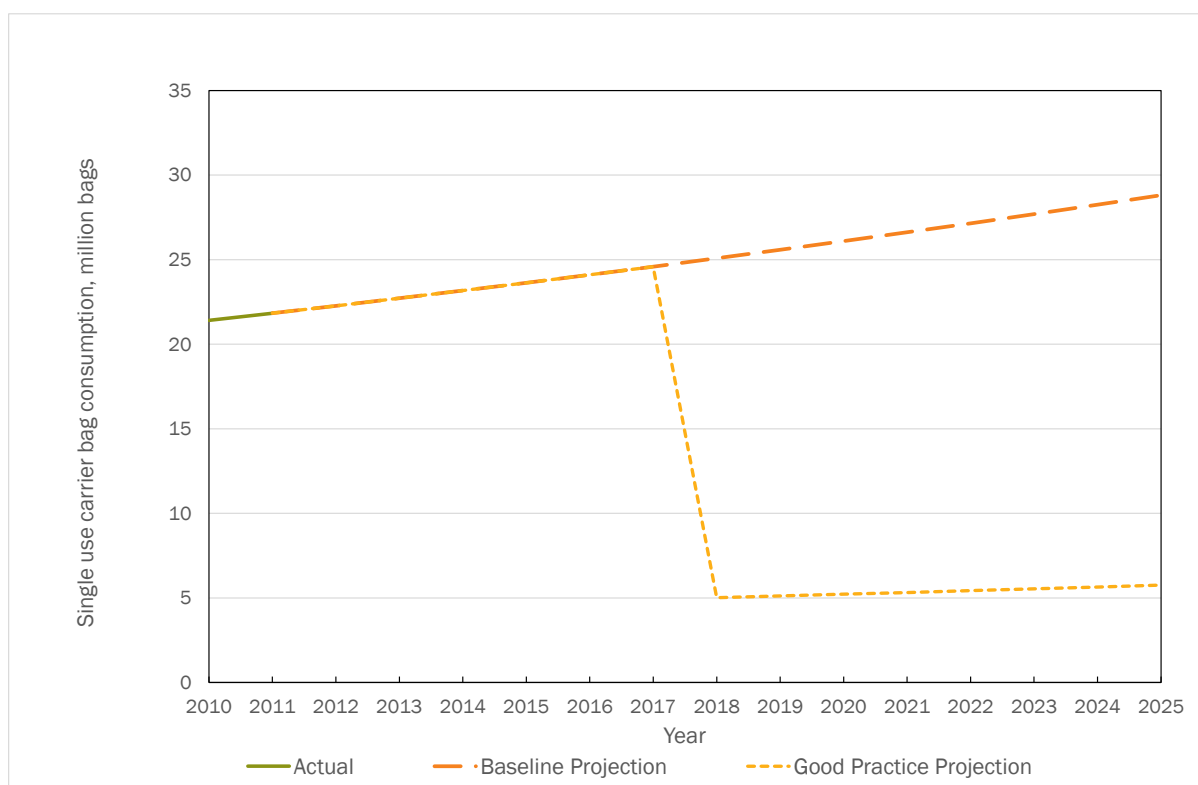


Figure 8-26: Change in Consumption of Single Use Carrier Bags, million bags



## 8.5 Full Revenue Outputs

A summary of the full revenue outputs for each of the suggested reforms to the tax system are presented in the table below.

Table 8-7: Revenue Outturns from Model, million EUR (real 2014 terms)

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Energy Taxes	Transport fuels	0	0	73	145	216	286	356	424	492	492	492
	C&I / Heating	0	0	43	84	123	161	198	234	269	269	269
	Electricity	559	559	559	559	559	559	559	559	559	559	559
	<i>Sub-total Energy, million EUR</i>	559	559	674	787	898	1,006	1,113	1,217	1,320	1,320	1,320
	<i>Sub-total Energy, % GDP</i>	0.3%	0.3%	0.3%	0.4%	0.4%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%
Transport Taxes (excluding transport fuels)	Vehicle Taxes	0	0	92	185	277	370	462	462	462	462	462
	Passenger Aviation Tax	0	0	235	465	473	480	488	495	503	510	518
	Freight Aviation Tax	0	0	0	0	0	0	1	1	1	1	1
	<i>Sub-total Transport, million EUR</i>	0	0	328	650	750	850	950	958	966	973	981
	<i>Sub-total Transport, % GDP</i>	0.0%	0.0%	0.2%	0.3%	0.4%	0.4%	0.5%	0.5%	0.5%	0.5%	0.5%
Pollution and Resource Taxes	Landfill Tax - Non-haz (excl. C&D)	0	0	0	0	0	0	0	0	0	0	0
	Landfill Tax - Inerts (C&D)	0	19	37	49	41	34	34	34	34	34	34
	Incineration /MBT Tax	0	5	10	15	16	16	16	16	16	16	16

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Air Pollution Tax	0	31	59	84	105	123	115	113	111	109	107
	Water Abstraction Tax	0	64	131	203	278	358	368	387	408	430	453
	Waste Water Tax	0	9	17	25	24	24	24	24	24	24	24
	Pesticides Tax	0	0	12	25	26	27	28	29	30	31	33
	Aggregates Tax	0	0	205	176	147	119	118	117	116	115	113
	Packaging Tax	0	0	24	24	24	25	25	26	27	27	28
	Single Use Bag Tax	0	3	3	1	1	1	1	1	1	1	1
	Fertiliser Tax	0	0	0	0	0	0	0	0	0	0	0
	<b>Sub-total Pollution &amp; Resource, million EUR</b>	0	131	500	600	661	725	728	746	766	787	809
	<b>Sub-total Pollution &amp; Resource, % GDP</b>	0.0%	0.1%	0.2%	0.3%	0.3%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
Total Revenue Stream	<b>Total, million EUR</b>	<b>559</b>	<b>690</b>	<b>1,502</b>	<b>2,038</b>	<b>2,309</b>	<b>2,581</b>	<b>2,791</b>	<b>2,922</b>	<b>3,052</b>	<b>3,080</b>	<b>3,110</b>
	<b>Total, % GDP</b>	<b>0.3%</b>	<b>0.3%</b>	<b>0.7%</b>	<b>1.0%</b>	<b>1.1%</b>	<b>1.3%</b>	<b>1.4%</b>	<b>1.4%</b>	<b>1.5%</b>	<b>1.5%</b>	<b>1.5%</b>

## 9.0 Germany

During the course of the study the latest data available from official sources was sought, namely the TAXUD Taxes in Europe database, energy excise duty tables and the OECD database on environmental taxes and charges. This was supplemented by national data sources where possible. Due to the number of taxes and countries involved, the central case for energy excise duties has been the rates published by TAXUD giving the position as of 1<sup>st</sup> July 2014. Planned future increases may not be fully captured in this analysis and therefore, the projected increase in revenues would effectively incorporate any revenue from increased rates in early 2015 or shortly thereafter.

### 9.1 Energy Taxes

➤ **Excise duties on energy products:**

- The excise duties for Germany are summarised in Table 9-1.

**Table 9-1: Excise Duties on Fuels and Electricity in Germany<sup>325</sup> – nominal rates**

Excise Duty	Unit	Rate Applied in Germany	Existing ETD Minimum	EU-28 Average	EU-28 Median
<b>Motor Fuels - propellant</b>					
Unleaded Petrol	€ per 1000 litres	€654.50 <sup>1</sup>	€359	€519	€509
Gas Oil (Diesel)	€ per 1000 litres	€470.40 <sup>2</sup>	€330	€427	€405
Kerosene	€ per 1000 litres	€654.50	€330	€440	€405
Liquid Petroleum Gas	€ per 1000 kg	€180.32	€125	€209	€180
Natural Gas	€ per GJ	€3.86	€2.60	€3.03	€2.66
<b>Motor Fuels – Industry / Commercial Use (excl. non-manufacturing business)</b>					
Gas Oil (Diesel)*	€ per 1000 litres	€46.01 <sup>3, 4</sup>	€21	€221	€163
Kerosene	€ per 1000 litres	€654.50	€21	€283	€330
Liquid Petroleum Gas	€ per 1000 kg	€180.32	€41	€126	€125
Natural Gas	€ per GJ	€3.86	€0.30	€1.76	€1.50
<b>Heating – Business Use (manufacturing industries)</b>					
Gas Oil (Diesel)	€ per 1000 litres	€46.01 <sup>4</sup>	€21	€221	€163
Kerosene	€ per 1000 litres	€654.50	€0.00	€270	€330

<sup>325</sup> Exempt territories: Helgoland island and the Büsingen exclave within Switzerland.



Excise Duty	Unit	Rate Applied in Germany	Existing ETD Minimum	EU-28 Average	EU-28 Median
Heavy Fuel Oil	€ per 1000 kg	€25	€15	€70	€25
Liquid Petroleum Gas	€ per 1000 kg	€45.45	€0.00	€82	€40
Natural Gas	€ per GJ	€1.14	€0.15	€1.36	€0.46
Coal and Coke	€ per GJ	€0.3 <sup>6</sup>	€0.15	€1.27	€0.31
<b>Heating – Non-Business Use (and non-manufacturing business)</b>					
Gas Oil (Diesel)	€ per 1000 litres	€61.35 <sup>5</sup>	€21	€179	€125
Kerosene	€ per 1000 litres	€654.50	€0.00	€279	€330
Heavy Fuel Oil	€ per 1000 kg	€25	€15	€85	€26
Liquid Petroleum Gas	€ per 1000 kg	€60.60	€0	€111	€42
Natural Gas	€ per GJ	€1.53	€0.3	€2.04	€0.94
Coal and Coke	€ per GJ	€0.3 <sup>6</sup>	€0.3	€1.77	€0.32
<b>Electricity</b>					
Business Use	€ per MWh	€15.37 <sup>7</sup>	€0.5	€8.42	€1.03
Non-Business Use	€ per MWh	€20.50	€1.0	€14.53	€2.06
<p><b>Notes:</b></p> <p>1. This rate is for petrol with less than 10 mg sulphur per kg. Rate above this threshold is 669.80</p> <p>2. This rate is for diesel with less than 10 mg sulphur per kg. Rate above this threshold is 485.70</p> <p>3. €255.60 for agriculture, horticulture, pisciculture and forestry according to art 15(3); €61.35 for CHP with minimum 60% utilization rate (cf. note 5).</p> <p>4. This rate is for diesel with less than 50 mg sulphur per kg. Rate above this threshold is 61.01</p> <p>5. This rate is for diesel with less than 50 mg sulphur per kg. Rate above this threshold is 76.35</p> <p>6. The tax rate as related to the net calorific value is €0.33 per GJ Coal is exempt where used for electricity production.</p> <p>7. The effective rate is reduced about 50% due to the ‘peak adjustment’ (spitzenausgleich).</p> <p>*. TAXUD tables provide no single tax rate for Germany.</p>					

- Coal that is used for electricity production (>2MW) is exempt from taxation, according to EnergieStG §37. Gas oil used for electricity production (>2 MW) is taxed at a reduced rate (EnergieStG §53) of €15 per hectolitre. When the same units are also producing heat, the share of energy for that purpose will be taxed. Energy use for flue gas treatment is liable too. However, when a combined heat- and power unit is highly efficient with an energy utilization rate of at least 70% it may obtain a complete exemption.

- Table 1.4. lists the nominal tax rates without the more complex system of individual reductions which are available to business and including;
  - Process specific reductions in energy tax (§51 EnergieStG);
  - Peak adjustment (Spitzenausgleich) for energy tax (§55 EnergieStG);
  - Process specific reductions in electricity tax (§9b StromStG); and
  - Peak adjustment (Spitzenausgleich) for electricity tax (§10 StromStG).
- The following sectors are regarded as energy-intensive and may obtain the “process specific” reductions for energy and electricity use; production of glass and glass products; ceramic products; cement and gypsum; products of cement, chalk and gypsum; mineral insulation; asphalt; products of graphit; concrete products; mineral fertilizers; metals and metal products, surface treatment of metals; chemical processes. Reductions apply to producing purposes, heating and other purposes mainly as regards the use of coal, gas oil and electricity.
- For these and other producing entities it is also possible to obtain a refund of energy and electricity taxes when, for the individual company, the tax payments introduced under the ecological tax reform exceed the sum of the social security contributions lowered as part of the tax shift within ETR (with a base payment of €750 to €1,000). This ‘peak adjustment’ mechanism has been introduced to support energy-intensive industries that are not equally labour-intensive. While the peak adjustment allows for a reduction of 90%, the remaining payment should ensure that EU minimum rates for electricity are complied with.
- Effectively this is a cap on the tax payments, and annually the refunds amount to more than €2 billion, of which 90% relates to the electricity tax (Figure 9-1).<sup>326</sup>

---

<sup>326</sup> BMF, 2010, Zweiundzwanzigster Subventionsbericht der Bundesregierung, Bonn  
[http://www.bundesfinanzministerium.de/Content/DE/Monatsberichte/Standardartikel\\_Migration/2010/03/analysen-und-berichte/b01-22-Subventionsbericht-der-Bundesregierung/22-Subventionsbericht-der-Bundesregierung.html](http://www.bundesfinanzministerium.de/Content/DE/Monatsberichte/Standardartikel_Migration/2010/03/analysen-und-berichte/b01-22-Subventionsbericht-der-Bundesregierung/22-Subventionsbericht-der-Bundesregierung.html)

Figure 9-1: Reductions in Energy Taxation from Reduced Rates

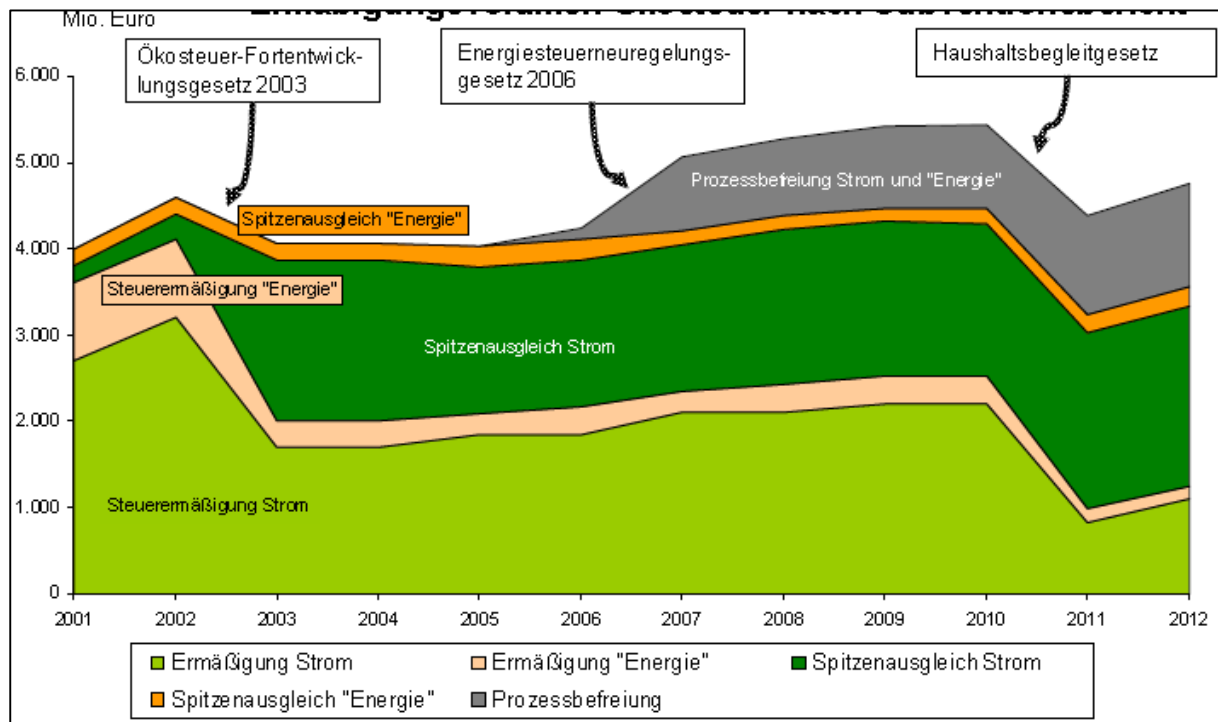


Figure: Reductions in energy taxation from reduced rates, process specific regulations and peak adjustment (from U. Beland, Deutscher Industrie- und Handelskammertag).

- Almost 100,000 companies have benefit from the 'peak adjustment', which seems a large number considering that there are about 50,000 manufacturing companies in Germany, but it includes also farmers and forestry. In 2010, it was about 162 TWh of electricity that was subject to 'peak adjustment' out of a total of 236 TWh used in industry and about 9 TWh in agriculture<sup>327</sup> (BMWi, 2011), implying that mainly industry benefits.
- Considering total revenues of about €7 billion from the electricity tax (of which €4 billion from business<sup>328</sup>) these figures indicate that the electricity tax is effectively a great deal lower for manufacturing industry than what the nominal rate suggests.<sup>329</sup> The 'peak adjustment' is considered a subsidy under EU state aid regulations. To enable continuation of the scheme it is now required that manufacturing industries are certified to meet energy efficiency requirements. Industry as a whole must also obtain a 1.3% improvement in energy efficiency per year, according to the self-obligation agreement with the government, otherwise it will forfeit the peak

<sup>327</sup> BMWi, Energiedaten <http://bmwi.de/DE/Service/suche,did=589204.html>

<sup>328</sup> Institut der Deutschen Wirtschaft in Köln, 2012, Alternative Möglichkeiten der steuerlichen Finanzierung der EEG-kosten, Kurzgutachten, p11 <http://www.iwkoeln.de>

<sup>329</sup> Apparently the electricity tax revenues of €7 billion shrink to €5 billion after the refunds of €2 billion to business. The net tax burden for business is hence about €2 billion or half the nominal burden.

adjustment or see it reduced. After a two-year transition this takes effect from 2015.

## 9.2 Transport Taxes (Excluding Transport Fuels)

- There is no registration tax on the purchase and imports of cars in Germany.
- Circulation tax:
  - The annual circulation tax for cars (Kfz-Steuer) registered after 1<sup>st</sup> July 2009. The tax is based partly on CO<sub>2</sub> emissions, consisting of a base tax and a CO<sub>2</sub> tax. The base tax is €2 per 100 cm<sup>3</sup> (petrol) and €9.5 per 100 cm<sup>3</sup> (diesel). The CO<sub>2</sub> component is linear with €2 per g per km emitted above 95 g per km, whereas cars below the threshold are exempt.
  - The circulation tax applies to domestic and foreign vehicles, when the latter are used in Germany.
  - For heavy-goods vehicles the circulation tax depends on weight:
    - Up to 2,000 kg: €11.25 per 200 kg.
    - From 2,000 to 3,000 kg: € 12.02 per 200 kg.
    - From 3,000 to 3,500 kg: €12.78 per 200 kg.
  - The following vehicles are exempt from circulation tax: police, ambulances, fire engines, custom and tax vehicles, road repair vehicles, street cleaning vehicles and trolley-buses. Vehicles for agricultural and forestry purposes as well as for shows may obtain exemption.
  - The road user charge for heavy-goods vehicles (Maut) is differentiated according to vehicle exhaust classes for vehicles of at least 12 tonnes.

Table 9-2: Distance-Based Toll-Rates (“Maut”) for Heavy-Duty Vehicles of at Least 12 Tonnes in Germany

Maut Category	Vehicle Exhaust Class	No. of Axels	Toll Rate
Category A	Euro 5 EEV Class 1 Euro 6	Up to 3 axles	€0.141 per km
		Up to 4 axles	€0.155 per km
Category B	Euro 4 Euro 3 with PMK 2, 3 or 4	Up to 3 axles	€0.169 per km
		Up to 4 axles	€0.183 per km
Category C	Euro 3 without PMK Euro 2 with PMK 1, 2, 3 or 4	Up to 3 axles	€0.190 per km
		Up to 4 axles	€0.204 per km
Category D	Euro 2 without PMK Euro 1 Euro 0 - other	Up to 3 axles	€0.274 per km
		Up to 4 axles	€0.288 per km

PMK is Partikelminderungsklasse (particle reduction class)

## 9.3 Pollution and Resource Taxes

- Water Abstraction Tax:
  - Germany's water abstraction tax (Wasserpfennig) is a natural resource tax

that applies to water works and others abstracting from aquifers or surface waters. It is a volumetric tax, with tax rates that are decided by the individual Land government and which hence differ across Germany. The Länder also administrate the tax bases differently with respect to the rates for surface waters and groundwater. In most Länder the revenues are ring-fenced for regional compensation schemes, whereas others do not tie it to specific statutory purposes.<sup>330</sup> Abstraction for irrigation purposes is exempted in several Länder or subject to reduced rates.

**Table 9-3: Water Abstraction Levy (Wasserpfennig) in German Länder**

	<b>Tax Base</b> GW:groundwater; SW:surface water	<b>Tax Rate</b> per m <sup>3</sup> (cents) <sup>1</sup>	<b>Minimum Threshold</b> p.a.	<b>Ring-fenced</b>	<b>Annual Revenue</b> (million €)
Baden-Württemberg	GW; SW	5.1	2,000 m <sup>3</sup>	From 2013 <sup>331</sup>	85
Berlin	GW	31	6,000 m <sup>3</sup>	Yes	52.6
Brandenburg	GW; SW	10; 2	3,000 m <sup>3</sup>	Yes	19
Bremen	GW; SW	5	4,000 m <sup>3</sup>	Yes	4.45
Hamburg	GW	31	10,000 m <sup>3</sup>	No	4.85
Mecklenburg-West Pomerania	GW; SW	5; 2	2,000 m <sup>3</sup>	Yes	5
Lower Saxony	GW; SW	5; 1	€260	Yes	60
North Rhine-Westphalia	GW; SW	4.5	3,000 m <sup>3</sup> per €150	Partly	86
Saarland	GW	7 or 8	€200	Partly	2.2
Saxony	GW; SW	1.5	2,000 m <sup>3</sup>	Yes	5.6
Saxony-Anhalt (from 2012)	GW; SW	5 or 2-7	2,000 m <sup>3</sup>	n.a.	n.a.
Schleswig-Holstein	GW; SW	5 or 11	€100	50%	58
<b>Note:</b> 1. Where different tax rates for groundwater (GW) and surface water (SW) these are separated with.					

<sup>330</sup> Water abstraction charges and compensation payments in Baden-Württemberg, EPI-WATER report; [http://www.feem-project.net/epiwater/docs/d32-d6-1/CS13\\_Buden-Wuerttemberg.pdf](http://www.feem-project.net/epiwater/docs/d32-d6-1/CS13_Buden-Wuerttemberg.pdf)

<sup>331</sup> <http://www.welt.de/regionales/baden-wuerttemberg/article131887573/Umweltminister-will-Wasserpfennig-anheben.html>

- There are a number of exemptions related to the above water abstraction charges, of which several are outlined in Table 9-4.<sup>332</sup>

Table 9-4: Exemptions to Water Abstraction Levies in German Länder

	Baden-Württemberg	Brandenburg	Bremen	Lower Saxony	Saxony	Schleswig-Holstein
Exemptions on the Grounds of Competitive Disadvantage	-	Water intensive production of businesses can be partly or totally freed from water abstraction charge in case of competitive disadvantages	-	-	-	-
Exemptions on the Grounds of Obtaining Heat	No fees for water extraction which aims to get heat	No fees for water abstraction which aims to get heat and where the water is discharged afterwards without any impairment	No fees for water abstraction which aims to get heat and where the water is discharged afterwards	No fees for water abstraction which aims to get heat and where the water is discharged afterwards	No fees for abstraction of surface water bodies for the purpose of using hydropower or getting heat	No fees for water abstraction from mineral springs which aims to get heat and is not used for commercial beverage production

- Germany's waste water tax (Abwasserabgabe) is linked to the discharge license, and when the concentration of the pollutant exceeds the 'Grenzwerte', the charge for the pollutant in question is raised by the percentage by which the value is exceeded. However, if the values are exceeded only once in the period of assessment, the charge is raised by half this percentage.
- Industries are considered for a charge reduction if the concentration values of the pollutants are below the minimum standards (Mindestanforderungen) specified by the federal authorities. Dischargers are also considered for charge reductions when they submit plans for installations of treatments plants, provided that at least a 20% reduction

<sup>332</sup> The full list of exemptions is available at [http://www2.oecd.org/ecoinst/queries/QueryResult\\_5.aspx?Key=3c7d6fdf-5d64-46c7-982c-a74a553d7159&QryCtx=4&QryFlag=3](http://www2.oecd.org/ecoinst/queries/QueryResult_5.aspx?Key=3c7d6fdf-5d64-46c7-982c-a74a553d7159&QryCtx=4&QryFlag=3)

in pollution load is achieved. Communities can obtain somewhat comparable arrangements as industries for reductions.<sup>333</sup>

- As for inhabitants not connected to the communal treatments plants but discharging directly to surface water the communities are liable for a charge. In this connection there is a standard reduction of 50% for the number of pollution units.

## 9.4 Modelled Changes in Tax Base

The modelled change in the tax base for each of the suggested reforms to the tax system are shown in the table and figures below.

Table 9-5: Change in Energy Tax Base

Fuel Type	Units	Baseline	After Tax Increase	Change
Gas Oil	million litres	53,919	52,130	-1,789
Petrol	million litres	20,158	20,158	0
Kerosene	million litres	9,444	9,444	0
LPG	thousand tonnes	1,572	1,470	-102
Heavy Fuel Oil	thousand tonnes	1,454	1,423	-30
Natural Gas	TJ (GCV)	1,899,249	1,882,956	-16,293
Coal	thousand tonnes	2,733	2,718	-15
Electricity	GWh	473,816	468,732	-5,084

---

<sup>333</sup> RIZA (1995) Waste water charge schemes in the European Union Part I, p 103, Lelystad.

Figure 9-2: Change in Internal Passenger Flights, flights per year

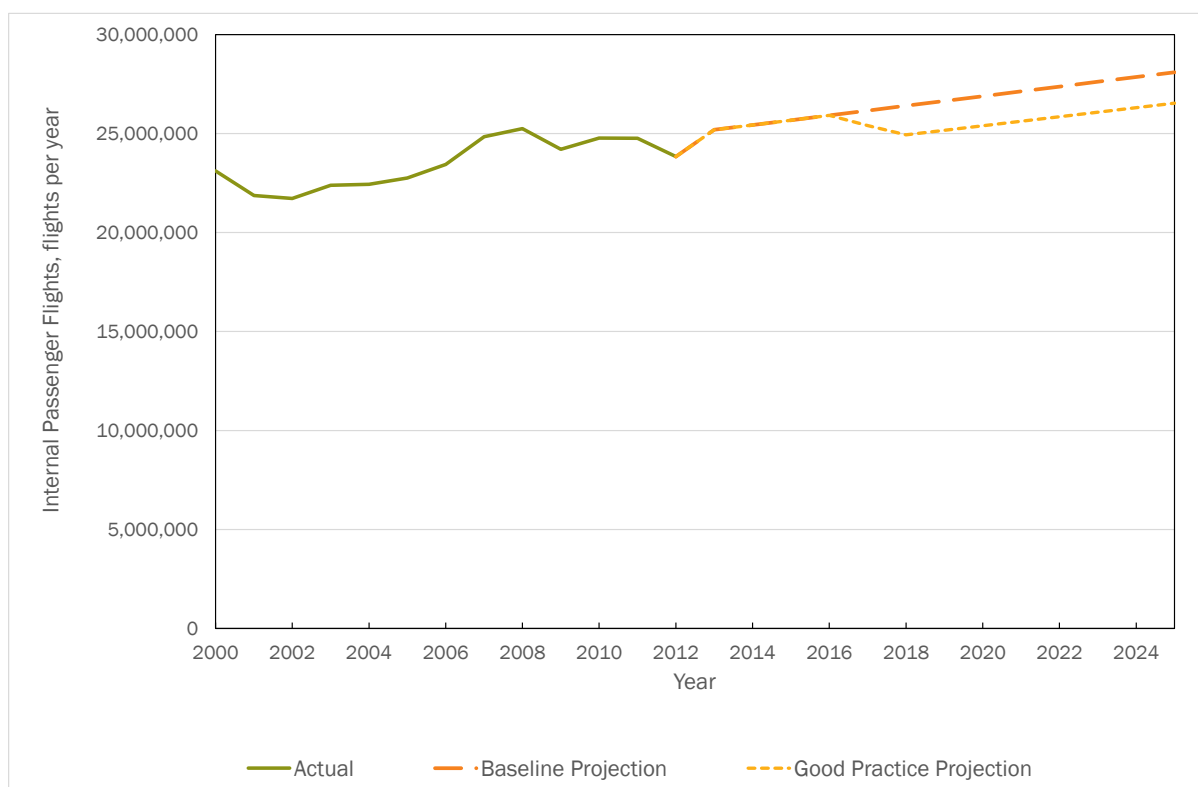


Figure 9-3: Change in Intra-EU Passenger Flights, flights per year

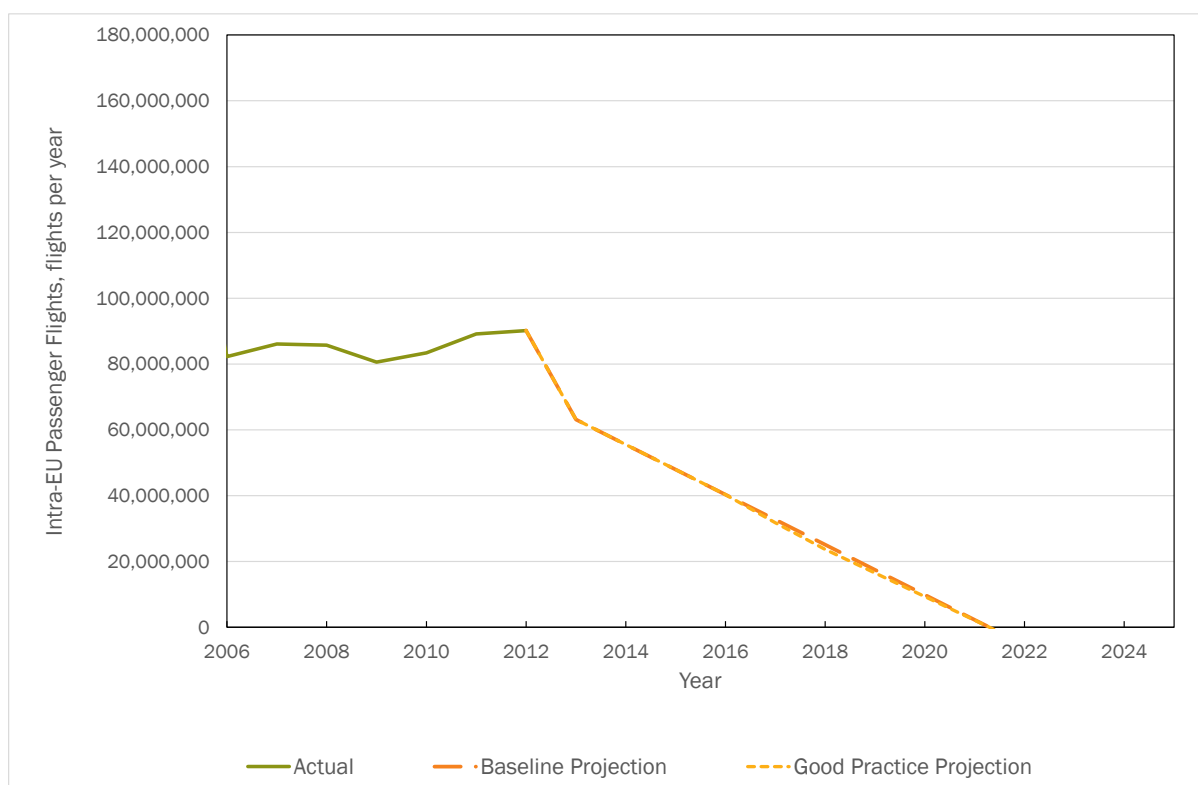




Figure 9-4: Change in Extra-EU Passenger Flights, flights per year

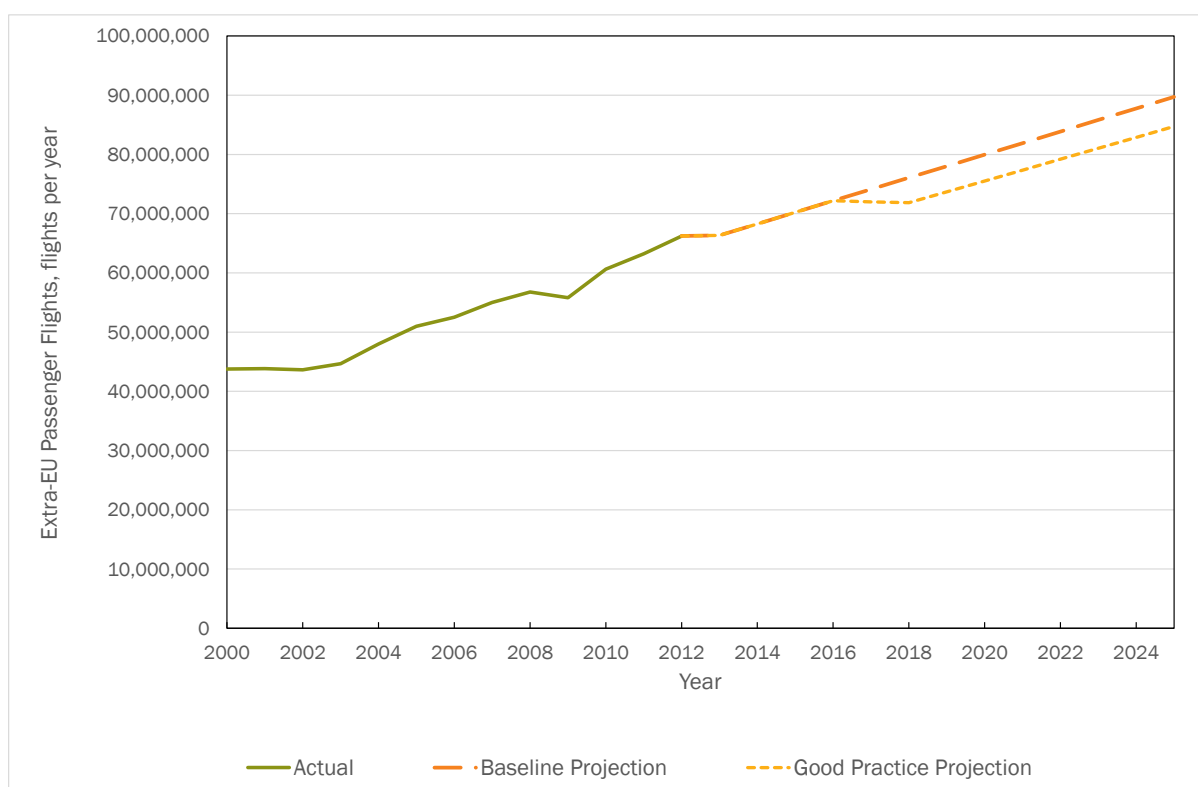


Figure 9-5: Change in Internal Air-freight, tonnes

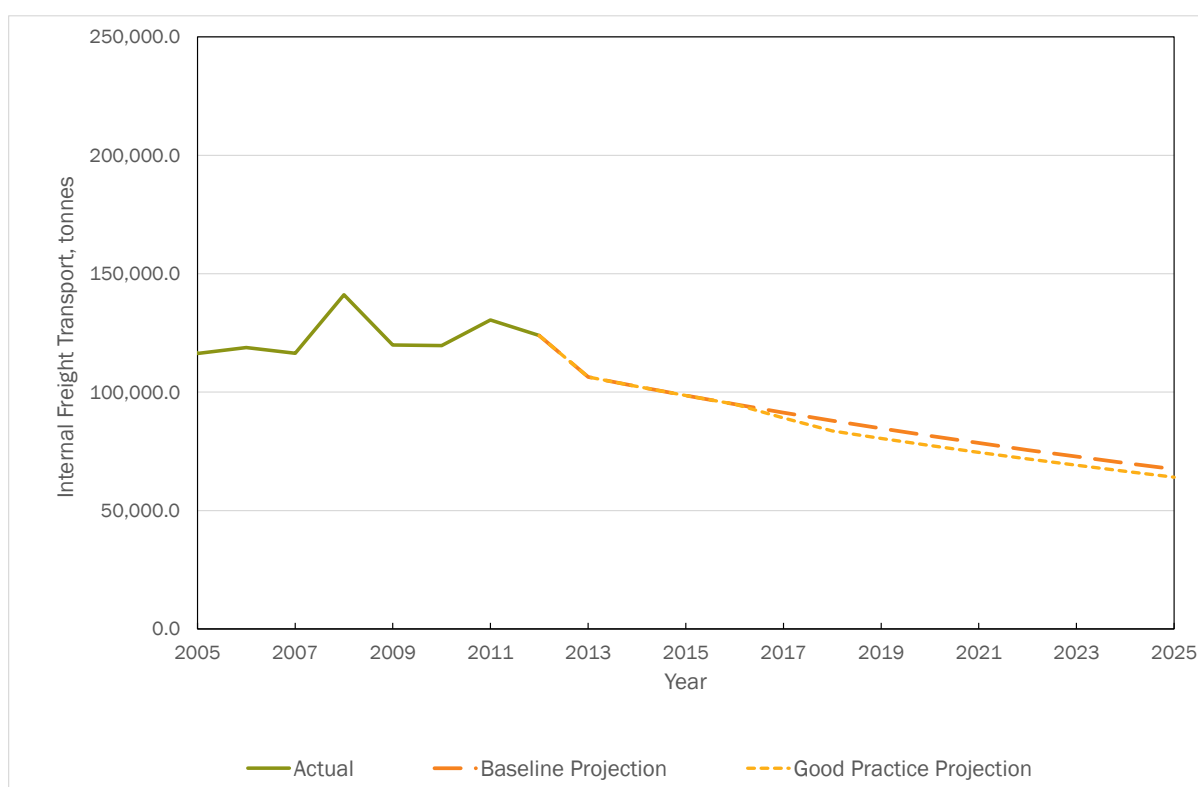


Figure 9-6: Change in Intra-EU Air-freight, tonnes

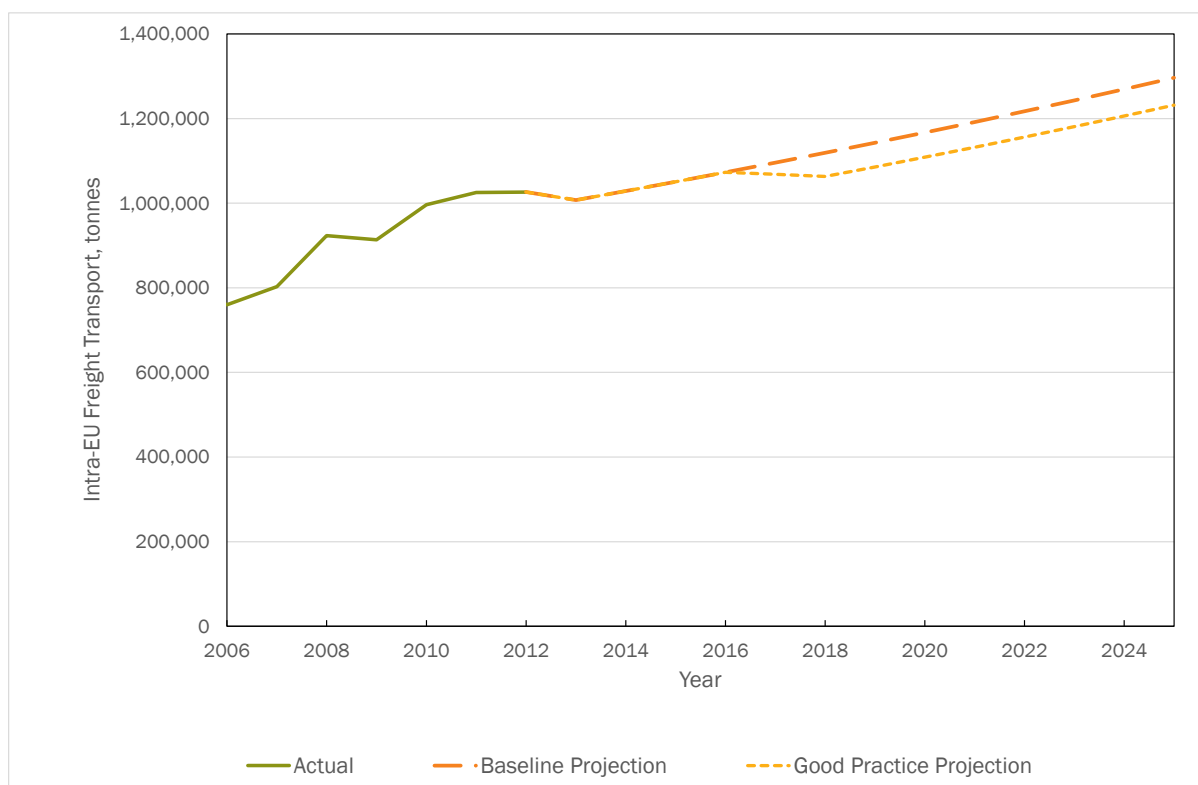


Figure 9-7: Change in Extra-EU Air-freight, tonnes

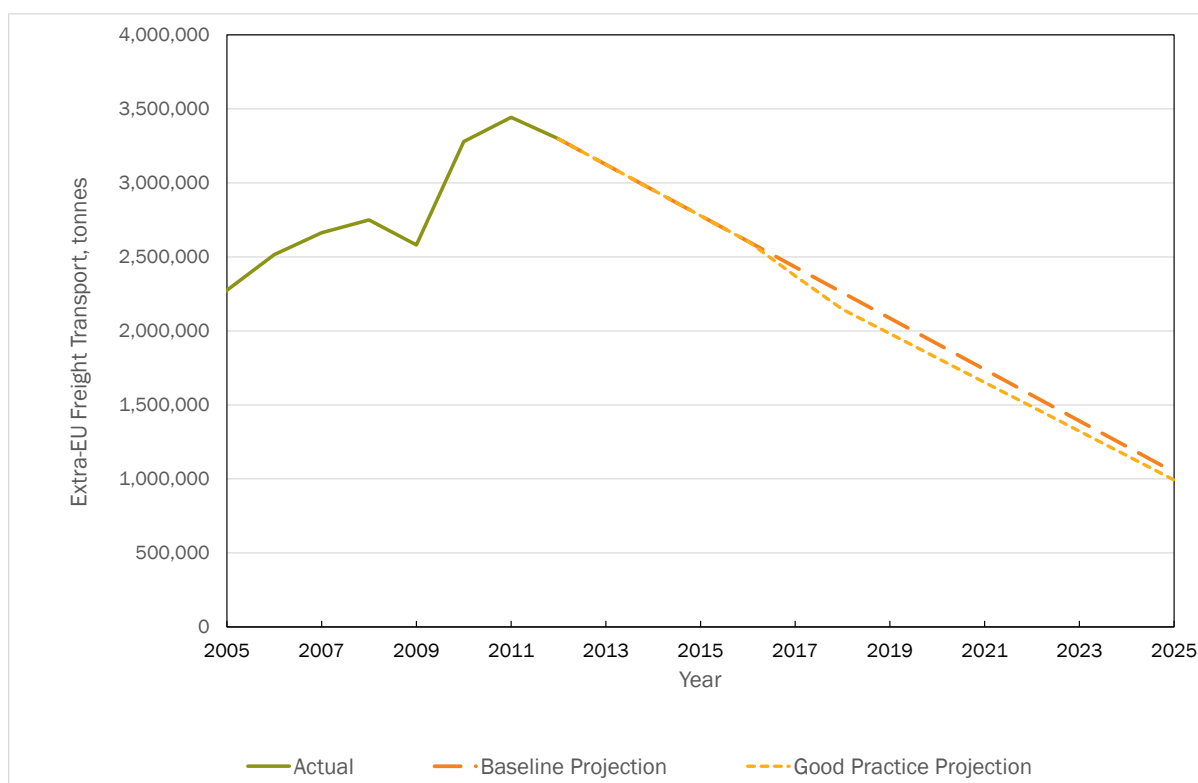


Figure 9-8: Change in Non-Hazardous Waste Landfilled, thousand tonnes

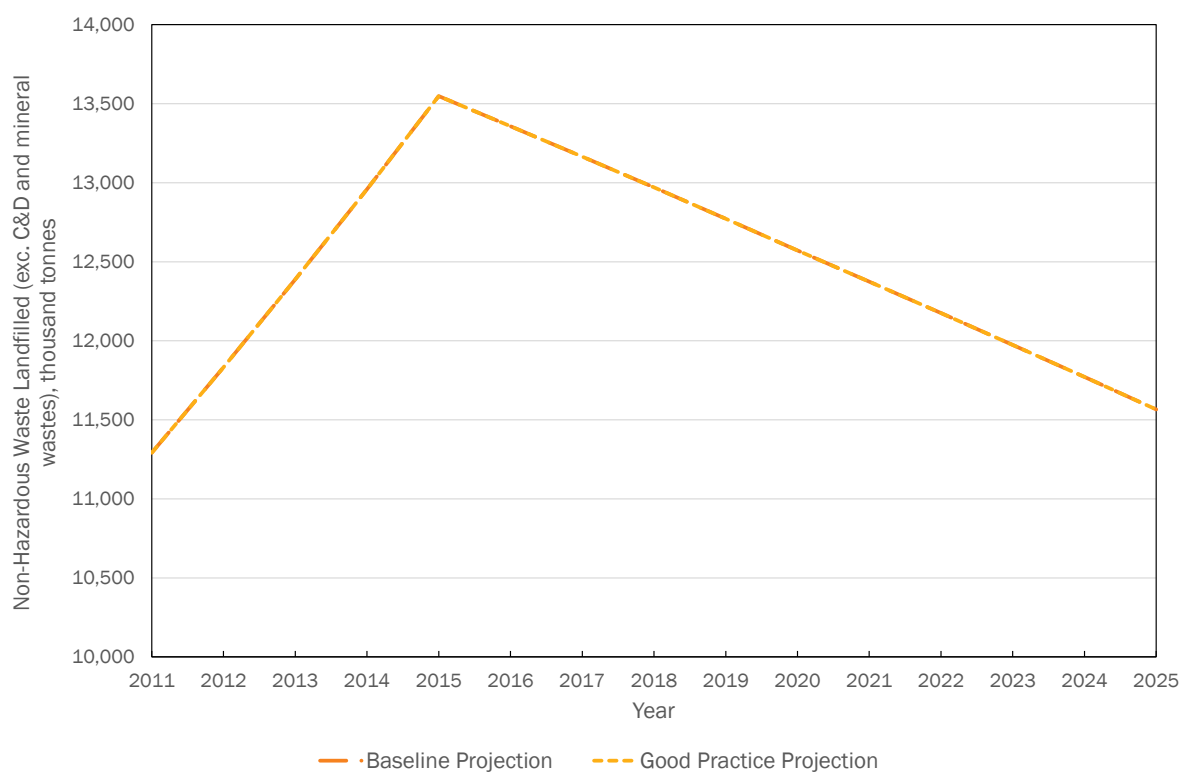


Figure 9-9: Change in MBT/ Incineration, thousand tonnes

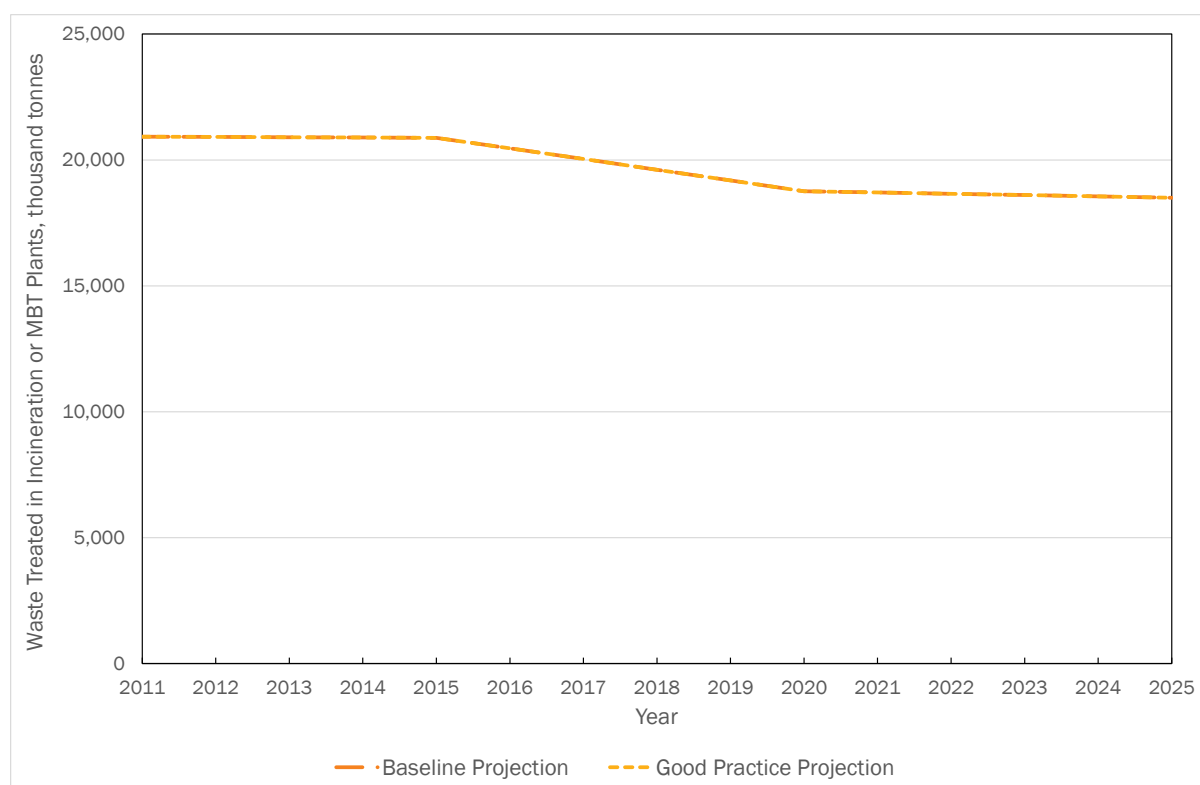


Figure 9-10: Change in SOx Emissions, tonnes

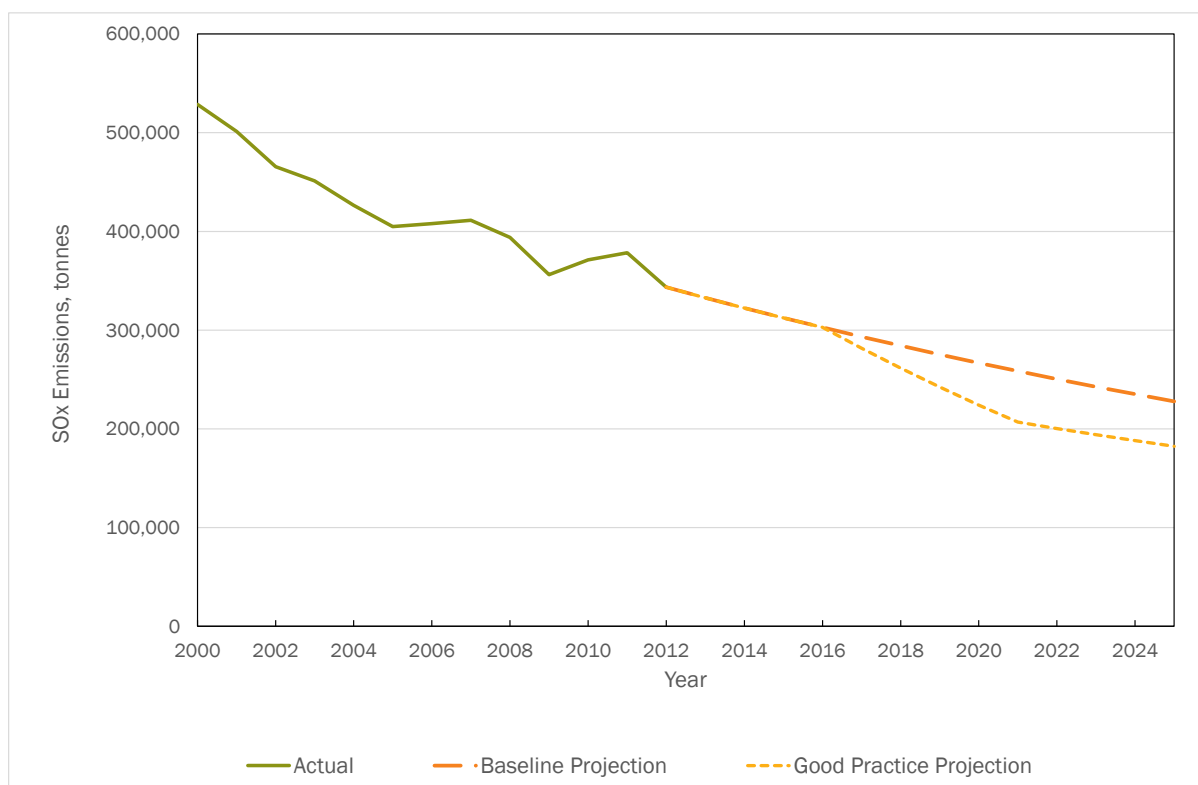


Figure 9-11: Change in NOx Emissions, tonnes

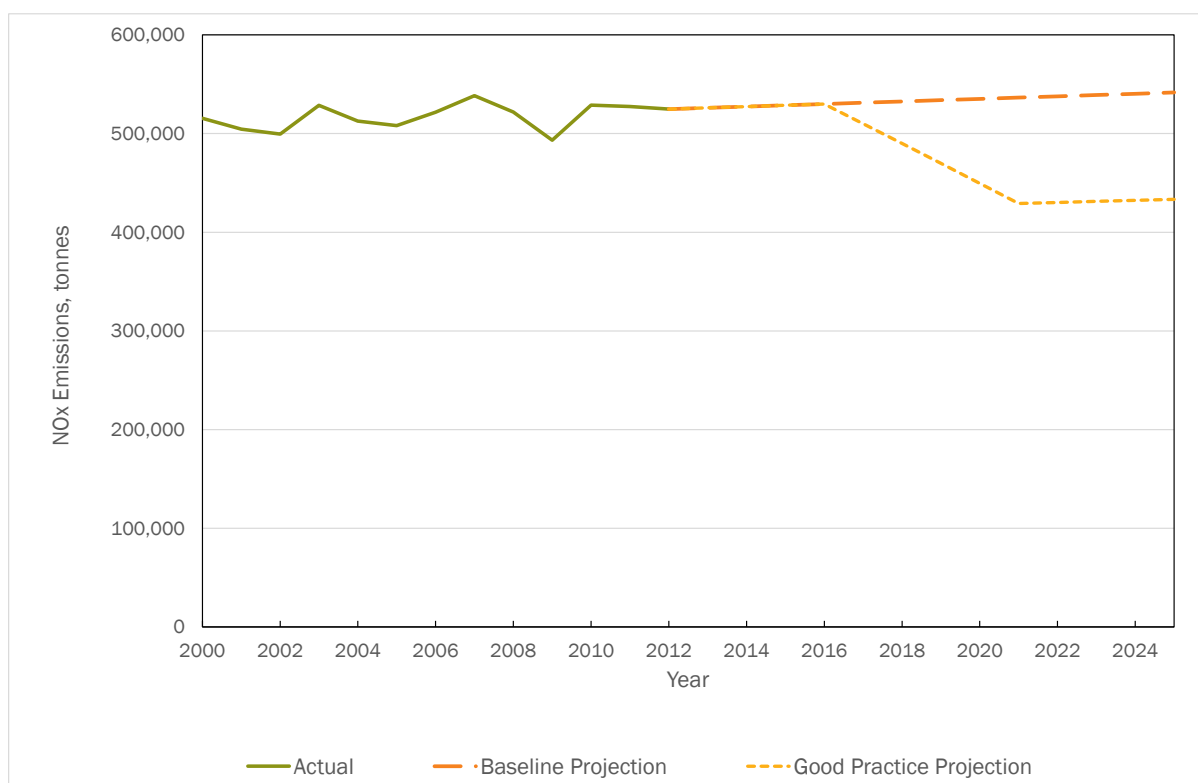


Figure 9-12: Change in PM<sub>10</sub> Emissions, tonnes

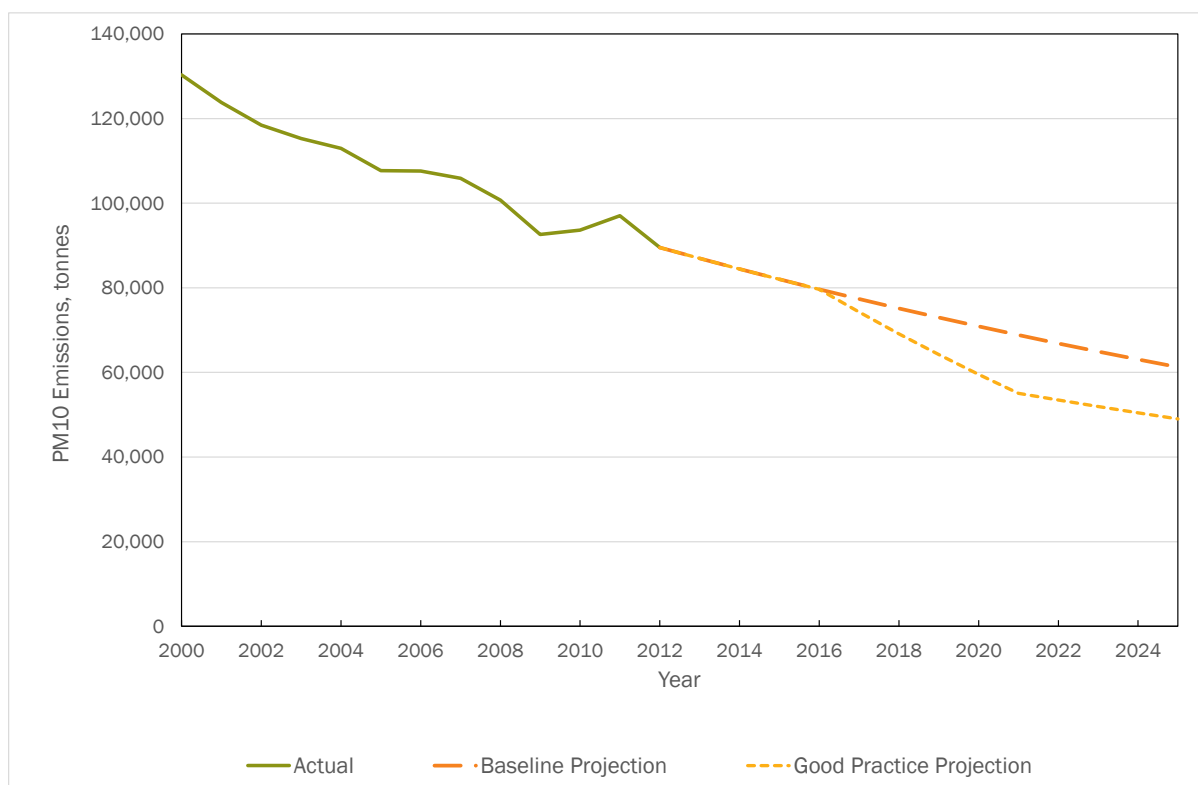


Figure 9-13: Change in Groundwater Abstraction – Public Supply, million cubic metres

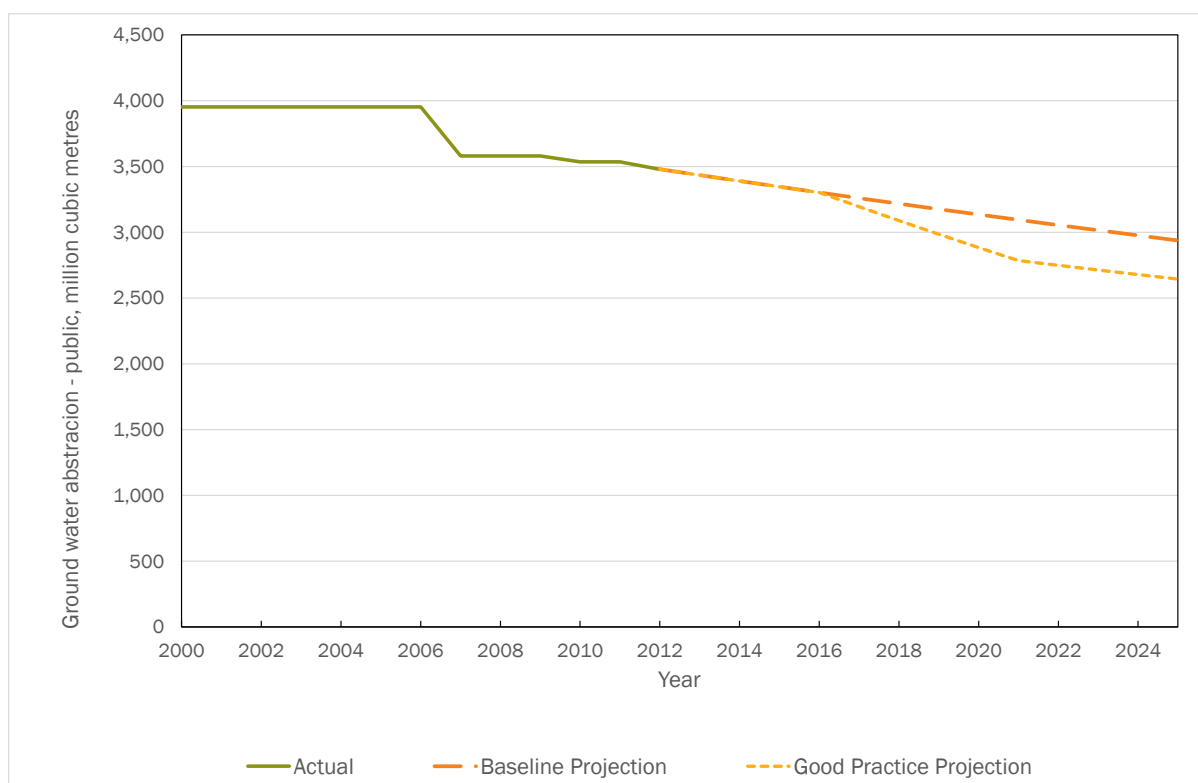


Figure 9-14: Change in Groundwater Abstraction – Manufacturing, million cubic metres

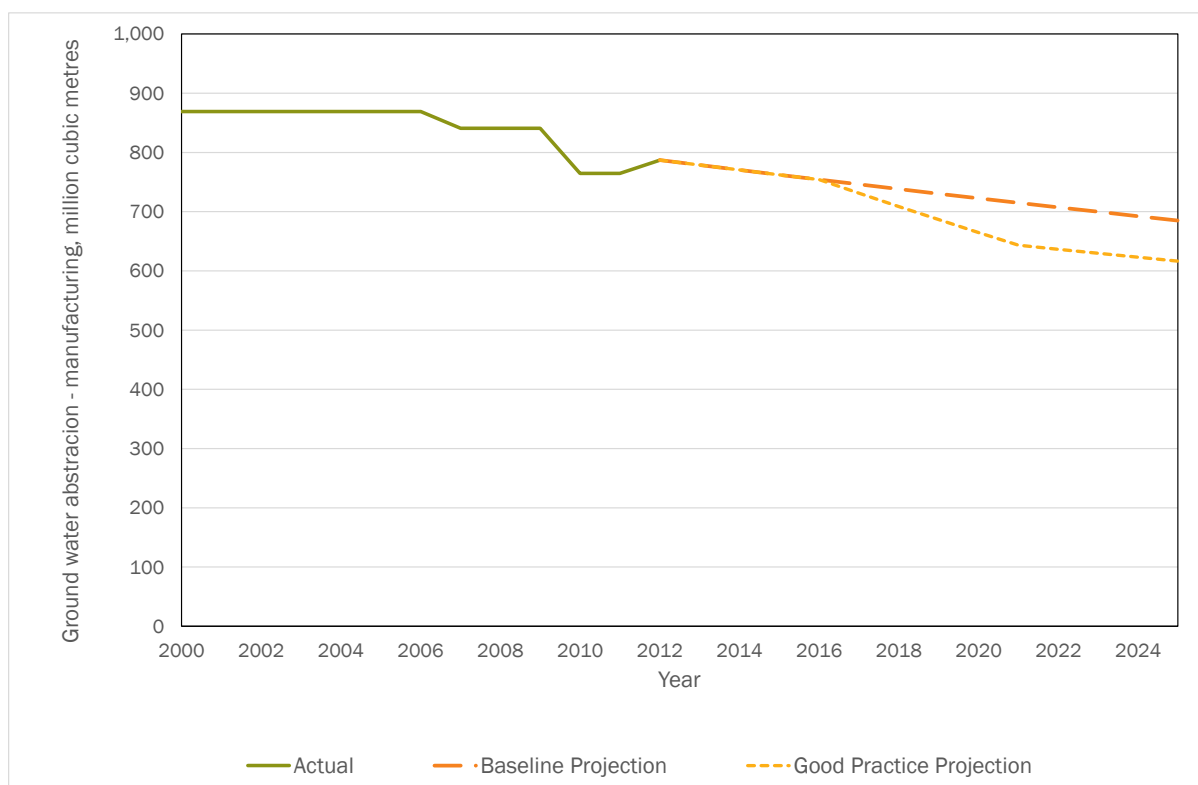


Figure 9-15: Change in Groundwater Abstraction – Agriculture, million cubic metres

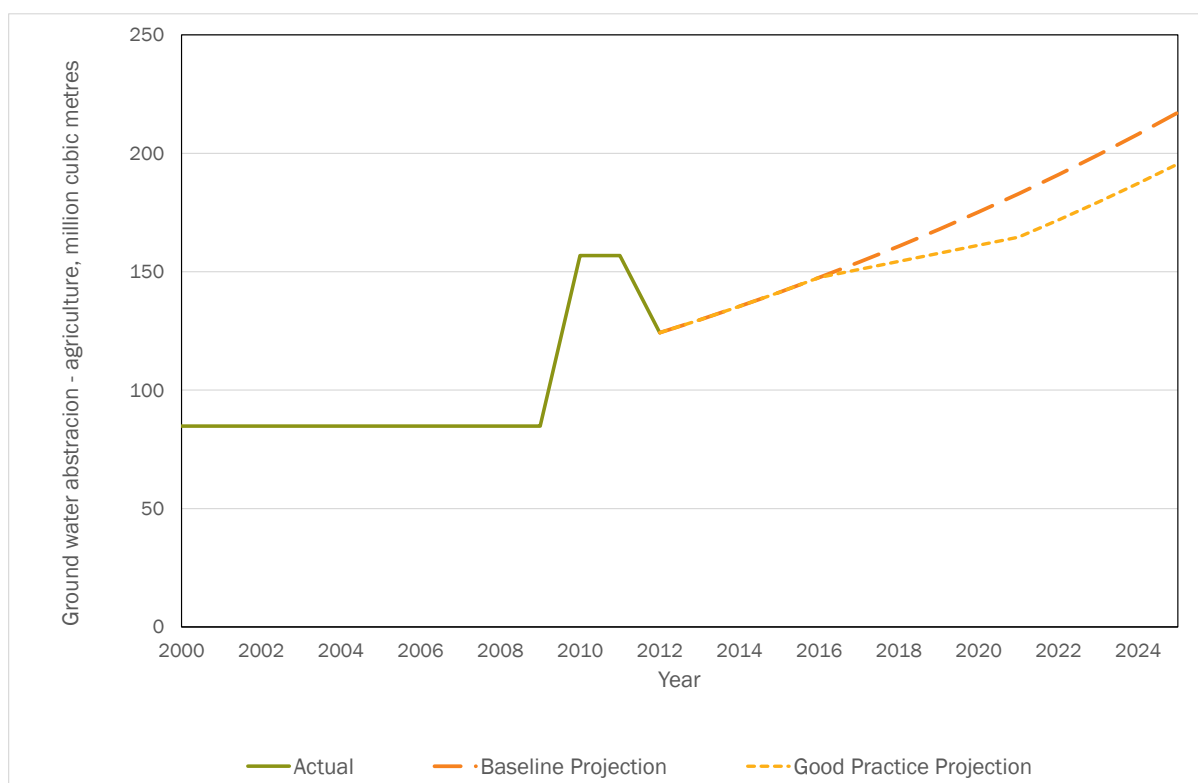


Figure 9-16: Change in Surface Water Abstraction – Public Supply, million cubic metres

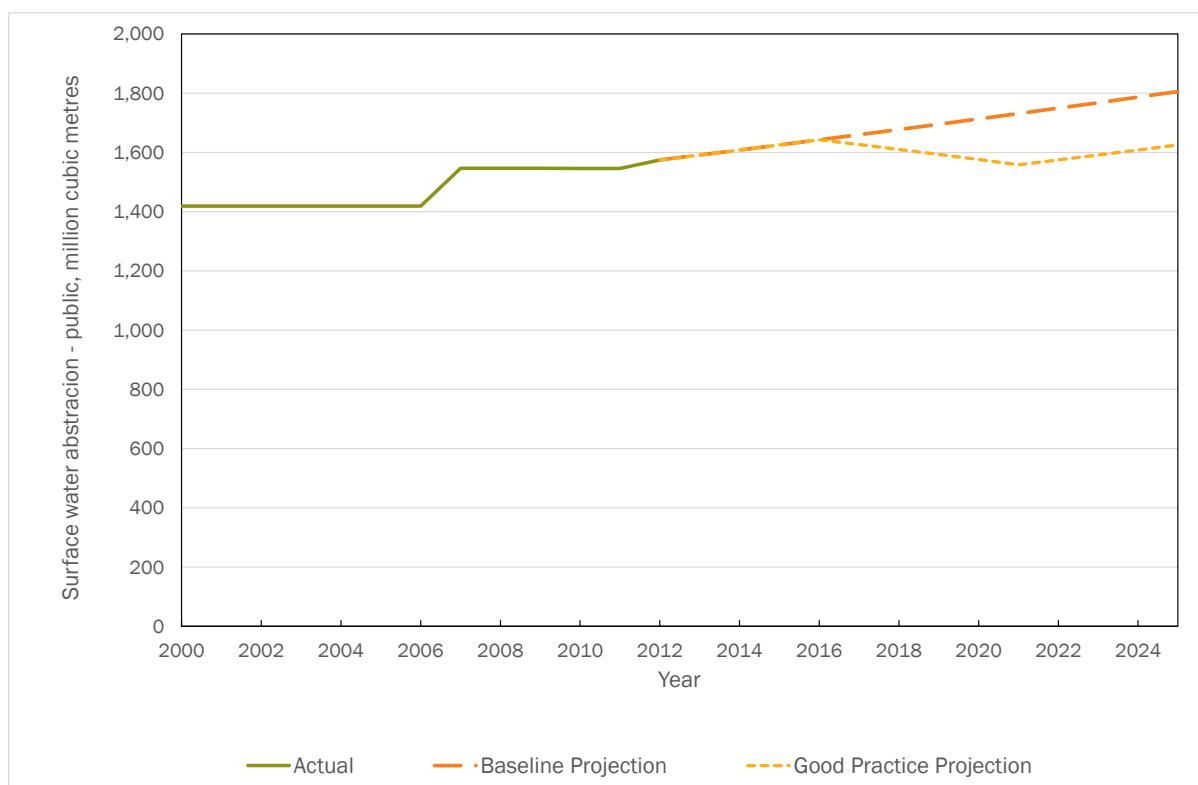


Figure 9-17: Change in Surface Water Abstraction – Manufacturing, million cubic metres

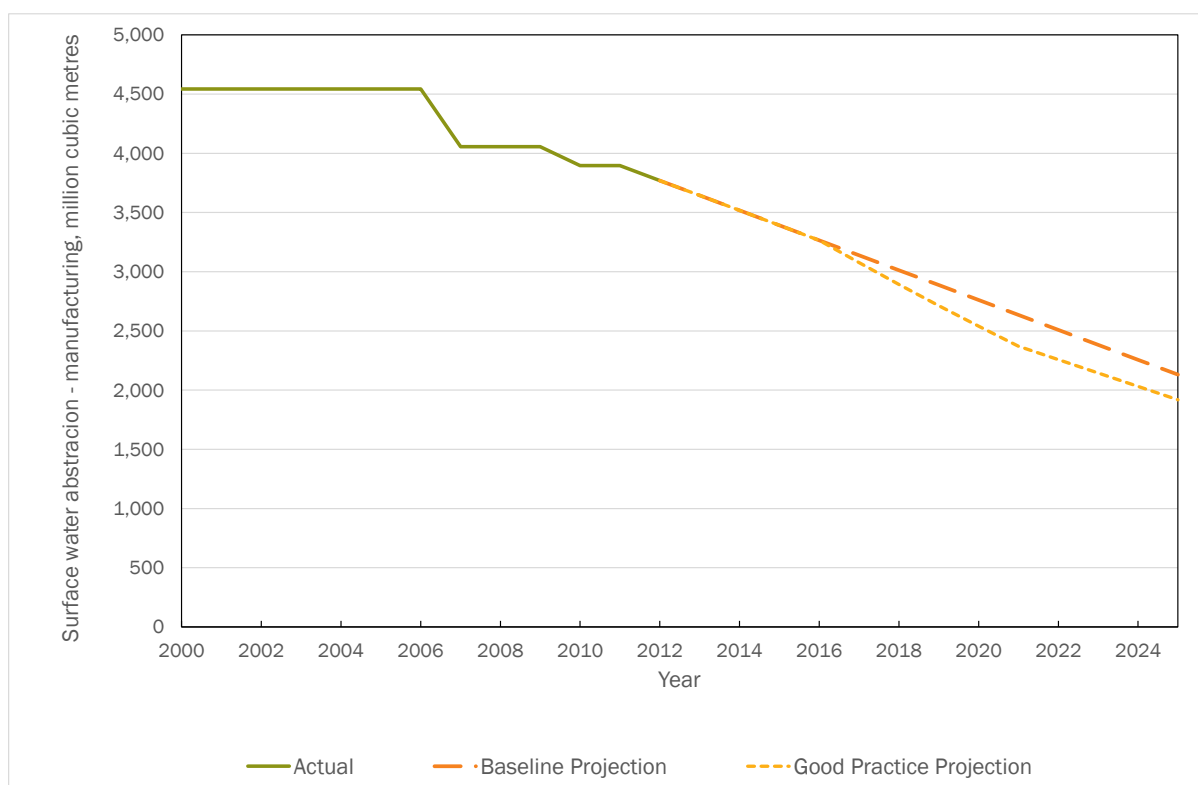


Figure 9-18: Change in Surface Water Abstraction – Agriculture, million cubic metres

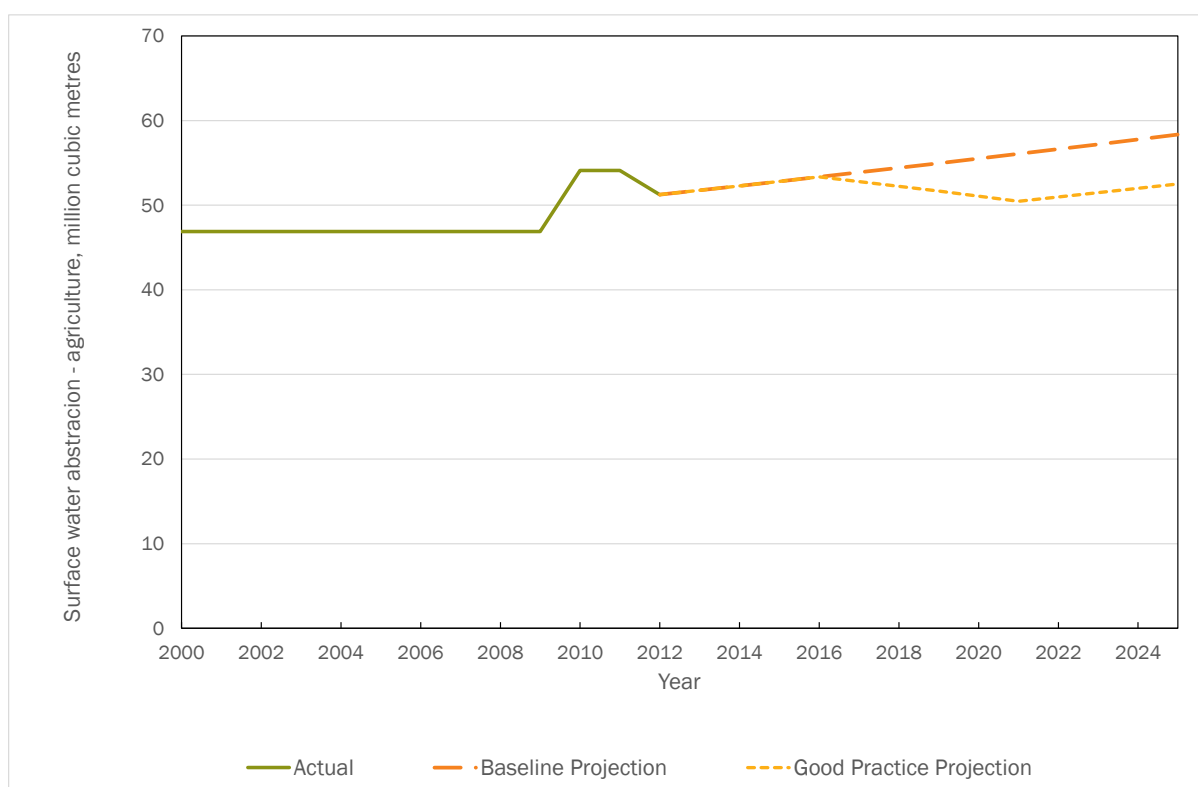


Figure 9-19: Change in Active Ingredients in Pesticides, tonnes

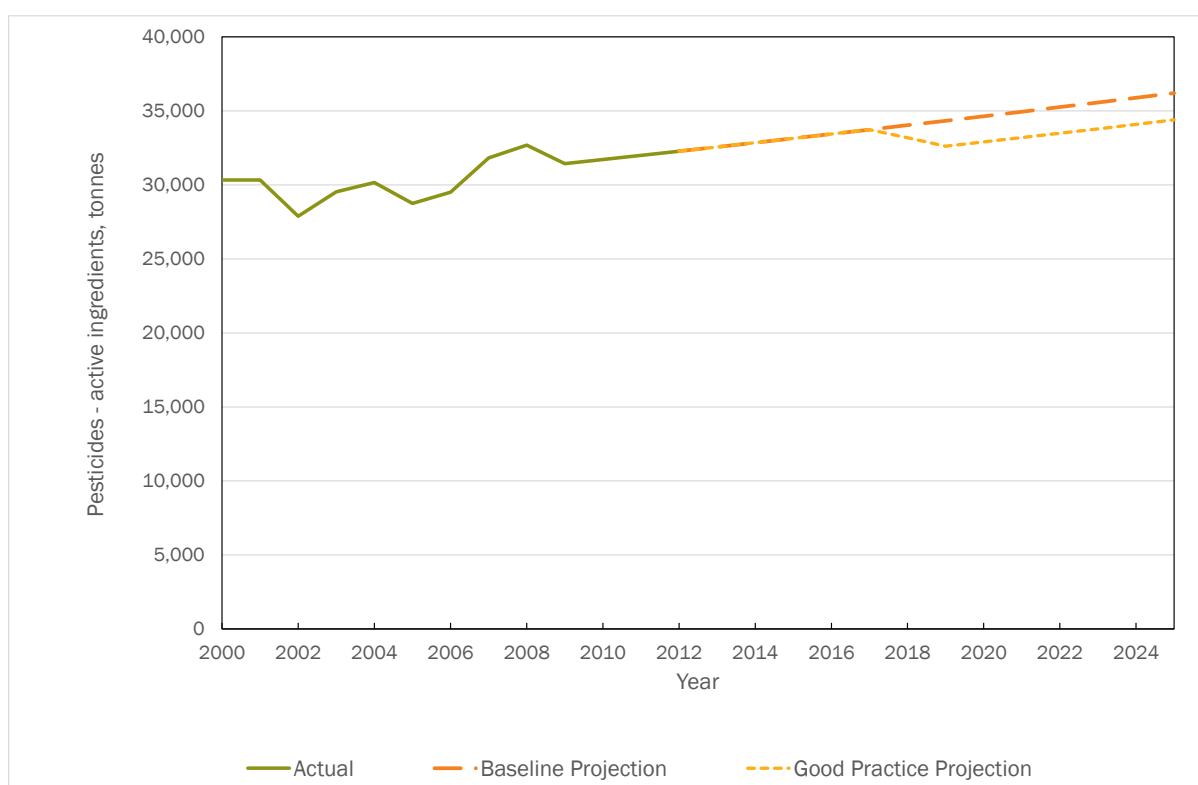




Figure 9-20: Change in Non-organic Nitrogen Sales of Fertilisers, tonnes

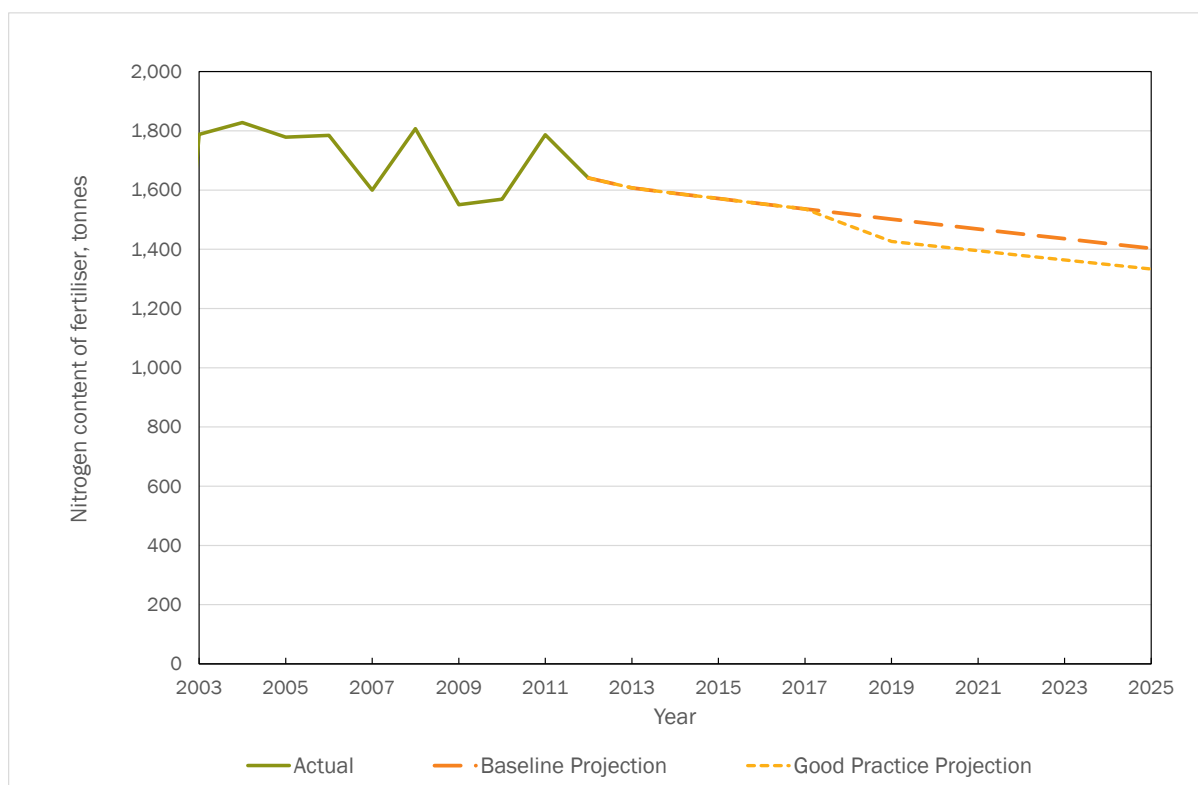


Figure 9-21: Change in Aggregates Extraction, thousand tonnes

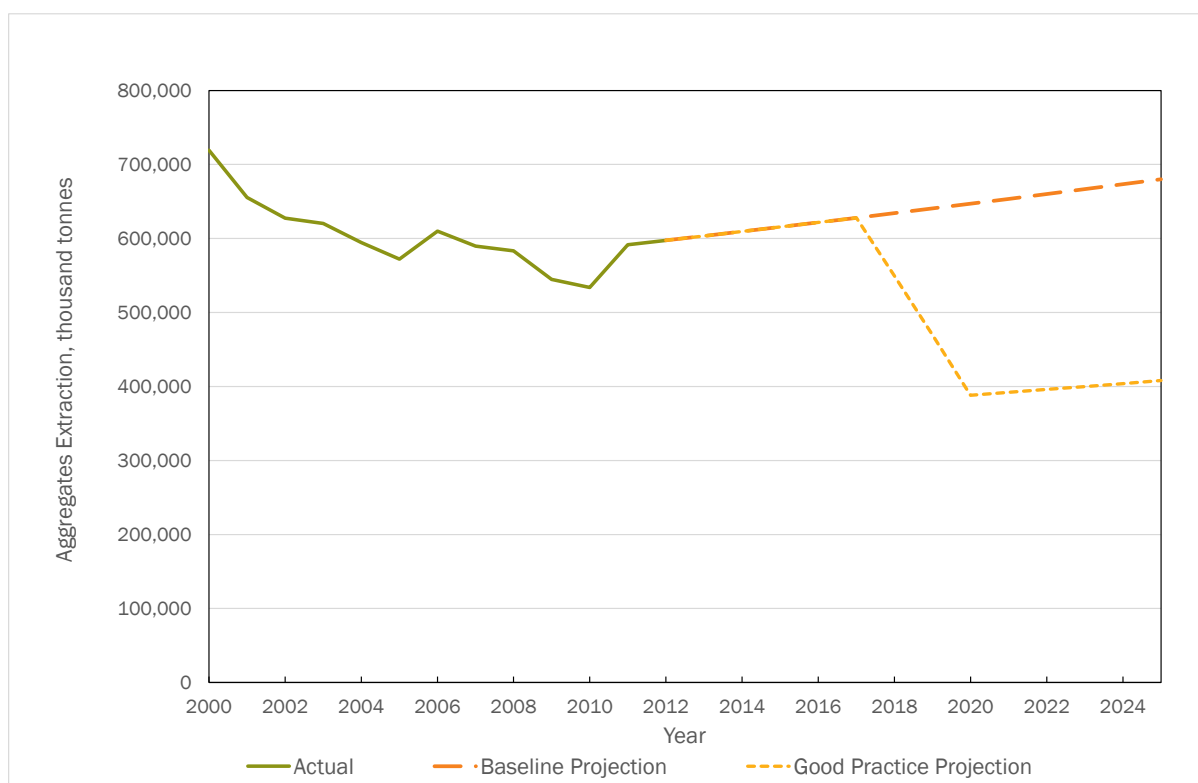


Figure 9-22: Change in Paper & Card Packaging Generation, thousand tonnes

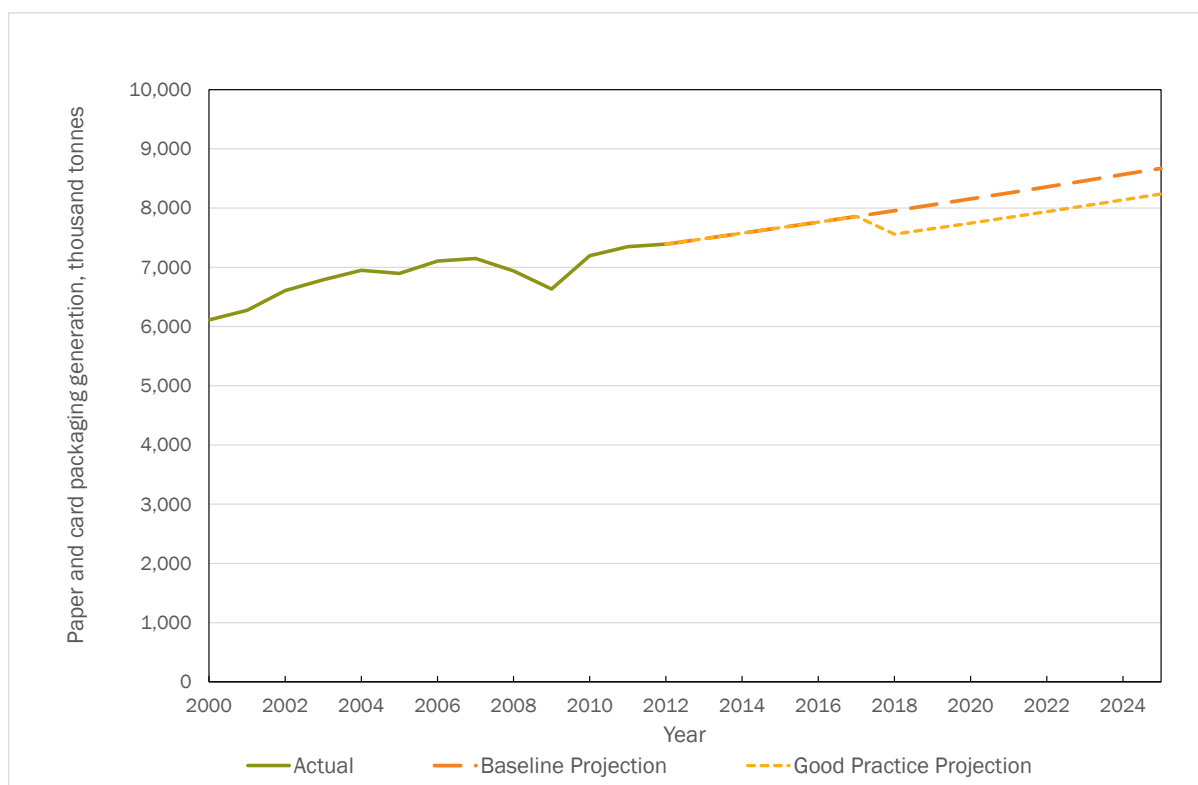


Figure 9-23: Change in Plastic Packaging Generation, thousand tonnes

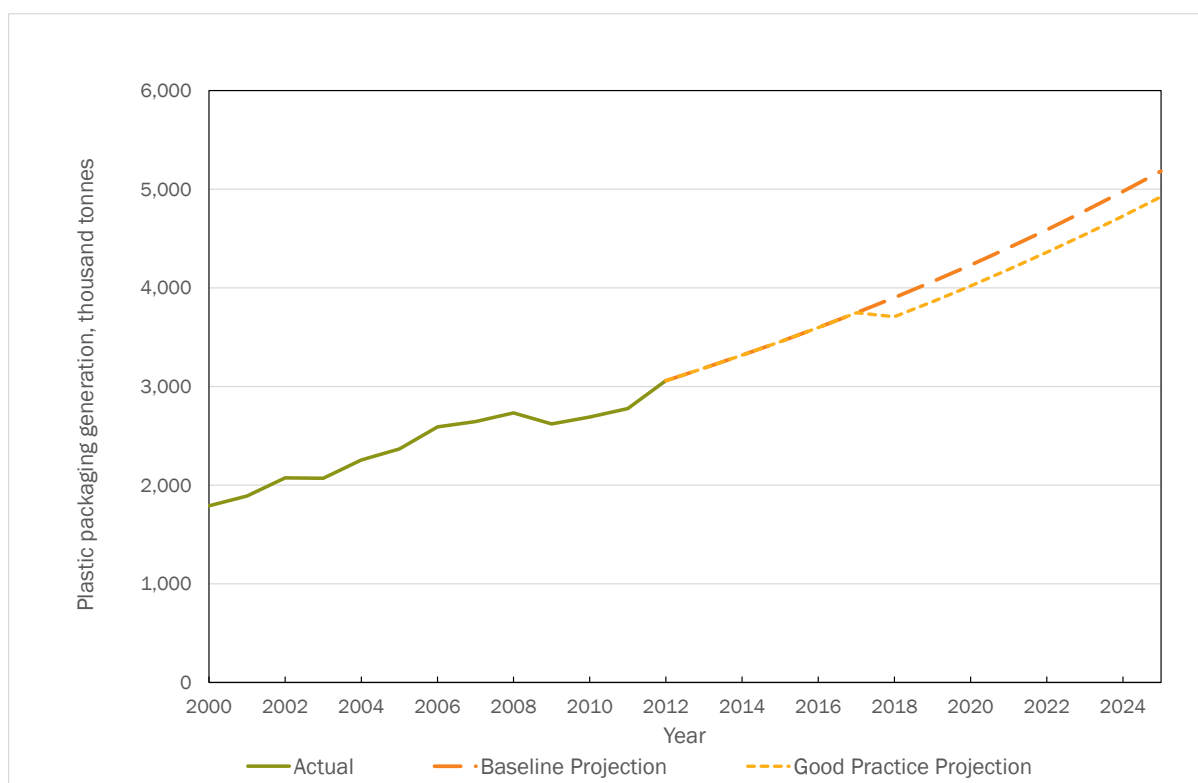


Figure 9-24: Change in Wood Packaging Generation, thousand tonnes

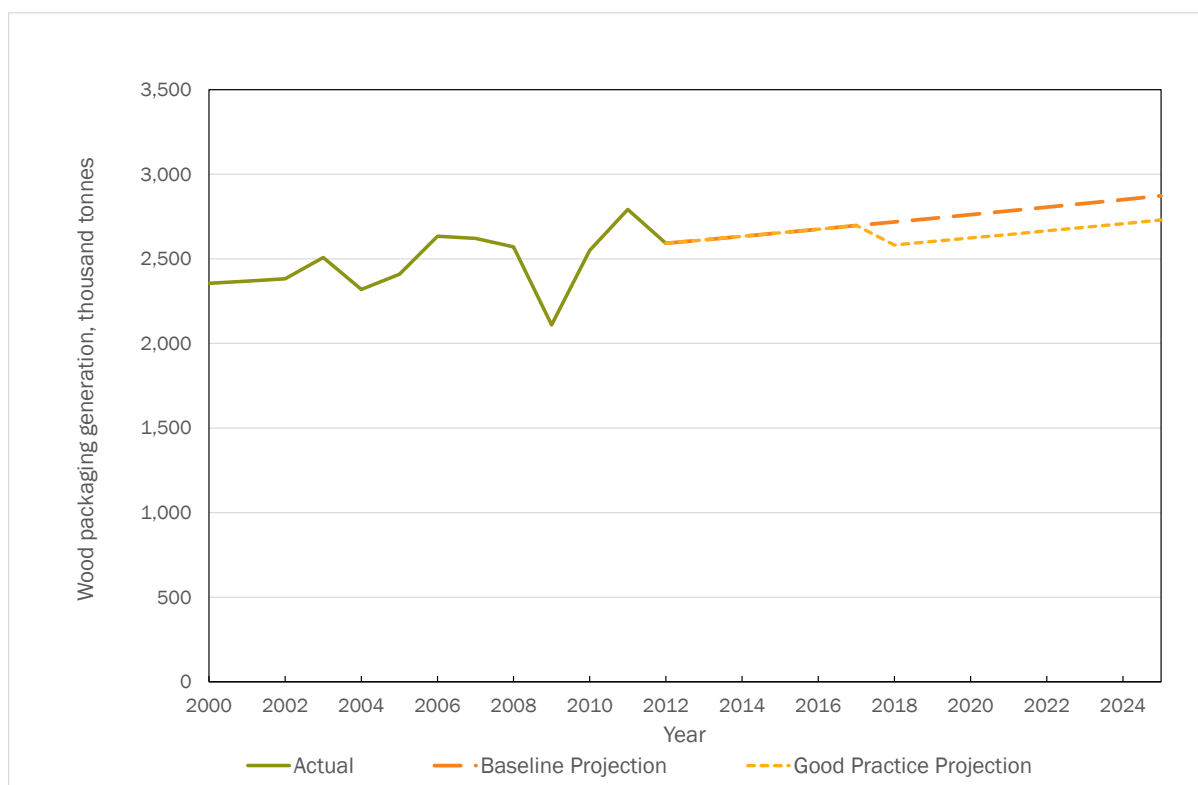


Figure 9-25: Change in Metal Packaging Generation, thousand tonnes

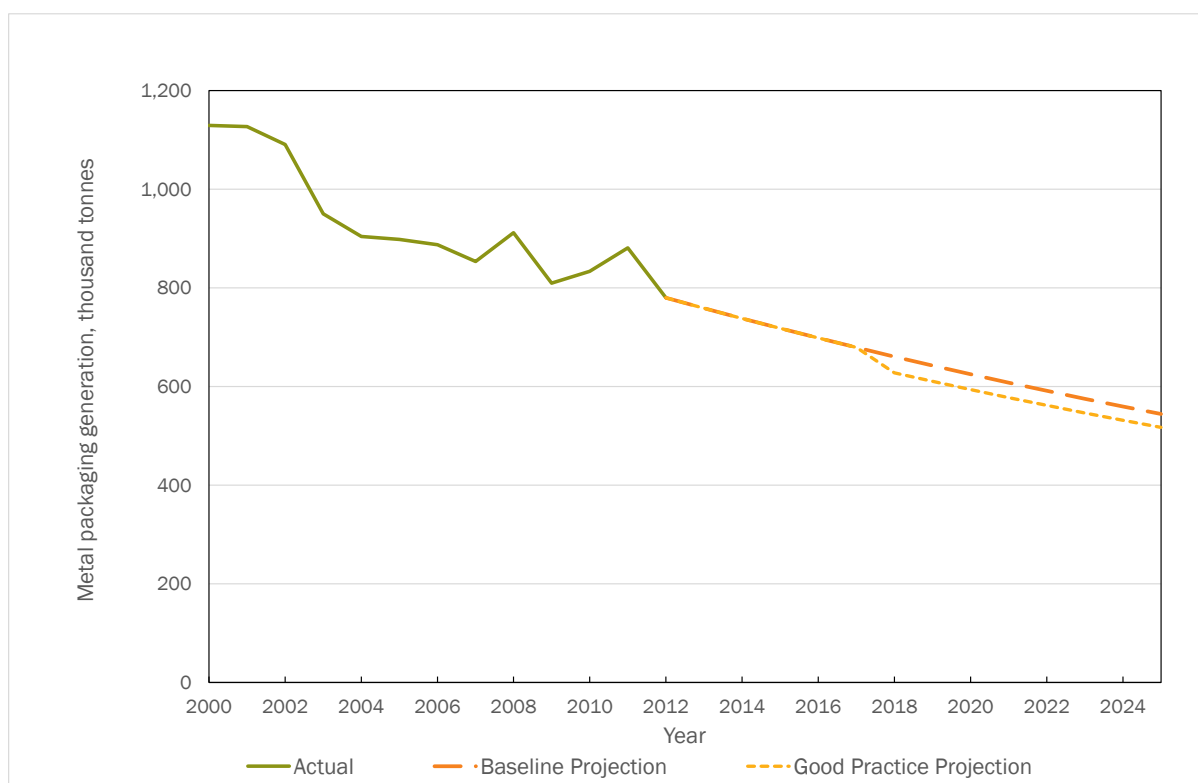


Figure 9-26: Change in Glass Packaging Generation, thousand tonnes

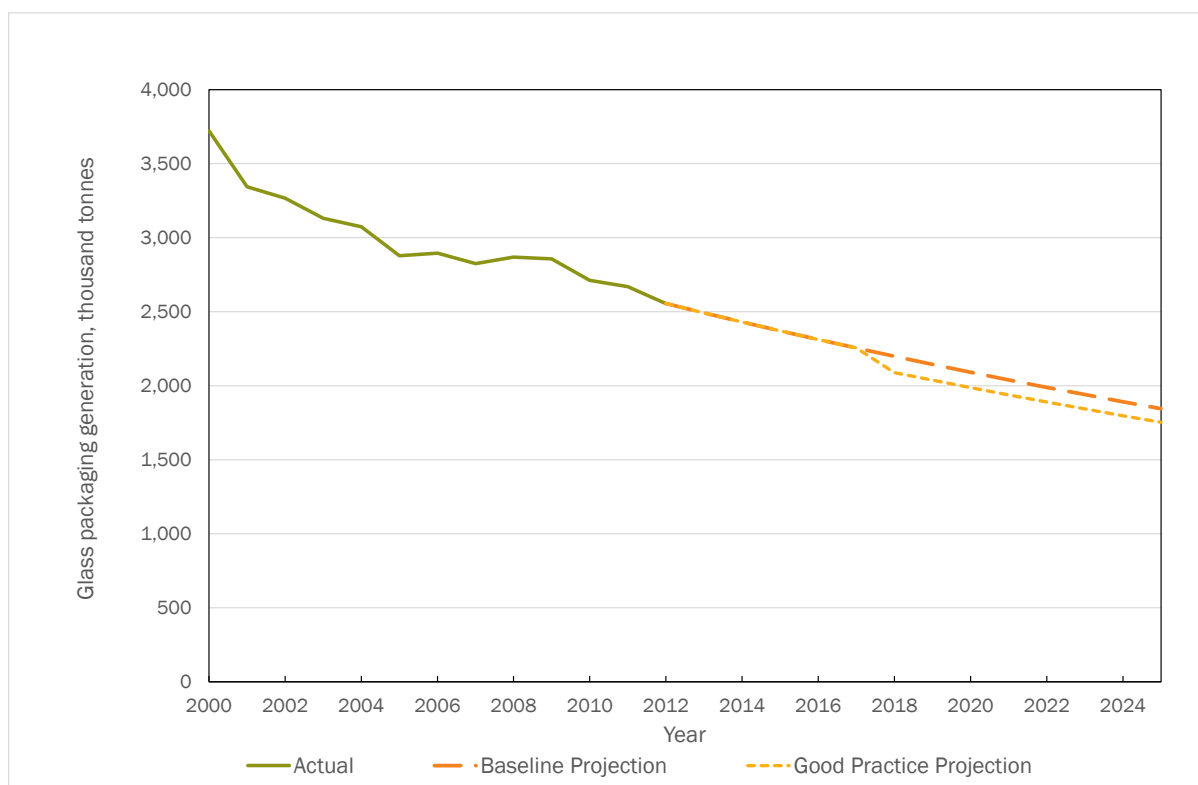
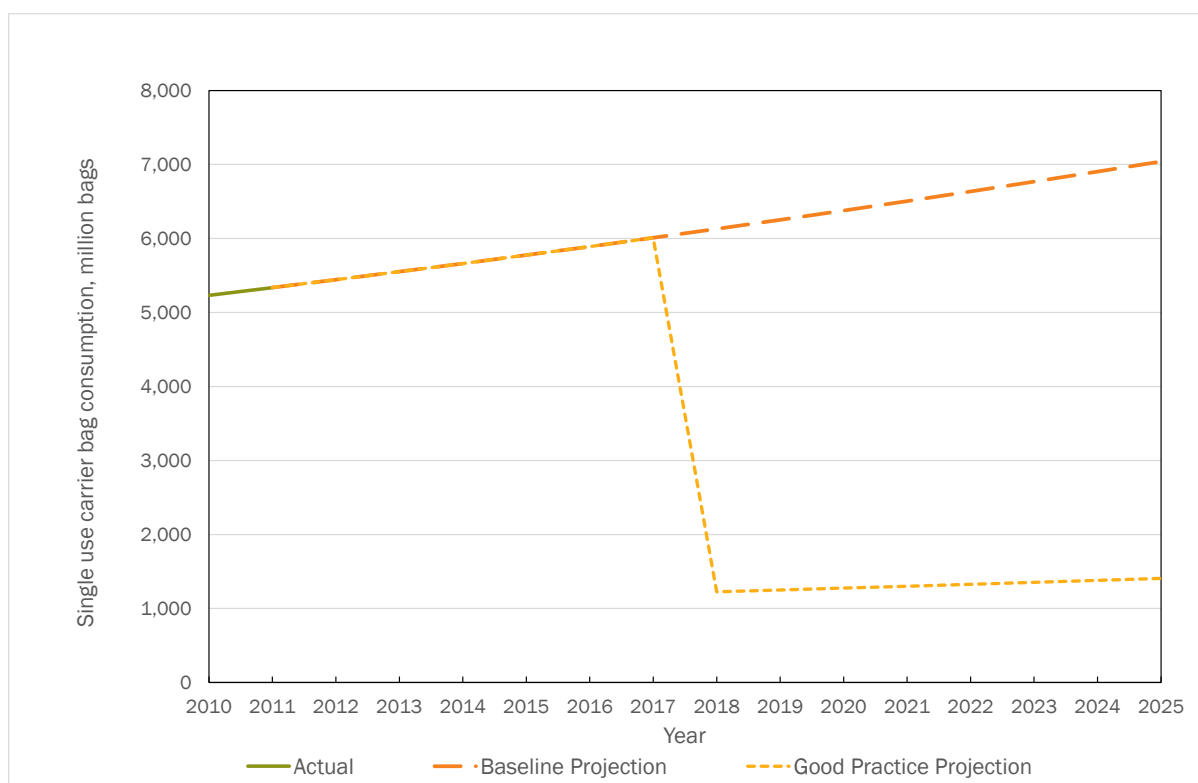


Figure 9-27: Change in Consumption of Single Use Carrier Bags, million bags



## 9.5 Full Revenue Outputs

A summary of the full revenue outputs for each of the suggested reforms to the tax system are presented in the table below.

Table 9-6: Revenue Outturns from Model, million EUR (real 2014 terms)

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Energy Taxes	Transport fuels	0	0	1,128	2,240	3,336	4,417	5,486	6,542	7,586	7,586	7,586
	C&I / Heating	0	0	231	454	671	884	1,092	1,296	1,497	1,497	1,497
	Electricity	1,693	1,693	1,693	1,693	1,693	1,693	1,693	1,693	1,693	1,693	1,693
	<i>Sub-total Energy, million EUR</i>	1,693	1,693	3,052	4,387	5,700	6,994	8,271	9,531	10,777	10,777	10,777
	<i>Sub-total Energy, % GDP</i>	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.3%	0.3%	0.4%	0.4%	0.4%
Transport Taxes (excluding transport fuels)	Vehicle Taxes	0	0	4,274	8,549	12,824	17,101	21,386	21,390	21,394	21,399	21,403
	Passenger Aviation Tax	0	0	2,387	4,559	4,474	4,390	4,306	4,222	4,138	4,053	3,969
	Freight Aviation Tax	0	0	2	4	4	4	4	3	3	3	3
	<i>Sub-total Transport, million EUR</i>	0	0	6,663	13,112	17,303	21,495	25,696	25,616	25,535	25,455	25,375
	<i>Sub-total Transport, % GDP</i>	0.0%	0.0%	0.2%	0.5%	0.6%	0.7%	0.9%	0.9%	0.9%	0.9%	0.9%
Pollution and Resource Taxes	Landfill Tax - Non-haz (excl. C&D)	0	0	0	0	0	0	0	0	0	0	0
	Landfill Tax - Inerts (C&D)	0	3	6	8	7	5	5	5	5	5	5
	Incineration /MBT Tax	0	101	196	285	279	273	272	271	271	270	269

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Air Pollution Tax	0	198	376	534	672	793	746	738	729	721	714
	Water Abstraction Tax	0	415	801	1,160	1,492	1,799	1,734	1,708	1,682	1,657	1,632
	Waste Water Tax	0	137	266	385	371	371	371	371	371	371	371
	Pesticides Tax	0	0	253	498	489	494	498	502	507	511	516
	Aggregates Tax	0	0	1,507	1,319	1,127	932	941	950	960	970	979
	Packaging Tax	0	0	530	513	523	533	543	554	566	578	591
	Single Use Bag Tax	0	615	627	128	130	133	136	138	141	144	147
	Fertiliser Tax	0	0	0	0	0	0	0	0	0	0	0
	<b>Sub-total Pollution &amp; Resource, million EUR</b>	0	1,469	4,562	4,829	5,091	5,332	5,246	5,239	5,233	5,228	5,224
	<b>Sub-total Pollution &amp; Resource, % GDP</b>	0.0%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Total Revenue Stream	<b>Total, million EUR</b>	<b>1,693</b>	<b>3,162</b>	<b>14,278</b>	<b>22,328</b>	<b>28,094</b>	<b>33,821</b>	<b>39,213</b>	<b>40,386</b>	<b>41,545</b>	<b>41,459</b>	<b>41,375</b>
	<b>Total, % GDP</b>	<b>0.1%</b>	<b>0.1%</b>	<b>0.5%</b>	<b>0.8%</b>	<b>1.0%</b>	<b>1.2%</b>	<b>1.4%</b>	<b>1.4%</b>	<b>1.4%</b>	<b>1.4%</b>	<b>1.4%</b>

## 10.0 Greece

During the course of the study the latest data available from official sources was sought, namely the TAXUD Taxes in Europe database, energy excise duty tables and the OECD database on environmental taxes and charges. This was supplemented by national data sources where possible. Due to the number of taxes and countries involved, the central case for energy excise duties has been the rates published by TAXUD giving the position as of 1<sup>st</sup> July 2014. Planned future increases may not be fully captured in this analysis and therefore, the projected increase in revenues would effectively incorporate any revenue from increased rates in early 2015 or shortly thereafter.

### 10.1 Energy Taxes

In Greece, there are two separate types of energy taxes:

1. Excise duties on mineral oil and other energy products; and
2. Two additional levies on electricity usage: Special Levy for the Reduction of GHGs (ETMEAP) and Special Duty 0.5%.

These taxes are outlined below.

- **The following excise duties on energy products apply. Unless otherwise noted, all information is sourced from the Excise Duty Tables:** <sup>334</sup>
  - Petrol:
    - Rate for leaded petrol (2014): €681 per 1,000 litres of fuel
    - Rate for unleaded petrol: rate (2014): €670 per 1,000 litres of fuel
  - Gas oil (diesel):
    - One rate applies whether the gas oil is used as a propellant, for industrial/commercial use or for heating (business and non-business use). The rate for 2014 is: €330 per 1,000 litres of fuel.
    - However, industrial use of gas oil in production activities is eligible for a refund of €125 per 1,000 litres and a refund of €264 per 1,000 litres is applied for gas oil used for agricultural purposes.
    - Up to 15<sup>th</sup> October 2012, reduced rates applied during the winter (15 October to 30 April). Following equalisation of the excise on gas oil for heating, with that used as propellant to €330 per 1,000 litres of fuel, a system of tax refunds which vary in accordance with income and geographical region (more in the north, less in the south) was introduced for households and a standard refund for farmers.
    - Bio-diesel is taxed at the same rate as gas oil.

---

<sup>334</sup> European Commission - Taxation and Customs Union (2014) Excise Duty Tables: Part II - Energy Products and Electricity, July 2014, [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/excise\\_duties/energy\\_products/rates/excise\\_duties-part\\_ii\\_energy\\_products\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/excise_duties/energy_products/rates/excise_duties-part_ii_energy_products_en.pdf)



- Kerosene:
  - For kerosene the same rates apply as for gas oil, for all uses (2014): €330 per 1,000 litres of fuel.
  - The rate was increased from €200 per 1,000 litres in November 2012.
- Heavy fuel oil:
  - Heating for business and non-business use are taxed the same.
  - Rate (2014): €38 per 1,000 kg of fuel.
- Liquefied Petroleum Gas (LPG):
  - Rate for propellant use (2014): €330 per 1,000 kg of fuel.
  - Rate for industrial/commercial use (2014): €120 per 1,000 kg of fuel.
  - Rate for heating (business and non-business use)(2014): €60 per 1,000 kg of fuel.
  - A special rate of €0.29 per 1,000 litres is applied for LPG used in agriculture.<sup>335</sup>
- Natural Gas:
  - There is no tax on natural gas when used as a propellant. However, industrial/commercial use and use of natural gas for heating, both for business and non-business use is taxed.
  - Rate (2014): €1.50 per GJ.
  - This rate has remained the same since September 2011.
- Coal and Coke:
  - Both business and non-business use of coal and coke for heating is taxed at the same rate (2014): €0.30 per GJ.
  - When used for electricity production, mineralogical and metallurgical processes and for chemical reductions, an exemption on the excise duty on coal and coke is applied.
- Electricity:
  - There are several different tax rates for use of electricity in Greece, all of which have been in place since May 2010.
  - Rate for business use (high voltage)(2014): €2.50 per MWh.
  - Rate for business use (other)(2014): €5 per MWh.
  - Rate for non-business use (households)(2014): €2.20 per MWh

---

<sup>335</sup> European Commission (2014) Taxes in Europe Database, Accessed 14 August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)

- Rate for non-business use (other)(2014): €5 per MWh
- Electricity of solar, wind, wave, tidal or geothermal origin is not subject to excise duties. Furthermore, electricity used in agriculture is also exempt.
- Other products:<sup>336</sup>
  - Aircraft petrol (2014): €697 per 1,000 litres
  - Benzol, tytolol, xylol, and other aromatic hydrocarbon mixtures (2014): €372 per 1,000 kg
  - White spirit (2014): €12 per 1,000 kg
  - Other light oils (2014): €12 per 1,000 litres
- Exemptions from all excise duties apply for the following:<sup>337</sup>
  - Energy products used by aircraft (except private leisure flights), sea transport vessels or vessels fishing within EU waters.
  - Diesel oil, kerosene, white spirit and other light oils used as raw material for production purposes.
- Revenue from all excise duties on mineral oil products in 2012 (the latest year for which figures are available): €3.97 billion (equivalent to 2.06% of GDP).<sup>338</sup>
- **Special Levy for the Reduction of GHGs ('Ειδικό Τέλος Μείωσης Εκπομπών Αερίων Ρύπων' (ETMEAP)):**
  - This was formerly known as the Renewable Energy Systems Levy and is a source of financing for the renewable energy special account which supports the installation of renewable energy systems.<sup>339</sup>
  - It is a levy charged on actual usage of electricity and is added to customer bills each month.
  - In December 2013, the Greek government decided to increase the levy by 97% on average to help close a large deficit in the Renewable Energy Sources special account, however this decision was revised in spring 2014 and the imposed increase on 1 April 2014 was restricted to an average of

---

<sup>336</sup> European Commission (2014) Taxes in Europe Database, Accessed 14 August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)

<sup>337</sup> European Commission (2014) Taxes in Europe Database, Accessed 14 August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)

<sup>338</sup> European Commission (2014) Taxes in Europe Database, Accessed 14 August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)

<sup>339</sup> Ecologic Institute, and eclareon (2014) Assessment of Climate Change Policies in the Context of the European Semester - Country Report: Greece, Report for European Commission - DG Clima, January 2014, [http://ec.europa.eu/clima/policies/g-gas/progress/docs/gr\\_2014\\_en.pdf](http://ec.europa.eu/clima/policies/g-gas/progress/docs/gr_2014_en.pdf)

32%.<sup>340 341</sup> The increase was required in order to cover the accumulated deficit of the Renewable Energy Sources Administrator, which has emerged as a result of the introduction of feed-in tariffs which were initially excessive, and which were, subsequently, drastically curtailed.

- The levy varies depending on the type of customer – after the increase on 1 April 2014, the average rate is of the levy is €19.73 per MWh, with domestic customers paying €26.30 per MWh.<sup>342</sup>
- Revenue: in 2012 (the latest year for which figures are available): €178 million (equivalent to 0.09% of GDP).<sup>343</sup>

➤ **Special Duty 0.5%:**<sup>344</sup>

- As with the previous levy, this is collected on all electricity bills.
- The rate for all types of electricity users is 0.5%. The basis of the calculation is the cost of the actual electricity usage plus the value of the excise duty (but excluding the value of the Special Levy for the Reduction of GHGs).
- Revenue: unknown.

## 10.2 Transport Taxes (Excluding Transport Fuels)

There are three types of transport taxes in Greece, excluding excise duties on transport fuels. These are a registration duty, a circulation duty and an additional annual 'luxury tax' imposed on large vehicles.

➤ **Motor vehicle registration duty (Τέλος ταξινόμησης οχημάτων):**<sup>345</sup>

- This is a one-off registration duty paid at the time of registration of a vehicle in Greece.
- The tax paid is a set percentage of the total wholesale price of the vehicle plus any insurance and transport costs. The percentage is determined by

---

<sup>340</sup> Ecologic Institute, and eclareon (2014) Assessment of Climate Change Policies in the Context of the European Semester - Monthly Progress Update: 01 February - 30 February (Issue 11/2014), Report for European Commission - DG Clima, March 2014, [http://ec.europa.eu/clima/policies/g-gas/progress/docs/progress\\_201402\\_en.pdf](http://ec.europa.eu/clima/policies/g-gas/progress/docs/progress_201402_en.pdf)

<sup>341</sup> Ecologic Institute, and eclareon (2014) Assessment of Climate Change Policies in the Context of the European Semester - Monthly Progress Update: 01 April - 30 April (Issue 13/2014), Report for European Commission - DG Clima, May 2014, [http://ec.europa.eu/clima/policies/g-gas/progress/docs/progress\\_201404\\_en.pdf](http://ec.europa.eu/clima/policies/g-gas/progress/docs/progress_201404_en.pdf)

<sup>342</sup> Ibid.

<sup>343</sup> Eurostat (2014) Revenue Data by Individual Tax (National Tax List), accessed 4 August 2014, [http://ec.europa.eu/taxation\\_customs/taxation/gen\\_info/economic\\_analysis/tax\\_structures/article\\_5985\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/gen_info/economic_analysis/tax_structures/article_5985_en.htm)

<sup>344</sup> Public Power Corporation S.A.-Hellas (no date) Special Duty 5‰ (L. 2093/92), accessed 8 September 2014, <https://www.dei.gr/en/eidiko-telos-5-eidtel-5-n-209392>

<sup>345</sup> European Commission (2014) Taxes in Europe Database, Accessed 14 August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)

the engine size and the emissions standard of the vehicle. For second-hand vehicles, the rates are reduced by a set percentage (ranging for cars from 8% to 95%), determined by the type, age and mileage of the vehicle.

- All electric vehicles and hybrid vehicles which comply with the European directives on emissions standards are exempt from the duty.
- Additionally, vehicles used as ambulances, by people with disabilities and by certain faith-based organisations are also exempt.
- Details of certain rates are included within Table 10-1. Full details of all rates are available on the TAX-UD database.<sup>346</sup>
- Revenue in 2012 (the latest year for which figures are available): €100 million (equivalent to 0.05% of GDP).

➤ **Circulation duty on motor vehicles (Τέλη κυκλοφορίας):**<sup>347</sup>

- This is an annual duty paid on vehicles (including buses and lorries) and motorcycles.
- The bases for the level of tax are the following:
  - Engine size for private cars registered up to 31 October 2010;
  - CO<sub>2</sub> emissions for private cars registered after 1 November 2010;
  - Engine size for motorcycles;
  - Gross weight for lorries; and
  - Number of passenger seats for buses.
- Rates are outlined in Table 12-1 (for private use vehicles) and Table 10-3 (for public use vehicles).
- Additionally the following rates apply:
  - For the use of provisional circulation license: €4 per day
  - For test drive circulation: motorcycles: €30 per annum and other vehicles: €150 per annum
  - Mopeds: €12 per annum
- Exemptions related to emissions levels include:
  - Hybrid vehicles with engine sizes up to 1,929 cc
  - Electric vehicles registered up through 31 October 2010

---

<sup>346</sup> European Commission (2014) Taxes in Europe Database – Motor Vehicles Tax: Car Registration Tax, Accessed 14 August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=216/1388754775&taxType=Other+indirect+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=216/1388754775&taxType=Other+indirect+tax)

<sup>347</sup> European Commission (2014) Taxes in Europe Database, Accessed 14 August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)

- Private vehicles registered after 31<sup>st</sup> October 2010, with CO<sub>2</sub> emissions below 100 g per km.
  - Other exemptions include the following: state owned vehicles, diplomatic vehicles, vehicles belonging to specific non-profit institutions, vehicles for some people with disabilities.
  - The duty in its present form has been in place since 2011. Prior to this, the duty was based on the vehicle's engine capacity alone.<sup>348</sup>
  - Revenue in 2012 (the latest year for which figures are available): €1.21 billion (equivalent to 0.63% of GDP). This tax revenue can be further split according to the tax-payer: €817 million from individuals and €397 million for businesses.<sup>349</sup>
- **Tax on Luxurious Living (Φόρο Πολυτελούς Διαβίωσης):**
- An annual 'luxury tax' is imposed on owners of swimming pools, aircraft and vehicles with engines larger than 1,929 cc.<sup>350</sup>
  - The tax was initially imposed for one year in 2011 before being implemented as an annual tax in 2013.<sup>351</sup>
  - The rate is flat-rate, based on the engine size and the age of the vehicle and ranges from just under €300 to over €5,000 per year. For vehicles with engine capacities of 1,929 – 2,500 cc, the rate is set at 5% of the presumed value of the vehicle; vehicles with engines larger than 2,500 cc are taxed at 10% of the presumed value of the vehicle. Details of rates are included within Table 10-4.<sup>352</sup>
  - Vehicles with engines smaller than 1,929 cc as well as vehicles more than 10 years old are exempt from the tax.<sup>353</sup>
  - The rate for aircraft is 10% of the presumed value.<sup>354</sup>

---

<sup>348</sup> Ministry of Environment, Energy and Climate Change (Hellenic Republic) (2010) Fifth National Communication to the United Nations Framework Convention on Climate Change, January 2010, [http://unfccc.int/resource/docs/natc/grc\\_nc5.pdf](http://unfccc.int/resource/docs/natc/grc_nc5.pdf), p. 127

<sup>349</sup> Eurostat (2014) Revenue Data by Individual Tax (National Tax List), accessed 4 August 2014, [http://ec.europa.eu/taxation\\_customs/taxation/gen\\_info/economic\\_analysis/tax\\_structures/article\\_5985\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/gen_info/economic_analysis/tax_structures/article_5985_en.htm)

<sup>350</sup> Greek Reporter (2014) Rich Greeks Face Luxury Tax, accessed 28 August 2014, <http://greece.greekreporter.com/2013/09/13/rich-greeks-face-luxury-tax/>

<sup>351</sup> Ibid.

<sup>352</sup> TO BHMA (Tovima) (2013) Έρχονται τα σημειώματα του φόρου πολυτελείας για ΙΧ άνω των 1.929 κ.εκ., accessed 28 August 2014, <http://www.tovima.gr/finance/article/?aid=542754>

<sup>353</sup> Ibid.

<sup>354</sup> Greek Reporter (2014) Rich Greeks Face Luxury Tax, accessed 28 August 2014, <http://greece.greekreporter.com/2013/09/13/rich-greeks-face-luxury-tax/>

- The revenue generated by this tax is unknown but in 2013, the tax was expected to generate between €100 million and €130 million (0.05% to 0.07% of GDP).<sup>355</sup>
- **Air passenger tax ('spatosimo'):**<sup>356</sup>
- This tax has been in place since 1992 and was implemented under Law 2065/1992 Government Gazette No 113. The tax is charged on all passengers flying into or out of Greek airports.
  - Revenues are used to modernise Greek airports.
  - Current tax rates are €12 per passenger for flights between 100 km and 750 km and €24 for flights above 750 km. These rates are higher than the original tax rates of €10 per passenger and €20 per passenger, respectively.
  - Proposals have been tabled to reduce the tax from October 2014.
  - There is no air freight tax in Greece.
  - Revenue: unknown.
- In addition, although not taxes, there are road tolls in place in many parts of Greece. These are levied for motorways and some tunnels and bridges. Per stretch of road or bridge, they range from €2 to €3 for several stretches of motorways to €13.20 for the Rio-Antirio Bridge.<sup>357,358</sup>

**Table 10-1: Vehicle Registration Tax Rate (Percentage of Wholesale Price) (Greece, 2014)**

Passenger Cars, Based on the Environmental Class of the Vehicle <sup>1</sup>				
Engine Capacity (cc)	Euro Class V	Euro Class IV	Euro Class III, II, I	Conventional Technology
Up to 900	5%	14%	24%	37%
901 – 1,400	12%	27%	49%	66%
1,401 – 1,600	20%	45%	95%	128%
1,601 – 1,800	30%	56%	129%	148%

<sup>355</sup> TO BHMA (Tovima) (2013) Έρχονται τα σημειώματα του φόρου πολυτελείας για ΙΧ άνω των 1.929 κ.εκ., accessed 28 August 2014, <http://www.tovima.gr/finance/article/?aid=542754>

<sup>356</sup> GTP Headlines (2014) Greece's 'Spatosimo' Air Passenger Tax to be Revised, accessed 31 August 2014, <http://news.gtp.gr/2014/04/29/greeces-spatosimo-air-passenger-tax-revised/>

<sup>357</sup> Rhino Car Hire (2013) Greek Toll Roads - A Guide to Toll Roads in Greece, accessed 8 September 2014, <http://www.rhinocarhire.com/Car-Hire-Blog/November-2013/Greek-Toll-Roads.aspx>

<sup>358</sup> The AA (no date) European Tolls: Search Results for Greece, accessed 8 September 2014, [http://www.theaa.com/allaboutcars/overseas/european\\_tolls\\_results.jsp?country=Greece](http://www.theaa.com/allaboutcars/overseas/european_tolls_results.jsp?country=Greece)

1,801 – 2,000	40%	83%	216%	266%
2,001 and above	50%	142%	334%	346%
Lorries and Trucks <sup>2</sup>				
Engine Capacity (cc)	Closed Lorries (weight up to 3.5 tonnes)	Open Lorries (weight up to 3.5 tonnes)	All other Lorries (weight over 3.5 tonnes)	
Up to 900	6%	7%	5%	
901 – 1,400	14%			
1,401 – 1,800	18%			
1,801 – 2,000	21%			
2,001 and above	26%			
Motorcycles				
Engine Capacity (cc)		All Classes		
Up to 125		0%		
126 – 249		2%		
250 – 900		7%		
901 – 1,400		12%		
1,401 – 1,600		14%		
1,601 – 1,800		17%		
1,801 and above		25%		
Notes:				
1. Caravans pay 50% of the passenger car rates.				
2. Rates given for lorries are applicable to vehicles which meet the relevant European vehicle emissions directives. The tax rate is increased by 30% for those that do not meet the emissions directives.				

Source: European Commission (2014) Taxes in Europe Database, Accessed 14 August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)

**Table 10-2: Motor Vehicle Road Tax, Private Use Vehicles (Greece, 2014)**

<b>Passenger Vehicles and Motorcycles Registered before or on 31 October 2010</b>		
<b>Category</b>	<b>Engine Size (cc)</b>	<b>Annual Tax</b>
A	Up to 300	€22
B	301 – 785	€55

C	786 – 1,071	€120
D	1,072 – 1,357	€135
E	1,358 – 1,548	€240
F	1,549 – 1,738	€265
G	1,739 – 1,928	€300
H	1,929 – 2,357	€660
I	2,358 – 3,000	€880
J	3,001 – 4,000	€1,100
K	4,001 and above	€1,320
<b>Passenger Vehicles and Motorcycles Registered on or after 1 November 2010</b>		
<b>CO<sub>2</sub> Emissions (g per km)</b>		<b>Annual Tax</b>
0 – 100		€0 per g CO <sub>2</sub>
101 – 120		€0.90 per g CO <sub>2</sub>
121 – 140		€1.10 per g CO <sub>2</sub>
141 – 160		€1.70 per g CO <sub>2</sub>
161 – 180		€2.25 per g CO <sub>2</sub>
181 – 200		€2.55 per g CO <sub>2</sub>
201 – 250		€2.80 per g CO <sub>2</sub>
251 and above		€3.40 per g CO <sub>2</sub>
<b>Lorries</b>		
<b>Category</b>	<b>Gross Weight (kg)</b>	<b>Annual Tax</b>
A	Up to 1,500	€75
B	1,501 – 3,500	€105
C	3,501 – 10,000	€300
D	10,001 – 20,000	€600
E	20,001 – 30,000	€940
F	30,001 – 40,000	€1,320
G	40,001 and above	€1,490



Truck trailers	N/A	€300
<b>Buses</b>		
<b>Category</b>	<b>Number of Seats</b>	<b>Annual Tax</b>
A	Up to 33	€210
B	34 – 50	€410
C	51 and above	€510
<b>Notes:</b> <ol style="list-style-type: none"> <li>1. Vehicles not falling within the above classifications pay €535 per annum.</li> <li>2. Ambulances and vehicles for funeral transport pay €300 per annum.</li> <li>3. Passenger trailers and semi-trailers are taxed at €140 per annum.</li> <li>4. Hybrid, electric and hydrogen cars registered before or on 31 October 2010 and with an engine size smaller than 1,929 cc do not pay motor vehicle tax. Those with an engine size greater than 1,929 cc pay 50% of the rates listed above.</li> </ol>		

Source: European Commission (2014) Taxes in Europe Database, Accessed 14 August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)

**Table 10-3: Motor Vehicle Road Tax, Public Use Vehicles (Greece, 2014)**

Taxis Registered on or after 1 November 2010		
CO <sub>2</sub> Emissions (g/km)		Annual Tax
0 – 100		€0 per g CO <sub>2</sub>
101 – 150		€2.25 per g CO <sub>2</sub>
151 and above		€2.80 per g CO <sub>2</sub>
Lorries		
Category	Gross Weight (kg)	Annual Tax
A	Up to 3,500	€125
B	3,501 – 10,000	€195
C	10,001 – 19,000	€340
D	19,001 – 26,000	€495
E	26,001 – 33,000	€620
F	33,001 – 40,000	€925
G	40,001 and above	€1,460
Truck trailers	N/A	€300

Buses		
Category	Number of Seats	Annual Tax
Provincial/Urban A	Up to 50	€210
Provincial/Urban B	51 and above	€385
Inter-city A	Up to 50	€215
Inter-city B	51 and above	€300
Tourist coaches	Up to 40 (sitting)	€430
Tourist coaches	41 and above (sitting)	€595
<b>Notes:</b> <ol style="list-style-type: none"> <li>1. Taxis registered before 1 November 2010 pay €290 per annum.</li> <li>2. Foreign lorries pay €100 for each trip</li> </ol>		

Source: European Commission (2014) Taxes in Europe Database, Accessed 14 August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)

**Table 10-4: Luxury Tax on Vehicles, Based on Vehicle Age and Size (Greece, 2014)**

Engine Capacity (cc)	Less than 5 Years Old	5 – 10 Years Old
1,929 – 1,999	€418.70	€293
2,000 – 2,099	€440	€308
2,100 – 2,199	€485	€340
2,200 – 2,299	€530	€371
2,300 – 2,399	€575	€402
2,400 – 2,499	€620	€434
2,500 – 2,599	€665	€465
2,600 – 2,799	€1,420	€994
2,800 – 2,999	€1,600	€1,120
3,000 – 3,199	€1,780	€1,246
3,200 – 3,399	€2,020	€1,414
3,400 – 3,599	€2,260	€1,582
3,600 – 3,799	€2,500	€1,750
3,800 – 3,999	€2,740	€1,918

Engine Capacity (cc)	Less than 5 Years Old	5 – 10 Years Old
4,000 – 4,199	€2,980	€2,086
4,200 – 4,399	€3,220	€2,254
4,400 – 4,599	€3,460	€2,422
4,600 – 4,799	€3,700	€2,590
4,800 – 4,999	€3,940	€2,758
5,000 – 5,199	€4,180	€2,926
5,200 – 5,399	€4,420	€3,094
5,400 – 5,599	€4,660	€3,260
5,600 – 5,799	€4,900	€3,430
5,800 – 5,999	€5,140	€3,598
6,000 and above	€5,380	€3,766

Source: TO BHMA (Tovima) (2013) Έρχονται τα σημειώματα του φόρου πολυτελείας για ΙΧ άνω των 1.929 κ.εκ., accessed 28 August 2014, <http://www.tovima.gr/finance/article/?aid=542754>

## 10.3 Pollution and Resource Taxes

### ➤ Landfill Tax:<sup>359</sup>

- A landfill tax was included within the new framework Law 4042/2012 on waste management which transposes the Waste Framework Directive 98/2008/EC and the Directive 99/2008/EC. Translated, the title of law 4042/2012 is as follows: “The protection of the environment through Criminal Law – Compliance with Directive 2008/99/EC; Framework for waste generation and management – Compliance with Directive 2008/98/EC”.
- The tax was due to be implemented as of 1 January 2014.
- The landfill tax rate for 2014 is €35 per tonne, with planned increases of €5 per tonne per year to €60 per tonne by 2019.
- The tax is paid by organisations or companies disposing the following wastes into landfill without pre-treatment:
  - Biodegradable kitchen and canteen waste (EWC code 20 01 08);
  - Biodegradable waste (EWC code 20 02 01);

---

<sup>359</sup> BiPRO, Arcadis, and Enviroplan (2012) Support to Member States in Improving Waste Management Based on Assessment of Member States' Performance - Country Factsheet for Greece, Report for European Commission - DG Environment, 2012, [http://ec.europa.eu/environment/waste/framework/pdf/Final%20Report%20\\_130507.pdf](http://ec.europa.eu/environment/waste/framework/pdf/Final%20Report%20_130507.pdf)

- Soil and stones (EWC code 20 02 02);
- Mixed municipal (EWC code 20 03 01);
- Waste from markets (EWC code 20 03 02);
- Bulky waste (EWC code 20 03 07);
- Concrete, bricks, tiles and ceramics (EWC code 17 01);
- Wood, glass and plastic (EWC code 17 02);
- Bituminous mixtures other than those containing coal tar (EWC code 17 03 02);
- Soil and stones other than those containing dangerous substances (EWC code 17 05 04);
- Dredging spoil other than those containing dangerous substances (EWC code 17 05 06); and
- Mixed construction & demolition waste other than those containing various dangerous substances (EWC code 17 09 04).
- Revenue: unknown as the tax has only been in force since January 2014.

➤ **Water Charges:**

- Water charges in Greece are set by individual utility companies, the majority of which are public, though a few are partly privatised. Irrigation charges are set by users' associations at nominal levels. Prices vary relatively widely across regions but appear to have risen in recent years. In 2008, the prices for irrigation water ranged from €0.011 per m<sup>3</sup> to €0.1 per m<sup>3</sup>, while in 2012 the range was €0.054 per m<sup>3</sup> to €0.338 per m<sup>3</sup>.<sup>360,361</sup> The average price of water in 2008 was reported to be €0.0243 per m<sup>3</sup> for irrigation and €0.2911 per m<sup>3</sup> for all uses.<sup>362</sup>
- Charges are made up of a standing charge which is based on the diameter of the pipe connecting the user to the supplier and a progressive volumetric rate based on consumption.<sup>363</sup> Although required by the Water Framework Directive as of 2010, tariffs are not set high enough to ensure full cost recovery. It does appear that the level of cost recovery is increasing, however, with cost recovery in the mid-2000s reported to be around 55% for all users (59.5% for domestic customers and 36.5% for

---

<sup>360</sup> See Table 7 in Garrido, A., and Calatrava, J. (2010) Agricultural Water Pricing: EU and Mexico, Report for OECD, 2010, <http://www.oecd.org/eu/45015101.pdf>, p.27

<sup>361</sup> IEEP (2013) Steps to Greening Country Report: Greece, Report for the European Commission, pp.4-5

<sup>362</sup> See Table 7 in Garrido, A., and Calatrava, J. (2010) Agricultural Water Pricing: EU and Mexico, Report for OECD, 2010, <http://www.oecd.org/eu/45015101.pdf>, p.27

<sup>363</sup> Ministry of Environment, Energy and Climate Change (Hellenic Republic) (2014) Sixth National Communication and First Biennial Report Under the United Nations Framework Convention on Climate Change, January 2014, [https://unfccc.int/files/national\\_reports/annex\\_i\\_natcom/submitted\\_natcom/application/pdf/nc6\\_greece%5b1%5d.pdf](https://unfccc.int/files/national_reports/annex_i_natcom/submitted_natcom/application/pdf/nc6_greece%5b1%5d.pdf), p. 269

irrigation).<sup>364</sup> In 2008, reported levels of cost recovery had increased to 64% overall (65% for domestic and industrial uses and 54% for irrigation).<sup>365</sup>

- The Special Secretariat for Water,<sup>366</sup> which sits under the Ministry of Environment, Energy and Climate Change, is “developing a new regulatory framework for the pricing of water and sewerage services in Greece across the entire value chain, from ‘Catchment to tap’.”<sup>367</sup> This includes setting out water pricing and tariff regulation that will ensure full cost recovery. The time scales for the completion of this framework are not known.
- It seems that there may be additional pollution taxes in Greece: Eurostat’s National Tax List data annex lists a pollution tax with the code D29FA and revenues from 2011 and 2012 amounting to €115 million and €54 million, respectively. It is unknown what this tax is and it was not possible to clarify this during the course of the study.<sup>368</sup>

## 10.4 Modelled Changes in Tax Base

The modelled change in the tax base for each of the suggested reforms to the tax system are shown in the table and figures below.

**Table 10-5: Change in Energy Tax Base**

Fuel Type	Units	Baseline	After Tax Increase	Change
Gas Oil	million litres	4,021	3,884	-136
Petrol	million litres	3,109	3,109	0
Kerosene	million litres	931	931	0
LPG	thousand tonnes	306	297	-9
Heavy Fuel Oil	thousand tonnes	176	172	-3
Natural Gas	TJ (GCV)	31,673	31,673	0
Coal	thousand tonnes	2,044	2,033	-11

<sup>364</sup> See Table 3.5 in OECD (2009) OECD Environmental Performance Reviews: Greece, 2009, 82.

<sup>365</sup> See Table 7 in Garrido, A., and Calatrava, J. (2010) Agricultural Water Pricing: EU and Mexico, Report for OECD, 2010, <http://www.oecd.org/eu/45015101.pdf>, p.27

<sup>366</sup> See <http://www.ypeka.gr/Default.aspx?tabid=246&locale=en-US&language=el-GR>

<sup>367</sup> Special Secretariat for Water, Ministry of Environment, Energy and Climate Change (Greece) Regulating Urban Water and Sewerage Tariffs: Guiding Principles and General Approach, <http://www.ypeka.gr/LinkClick.aspx?fileticket=4I0g4UMdYxU%3D&tabid=248&language=el-GR>

<sup>368</sup> Eurostat (2014) Revenue Data by Individual Tax (National Tax List), accessed 4 August 2014, [http://ec.europa.eu/taxation\\_customs/taxation/gen\\_info/economic\\_analysis/tax\\_structures/article\\_5985\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/gen_info/economic_analysis/tax_structures/article_5985_en.htm)

Fuel Type	Units	Baseline	After Tax Increase	Change
Electricity	GWh	41,132	41,126	-6

Figure 10-1: Change in Internal Passenger Flights, flights per year

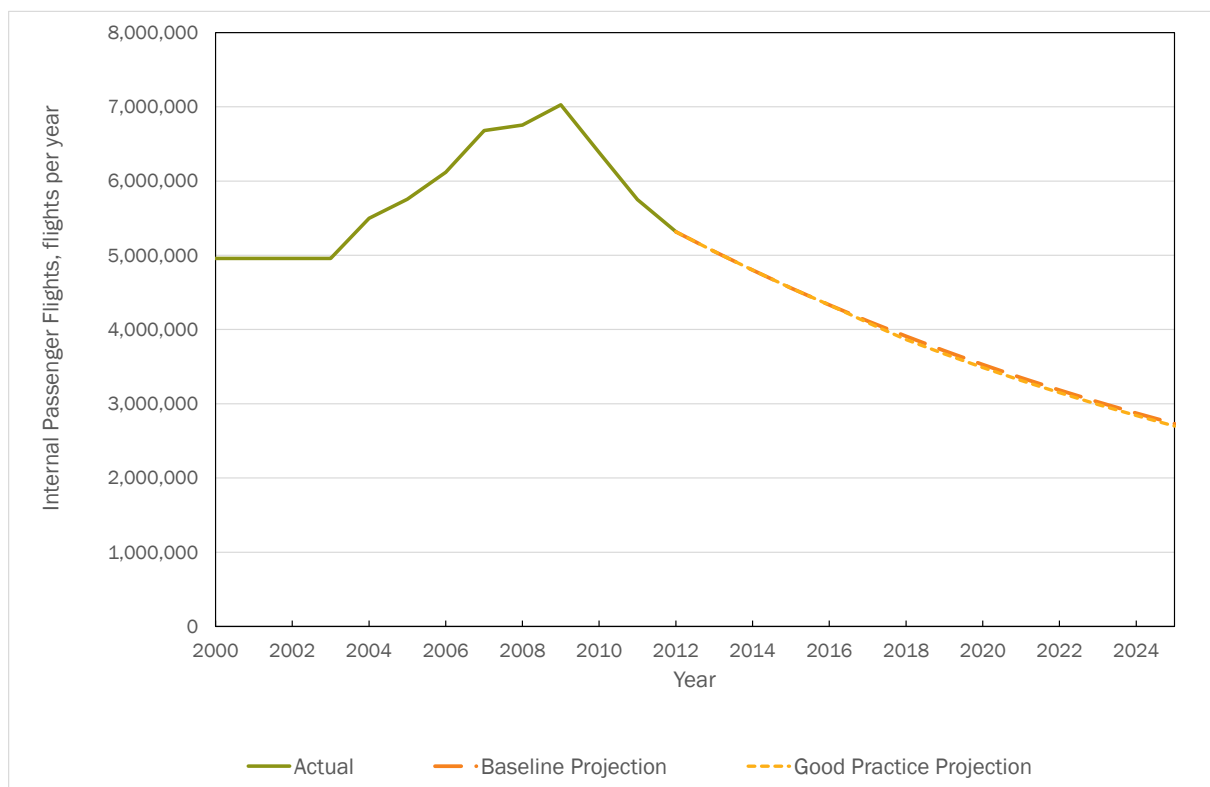


Figure 10-2: Change in Intra-EU Passenger Flights, flights per year

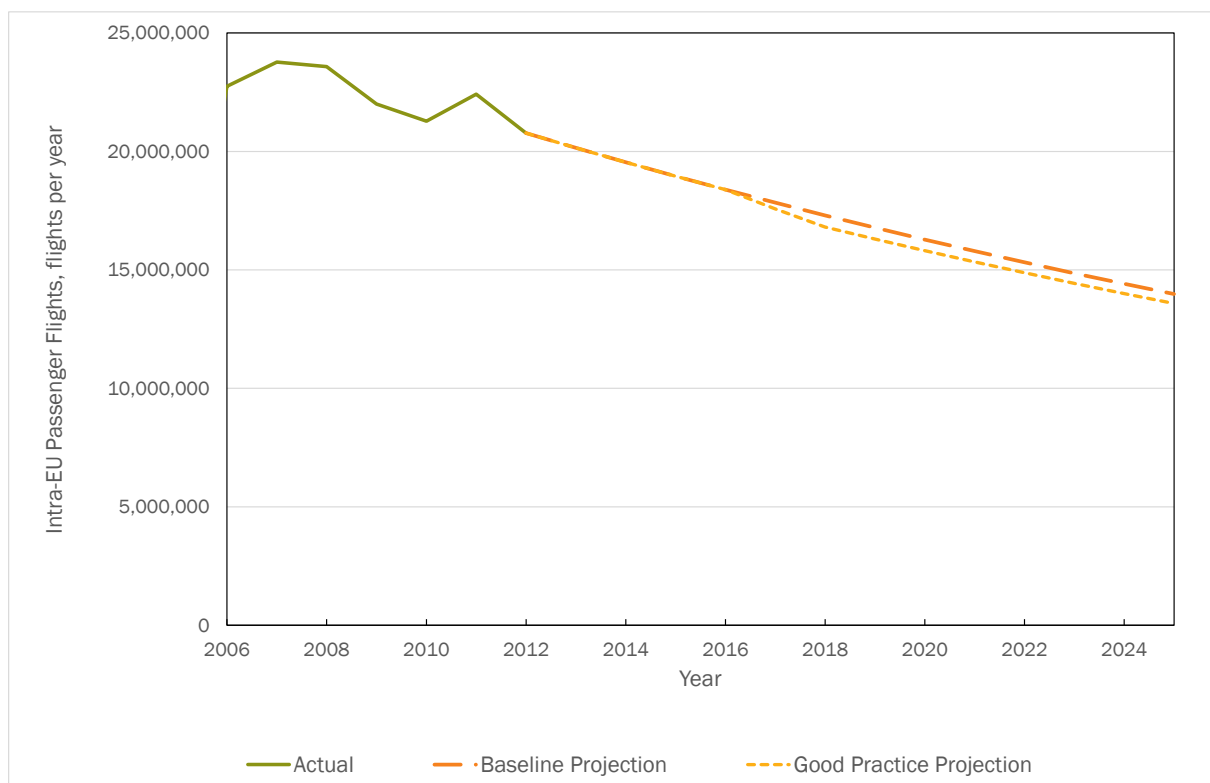


Figure 10-3: Change in Extra-EU Passenger Flights, flights per year

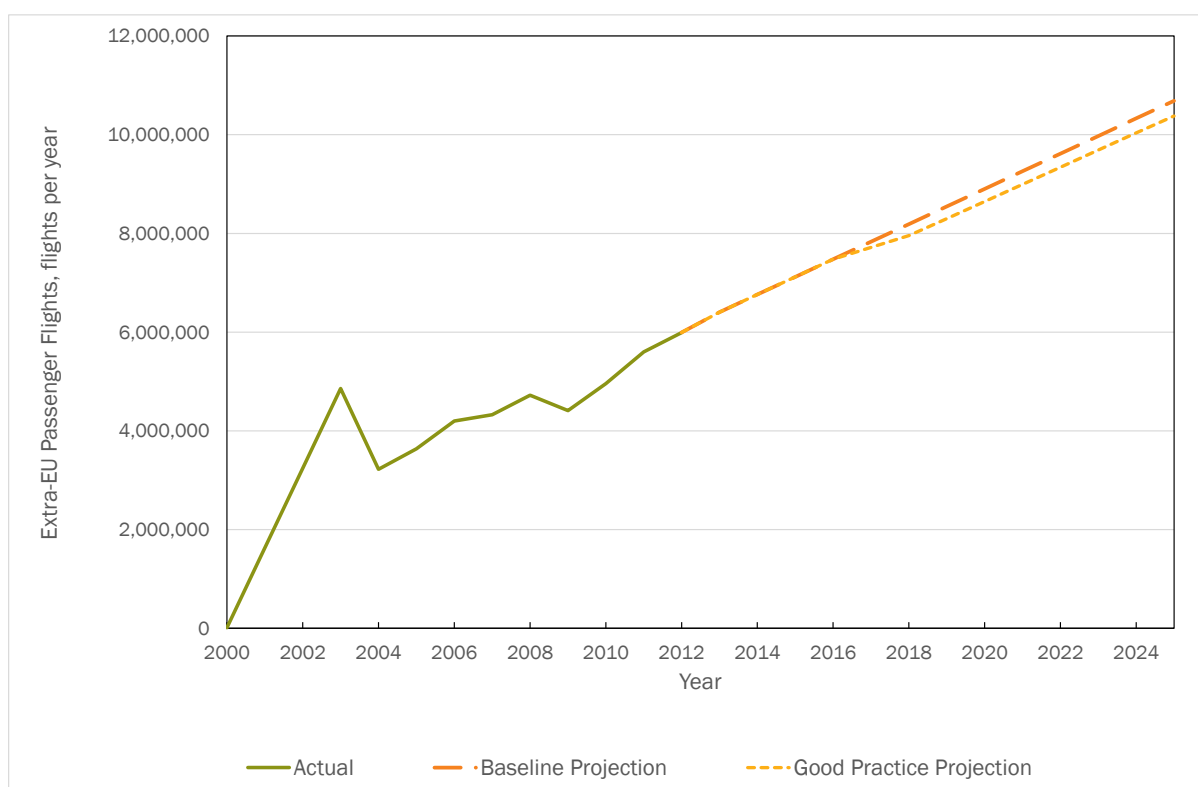


Figure 10-4: Change in Internal Air-freight, tonnes

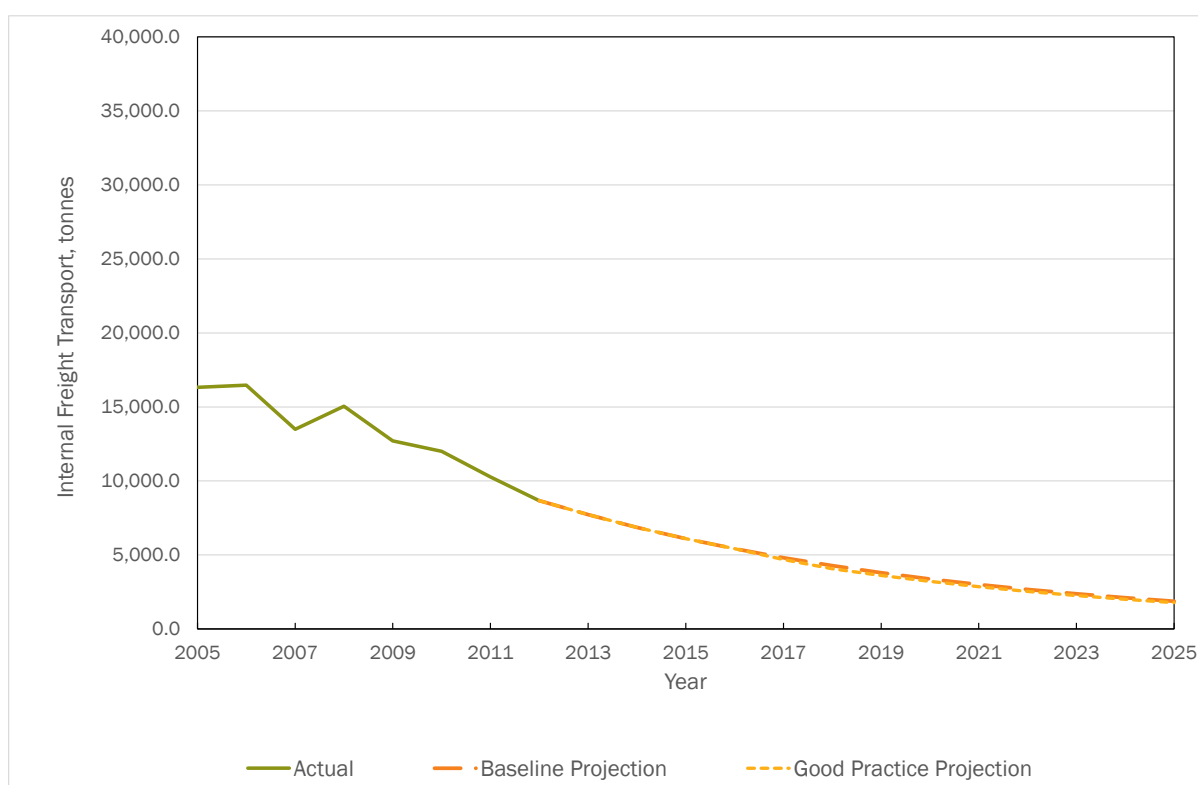




Figure 10-5: Change in Intra-EU Air-freight, tonnes

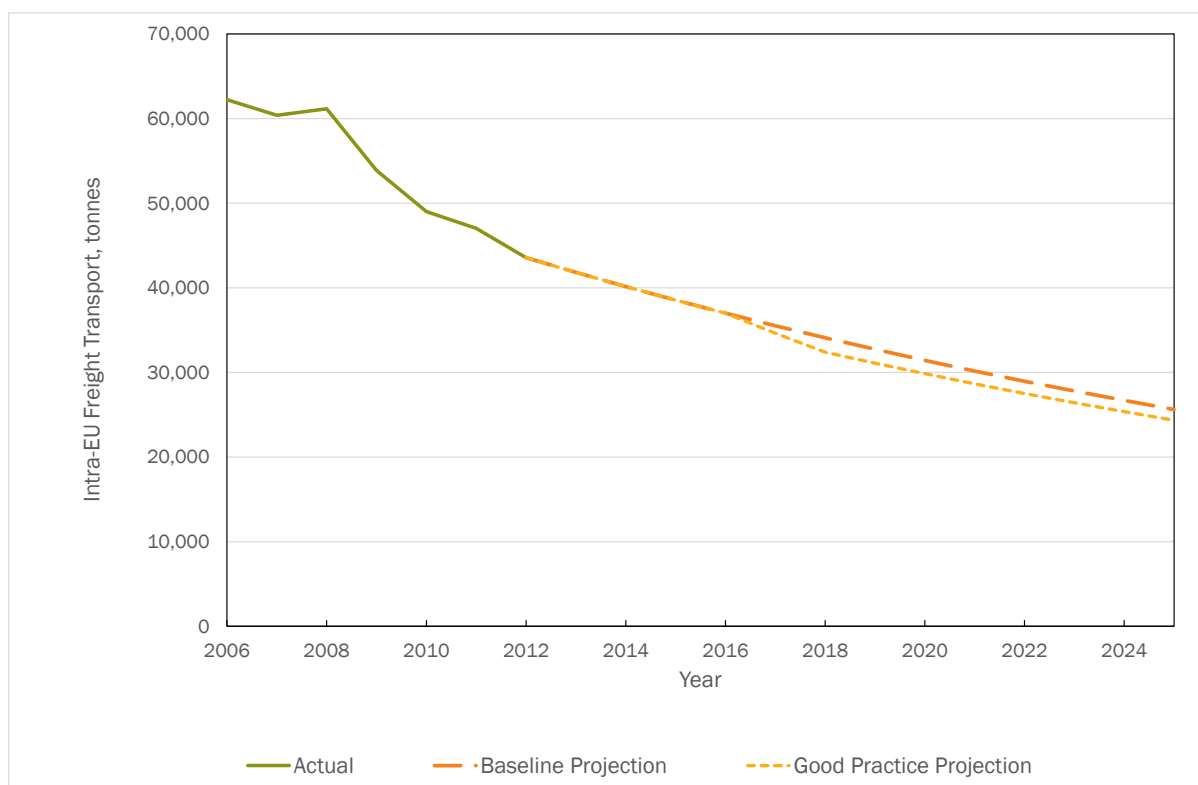


Figure 10-6: Change in Extra-EU Air-freight, tonnes

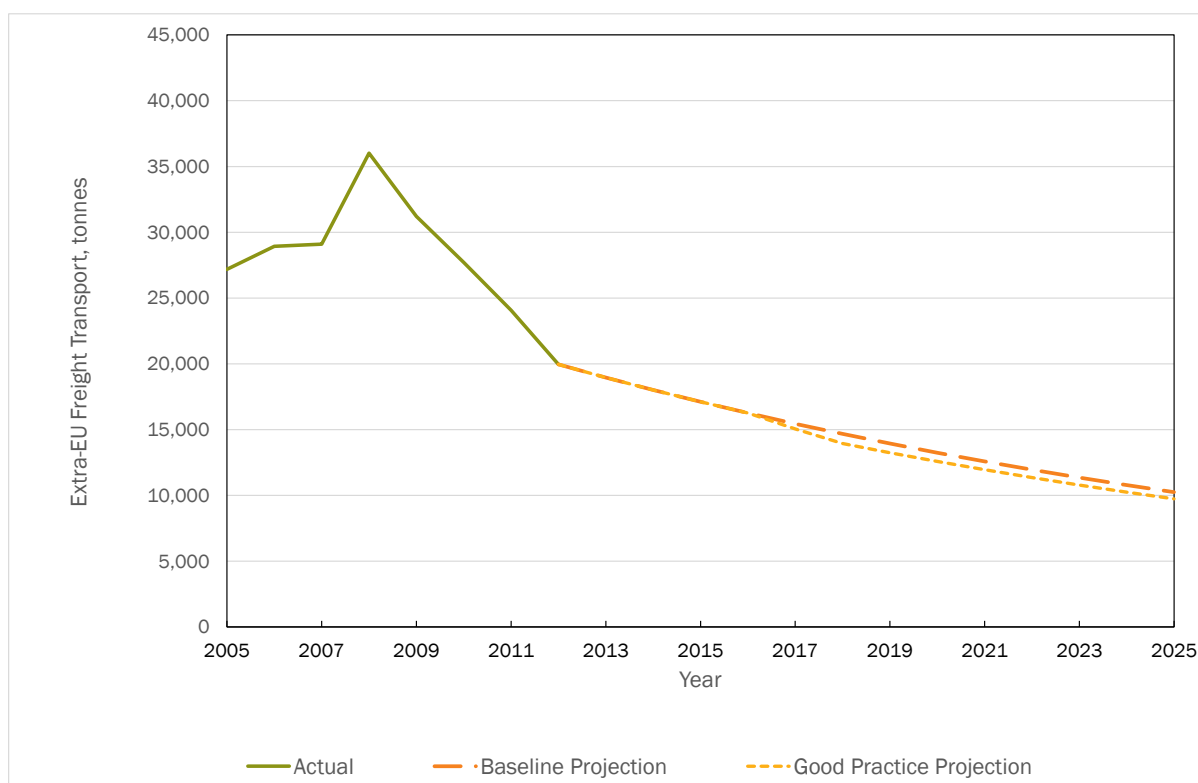


Figure 10-7: Change in Non-Hazardous Waste Landfilled, thousand tonnes

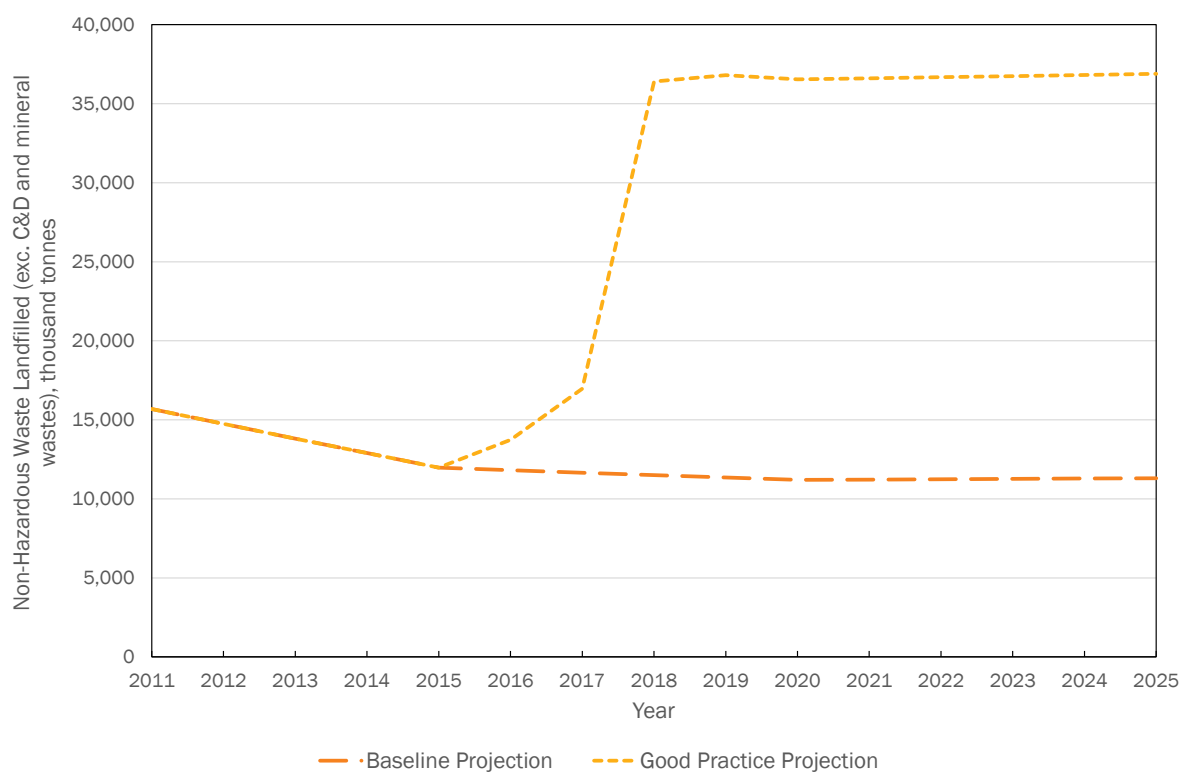


Figure 10-8: Change in MBT/ Incineration, thousand tonnes

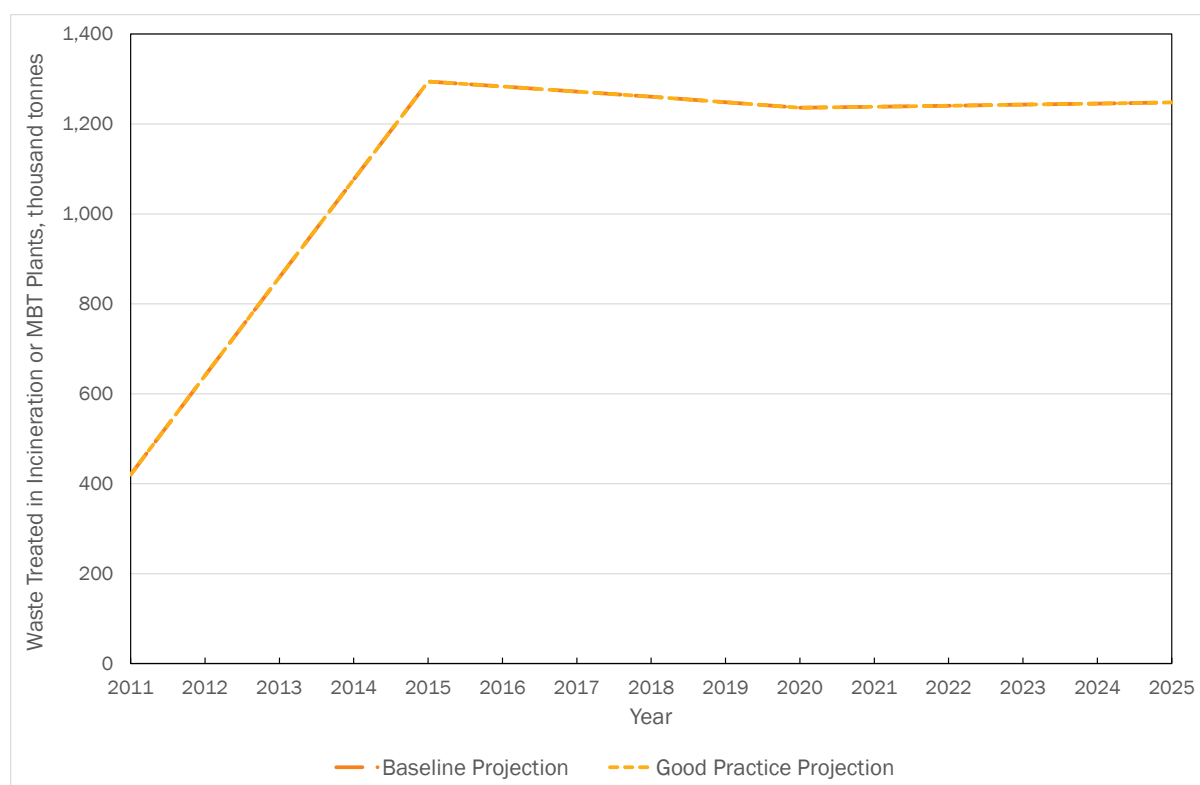


Figure 10-9: Change in SOx Emissions, tonnes

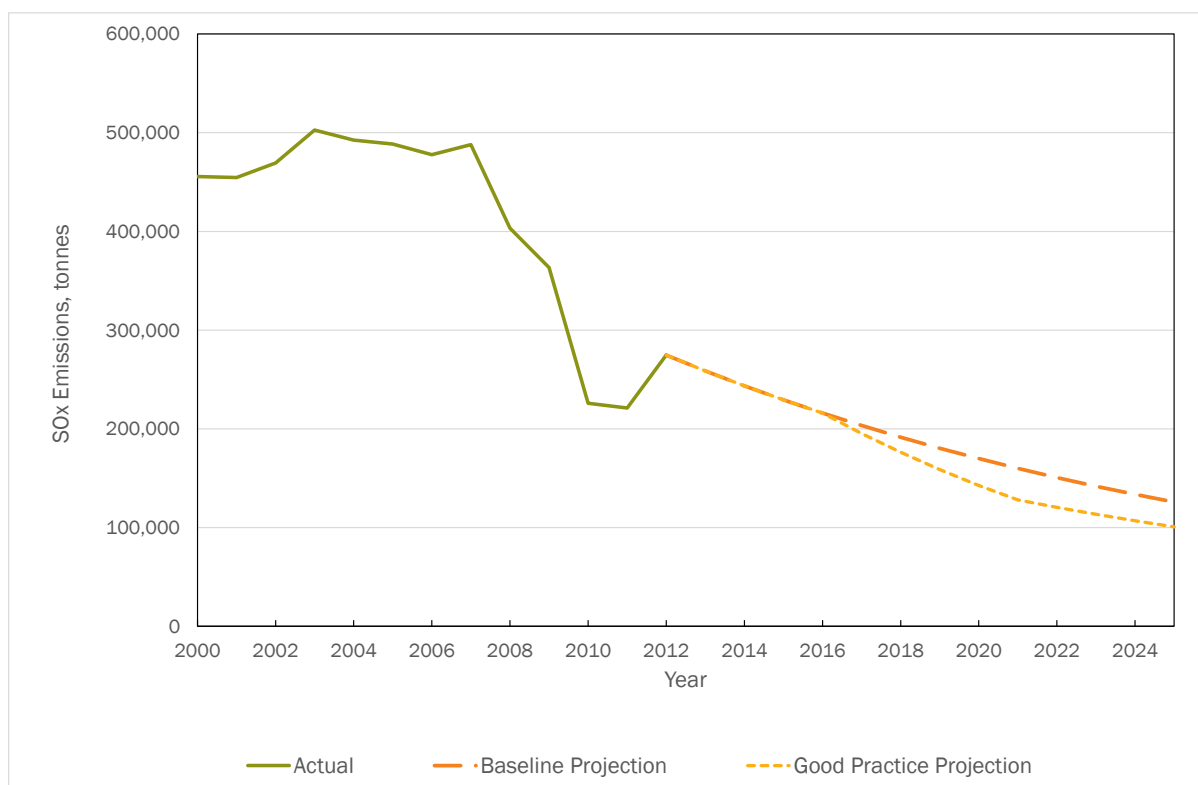


Figure 10-10: Change in NOx Emissions, tonnes



Figure 10-11: Change in PM<sub>10</sub> Emissions, tonnes

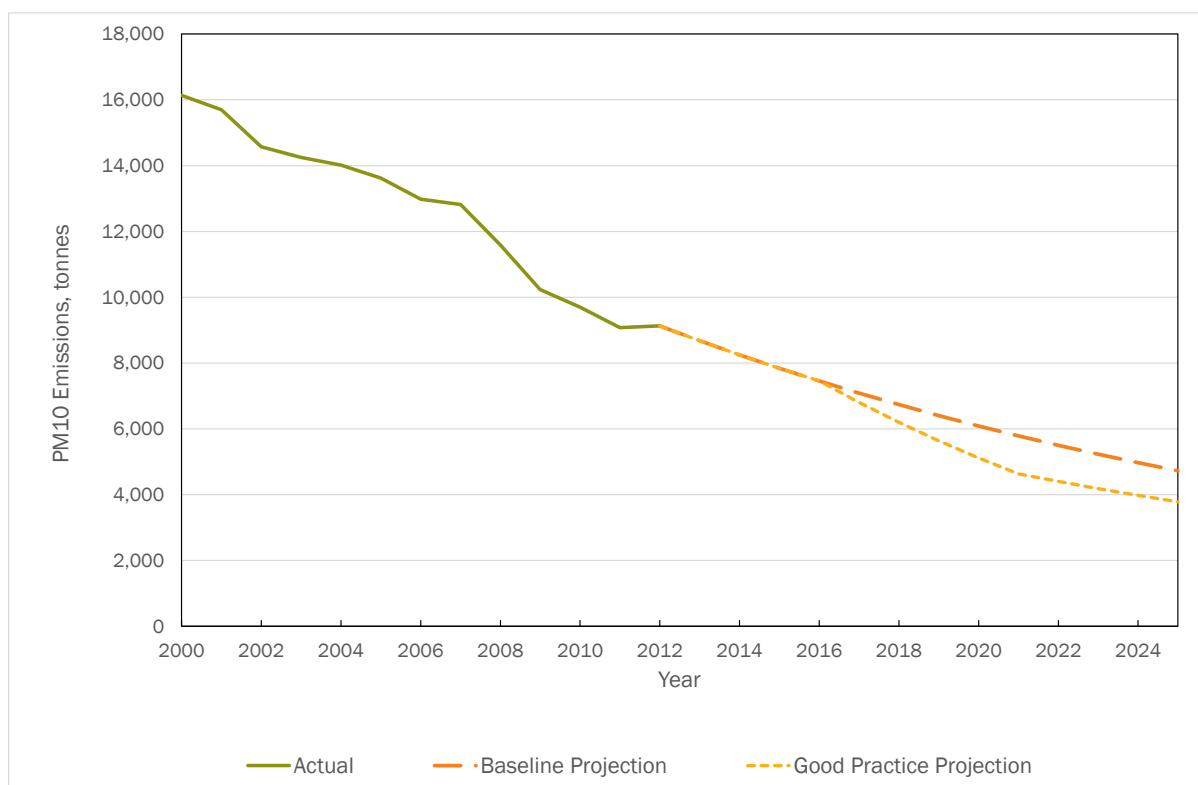


Figure 10-12: Change in Groundwater Abstraction – Public Supply, million cubic metres

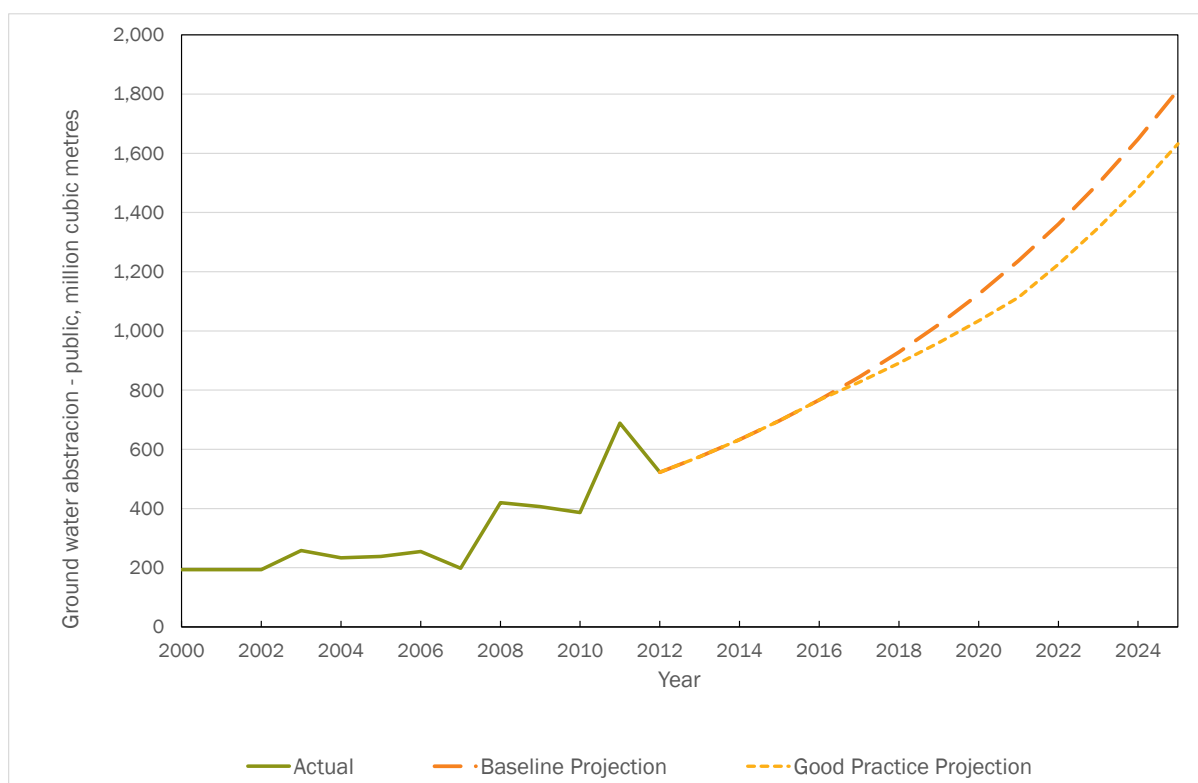


Figure 10-13: Change in Groundwater Abstraction – Manufacturing, million cubic metres

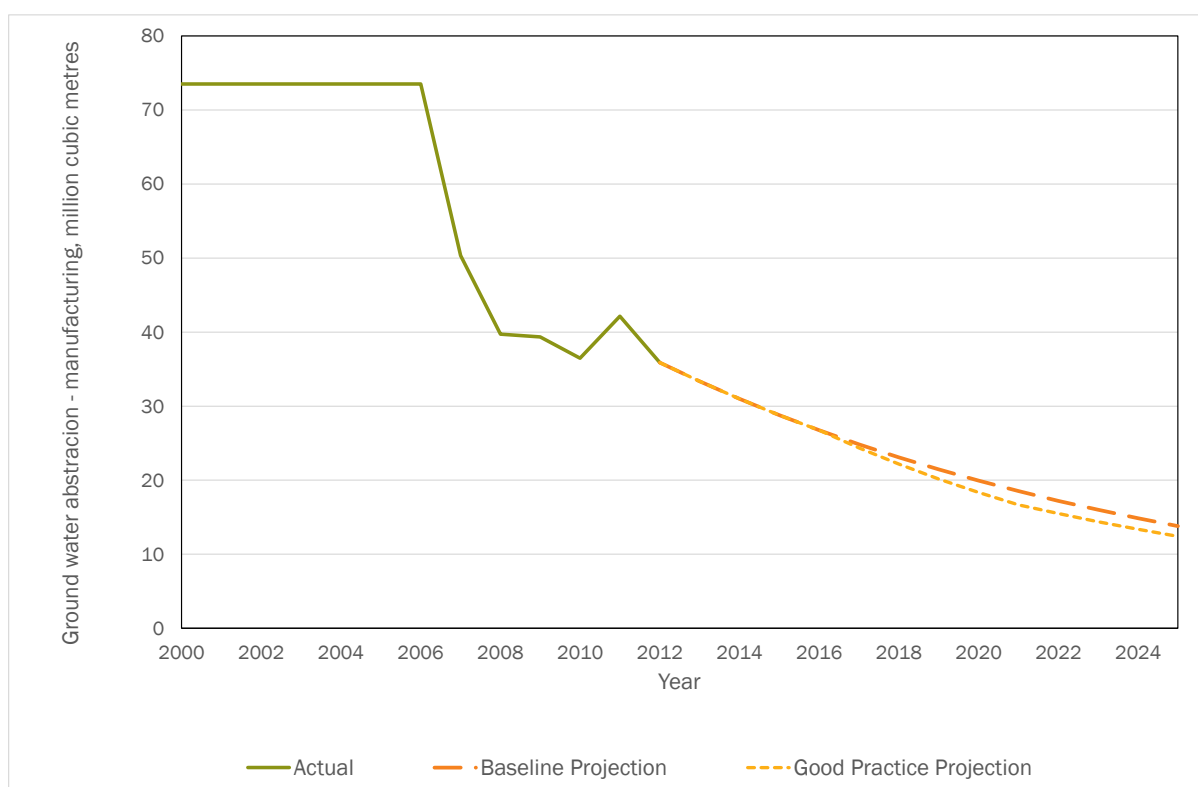


Figure 10-14: Change in Groundwater Abstraction – Agriculture, million cubic metres

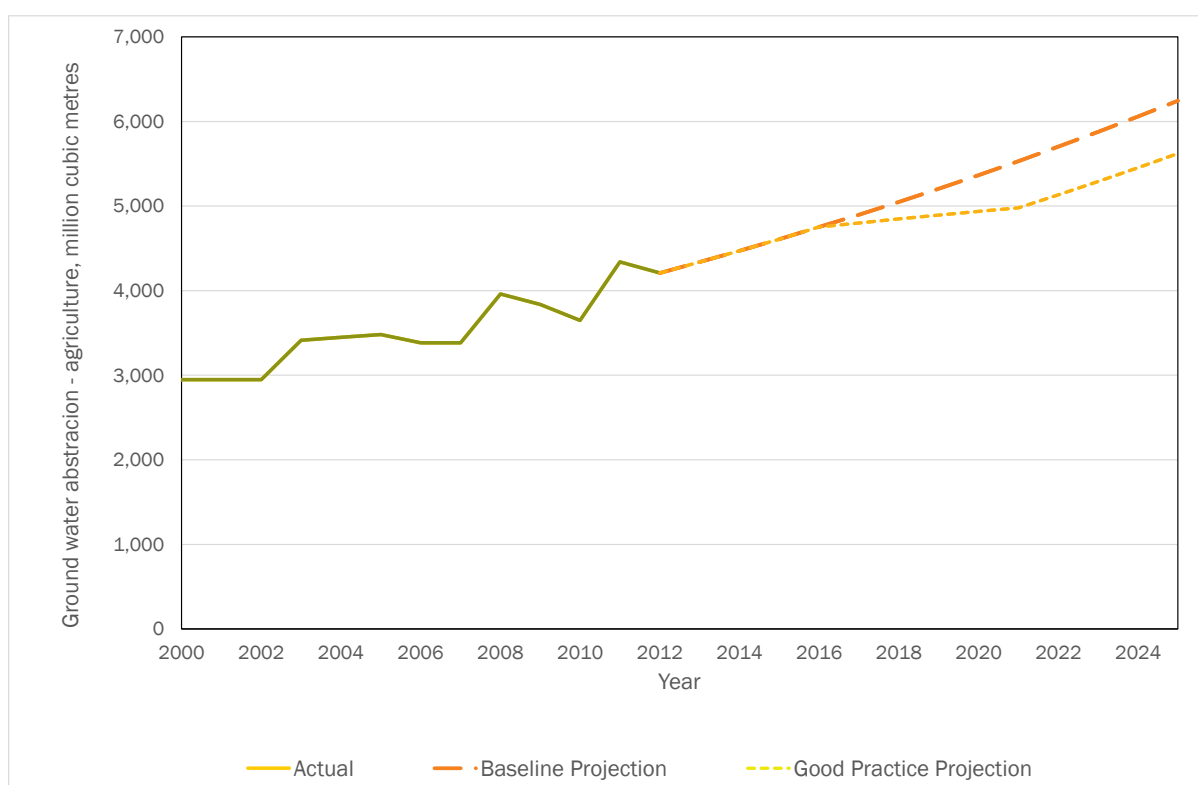


Figure 10-15: Change in Surface Water Abstraction – Public Supply, million cubic metres

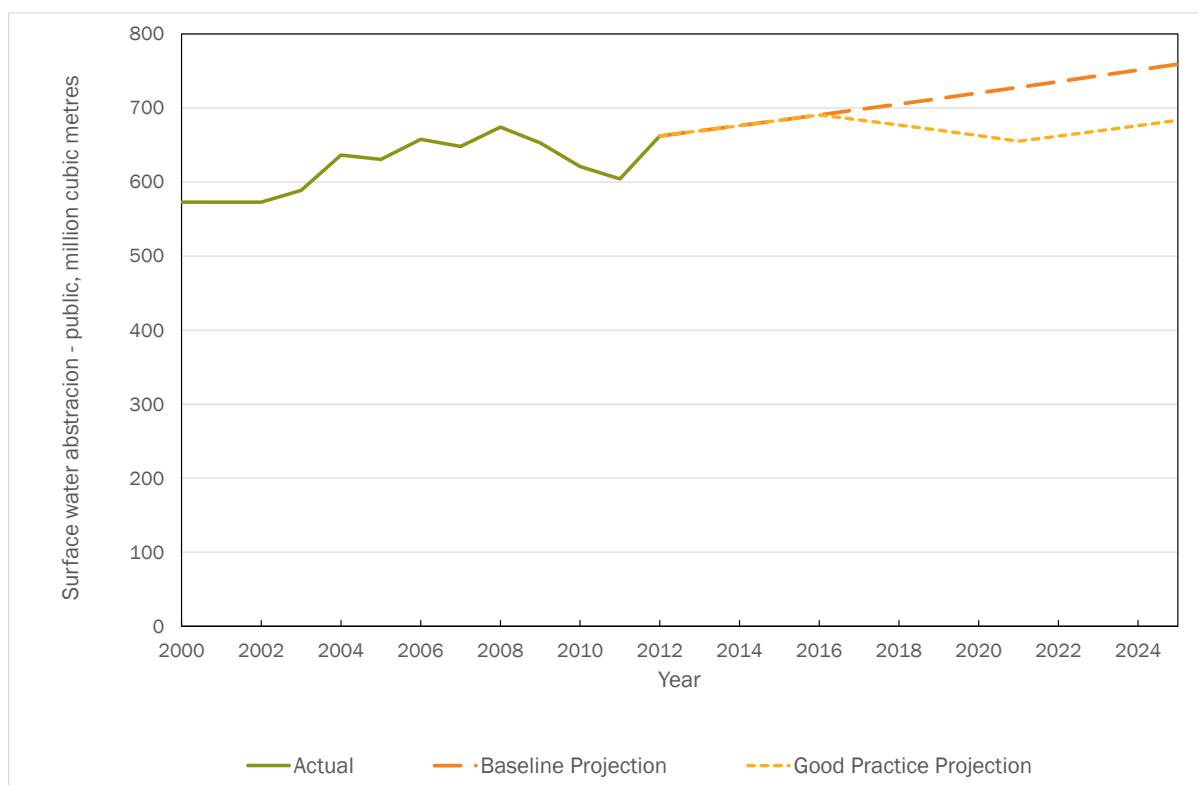


Figure 10-16: Change in Surface Water Abstraction – Manufacturing, million cubic metres

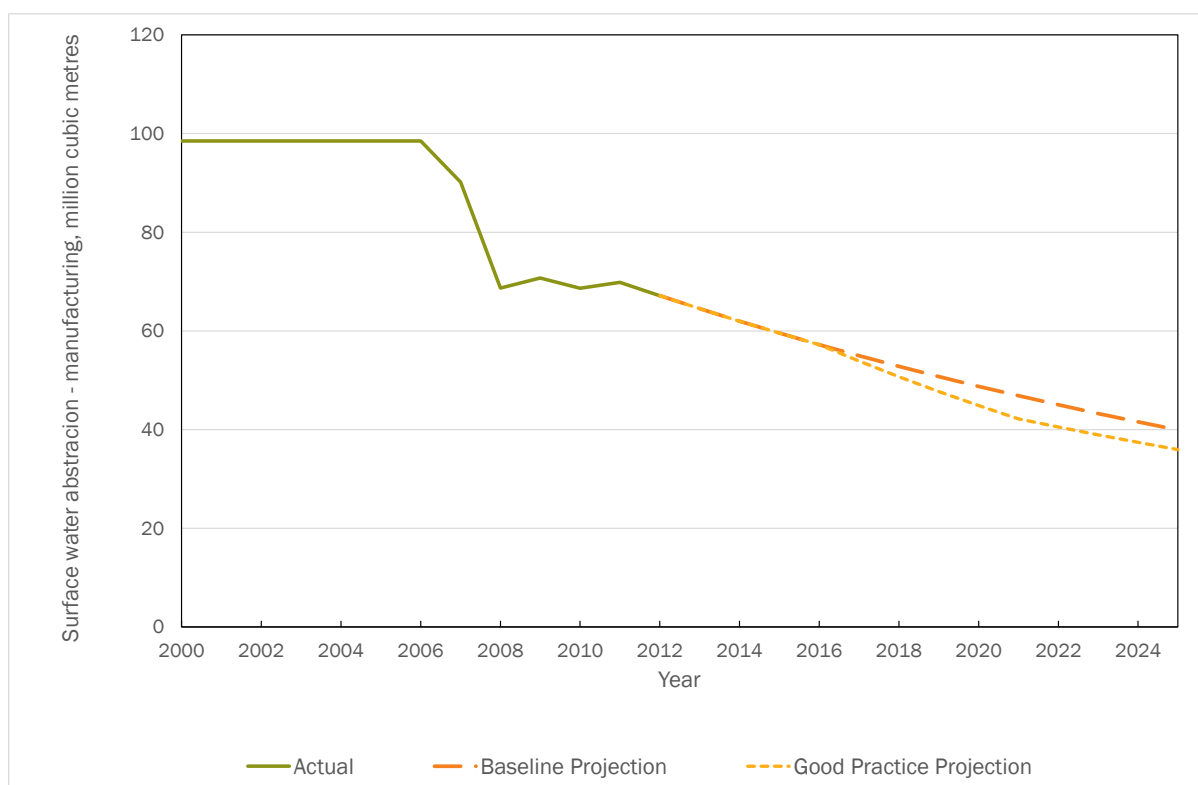


Figure 10-17: Change in Surface Water Abstraction – Agriculture, million cubic metres

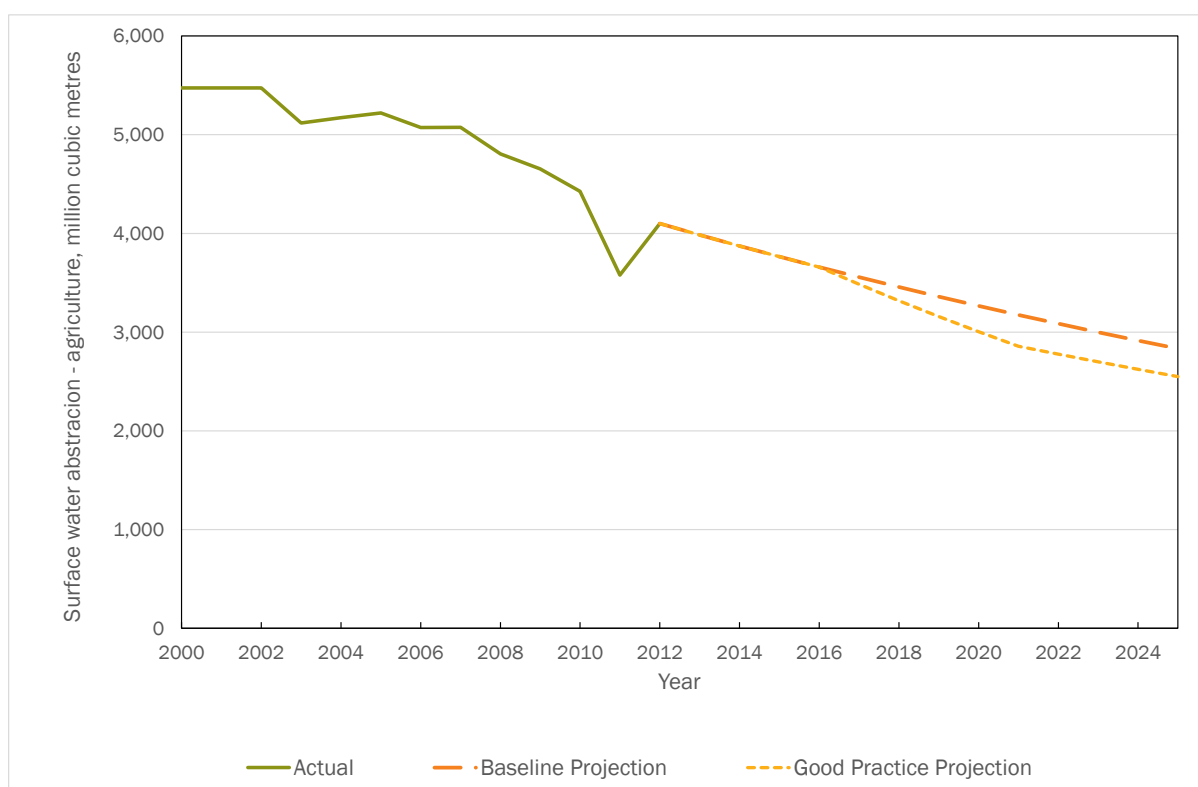


Figure 10-18: Change in Active Ingredients in Pesticides, tonnes

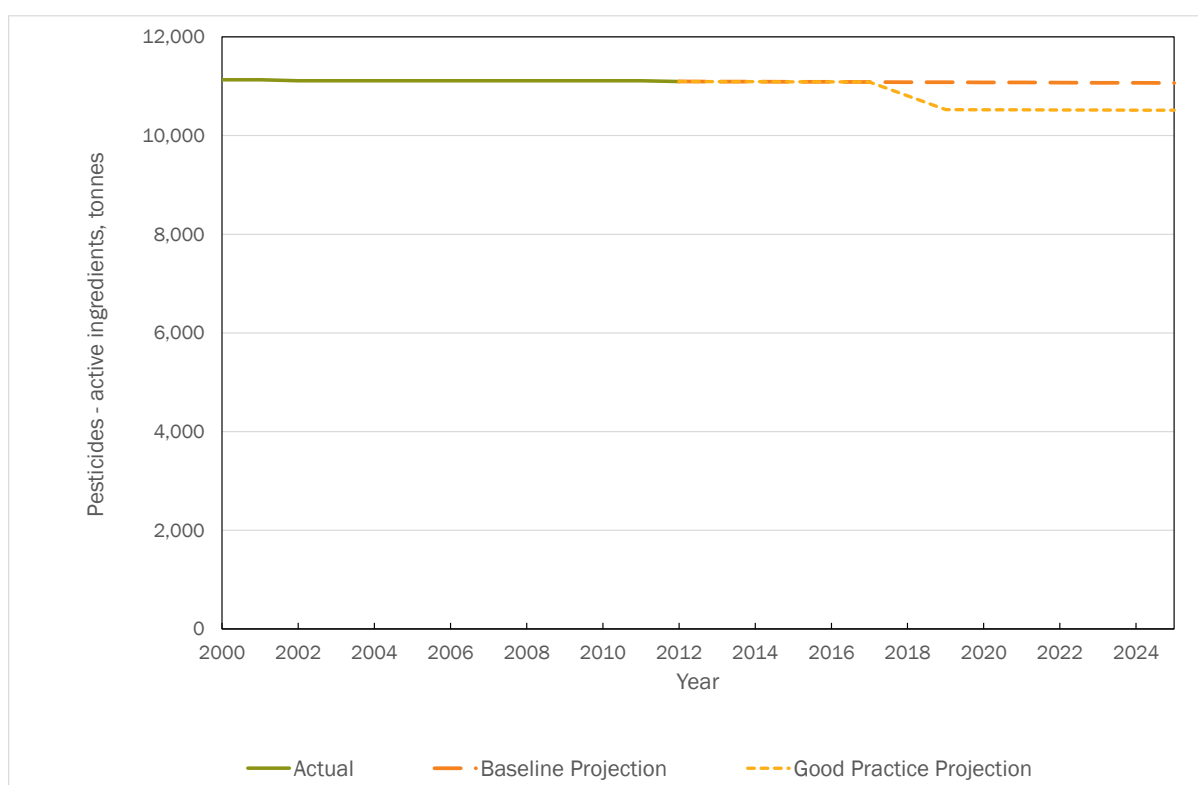


Figure 10-19: Change in Non-organic Nitrogen Sales of Fertilisers, tonnes



Figure 10-20: Change in Aggregates Extraction, thousand tonnes

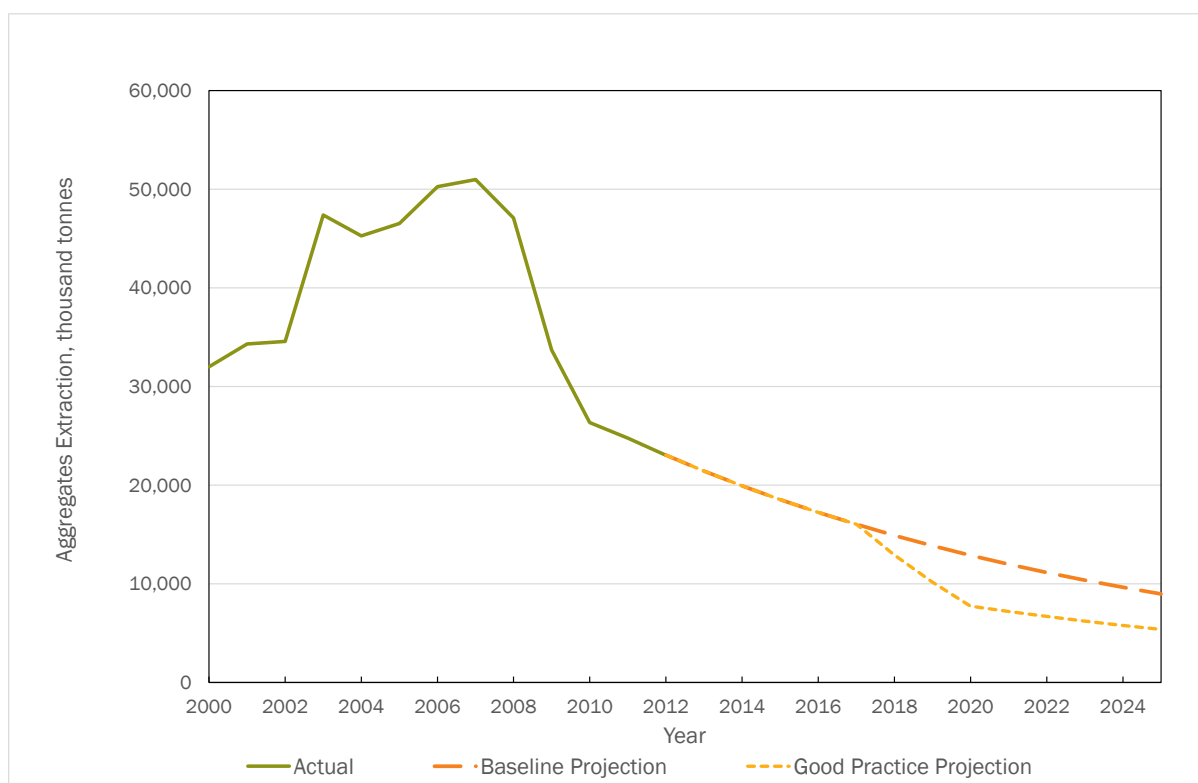




Figure 10-21: Change in Paper & Card Packaging Generation, thousand tonnes

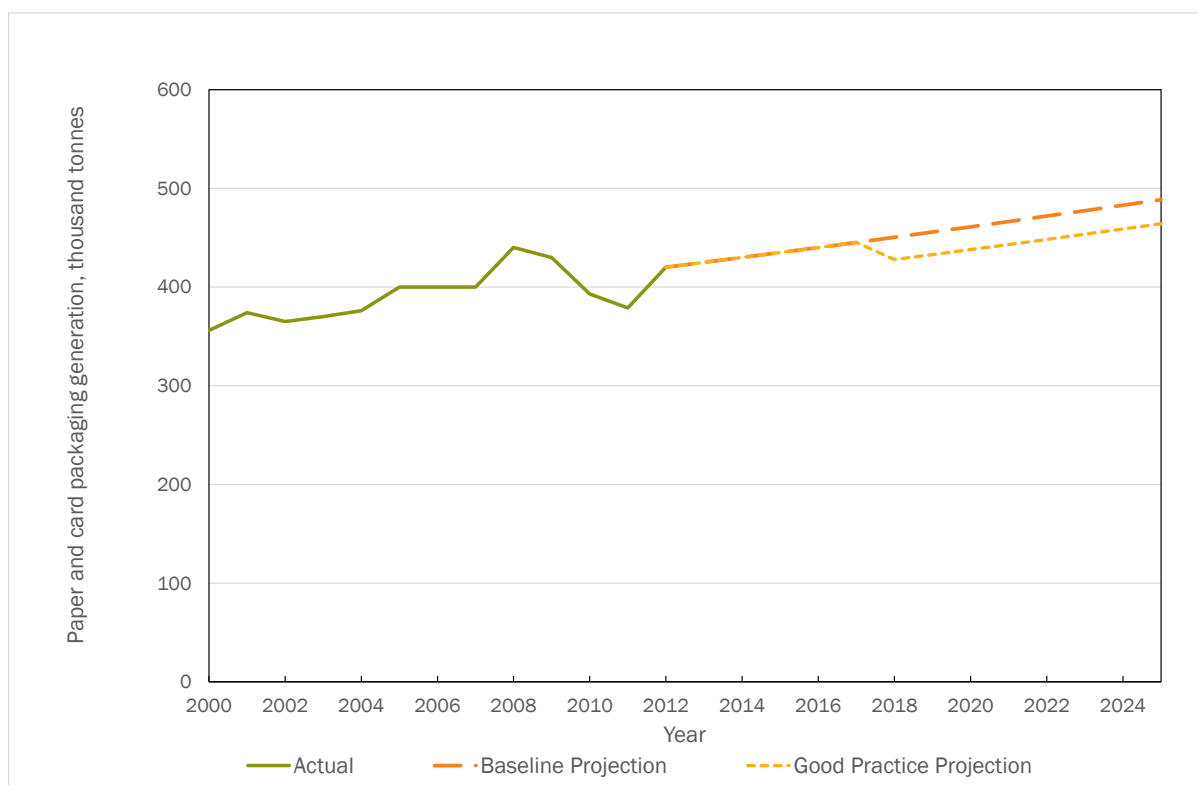


Figure 10-22: Change in Plastic Packaging Generation, thousand tonnes

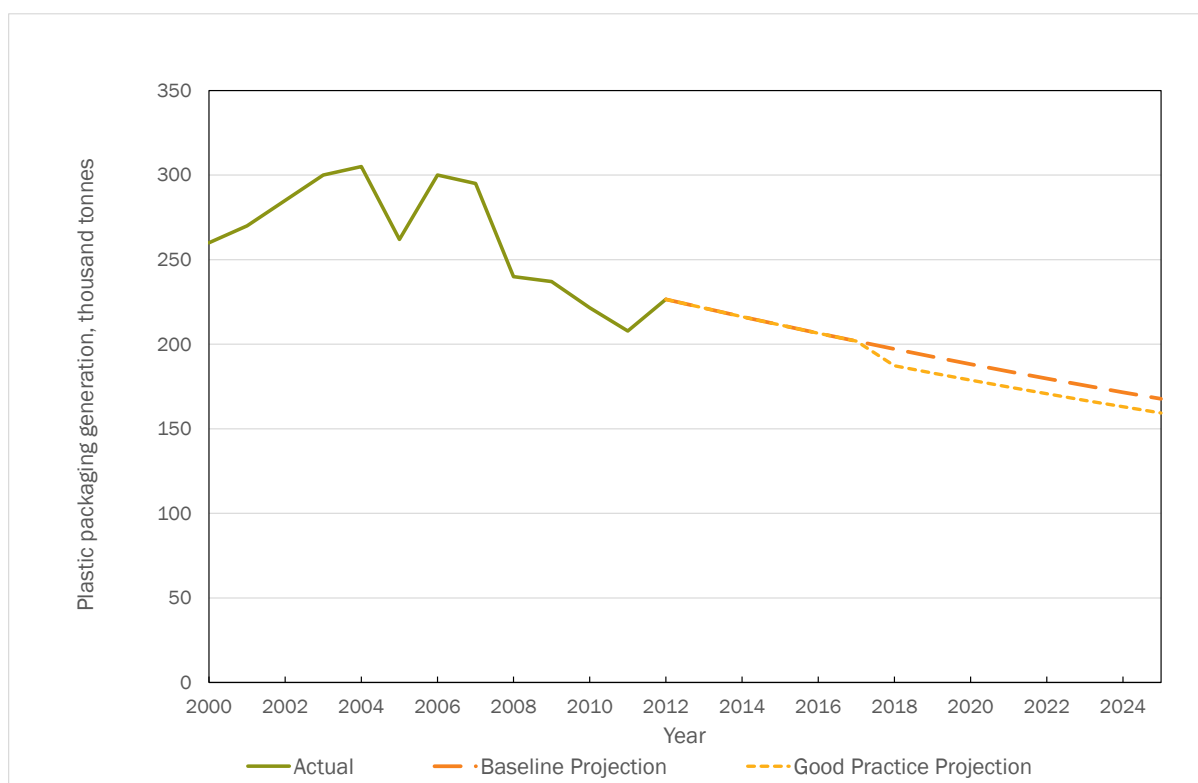


Figure 10-23: Change in Wood Packaging Generation, thousand tonnes

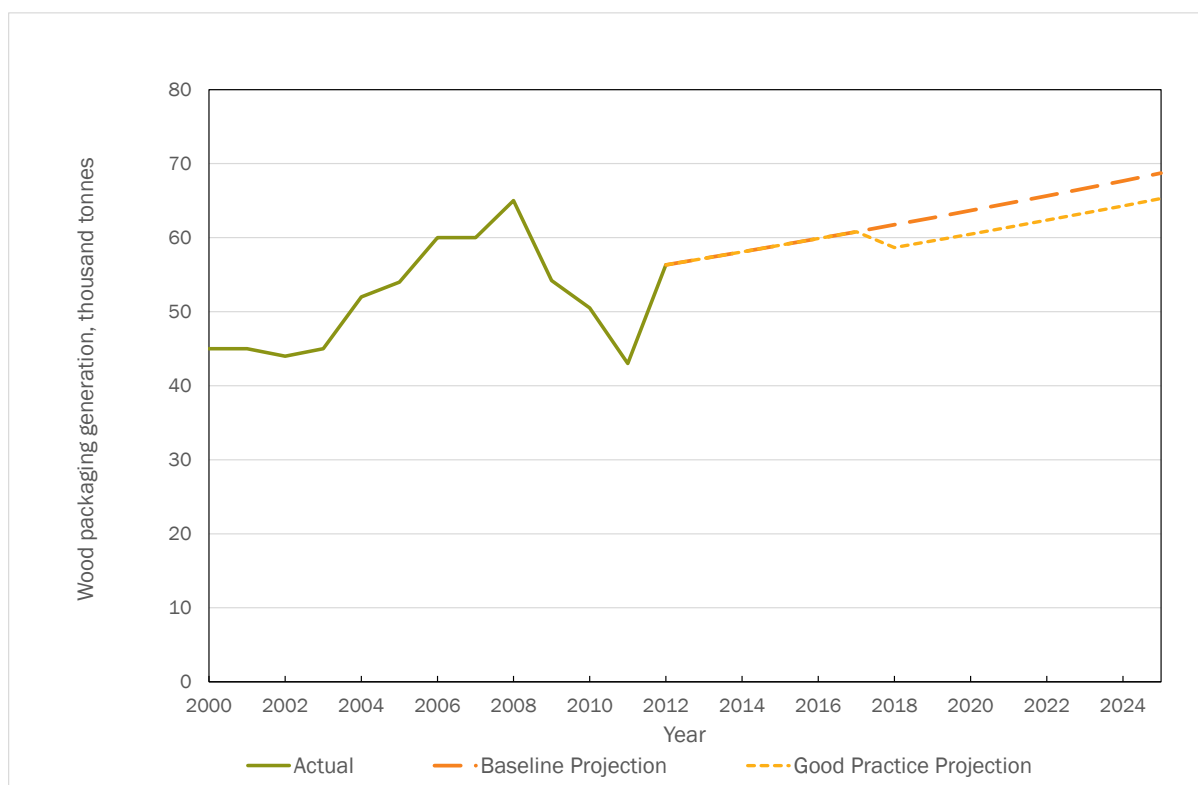


Figure 10-24: Change in Metal Packaging Generation, thousand tonnes

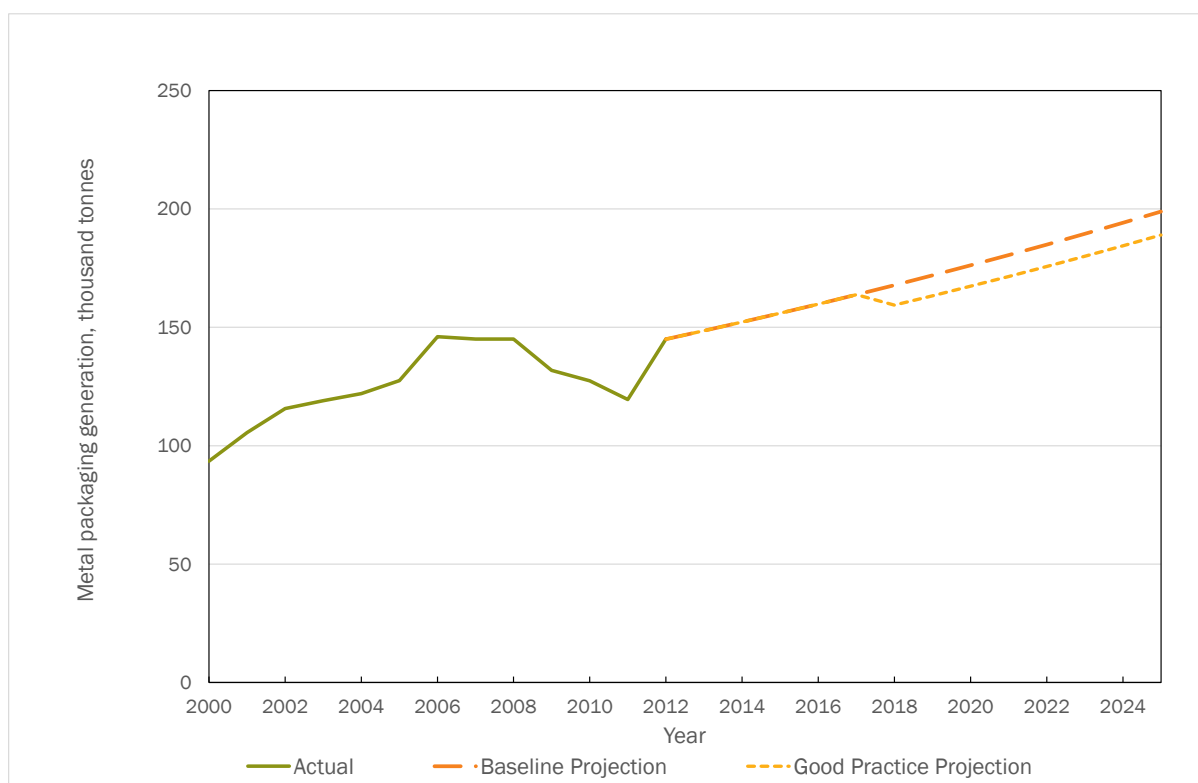


Figure 10-25: Change in Glass Packaging Generation, thousand tonnes

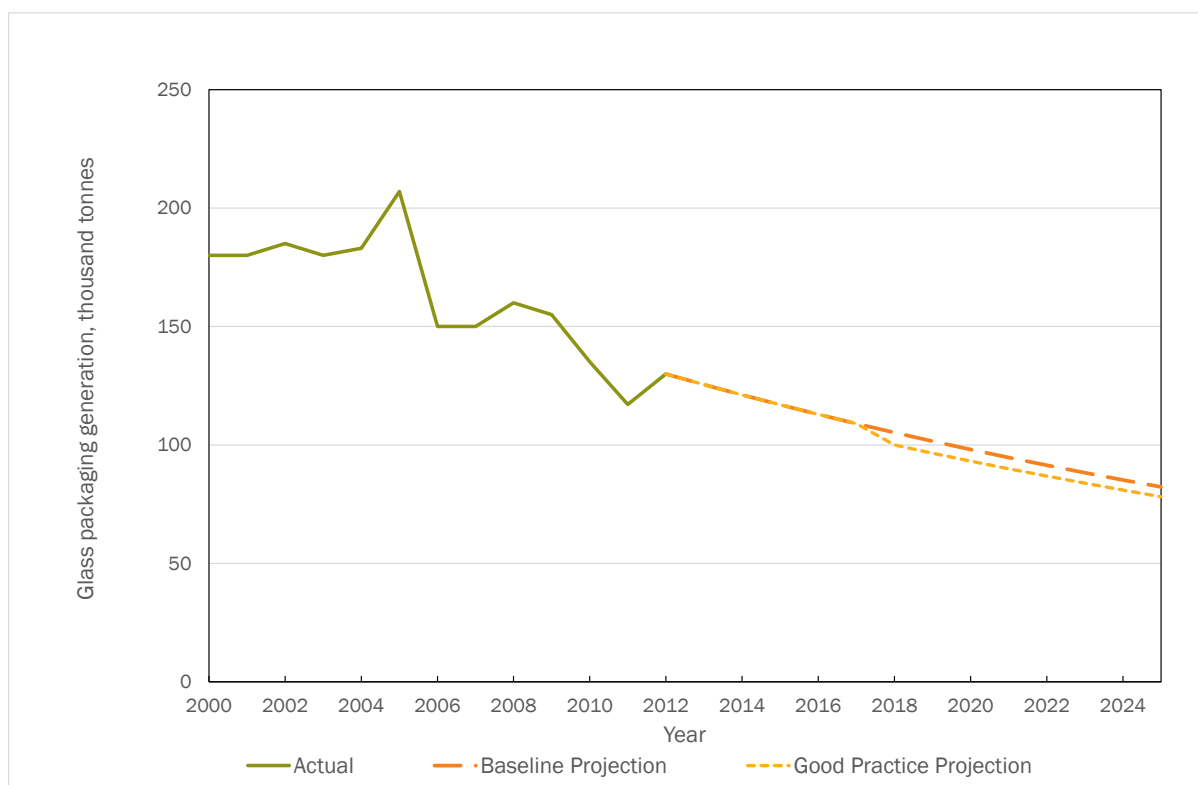
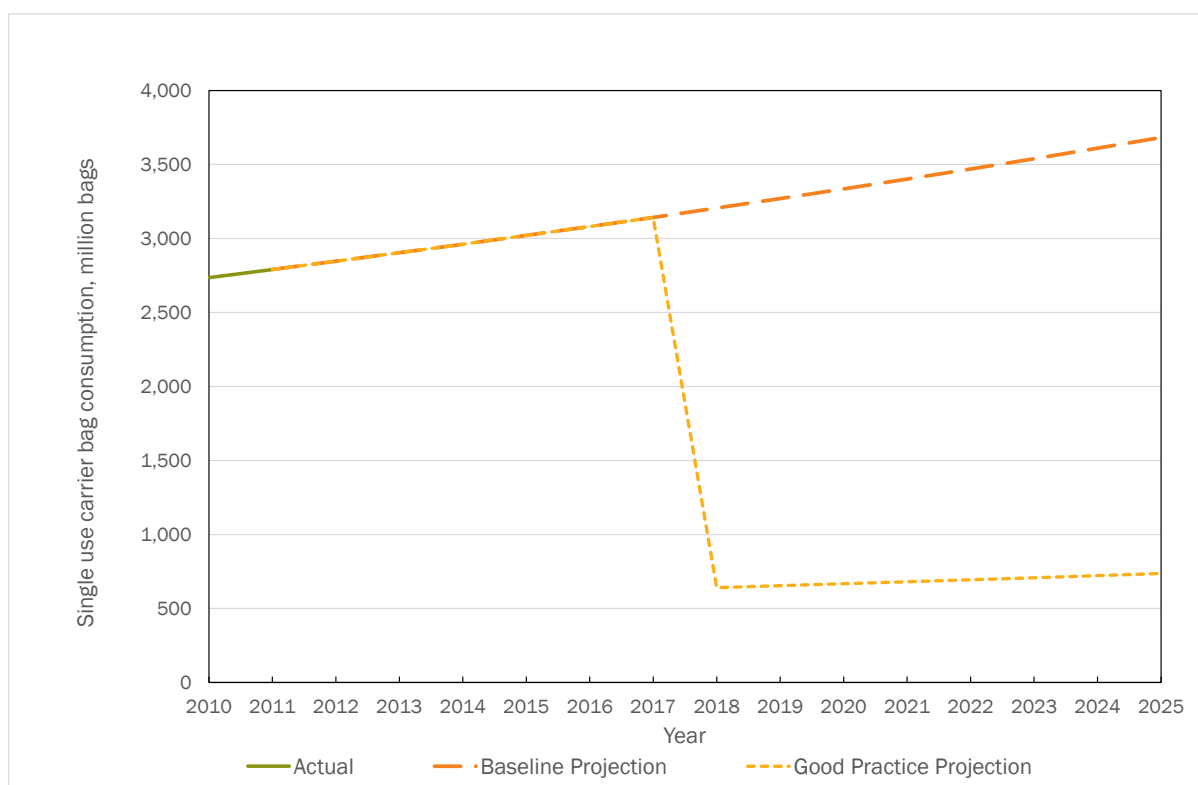


Figure 10-26: Change in Consumption of Single Use Carrier Bags, million bags



## 10.5 Full Revenue Outputs

A summary of the full revenue outputs for each of the suggested reforms to the tax system are presented in the table below.

Table 10-6: Revenue Outturns from Model, million EUR (real 2014 terms)

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Energy Taxes	Transport fuels	0	0	138	275	409	541	672	801	928	928	928
	C&I / Heating	0	0	16	33	49	65	81	97	113	113	113
	Electricity	2	2	2	2	2	2	2	2	2	2	2
	<i>Sub-total Energy, million EUR</i>	2	2	157	309	460	608	755	900	1,044	1,044	1,044
	<i>Sub-total Energy, % GDP</i>	0.0%	0.0%	0.1%	0.2%	0.2%	0.3%	0.4%	0.5%	0.6%	0.6%	0.6%
Transport Taxes (excluding transport fuels)	Vehicle Taxes	0	0	17	33	50	66	83	83	83	83	83
	Passenger Aviation Tax	0	0	215	425	427	429	431	433	436	439	442
	Freight Aviation Tax	0	0	0	0	0	0	0	0	0	0	0
	<i>Sub-total Transport, million EUR</i>	0	0	231	458	476	495	514	516	519	522	525
	<i>Sub-total Transport, % GDP</i>	0.0%	0.0%	0.1%	0.2%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
Pollution and Resource Taxes	Landfill Tax - Non-haz (excl. C&D)	0	0	0	0	0	0	0	0	0	0	0
	Landfill Tax - Inerts (C&D)	0	1	2	3	3	2	2	2	2	2	2
	Incineration /MBT Tax	0	6	12	18	18	17	17	17	17	17	18

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Air Pollution Tax	0	78	146	203	251	291	269	262	255	249	243
	Water Abstraction Tax	0	101	206	316	430	550	564	592	623	657	695
	Waste Water Tax	0	14	28	40	39	39	39	39	39	39	39
	Pesticides Tax	0	0	111	216	211	210	210	210	210	210	210
	Aggregates Tax	0	0	38	31	24	19	17	16	15	14	13
	Packaging Tax	0	0	38	36	36	37	37	37	37	37	37
	Single Use Bag Tax	0	264	269	55	56	57	58	59	61	62	63
	Fertiliser Tax	0	0	0	0	0	0	0	0	0	0	0
	<b>Sub-total Pollution &amp; Resource, million EUR</b>	0	466	851	918	1,068	1,222	1,214	1,236	1,260	1,288	1,320
	<b>Sub-total Pollution &amp; Resource, % GDP</b>	0.0%	0.2%	0.5%	0.5%	0.6%	0.6%	0.6%	0.7%	0.7%	0.7%	0.7%
<b>Total Revenue Stream</b>	<b>Total, million EUR</b>	2	468	1,239	1,686	2,004	2,326	2,483	2,652	2,823	2,854	2,889
	<b>Total, % GDP</b>	0.0%	0.2%	0.7%	0.9%	1.1%	1.2%	1.3%	1.4%	1.5%	1.5%	1.5%

## 11.0 Ireland

During the course of the study the latest data available from official sources was sought, namely the TAXUD Taxes in Europe database, energy excise duty tables and the OECD database on environmental taxes and charges. This was supplemented by national data sources where possible. Due to the number of taxes and countries involved, the central case for energy excise duties has been the rates published by TAXUD giving the position as of 1st July 2014. Planned future increases may not be fully captured in this analysis and therefore, the projected increase in revenues would effectively incorporate any revenue from increased rates in early 2015 or shortly thereafter.

### 11.1 Energy Taxes

#### ➤ Energy Taxes:

- Ireland has excise duties on fuels and electricity. These taxes are shown in Table 11-1, which shows how they compare to the recommended minimum rates in the existing ETD and the EU-28 average and median rates.<sup>369</sup>

Table 11-1: Excise Duties on Fuels and Electricity in Ireland

Excise Duty	Unit	Rate Applied in Ireland	Existing ETD Minimum	EU-28 Average	EU-28 Median
<b>Motor Fuels - propellant</b>					
Unleaded Petrol	€ per 1000 litres	€587.71 <sup>1</sup>	€359	€519	€509
Gas Oil (Diesel)	€ per 1000 litres	€479.02	€330	€427	€405
Kerosene	€ per 1000 litres	€479.02	€330	€440	€405
Liquid Petroleum Gas	€ per 1000 kg	€176.33	€125	€209	€180
Natural Gas	€ per GJ	€0 <sup>2</sup>	€2.60	€3.03	€2.66
<b>Motor Fuels – Industry / Commercial Use</b>					
Gas Oil (Diesel)	€ per 1000 litres	€102.28	€21	€221	€163
Kerosene	€ per 1000 litres	€50.73	€21	€283	€330
Liquid Petroleum Gas	€ per 1000 kg	€60.07	€41	€126	€125
Natural Gas	€ per GJ	€1.03	€0.30	€1.76	€1.50
<b>Heating – Business Use</b>					

<sup>369</sup> European Commission (2013) *Taxes in Europe Database*, Accessed 13<sup>th</sup> December 2013, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)

Excise Duty	Unit	Rate Applied in Ireland	Existing ETD Minimum	EU-28 Average	EU-28 Median
Gas Oil (Diesel)	€ per 1000 litres	€102.28	€21	€221	€163
Kerosene	€ per 1000 litres	€50.73	€0.00	€270	€330
Heavy Fuel Oil	€ per 1000 kg	€77.68	€15	€70	€25
Liquid Petroleum Gas	€ per 1000 kg	€60.07	€0.00	€82	€40
Natural Gas	€ per GJ	€1.03	€0.15	€1.36	€0.46
Coal and Coke	€ per GJ	€1.89	€0.15	€1.27	€0.31
<b>Heating – Non-Business Use</b>					
Gas Oil (Diesel)	€ per 1000 litres	€102.28	€21	€179	€125
Kerosene	€ per 1000 litres	€50.73	€0.00	€279	€330
Heavy Fuel Oil	€ per 1000 kg	€77.68	€15	€85	€26
Liquid Petroleum Gas	€ per 1000 kg	€60.07	€0	€111	€42
Natural Gas	€ per GJ	€1.03	€0.3	€2.04	€0.94
Coal and Coke	€ per GJ	€1.89	€0.3	€1.77	€0.32
<b>Electricity</b>					
Business Use	€ per MWh	€0.5	€0.5	€8.42	€1.03
Non-Business Use	€ per MWh	€1.0	€1.0	€14.53	€2.06
<b>Notes:</b> 1. Including CO <sub>2</sub> charge of 4.5 cents/liter (€20 per ton CO <sub>2</sub> ) for non-ETS emitters. 2. Gas not in use as propellant in Ireland.					

- The VAT rate is reduced for fuels (gas oil, kerosene, heavy fuel oil, LPG, natural gas, coal) used for industry motors, business heating and non-business. The reduced VAT rate is 13.5% against the standard VAT rate of 23%. The reduced VAT rate applies for electricity consumption too.
- No CO<sub>2</sub> tax applies to biofuels in Ireland, but otherwise biofuels substituting for diesel is taxed at the same rates.
- For agriculture propellants and railways the rates for industry motors apply, whereas other agricultural machinery benefits from a 50% reduction in these rates for diesel. Horticultural production has a reduced rate for heavy fuel oil.
- For commercial diesel (ETD art 7.2) a partial refund of up to €75 per hl, depending on market price levels, is available to qualified road transport



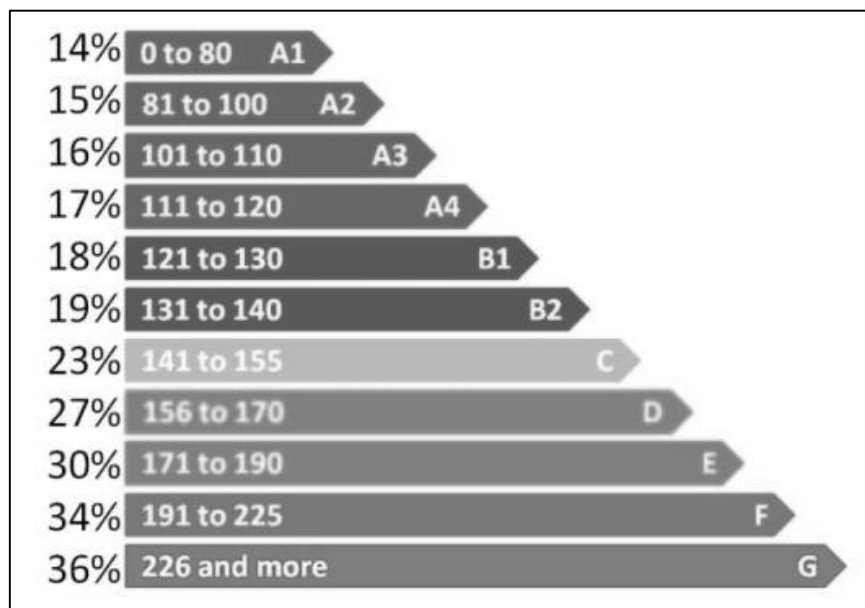
operators.<sup>370</sup> It has recently been decided to include also the CO<sub>2</sub> tax under the refund scheme, adding €53 per hl to refunds.

## 11.2 Transport Taxes (Excluding Transport Fuels)

### ➤ Registration Tax:

- For Category A vehicles the Vehicle Registration Tax (VRT) is, since 2008<sup>371</sup>, based on CO<sub>2</sub> emissions, with an ad-valorem rate between 14% and 36% of the market price (see Figure 11-1). Category A vehicles comprise passenger cars and minibuses with less than 10 to 12 seats.

Figure 11-1: VRT Taxes as a Percentage of Sales Price and Subject to CO<sub>2</sub> Emissions



- Category B vehicles comprise vans, motor caravans and light commercial vehicles (<3.5 tonnes). Passenger cars that have been modified to have less than four seats and have a technically permissible maximum laden mass weight greater than 130 per cent of the mass in service of the vehicle with body are category B. The rate applicable to category B vehicles is 13.3% of the open market selling price or a minimum of €125.
- Category C vehicles comprise commercial vehicles, buses or agricultural vehicles and the tax rate is a flat-rate unrelated to emissions at €200 per vehicle.<sup>372</sup>
- Category D vehicles exempt from VRT include ambulances, fire engines, and vehicles used in the transportation of road construction machinery.

<sup>370</sup> <http://www.revenue.ie/en/tax/excise/diesel-rebate-scheme/faqs.html>

<sup>371</sup> <http://www.economicinstruments.com/index.php/climate-change/article/34->

<sup>372</sup> <http://vrt.ie/vrtDetail.php?page=20>

- It is possible to be exempted from VRT for owners that have had their residence outside Ireland for more than 12 months and who purchased the vehicle in another state with the associated taxes. Electric vehicles are exempt from VRT in any case.

➤ **Circulation Tax:**

- Ireland's circulation tax ('Motor Tax') applies to vehicles of all categories as indicated in Table 11-2.

**Table 11-2: Motor Tax (Annual Circulation Tax) Relative to CO<sub>2</sub> Emissions.**

Vehicle Category	Gram CO <sub>2</sub> per km	Tax Rate in €
A0	0	120
A1	1-80	170
A2	81-100	180
A3	101-110	190
A4	111-120	200
B1	121-130	270
B2	131-140	280
C	141-155	390
D	156-170	570
E	171-190	750
F	191-225	1,200
G	Above 225	2,350

### 11.3 Pollution and Resource Taxes

- The landfill tax which has been in place since 1996 and is paid on top of the normal gate fees by business and local authorities is subject to VAT.
- Certain types of waste are exempt from the landfill tax including non-hazardous construction waste and excavation spoil used for landfill site engineering, street-cleaning waste, illegal waste redeemed by the authorities, pre-approved clean-up waste from citizen groups, polymer recycling residues, shredding non-metallic residues and own-use landfills in mining.<sup>373</sup>
- The plastic bag levy applies to all sales outlets, both supermarkets and retailers. It has exemptions for specific purposes (e.g. fish, meat,

---

<sup>373</sup> ETC/SCP Working paper 1/2012, Overview of the use of landfill taxes in Europe, Copenhagen, p 45-50. [http://scp.eionet.europa.eu/publications/WP2012\\_1/wp/WP2012\\_1](http://scp.eionet.europa.eu/publications/WP2012_1/wp/WP2012_1)

vegetables) for smaller size bags. Reusable bags costing more than 70 cents and shopping bags in airports are exempt too.<sup>374</sup>

## 11.4 Modelled Changes in Tax Base

The modelled change in the tax base for each of the suggested reforms to the tax system are shown in the table and figures below.

Table 11-3: Change in Energy Tax Base

Fuel Type	Units	Baseline	After Tax Increase	Change
Gas Oil	million litres	2,653	2,597	-56
Petrol	million litres	1,166	1,166	0
Kerosene	million litres	1,205	1,196	-9
LPG	thousand tonnes	61	59	-2
Heavy Fuel Oil	thousand tonnes	103	101	-2
Natural Gas	TJ (GCV)	50,505	48,240	-2,265
Coal	thousand tonnes	555	553	-2
Electricity	GWh	17,323	17,305	-18

---

<sup>374</sup> UCD Dublin, Economic instruments in environmental policy database, Plastic Bag Levy Ireland <http://www.economicinstruments.com/index.php/component/zine/article/214>

Figure 11-2: Change in Internal Passenger Flights, flights per year

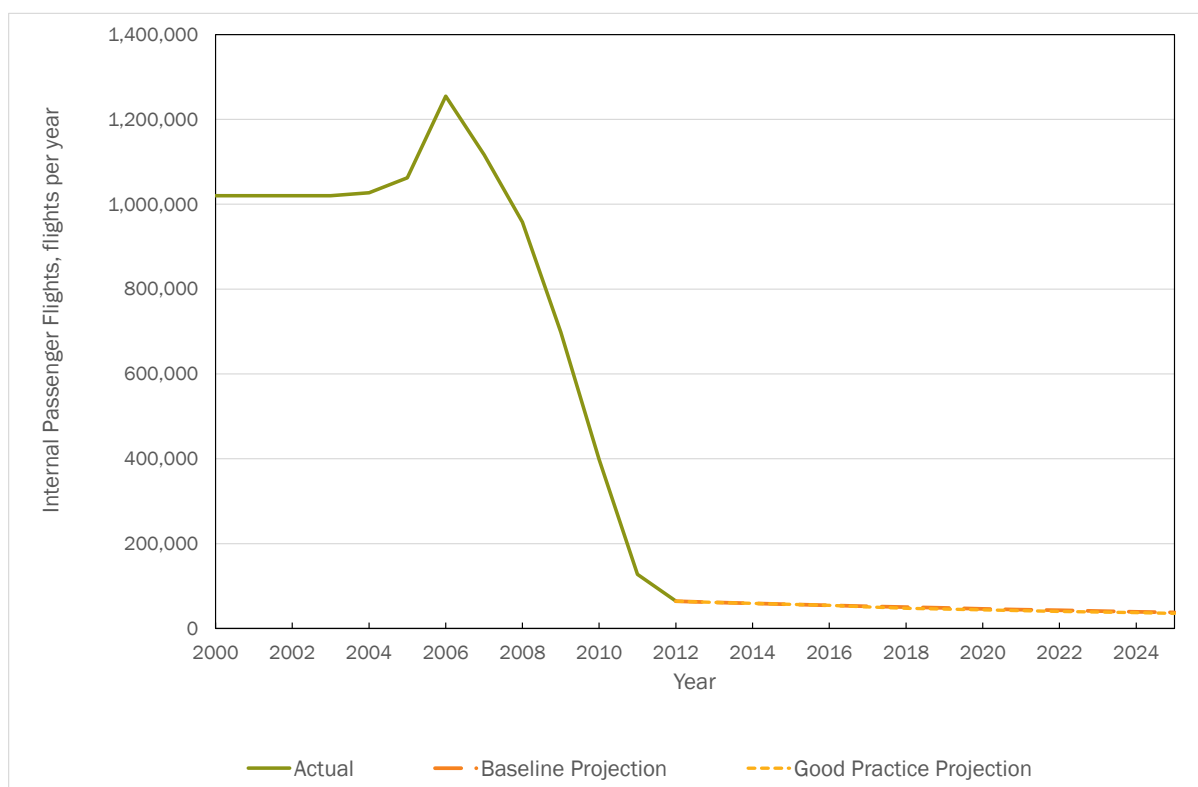


Figure 11-3: Change in Intra-EU Passenger Flights, flights per year

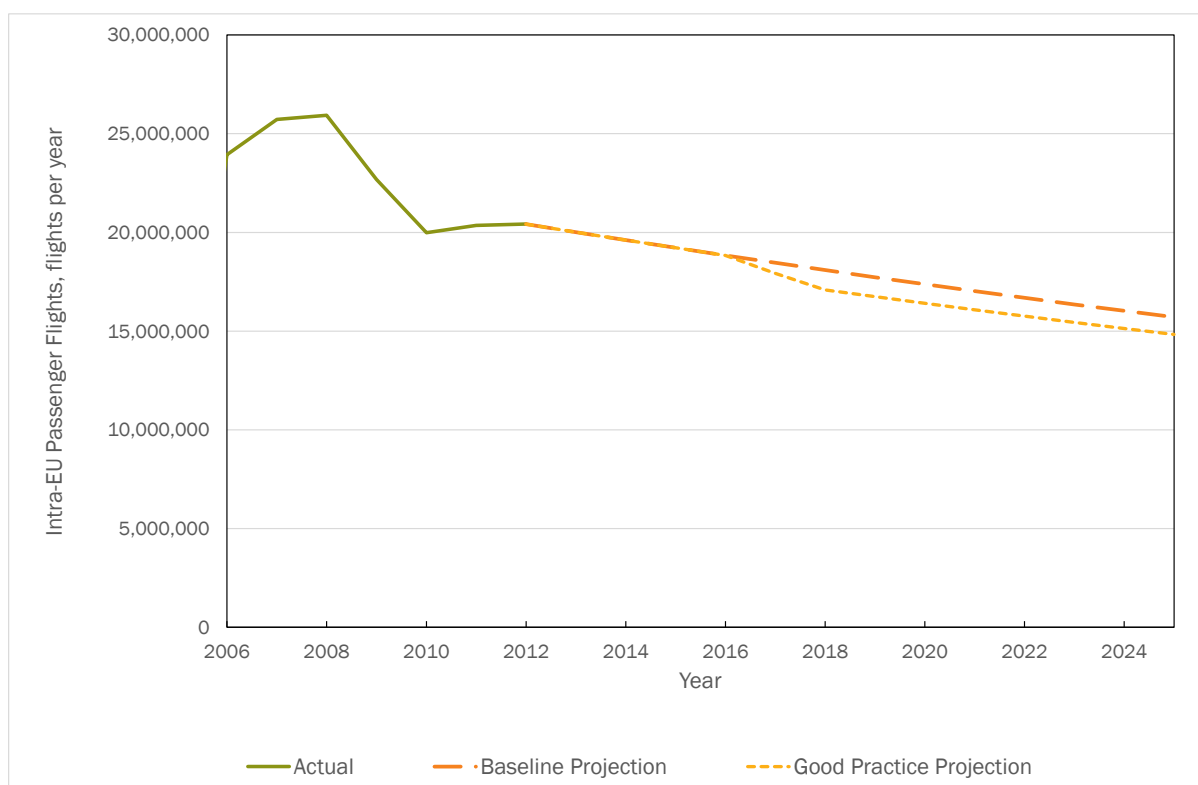


Figure 11-4: Change in Extra-EU Passenger Flights, flights per year

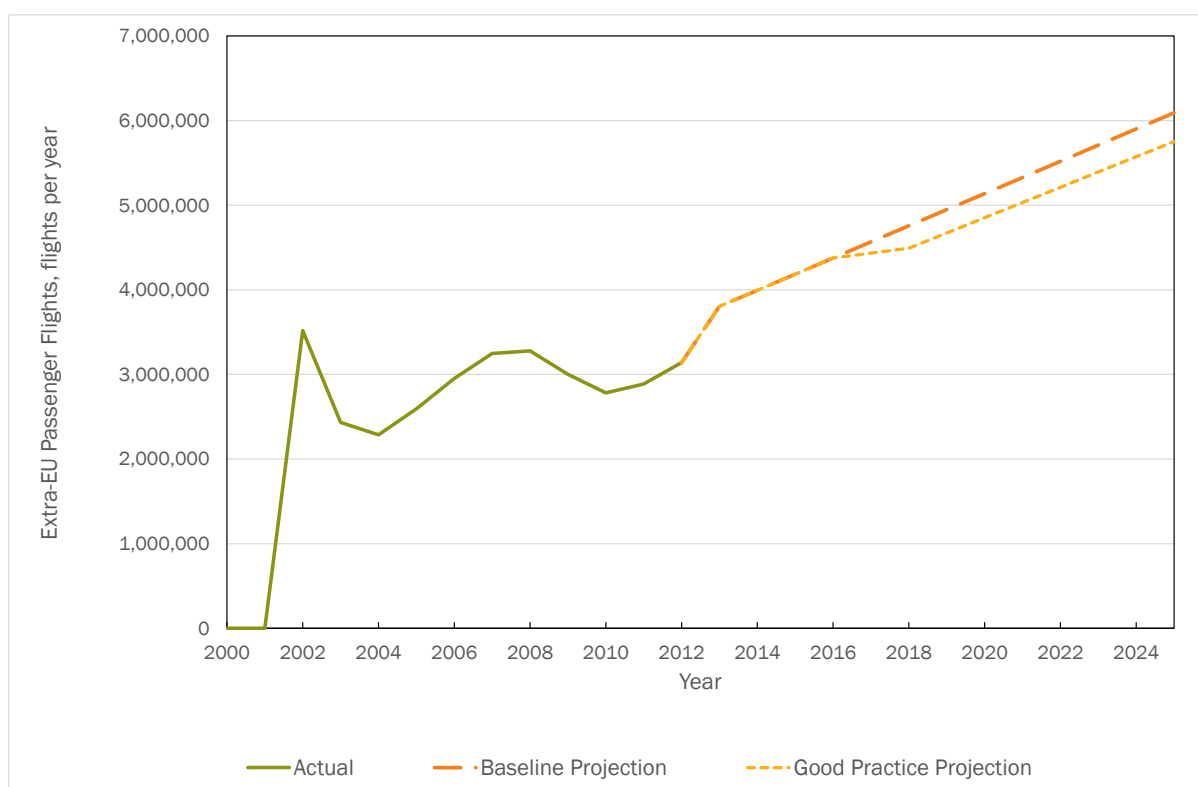


Figure 11-5: Change in Internal Air-freight, tonnes

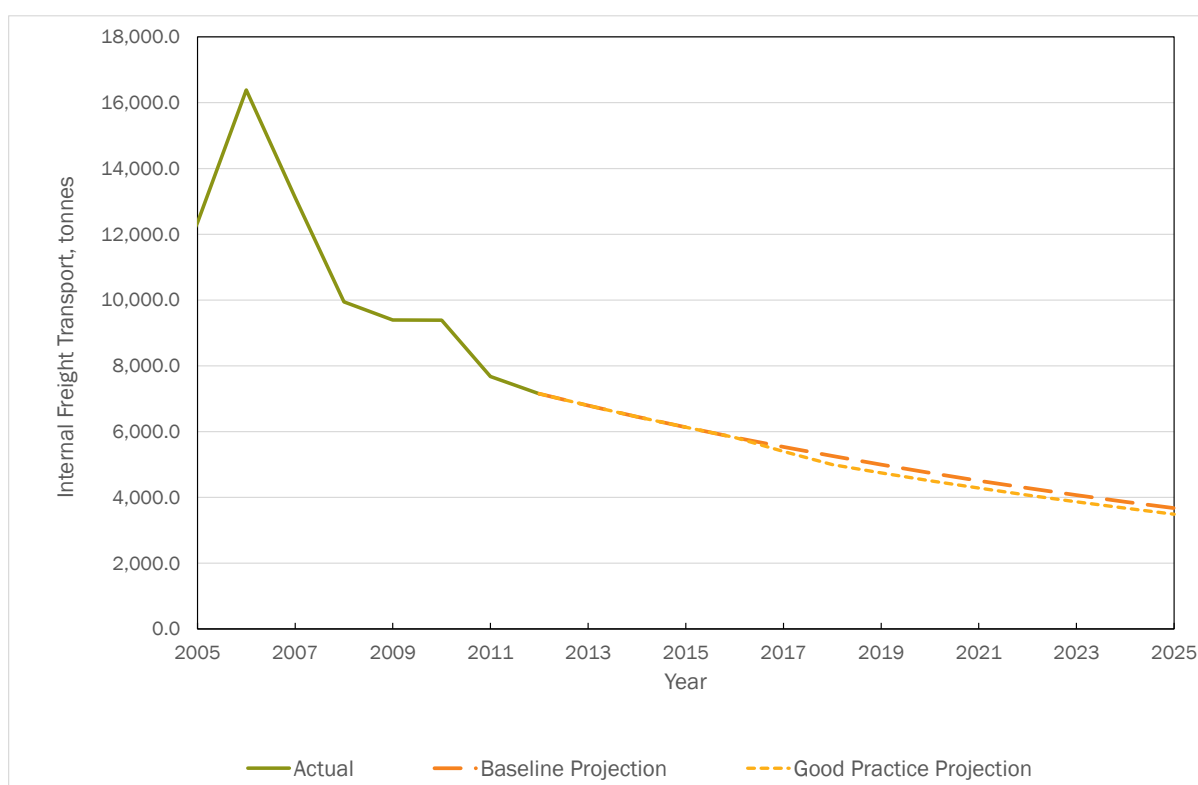


Figure 11-6: Change in Intra-EU Air-freight, tonnes

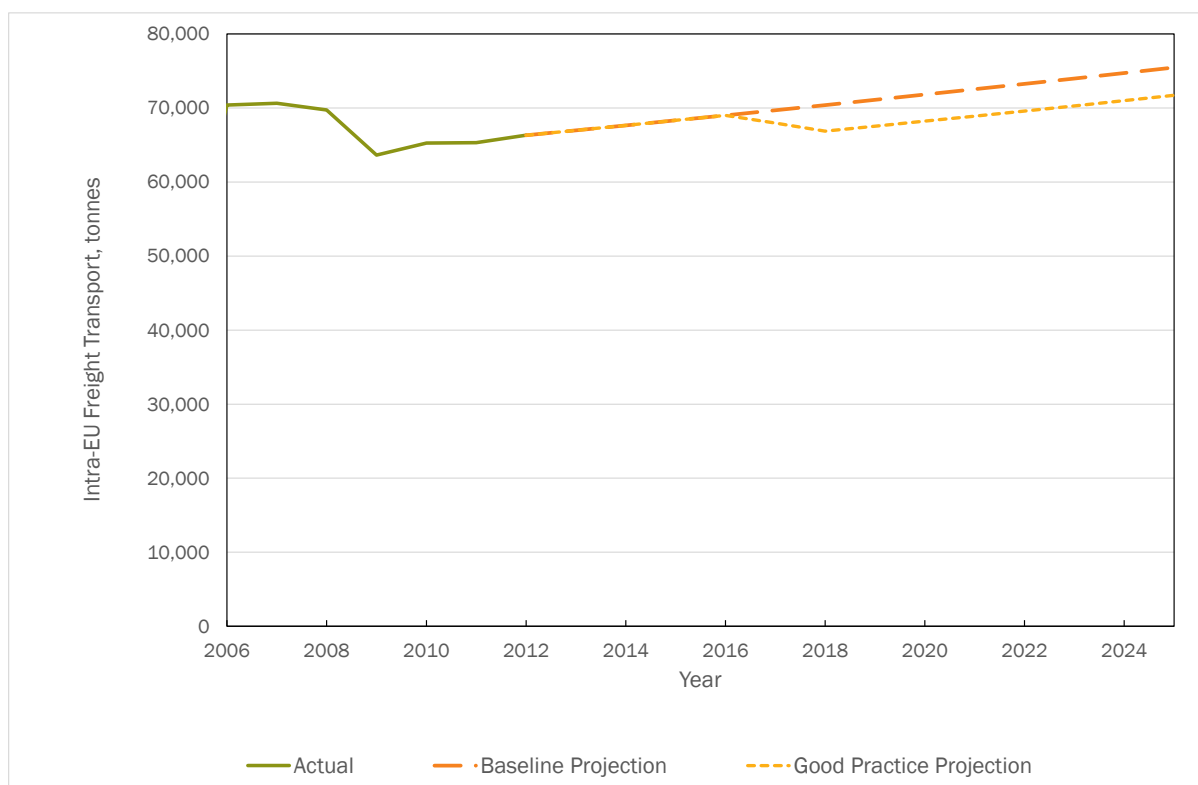


Figure 11-7: Change in Extra-EU Air-freight, tonnes

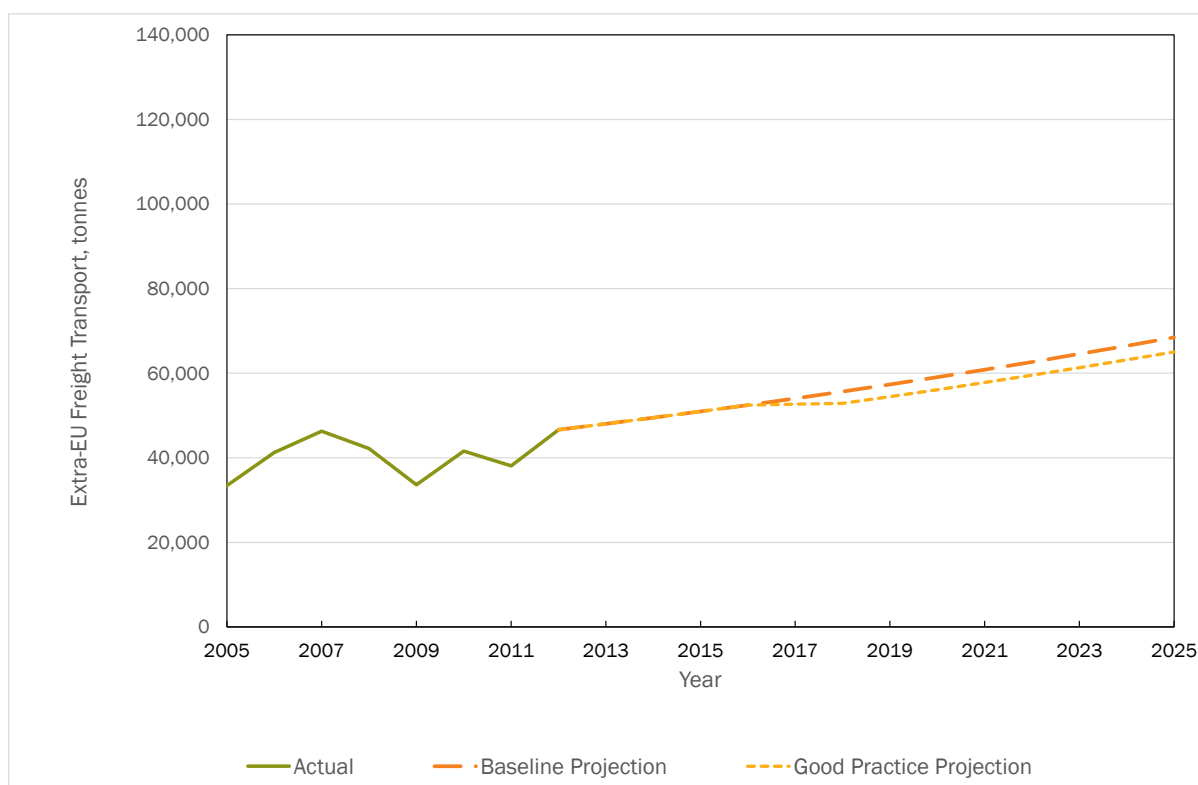


Figure 11-8: Change in Non-Hazardous Waste Landfilled, thousand tonnes

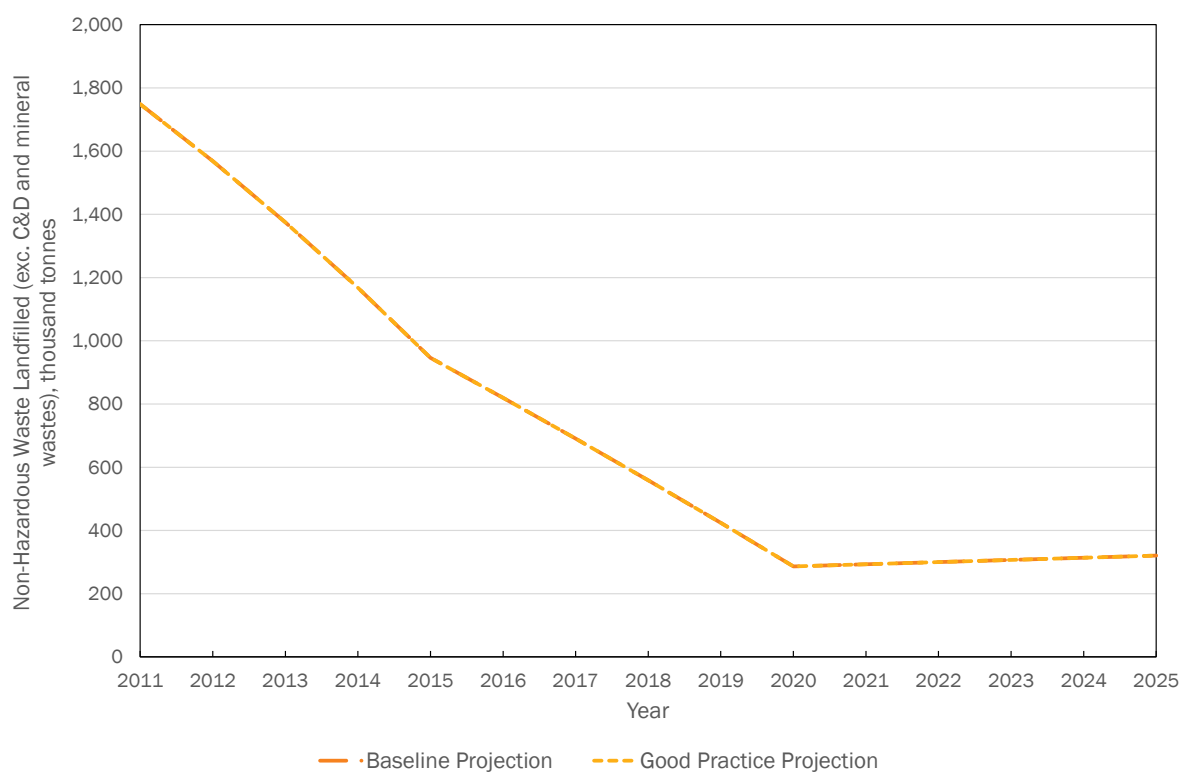


Figure 11-9: Change in MBT/ Incineration, thousand tonnes

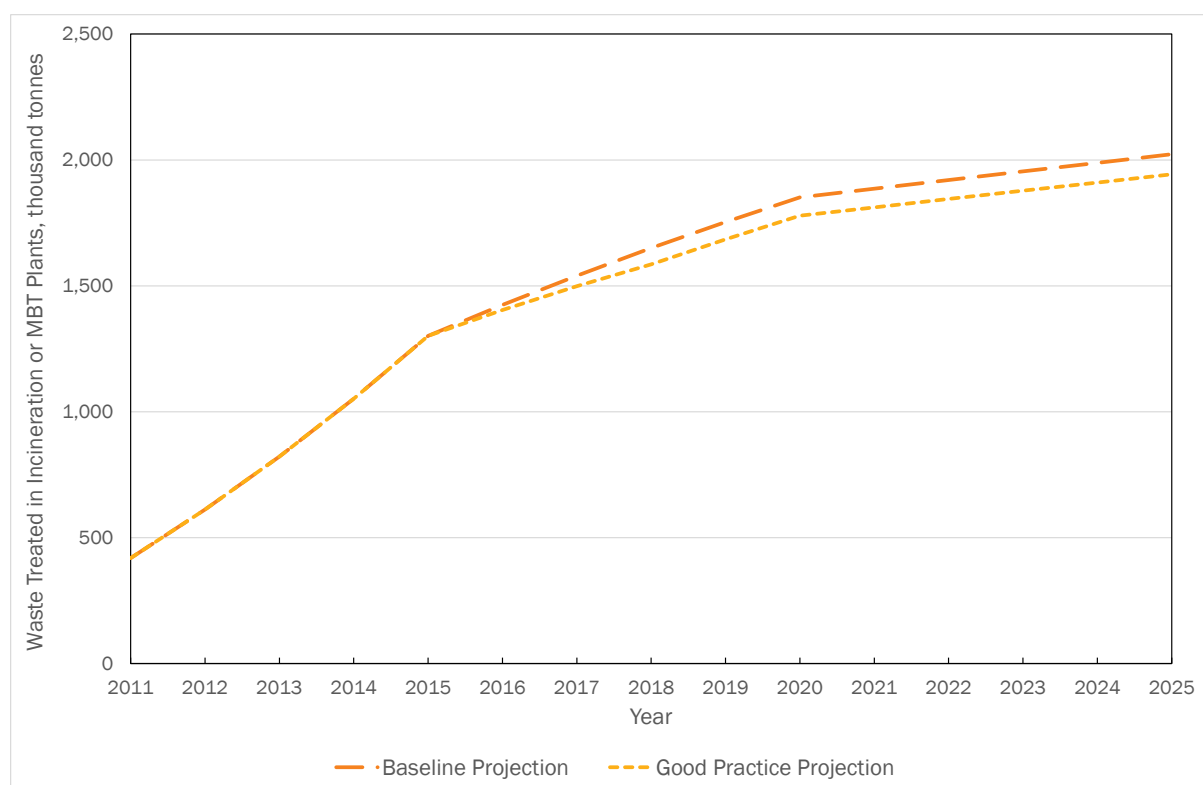


Figure 11-10: Change in SO<sub>x</sub> Emissions, tonnes



Figure 11-11: Change in NO<sub>x</sub> Emissions, tonnes





Figure 11-12: Change in PM<sub>10</sub> Emissions, tonnes

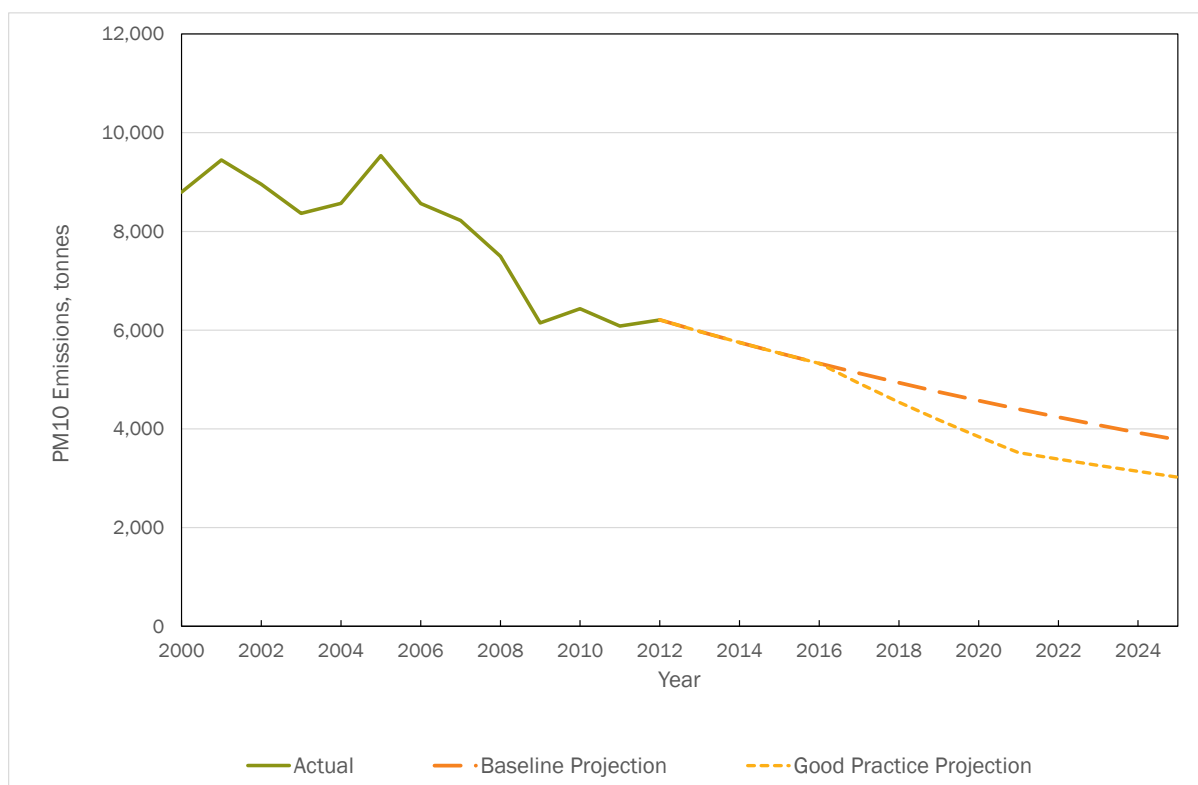


Figure 11-13: Change in Groundwater Abstraction – Public Supply, million cubic metres

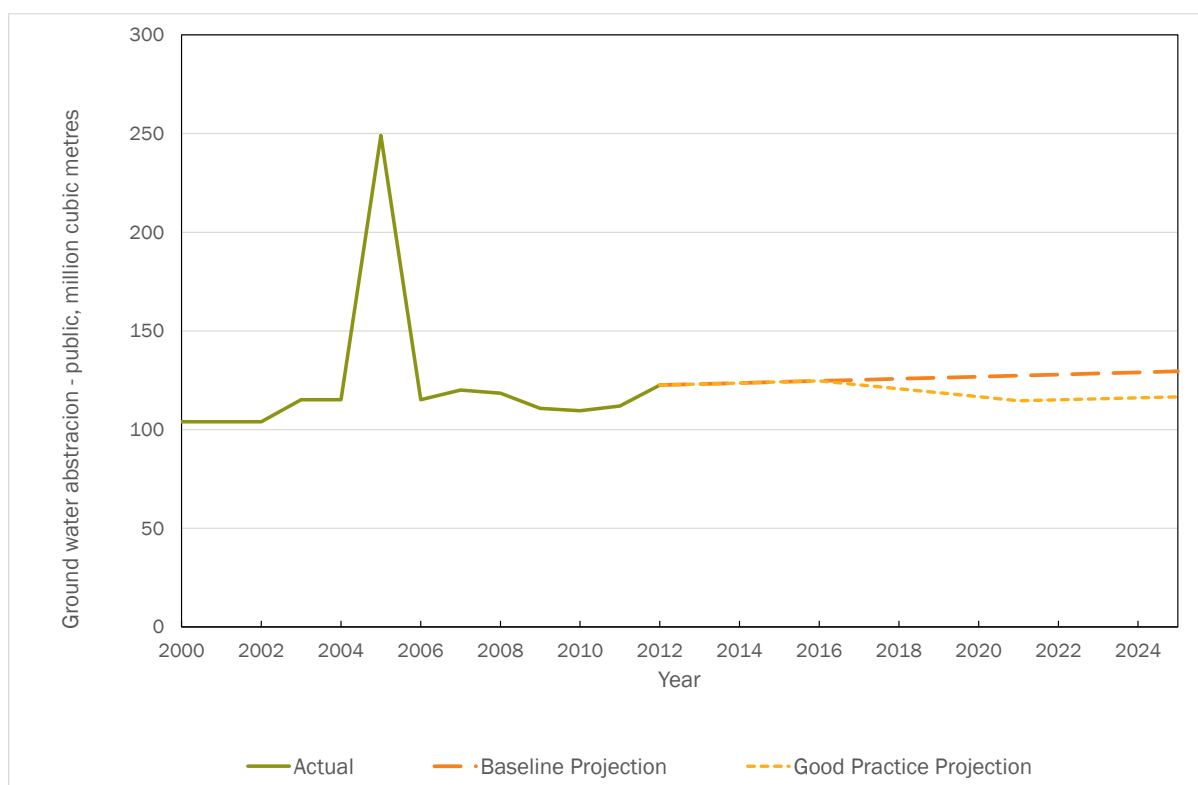


Figure 11-14: Change in Groundwater Abstraction – Manufacturing, million cubic metres

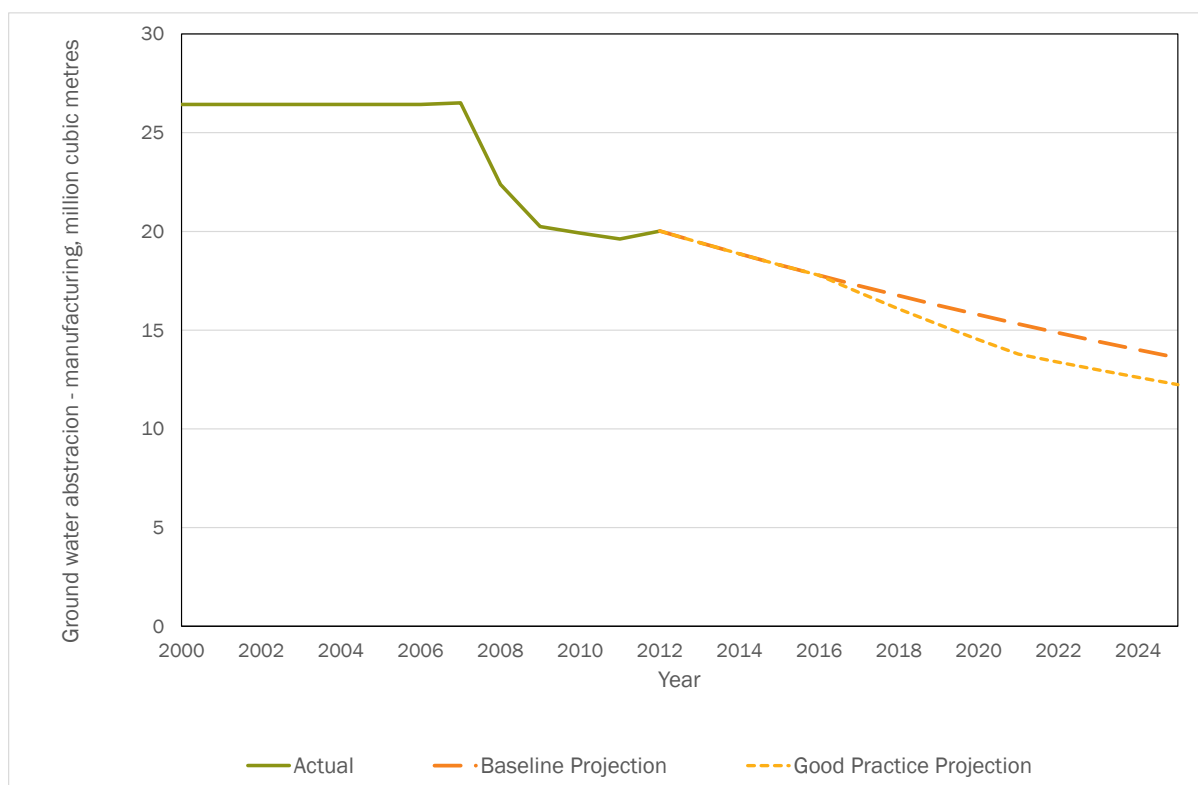


Figure 11-15: Change in Groundwater Abstraction – Agriculture, million cubic metres

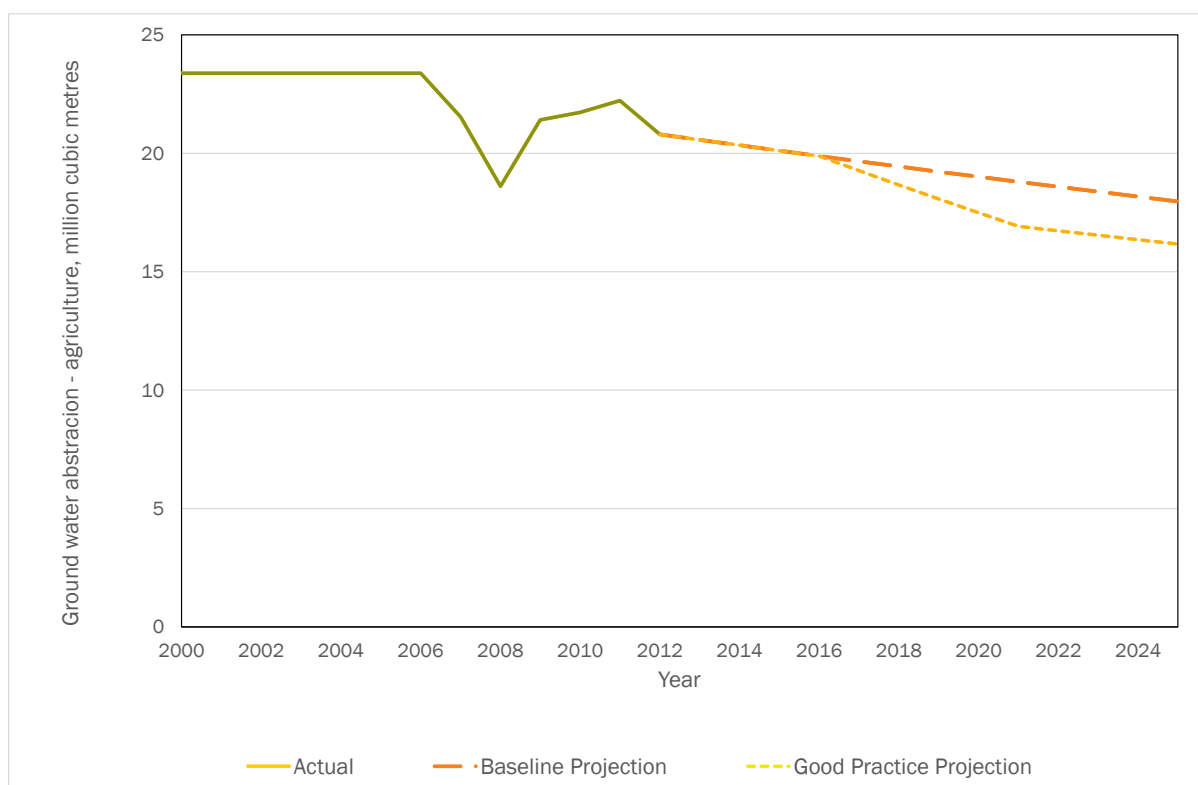


Figure 11-16: Change in Surface Water Abstraction – Public Supply, million cubic metres

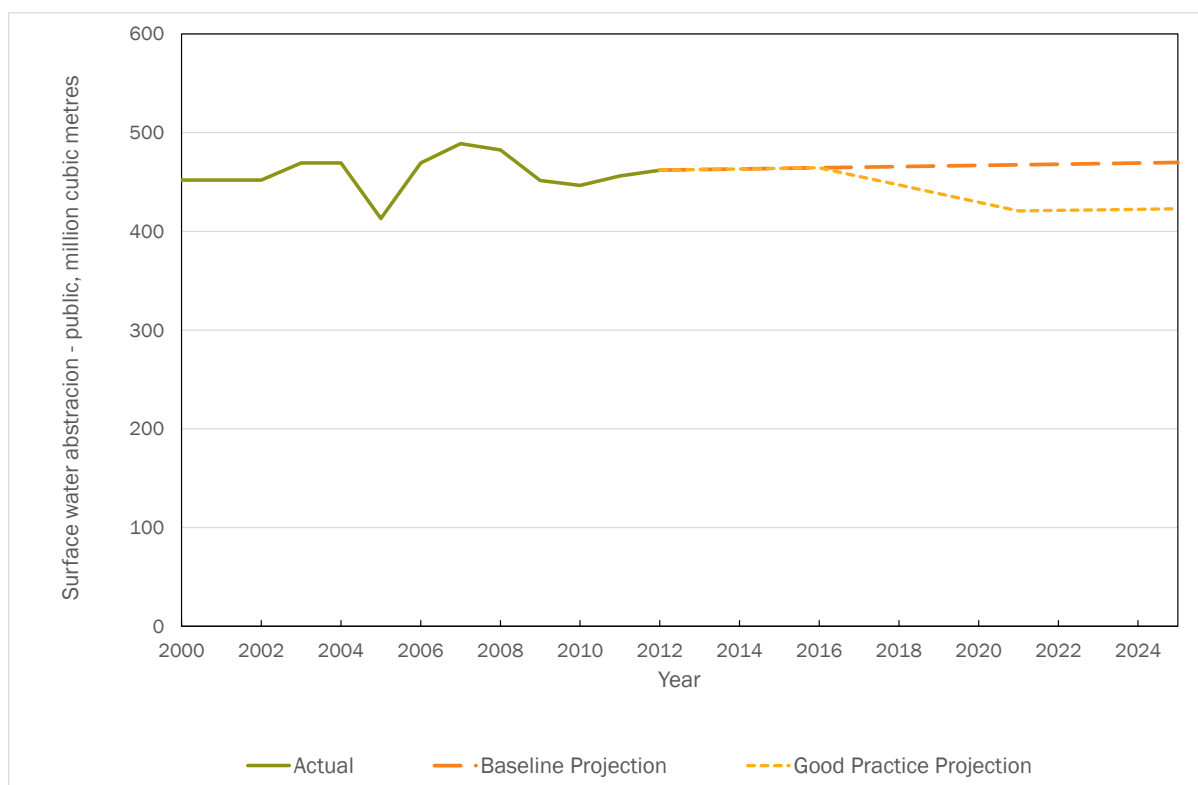


Figure 11-17: Change in Surface Water Abstraction – Manufacturing, million cubic metres

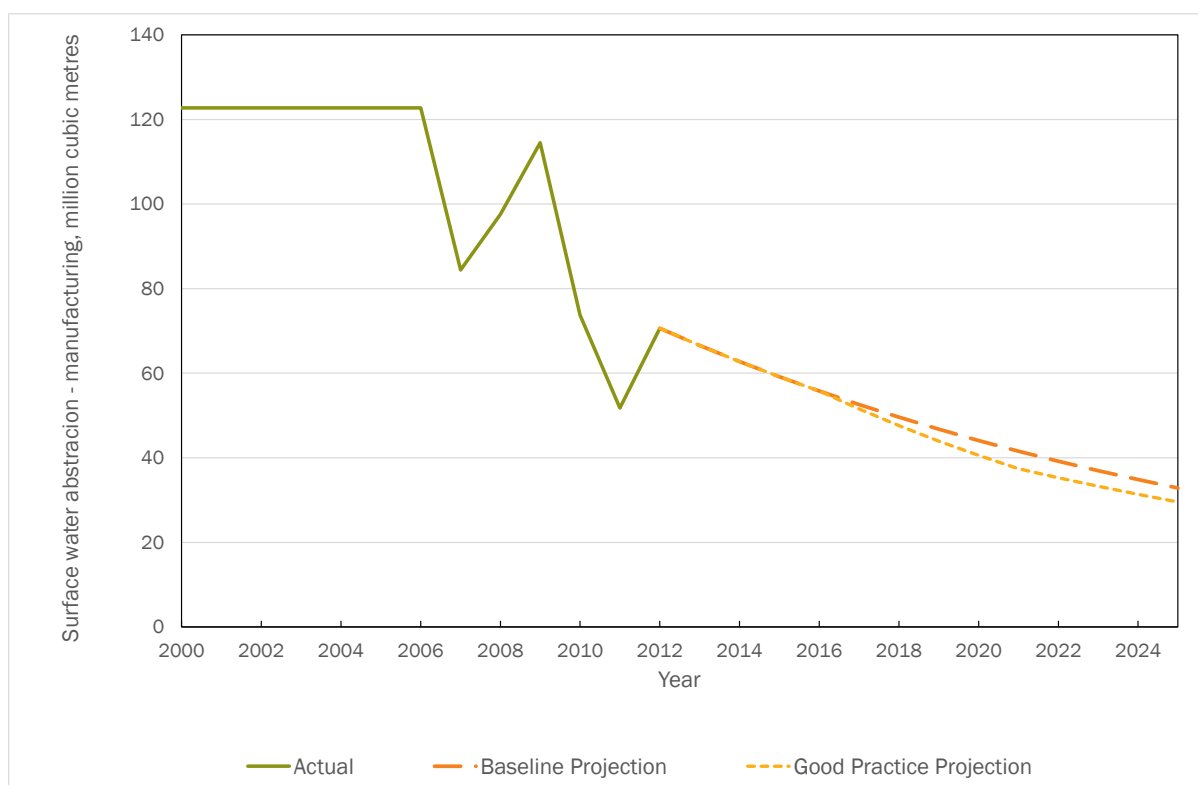


Figure 11-18: Change in Surface Water Abstraction – Agriculture, million cubic metres

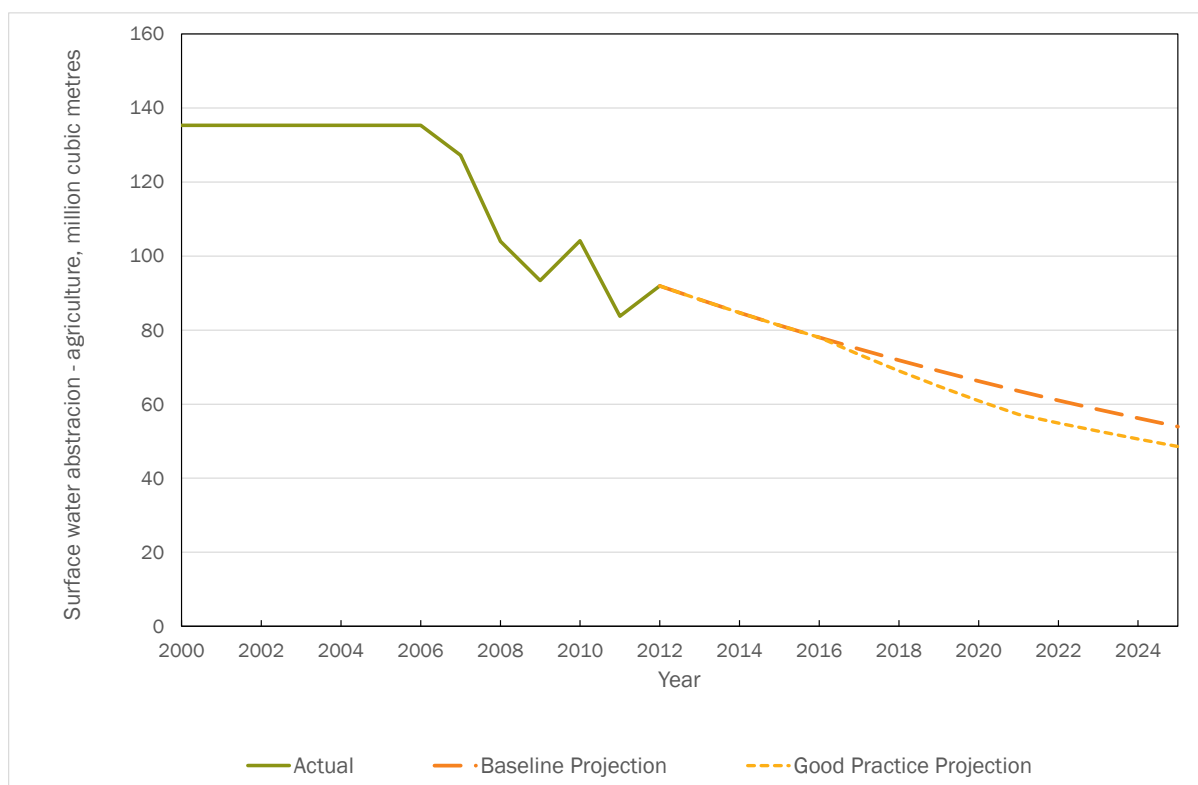


Figure 11-19: Change in Active Ingredients in Pesticides, tonnes

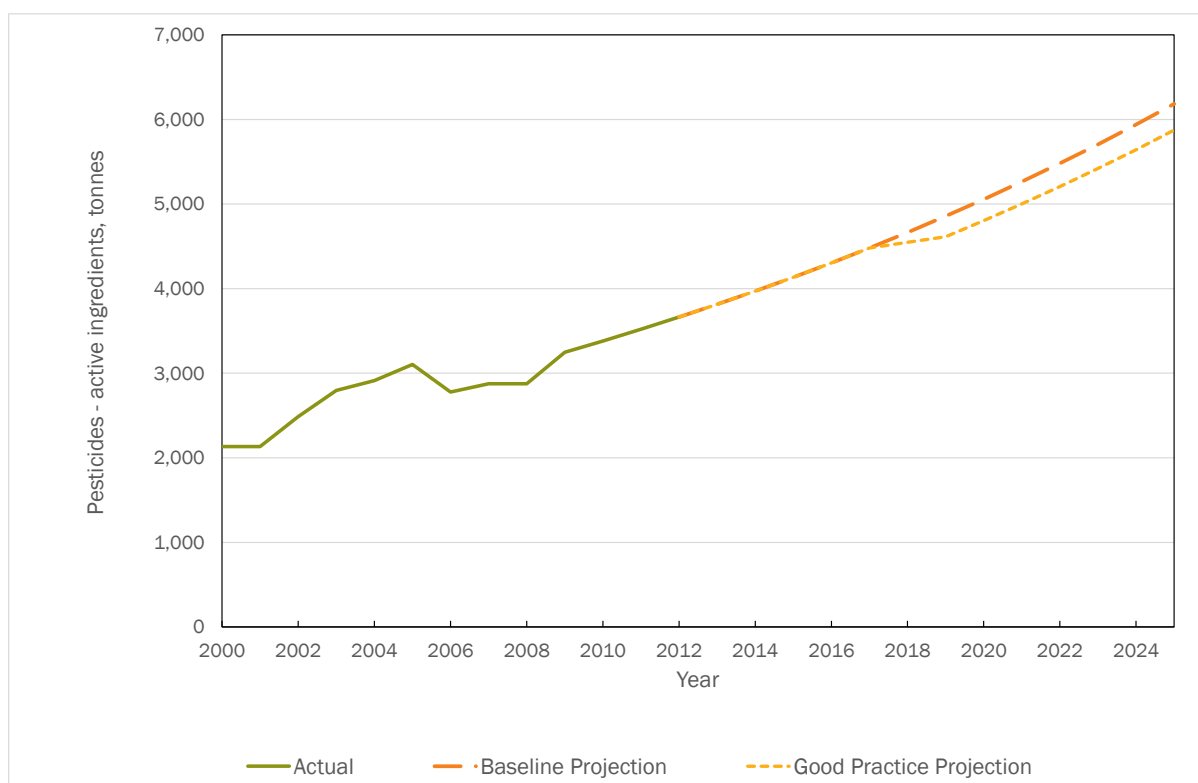


Figure 11-20: Change in Non-organic Nitrogen Sales of Fertilisers, tonnes



Figure 11-21: Change in Aggregates Extraction, thousand tonnes

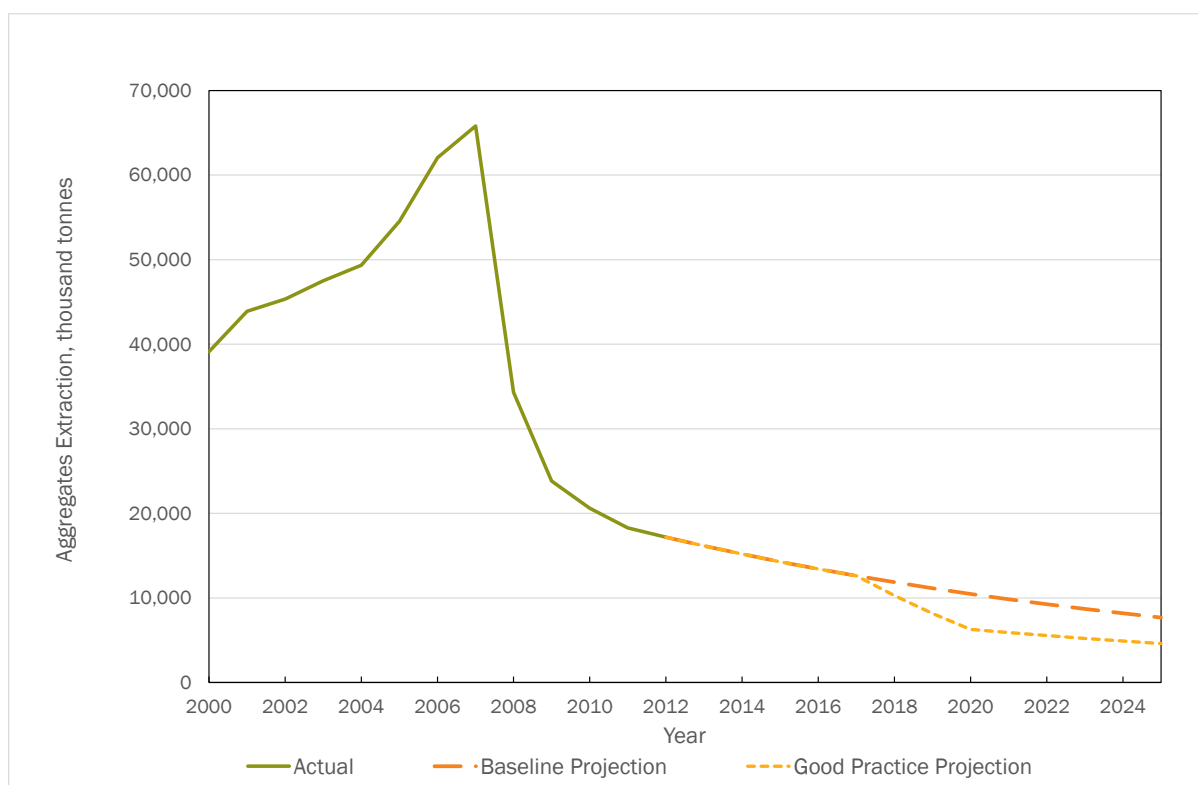


Figure 11-22: Change in Paper & Card Packaging Generation, thousand tonnes

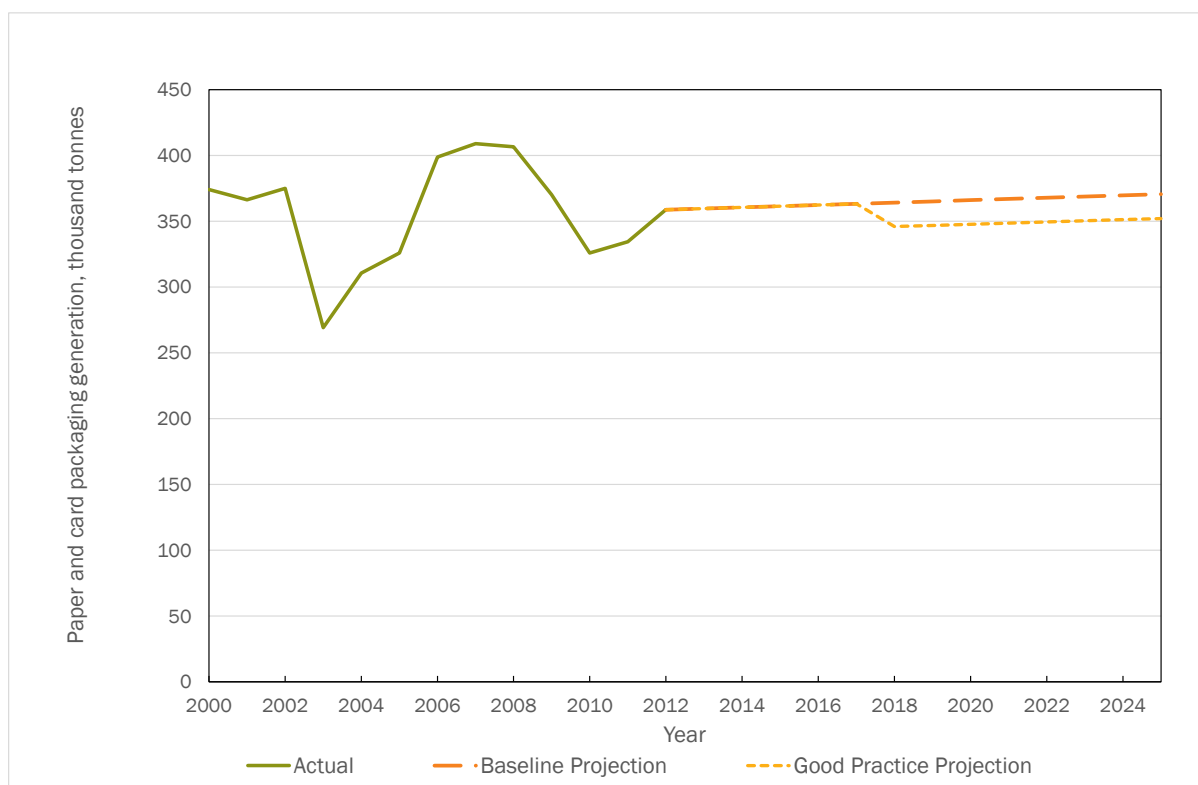


Figure 11-23: Change in Plastic Packaging Generation, thousand tonnes

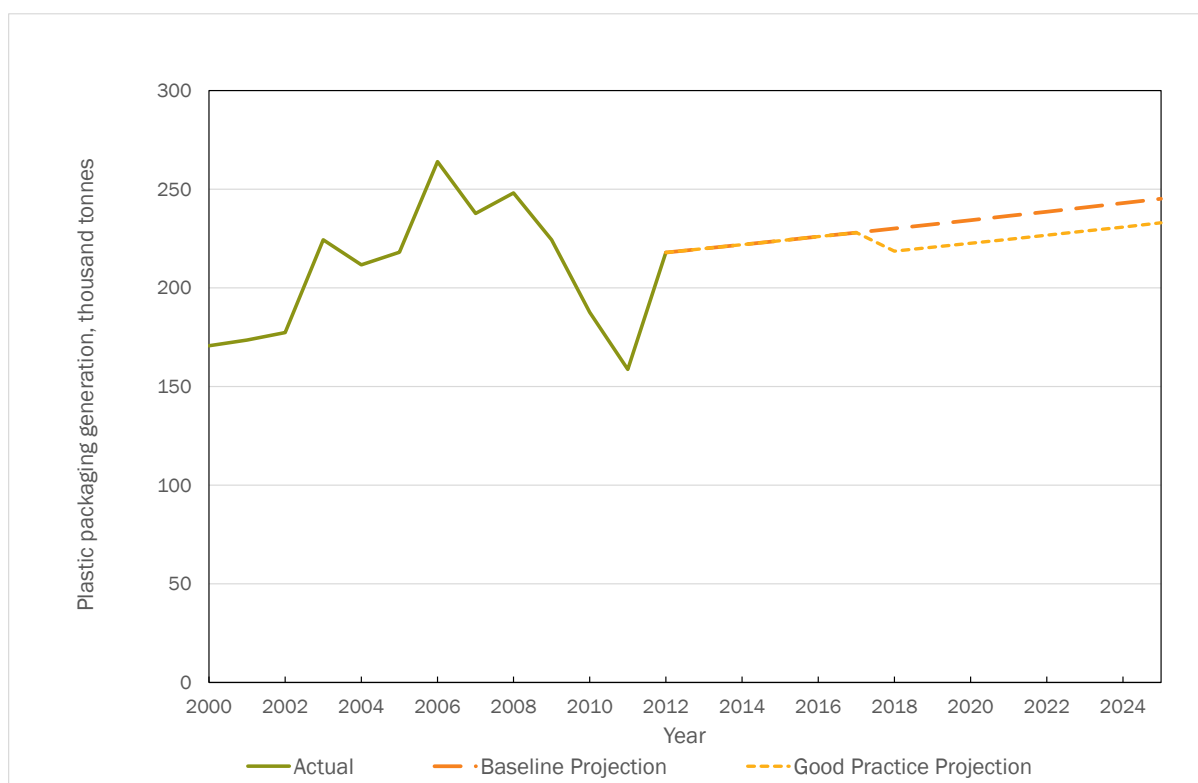


Figure 11-24: Change in Wood Packaging Generation, thousand tonnes

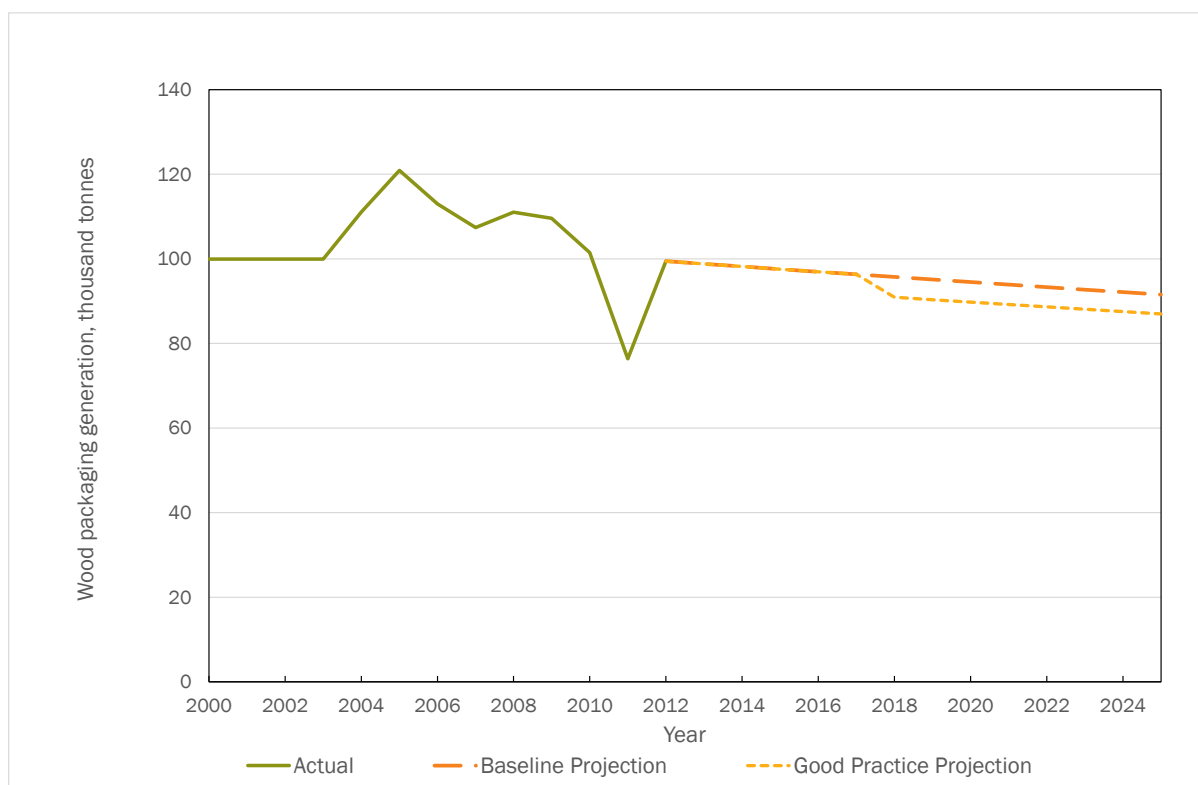


Figure 11-25: Change in Metal Packaging Generation, thousand tonnes

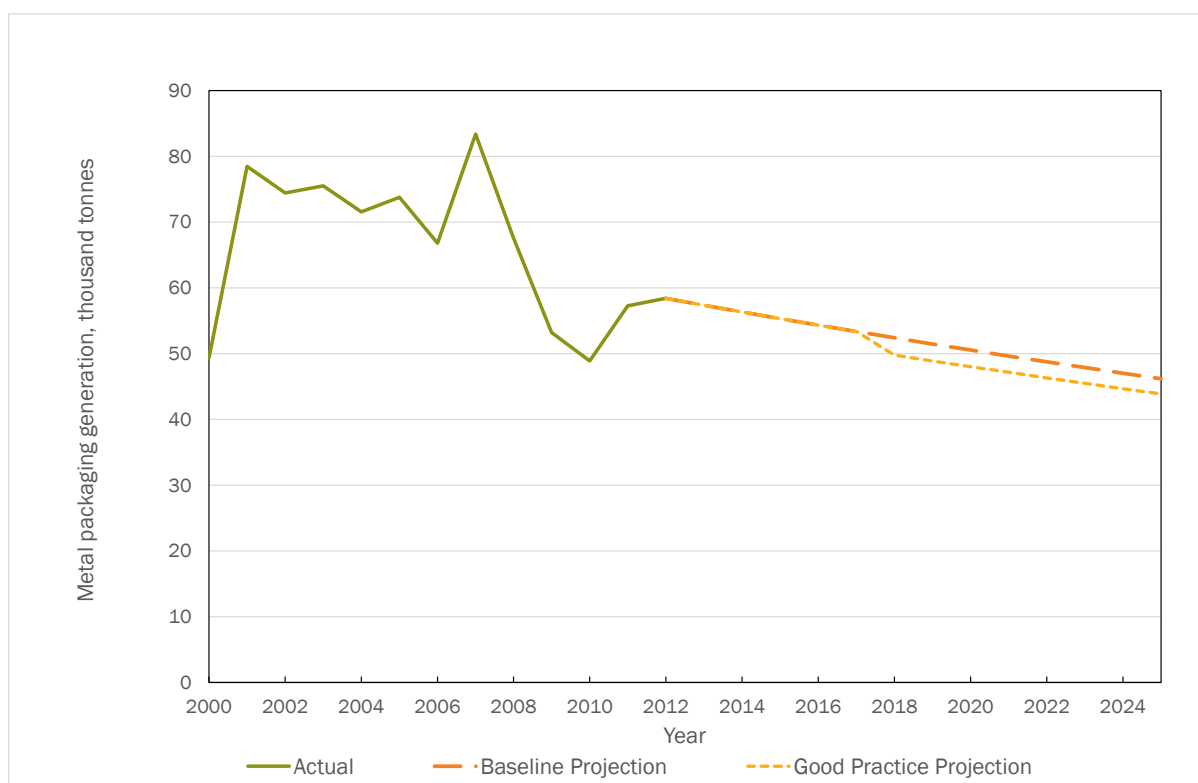


Figure 11-26: Change in Glass Packaging Generation, thousand tonnes

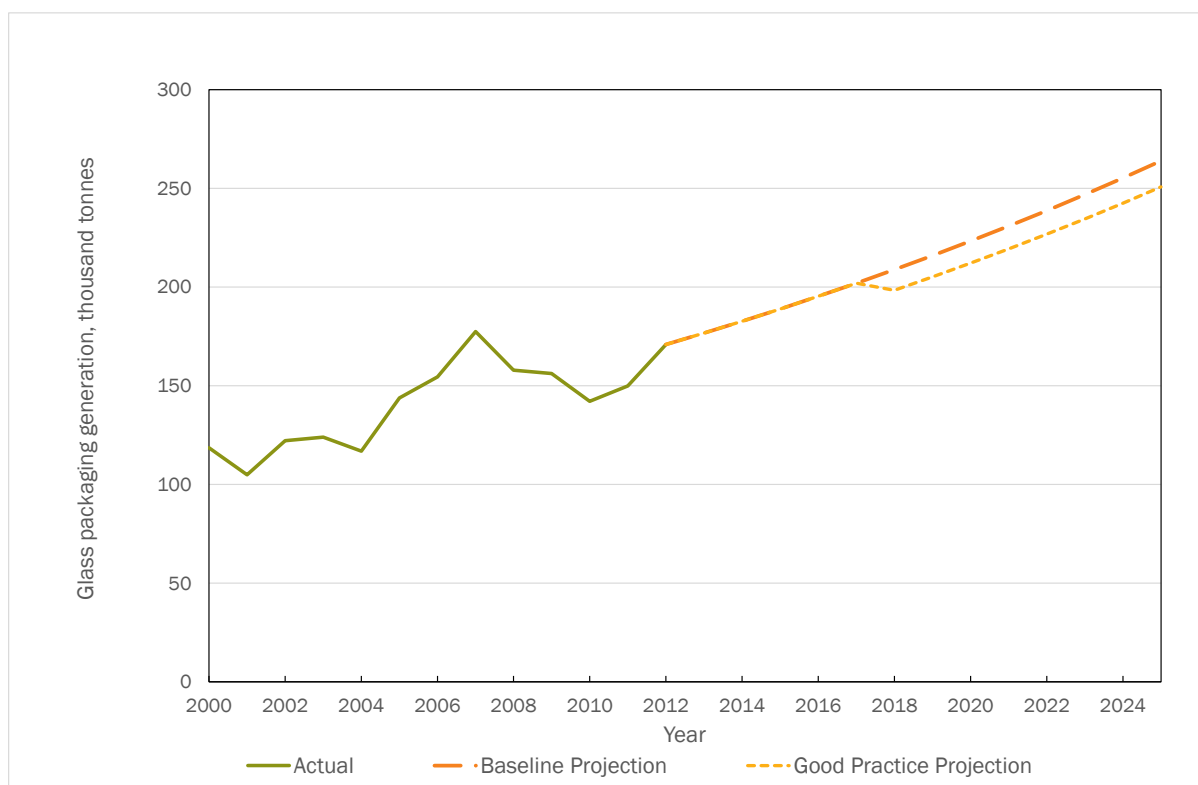
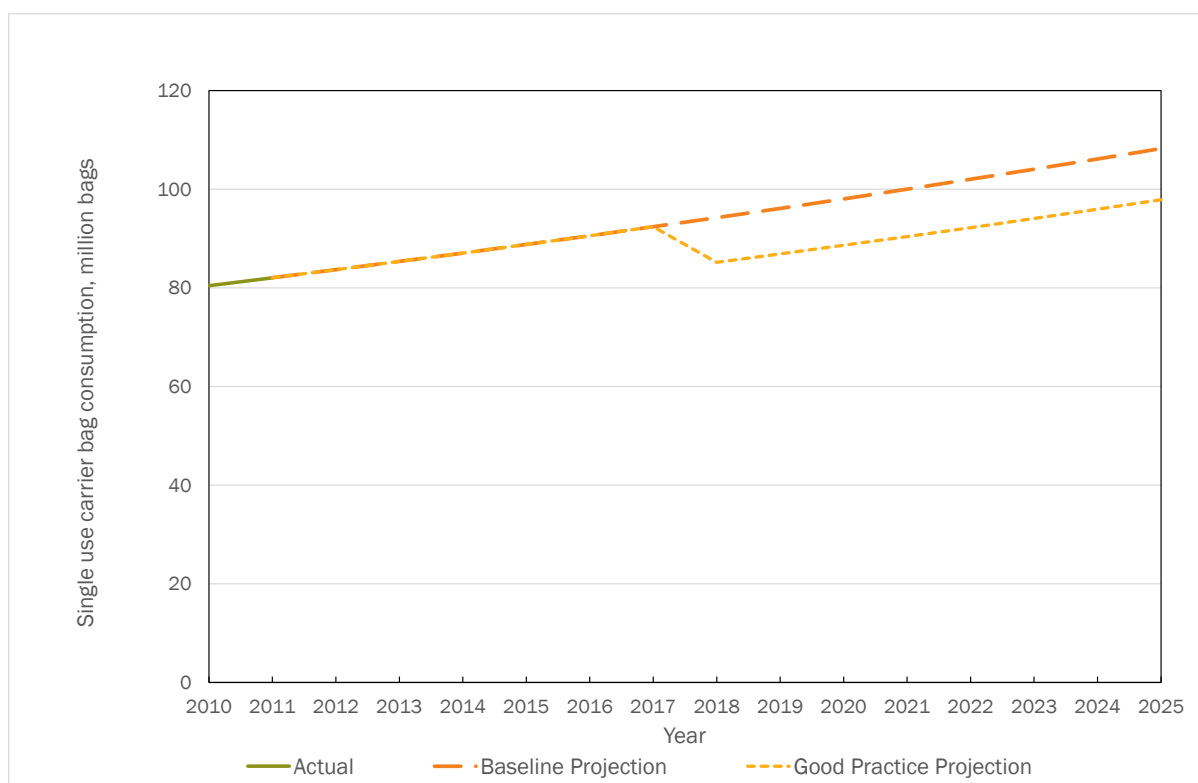


Figure 11-27: Change in Consumption of Single Use Carrier Bags, million bags





## 11.5 Full Revenue Outputs

A summary of the full revenue outputs for each of the suggested reforms to the tax system are presented in the table below.

Table 11-4: Revenue Outturns from Model, million EUR (real 2014 terms)

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Energy Taxes	Transport fuels	0	0	48	96	143	190	237	284	330	330	330
	C&I / Heating	0	0	20	39	58	77	96	115	134	134	134
	Electricity	6	6	6	6	6	6	6	6	6	6	6
	<i>Sub-total Energy, million EUR</i>	6	6	73	140	207	273	339	405	470	470	470
	<i>Sub-total Energy, % GDP</i>	0.0%	0.0%	0.0%	0.1%	0.1%	0.2%	0.2%	0.2%	0.3%	0.3%	0.3%
Transport Taxes (excluding transport fuels)	Vehicle Taxes	0	0	123	247	370	494	617	618	618	618	618
	Passenger Aviation Tax	0	0	335	653	653	654	654	655	656	658	659
	Freight Aviation Tax	0	0	0	0	0	0	0	0	0	0	0
	<i>Sub-total Transport, million EUR</i>	0	0	459	899	1,023	1,147	1,272	1,273	1,274	1,276	1,277
	<i>Sub-total Transport, % GDP</i>	0.0%	0.0%	0.3%	0.5%	0.6%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%
Pollution and Resource Taxes	Landfill Tax - Non-haz (excl. C&D)	0	0	0	0	0	0	0	0	0	0	0
	Landfill Tax - Inerts (C&D)	0	0	0	0	0	0	0	0	0	0	0
	Incineration /MBT Tax	0	7	15	24	25	27	27	28	28	29	29

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Air Pollution Tax	0	6	11	14	17	18	16	15	14	13	12
	Water Abstraction Tax	0	19	38	55	72	88	86	86	86	86	85
	Waste Water Tax	0	8	15	22	21	21	21	21	21	21	21
	Pesticides Tax	0	0	28	57	58	60	63	65	68	71	73
	Aggregates Tax	0	0	30	25	20	15	14	13	13	12	11
	Packaging Tax	0	0	31	30	30	30	30	31	31	31	31
	Single Use Bag Tax	0	0	0	0	0	0	0	0	0	0	0
	Fertiliser Tax	0	0	0	0	0	0	0	0	0	0	0
	<b>Sub-total Pollution &amp; Resource, million EUR</b>	0	40	168	227	243	260	258	259	260	262	264
	<b>Sub-total Pollution &amp; Resource, % GDP</b>	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%
Total Revenue Stream	<b>Total, million EUR</b>	<b>6</b>	<b>46</b>	<b>701</b>	<b>1,267</b>	<b>1,473</b>	<b>1,680</b>	<b>1,869</b>	<b>1,936</b>	<b>2,004</b>	<b>2,007</b>	<b>2,010</b>
	<b>Total, % GDP</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.4%</b>	<b>0.7%</b>	<b>0.8%</b>	<b>1.0%</b>	<b>1.1%</b>	<b>1.1%</b>	<b>1.1%</b>	<b>1.1%</b>	<b>1.2%</b>

## 12.0 Latvia

During the course of the study the latest data available from official sources was sought, namely the TAXUD Taxes in Europe database, energy excise duty tables and the OECD database on environmental taxes and charges. This was supplemented by national data sources where possible. Due to the number of taxes and countries involved, the central case for energy excise duties has been the rates published by TAXUD giving the position as of 1st July 2014. Planned future increases may not be fully captured in this analysis and therefore, the projected increase in revenues would effectively incorporate any revenue from increased rates in early 2015 or shortly thereafter.

### 12.1 Energy Taxes

There are two types of energy taxes in Latvia: excise duties, as applied to energy products, natural gas and coal, and a new tax (the 'subsidised electricity tax'), aimed at generating revenue to reduce the impact of higher energy costs on low income consumers, and applied since 1<sup>st</sup> January 2014.

The following excise duties are applied to energy products in Latvia:<sup>375</sup>

- Petrol:
  - Leaded petrol:
    - Rate (2014): €455.32 per 1,000 litres of fuel.
    - Note that leaded petrol is no longer sold in Latvia.
  - Unleaded petrol:
    - Rate (2014): €411.21 per 1,000 litres of fuel.
    - Unleaded petrol with 70% - 85% bio-ethanol content is taxed at a reduced rate: €123.36 per 1,000 litres of fuel.
- Gas oil (diesel):
  - Gas oil used as a propellant:
    - Rate (2014): €332.95 per 1,000 litres of fuel.
    - If the fuel contains at least 30% biofuel of rape seed origin by volume, the rate is €233.35 per 1,000 litres of fuel.
    - Fuels that are 100% biofuels are exempt from excise duties.
  - Gas oil used for industrial or commercial use and both business and non-business heating:
    - Rate (2014): €56.91 per 1,000 litres of fuel.

---

<sup>375</sup> European Commission - Taxation and Customs Union (2014) *Excise Duty Tables: Part II - Energy Products and Electricity*, July 2014, [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/excise\\_duties/energy\\_products/rates/excise\\_duties-part\\_ii\\_energy\\_products\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/excise_duties/energy_products/rates/excise_duties-part_ii_energy_products_en.pdf)

- Fuels that contain at least 5% biofuel of rape seed origin are taxed less: €21.34 per 1,000 litres of fuel.
  - Gas oil used for certain agricultural purposes is exempt from excise duties.<sup>376</sup>
- Kerosene:
- The tax rates for kerosene are identical to those for gas oil, although only one rate is applied to kerosene used as a propellant.
  - Kerosene used as a propellant:
    - Rate (2014): €332.95 per 1,000 litres of fuel.
  - Kerosene used for industrial or commercial use and both business and non-business heating:
    - Rate (2014): €56.91 per 1,000 litres of fuel.
    - Fuels that contain at least 5% biofuel of rape seed origin are taxed less: €21.34 per 1,000 litres of fuel.
- Heavy fuel oil:
- Heating, both business and non-business use:
    - Rate (2014): €15.65 per 1,000 kg of fuel.
- Liquefied Petroleum Gas (LPG):
- Propellant and industrial or commercial use:
    - Rate (2014): €161.00 per 1,000 kg of fuel.
  - LPG for heating use (business and non-business) is not taxed.
- Natural gas:
- Used as a propellant:
    - Rate (2014): €2.67 per GJ of fuel.<sup>377</sup>
  - All other uses (industrial or commercial and heating, both business and non-business):
    - Rate (2014): €0.46 per GJ of fuel.<sup>378</sup>
    - Natural gas used to heat covered agricultural land or industrial poultry houses is exempt from excise duties while natural gas used in industrial process is charged at €0.15 per GJ of fuel.<sup>379,380</sup>

---

<sup>376</sup> European Commission (2014) *Taxes in Europe Database*, Accessed 3 September 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)

<sup>377</sup> The official rate (government) is €99.60 per 1000 m<sup>3</sup>

<sup>378</sup> The official rate (government) is €17.07 per 1000 m<sup>3</sup>

<sup>379</sup> European Commission (2014) *Taxes in Europe Database*, Accessed 3 September 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)

- Coal and Coke:
  - Heating (business and non-business use):
    - Rate (2014): €0.30 per GJ of fuel.
- Electricity:
  - Business and non-business use:
    - Rate (2014): €1.01 per MWh.
- Any fuel used for the following purposes is exempt from excise duties:
  - Aircraft, except those used for private recreation and entertainment;
  - Ships, except those used for private recreation and entertainment;
  - Generation of energy or in CHP plants; and
  - Chemical treatment processes.
- Revenue in 2012 (the latest year for which figures are available): LVL 281 million (€403 million, equivalent to 1.81% of GDP) <sup>381</sup>

#### Subsidised Electricity Tax:<sup>382 383</sup>

- This tax is charged on the income obtained by electricity companies from subsidised electricity generation (from renewable energy or through combined heat and power [CHP] units):
- Income from this tax is due to be used for a new Electricity Customer Support Fund, which is intended to mitigate rising electricity costs caused by the renewable energy 'Compulsory Procurement Component' which has been added to electricity bills since 2013.
- Rates are charged based on the fuel used in the production of electricity:
  - Fossil fuels used in CHP units: 15% of income;
  - Renewable energy sources: 10% of income; and
  - Fossil fuelled Combined Heat and Power with capacity (up to 4MW) and renewable energy fuelled Combined Heat and Power (all scales), where heat is delivered to district heating networks: 5% of income.
- This tax is time-limited and applies to income earned in 2014-2017.

<sup>380</sup> The official rate (government) is €5.65 per 1000 m<sup>3</sup>

<sup>381</sup> Eurostat (2014) *Revenue Data by Individual Tax (National Tax List)*, accessed 4 August 2014, [http://ec.europa.eu/taxation\\_customs/taxation/gen\\_info/economic\\_analysis/tax\\_structures/article\\_5985\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/gen_info/economic_analysis/tax_structures/article_5985_en.htm)

<sup>382</sup> European Commission (2014) *Taxes in Europe Database*, Accessed 3 September 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)

<sup>383</sup> Ecologic Institute, and eclareon (2014) *Assessment of Climate Change Policies in the Context of the European Semester - Country Report: Latvia*, Report for European Commission - DG Clima, January 2014, [http://ec.europa.eu/clima/policies/g-gas/progress/docs/lv\\_2014\\_en.pdf](http://ec.europa.eu/clima/policies/g-gas/progress/docs/lv_2014_en.pdf), pp. 13-14

Revenue: Unknown as the tax has only been collected since 1 January 2014.

## 12.2 Transport Taxes (Excluding Transport Fuels)

There are three types of transport taxes imposed in Latvia: one registration tax for cars and motorcycles, and two circulation taxes, of which one is for all vehicles and one is specifically for company cars. There are no aviation taxes or charges currently collected in Latvia. Each of these taxes is described below.

- Car Registration Tax ('Car and Motorcycle Tax'):<sup>384</sup>
  - This is a registration tax, known until 2004 as an excise duty on vehicles, which is paid for all vehicles prior to being registered in Latvia.
  - Exemptions apply to several types of vehicles:
    - Vehicles exempt from custom duties (under EU Regulation 918/83).
    - Vehicles more than 25 years old.
    - Electric vehicles.
    - Vehicles for certain uses, such as ambulances, caravans and hearses.
    - Vehicles adapted for people with certain disabilities.
    - Sports cars and motorcycles.
  - As of 1 January 2010, for vehicles first registered in Latvia or abroad prior to 1 January 2009, rates are determined based on the age and/or the engine size of the vehicle. Vehicles registered after 1 January 2009 are charged according to their CO<sub>2</sub> emissions.
  - Rates for passenger cars are outlined in Table 12-1. Motorcycles registered prior to 1 January 2009 pay 25% of the rate for passenger cars. Motorcycles registered after 1 January 2009 are charged according to their engine size (€0.14 per cc).
  - Revenue in 2012 (the latest year for which figures are available): LVL 6.26 million (€8.98 million, equivalent to 0.04% of GDP)<sup>385</sup>
- Motor Vehicles Tax ('Vehicle Use/Operating Tax'):<sup>386</sup>
  - This is a circulation tax (paid annually) on all vehicles, except tractors, trailers or semi-trailers with a GVW of less than 3.5 tonnes, trams, trolleybuses, off-road vehicles, snowmobiles and mopeds.

---

<sup>384</sup> European Commission (2014) *Taxes in Europe Database*, Accessed 3 September 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)

<sup>385</sup> Eurostat (2014) *Revenue Data by Individual Tax (National Tax List)*, accessed 4 August 2014, [http://ec.europa.eu/taxation\\_customs/taxation/gen\\_info/economic\\_analysis/tax\\_structures/article\\_5985\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/gen_info/economic_analysis/tax_structures/article_5985_en.htm)

<sup>386</sup> European Commission (2014) *Taxes in Europe Database*, Accessed 3 September 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)

- Exemptions apply for emergency vehicles, diplomatic or consular vehicles, and vehicles used by people with disabilities.
  - Deductions apply for farmers (one lorry and trailer receive a 50% deduction) and people with three or more children (80% deduction on one vehicle).
  - Motorcycles, motorised tricycles and quad bikes registered after 1 January 2005 are charged according to their engine capacity:<sup>387</sup>
    - 500 cc or below: €17.07 per annum.
    - 501 – 1,000 cc: €34.15 per annum.
    - 1,001 – 1,500 cc: €51.22 per annum.
    - 1,501 cc and above; €68.30 per annum.
  - Motorcycles, motorised tricycles and quad bikes registered prior to 1 January 2005 are charged a flat-rate of €35.57 per annum.<sup>388</sup>
  - All passenger cars are taxed according to their gross vehicle weight (GVW). Additionally those registered after 1 January 2005 are also taxed according to engine capacity and engine power, with larger vehicles charged a higher rate. Buses and lorries are taxed on their weight only. These rates are outlined in
    - Table 12-2.
  - Revenue in 2012 (the latest year for which figures are available): LVL 47.7 million (€68.4 million, equivalent to 0.31% of GDP)<sup>389</sup>
- Company Car Tax:<sup>390</sup>
- This is a circulation tax (paid monthly), which is charged on vehicles which are used both as company and personal vehicles and which have 9 seats or fewer.
  - The tax has been collected since 1 January 2011.
  - The rate is based on the engine size and the car registration date.
  - Vehicles registered before 1 January 2005:
    - Rate: €42.69 per month.
  - Vehicles registered after 1 January 2005:

---

<sup>387</sup> *Vehicle Operating Tax*, accessed 5 September 2014, [http://www.fm.gov.lv/en/s/taxes/vehicle\\_operating\\_tax/43722-vehicle-operating-tax](http://www.fm.gov.lv/en/s/taxes/vehicle_operating_tax/43722-vehicle-operating-tax)

<sup>388</sup> Ibid.

<sup>389</sup> Eurostat (2014) *Revenue Data by Individual Tax (National Tax List)*, accessed 4 August 2014, [http://ec.europa.eu/taxation\\_customs/taxation/gen\\_info/economic\\_analysis/tax\\_structures/article\\_5985\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/gen_info/economic_analysis/tax_structures/article_5985_en.htm)

<sup>390</sup> European Commission (2014) *Taxes in Europe Database*, Accessed 3 September 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)



- Engine capacity up to 2,000 cc: €27.03 per month.
- Engine capacity from 2,001 to 2,500 cc: €42.69 per month.
- Engine capacity above 2,500 cc: €56.91 per month.
- Exemptions include emergency vehicles, taxis and certain other vehicles.
- Revenue in 2012 (the latest year for which figures are available): LVL 11.7 million (€16.9 million, equivalent to 0.08% of GDP).<sup>391</sup>
- As part of the Natural Resources Tax, there is also a flat-rate charge of €40 per vehicle at the time of registration in Latvia.<sup>392</sup> See below for more details of the Natural Resources Tax.
- There is currently no air passenger or freight tax, but a 'passenger departure duty' was in place until the end of the 2004.<sup>393</sup>
  - The rate of the duty is unknown.
  - Revenue in 2004 (the latest year the tax was in existence): LVL 3.59 million (€5.40 million, equivalent to 0.024% of GDP).<sup>394</sup>

In addition to the taxes above, a road toll system (Euro Vignette) has been in place in Latvia on many stretches of main state roads since 1 July 2014. Rates depend on the type and size of the vehicle used and the vehicle's emissions rating (Euro class). Daily rates range from €8 – €11 per vehicle, while annual rates range from €400 – €925 per vehicle.<sup>395</sup>

---

<sup>391</sup> Eurostat (2014) *Revenue Data by Individual Tax (National Tax List)*, accessed 4 August 2014, [http://ec.europa.eu/taxation\\_customs/taxation/gen\\_info/economic\\_analysis/tax\\_structures/article\\_5985\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/gen_info/economic_analysis/tax_structures/article_5985_en.htm)

<sup>392</sup> Valsts Ieņēmumu Dienests (State Revenue Service) (2014) *Natural Resources Tax*, accessed 5 September 2014, <https://www.vid.gov.lv/default.aspx?tabid=8&id=6681&hl=2>

<sup>393</sup> Valsts Valodas Centrs (State Language Centre) (2010) *Transport Development Guidelines 2007-2013 (Informative Part) (English Translation)*, March 2010, [http://www.vvc.gov.lv/export/sites/default/docs/LRTA/Citi/Transport\\_Development\\_Guidelines\\_x2007-2013x.doc#](http://www.vvc.gov.lv/export/sites/default/docs/LRTA/Citi/Transport_Development_Guidelines_x2007-2013x.doc#), p.11

<sup>394</sup> Eurostat (2014) *Revenue Data by Individual Tax (National Tax List)*, accessed 4 August 2014, [http://ec.europa.eu/taxation\\_customs/taxation/gen\\_info/economic\\_analysis/tax\\_structures/article\\_5985\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/gen_info/economic_analysis/tax_structures/article_5985_en.htm)

<sup>395</sup> Rates and information about the Vignette are available in English: <https://www.lvignette.eu/#middle:lng=en>

Table 12-1: Car Registration Tax ('Car and Motorcycle Tax') (Latvia, 2014)<sup>396</sup>

Passenger cars registered before 1 January 2009		
Engine Size (cc)	Age of the Vehicle (From First Registration Date, in Years)	Tax Rate
Up to and including 3,000	2	€213.43
	3	€177.86
	4	€142.29
	5 – 7	€106.75
	8	€113.83
	9	€120.94
	10	€128.06
	11	€142.29
	12	€156.52
	13	€184.97
	14	€213.43
	15	€241.89
	16	€270.35
	17	€298.80
	18	€327.26
	19 – 25	€355.72
3,001 – 3,500	N/A	€426.86
3,501 – 4,000	N/A	€569.15
4,001 – 4,500	N/A	€711.44
4,501 and above	N/A	€853.72
Passenger cars registered after 1 January 2009		
CO <sub>2</sub> emissions (g/km)		Annual Tax

<sup>396</sup> European Commission (2014) *Taxes in Europe Database*, Accessed 3 September 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)

0 – 120	€0.43 per g CO <sub>2</sub>
121 – 170	€1.42 per g CO <sub>2</sub>
171 – 220	€2.13 per g CO <sub>2</sub>
221 – 250	€3.56 per g CO <sub>2</sub>
251 – 300	€4.27 per g CO <sub>2</sub>
301 – 350	€5.69 per g CO <sub>2</sub>
351 and above	€7.11 per g CO <sub>2</sub>

Table 12-2: Motor Vehicles Tax ('Vehicle Use Tax') (Latvia, 2014)<sup>397</sup>

Passenger cars registered after 1 January 2005							
Gross Vehicle Weight (kg)	Annual Tax Rate (1)		Engine Capacity (cc)	Annual Tax Rate (2)		Engine Maximum Power (kW)	Annual Tax Rate (3)
1,500 or below	€14.23	+	1,500 or below	€8.54	+	55 or below	€8.54
1,501 – 1,800	€29.88		1,501 – 2,000	€21.34		56 – 92	€21.34
1,801 – 2,100	€51.22		2,001 – 2,500	€34.15		93 – 129	€34.15
2,101 – 2,600	€65.45		2,501 – 3,000	€51.22		130 – 166	€51.22
2,601 – 3,000	€78.26		3,001 – 3,500	€85.37		167 – 203	€85.37
3,001 – 3,500	€91.06		3,501 – 4,000	€149.40		204 – 240	€149.40
3,501 and above	€102.45		4,001 – 5,000	€213.43		241 – 300	€213.43
			5,001 and above	€277.46		301 and above	€277.46
Passenger cars registered before 1 January 2005 and all other vehicles (all registration dates)							
Gross Vehicle Weight (kg)	Annual Tax Rate for Passenger Cars		Annual Tax Rate for Buses		Annual Tax Rate for Lorries		
1,500 or below	€35.57		€17.07		€17.07		
1,501 – 1,800	€75.41		€34.15		€34.15		

<sup>397</sup> European Commission (2014) *Taxes in Europe Database*, Accessed 3 September, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)

1,801 – 2,100	€128.06	€64.03	€64.03
2,101 – 2,600	€162.21	€76.84	€76.84
2,601 – 3,000	€196.36	€102.45	€102.45
3,001 – 3,500	€226.24		
3,501 – 12,000	€256.12	€110.98	€145.13
12,001 and above	N/A	€145.13	Rate based on number of axles and the type of suspension. <sup>398</sup>

## 12.3 Pollution and Resource Taxes

In Latvia, one all-encompassing Natural Resources Tax includes taxation on most of the types of activities covered by individual taxes in many other Member States. This includes an aggregates tax, water abstraction tax, landfill tax, water pollution tax, tax on various goods that are harmful to the environment, tax on materials used for packaging, tax on radioactive materials, air pollution tax (including CO<sub>2</sub>), tax on the use of coal, coke and lignite and, finally, a tax on the pumping of natural gas or greenhouse gases into geological structures.<sup>399 400</sup>

For the sake of comparison with other EU member states in this report, the Natural Resources Tax is here described under headings related to the environmental aspects that the tax is targeting.

Natural Resources Tax: <sup>401</sup>

- Total Revenue for Natural Resources Tax: in 2012 (the latest year for which figures are available) LVL 12.3 million (€17.6 million, equivalent to 0.079% of GDP). No revenue figures have been found that break down the total into its constituent parts.<sup>402</sup>

<sup>398</sup> Valsts Ieņēmumu Dienests (State Revenue Service) (2014) *Law on the Vehicle Operation Tax and Company Car Tax*, accessed 5 September 2014, <https://www.vid.gov.lv/default.aspx?tabid=8&id=6689&hl=2>

<sup>399</sup> European Commission (2014) *Taxes in Europe Database*, Accessed 3 September, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)

<sup>400</sup> Valsts Ieņēmumu Dienests (State Revenue Service) (2014) *Natural Resources Tax*, accessed 5 September 2014, <https://www.vid.gov.lv/default.aspx?tabid=8&id=6681&hl=2>

<sup>401</sup> In addition to the sources listed above, a full English translation of the Natural Resources Law is available online: Valsts Valodas Centrs (State Language Centre) (no date) *Natural Resources Tax Law (English Translation)*, no date, [http://www.vvc.gov.lv/export/sites/default/docs/LRTA/Likumi/Natural\\_Resources\\_Tax\\_Law.doc#](http://www.vvc.gov.lv/export/sites/default/docs/LRTA/Likumi/Natural_Resources_Tax_Law.doc#)

<sup>402</sup> Eurostat (2014) *Revenue Data by Individual Tax (National Tax List)*, accessed 4 August 2014, [http://ec.europa.eu/taxation\\_customs/taxation/gen\\_info/economic\\_analysis/tax\\_structures/article\\_5985\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/gen_info/economic_analysis/tax_structures/article_5985_en.htm)

➤ Waste Disposal Tax (Landfill Tax):

- A tax on waste disposal (landfill tax) has been imposed in Latvia since 1991 and has been amended twice, both in 1996 and 2006, though rates have been increased multiple times since its introduction, most recently in January 2014.<sup>403,404</sup> The rate depends on the type of waste disposed and is charged on a per tonne basis:
  - Municipal waste: €12.00 per tonne (increased in several increments from €1.07 per tonne in 2007).
  - Construction & Demolition (C&D) waste: €21.34 per tonne.
  - Asbestos: €35.57 per tonne.
  - Hazardous waste: €35.57 per tonne.
  - Industrial waste: €21.34 per tonne.

➤ Water Abstraction Tax:

- Extraction of water is taxed depending on the type and quality of water extracted. Consumers who use more than 10 cubic metres of water in any 24-hour period must pay the following tax. Rates are set according to the 'polluter pays' principles and the principle that water management costs and any damage caused must be covered.<sup>405</sup>
- Anyone wishing to abstract water must have a permit. The fee for issuing a water permit was €79 in 2011. If no permit is issued, the water abstraction tax rates are ten times the rates shown below.<sup>406</sup>
- The rate for surface water abstraction was increased between 2007 and 2010; rates for other types and uses of water have remained steady since 2007: <sup>407</sup>
  - Surface water: €0.009 per m<sup>3</sup>.
  - Ground water used in water supply, high value: €0.04 per m<sup>3</sup>.
  - Ground water used in water supply, medium value: €0.03 per m<sup>3</sup>.
  - Ground water used in water supply, low value: €0.014 per m<sup>3</sup>.
  - Medicinal mineral water: €0.14 per m<sup>3</sup>.
  - Ground water sold on, high value: €1.42 per m<sup>3</sup>.

---

<sup>403</sup> European Topic Centre on Sustainable Consumption and Production (2012) *Overview of the Use of Landfill Taxes in Europe*, Report for European Environment Agency, April 2012, [http://scp.eionet.europa.eu/publications/WP2012\\_1/wp/WP2012\\_1](http://scp.eionet.europa.eu/publications/WP2012_1/wp/WP2012_1), p. 55

<sup>404</sup> European Commission (2014) *Commission Staff Working Document: Assessment of the 2014 National Reform Programme and Stability Programme for Latvia*, June 2014, [http://ec.europa.eu/europe2020/pdf/csr2014/swd2014\\_latvia\\_en.pdf](http://ec.europa.eu/europe2020/pdf/csr2014/swd2014_latvia_en.pdf), p. 26

<sup>405</sup> IEEP (2013) *Steps to Greening Country Report: Latvia*, Report for the European Commission, p. 12

<sup>406</sup> Ibid, pp. 12-13

<sup>407</sup> Ibid., p. 12

- Ground water sold on, medium value: €0.85 per m<sup>3</sup>.
- Ground water sold on, low value: €0.43 per m<sup>3</sup>.

➤ **Aggregates Tax:**

- The extraction of natural materials is taxed on a per weight or volume basis:
  - Soil: €0.43 per m<sup>3</sup>.
  - Sandy/clay loam, sedimentary rock: €0.14 per m<sup>3</sup>.
  - Quartz sand: €0.45 per m<sup>3</sup>.
  - Sand: €0.21 per m<sup>3</sup>.
  - Sand-gravel (fragments > 2-5 mm for more than 15% of the content): €0.36 per m<sup>3</sup>.
  - Clay: €0.21 per m<sup>3</sup>.
  - Dolomite for decoration: €0.36 per m<sup>3</sup>.
  - Dolomite: €0.21 per m<sup>3</sup>.
  - Limestone: €0.28 per m<sup>3</sup>.
  - Freshwater limestone: €0.14 per m<sup>3</sup>.
  - Travertine: €1.42 per m<sup>3</sup>.
  - Gypsum: €0.54 per m<sup>3</sup> (due to be increased to €0.60 per m<sup>3</sup> by 2016).
  - Field stones: €0.57 per m<sup>3</sup>.
  - Pigmentary soil: €0.14 per m<sup>3</sup>.
  - Peat (moisture – 40%): €0.55 per tonne.
  - Organogenic sapropel (algal and zoogenic-algal) and organogenic lime with ash content less than 30% (moisture – 60%): €0.71 per tonne.
  - Other sapropel rock (moisture – 60%): €0.14 per tonne.
  - All types of medicinal mud: €0.71 per tonne.

➤ **Air Pollution Tax:**

- Any emission of air pollutants (including CO<sub>2</sub>) which is outside of transferred allowances is taxed. A number of these rates are due to be further increased in 2015, having increased steadily since 2007:<sup>408</sup>
  - CO<sub>2</sub> from stationary technological installations (except those covered by exemptions outlined in the Law on Pollution<sup>409</sup>): 2014 rate: €2.85 per tonne; 2015 rate: €3.50 per tonne.

---

<sup>408</sup> IEEP (2013) *Steps to Greening Country Report: Latvia*, Report for the European Commission, p. 30

- PM<sub>10</sub> (not containing heavy metals): 2014 rate: €51.22 per tonne; 2015 rate: €75.00 per tonne.
- Carbon Monoxide: Rate (not changing in 2015): €7.83 per tonne.
- Ammonia and other non-organic compounds: Rate (not changing in 2015): €18.50 per tonne.
- Sulphur dioxide, nitrogen oxides, VOCs and other hydrocarbons: Rate (not changing in 2015): €85.37 per tonne.
- Heavy metals and compounds thereof: Rate (not changing in 2015): €1,138.30 per tonne.
- PM<sub>10</sub> for bulk handling at open terminals or other open areas: 2014 rate: €1,024.40 per tonne; 2015 rate: €1,500.00 per tonne.

➤ Water Pollution Tax:

- A tax is levied on pollution discharged into water ways. The level of the tax is set according to how hazardous the material is and is paid per tonne of material released:
  - Non-hazardous substances: €5.50 per tonne
  - Suspended (non-hazardous) substances: €14.23 per tonne
  - Moderately-hazardous substances: €42.69 per tonne
  - Hazardous substances: €11,382.97 per tonne
  - Especially hazardous substances: €71,143.59 per tonne
  - Phosphorus (total content): €270.00 per tonne

➤ Packaging Tax (and tax on disposable tableware and accessories):

- The sale of materials used for packaging as well as the use of disposal tableware is taxed on a per kg basis. This also includes plastic bags:
  - Glass-source materials: €0.44 per kg.
  - Plastic-source materials, except 'bioplastic' and oxy-degradable plastic source materials: €1.22 per kg.
  - Metal-source materials: €1.10 per kg.
  - Wood-, paper-, cardboard- and other natural fibre- and bioplastic-source materials: €0.24 per kg.
  - Oxy-degradable plastic-source materials: €0.70 per kg.
  - Polystyrene-source materials: €1.56 per kg.
  - Plastic bag (weight per bag is less than 0.003 kg): €3.70 per kg.
  - Plastic bag (weight per bag is more than 0.003 kg): €1.14 per kg.

---

<sup>409</sup> This includes energy generation from renewable energy and peat. [Source: IEEP (2013) *Steps to Greening Country Report: Latvia*, Report for the European Commission, p.10]

- Tax on goods harmful to the environment:
  - The sale of goods harmful to the environment is taxed, either according to the weight of material or per item:
    - Lubricating oils: €0.17 per kg.
    - Electric batteries and galvanic sources of electricity: €0.74 – €17.03 per kg, depending on the type of battery.
    - Substances depleting the ozone layer: €2.22 per kg of ozone depletion potential.
    - Tyres: €0.33 per kg.
    - Oil filters: €0.33 per kg.
    - Electrical and electronic equipment (in accordance with Section 20.1, §1 of the Waste Management Law): €1.44 – €3.01 per kg, though gas discharge light bulbs are taxed on a per item basis: €8.58 per item.
  - The use of radioactive substances (resulting in radioactive waste) is also taxed:
    - The rate ranges from €711.44 per m<sup>3</sup> of waste for the first radionuclide group from a closed radiation source to €14,228.72 per m<sup>3</sup> of waste for the seventh radionuclide group from an ionising radiation source.
  - Vehicles are also taxed under the Natural Resources Tax, in addition to being subject to registration taxes. This is paid by the person who imports or sells the vehicles in Latvia.
    - The rate is €40 per vehicle.
- Additional tax on the sale of coal, coke and lignite:
  - Rate:
    - Coal, coke and lignite with known thermal input: €0.30 per GJ.
    - Coal, coke and lignite without known thermal input: €8.54 per tonne.
- Tax on the pumping of natural gas and greenhouse gases into geological structures:
  - The tax depends on the particular gas pumped:
    - Natural gas: €0.0143 per m<sup>3</sup>
    - Methane: €0.0143 per m<sup>3</sup>
    - Carbon dioxide: €0.07 m<sup>3</sup>
    - Other greenhouse gases: €0.14 per m<sup>3</sup>



- It has been reported that advertisement paper was due to be taxed under the Natural Resources Tax from August 2013 at a rate of €1.28 per kg, but this does not appear to be the case.<sup>410</sup>
- In addition to the Natural Resources Tax, Latvia was recently considered a mandatory deposit refund system for beverage containers, to be enforced from 1<sup>st</sup> January 2015.<sup>411</sup> The legal framework needed to implement this has not been adopted and the idea has now been put on hold.<sup>412</sup>
- Water Charging:
  - Water charging in Latvia takes the form of the water abstraction tax, which is part of the Natural Resources Tax, as described above. This includes a flat volumetric-based rate which varies according to the type and quality of the water extracted, with surface water charged at a rate more than four times lower than the rate for groundwater. The tax is only collected if water usage is greater than 10 m<sup>3</sup> in a given 24-hour period.
  - A permit must be issued before water can be abstracted and users that do not have a permit but abstract water nonetheless (or who extract more than is permitted) are taxed at ten times the normal rate.
  - An Arcadis report from 2010 states that the Daugava, Lielupe, Gauja, and Venta rivers have 100% cost recovery of financial costs related to water for agriculture.<sup>413</sup>
  - A report from the European Environment Agency in 2013 also notes that a water supply user charge, a sewage charge, a water effluent charge and water pollution non-compliance fees are also implemented in Latvia, though no further information has been found on any of these charges.<sup>414</sup>

## 12.4 Modelled Changes in Tax Base

The modelled change in the tax base for each of the suggested reforms to the tax system are shown in the table and figures below.

---

<sup>410</sup> Ecologic Institute, and eclareon (2014) *Assessment of Climate Change Policies in the Context of the European Semester - Country Report: Latvia*, Report for European Commission - DG Clima, January 2014, [http://ec.europa.eu/clima/policies/g-gas/progress/docs/lv\\_2014\\_en.pdf](http://ec.europa.eu/clima/policies/g-gas/progress/docs/lv_2014_en.pdf), p.12

<sup>411</sup> Ecologic Institute, and eclareon (2014) *Assessment of Climate Change Policies in the Context of the European Semester - Country Report: Latvia*, Report for European Commission - DG Clima, January 2014, [http://ec.europa.eu/clima/policies/g-gas/progress/docs/lv\\_2014\\_en.pdf](http://ec.europa.eu/clima/policies/g-gas/progress/docs/lv_2014_en.pdf), p.15

<sup>412</sup> Personal communication with Silvija Aile of DG Environment at the European Commission, 3<sup>rd</sup> October 2013.

<sup>413</sup> See the annexes of ARCADIS, InterSus, Fresh Thoughts Consulting, Eco Logic, and TYP SA (2012) *The Role of Water Pricing and Water Allocation in Agriculture in Delivering Sustainable Water Use in Europe*, Report for European Commission Directorate-General for the Environment, February 2012, [www.enorasis.eu/uploads/files/Water%20Governance/role\\_water\\_pricing.pdf](http://www.enorasis.eu/uploads/files/Water%20Governance/role_water_pricing.pdf), p. 18

<sup>414</sup> European Environment Agency (2013) *Assessment of Cost Recovery Through Water Pricing*, September 2013, [www.eea.europa.eu/publications/assessment-of-full-cost-recovery](http://www.eea.europa.eu/publications/assessment-of-full-cost-recovery), p. 115

Table 12-3: Change in Energy Tax Base

Fuel Type	Units	Baseline	After Tax Increase	Change
Gas Oil	million litres	853	835	-18
Petrol	million litres	252	252	0
Kerosene	million litres	121	121	0
LPG	thousand tonnes	35	31	-4
Heavy Fuel Oil	thousand tonnes	4	4	0
Natural Gas	TJ (GCV)	14,422	13,997	-425
Coal	thousand tonnes	2,231	2,221	-11
Electricity	GWh	5,862	5,862	0

Figure 12-1: Change in Internal Passenger Flights, flights per year

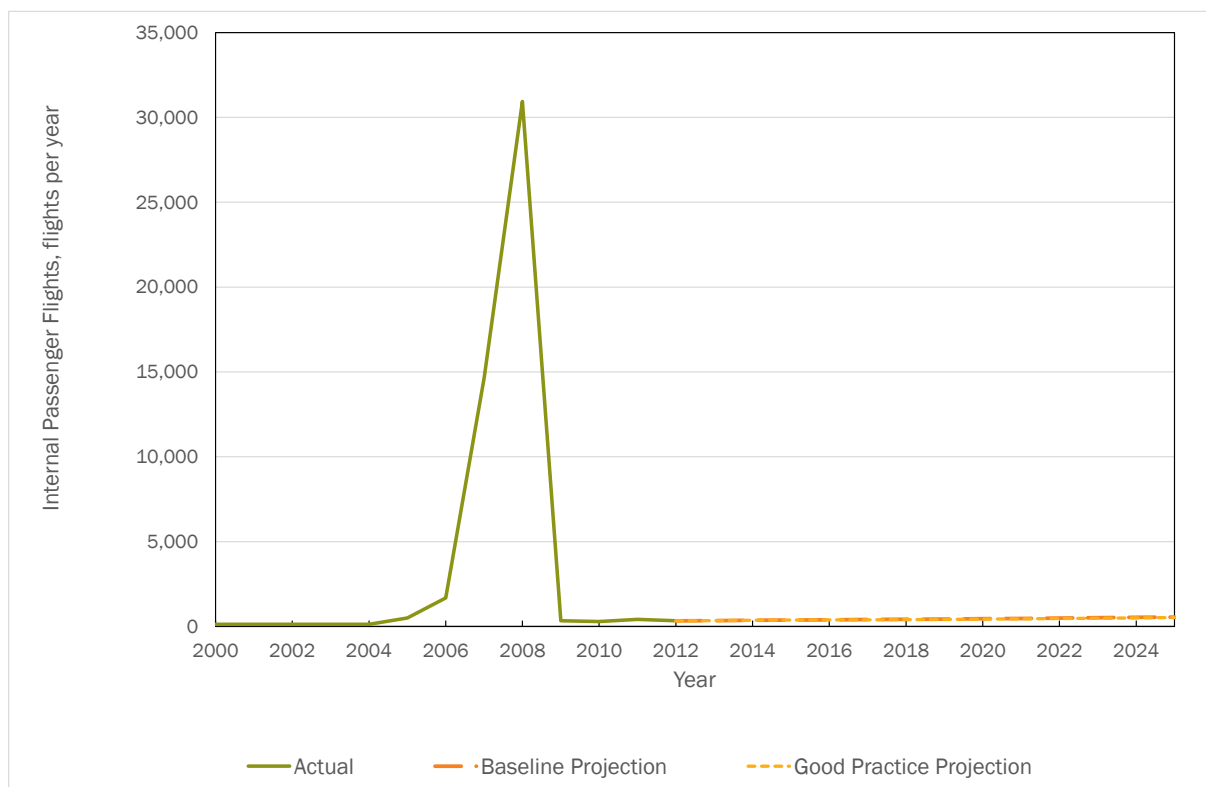


Figure 12-2: Change in Intra-EU Passenger Flights, flights per year

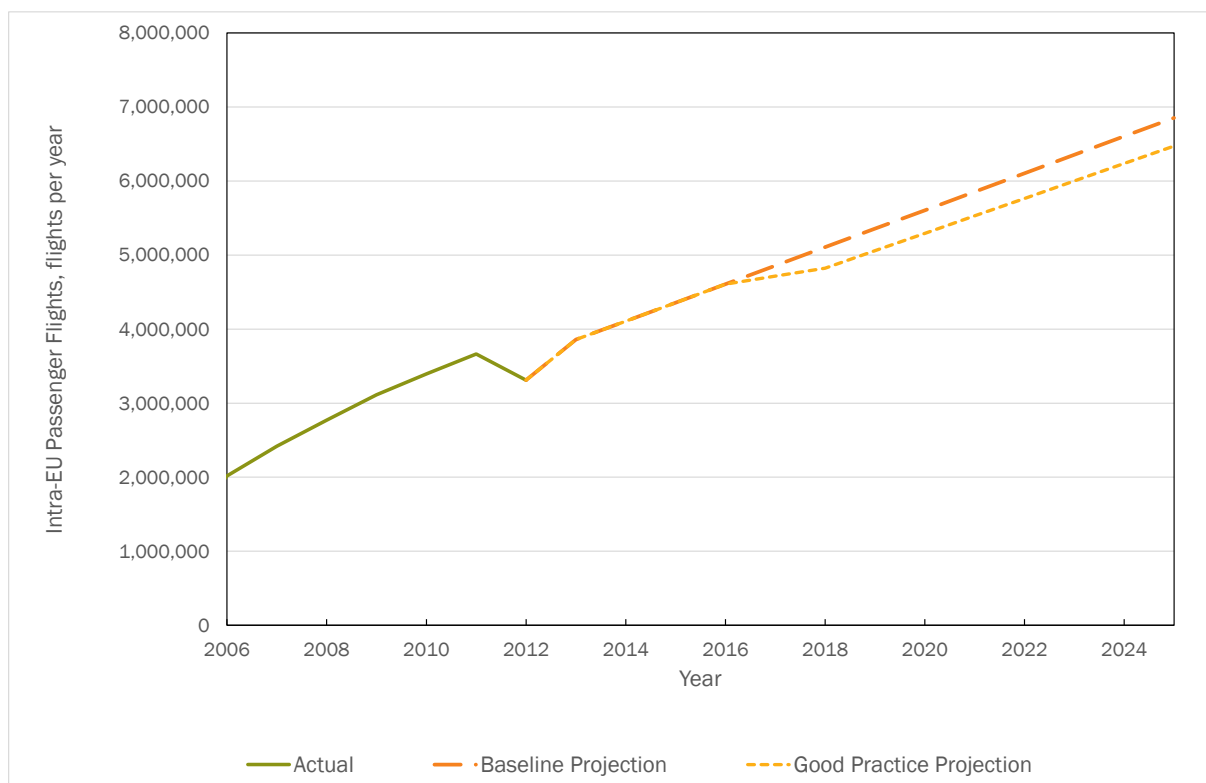


Figure 12-3: Change in Extra-EU Passenger Flights, flights per year

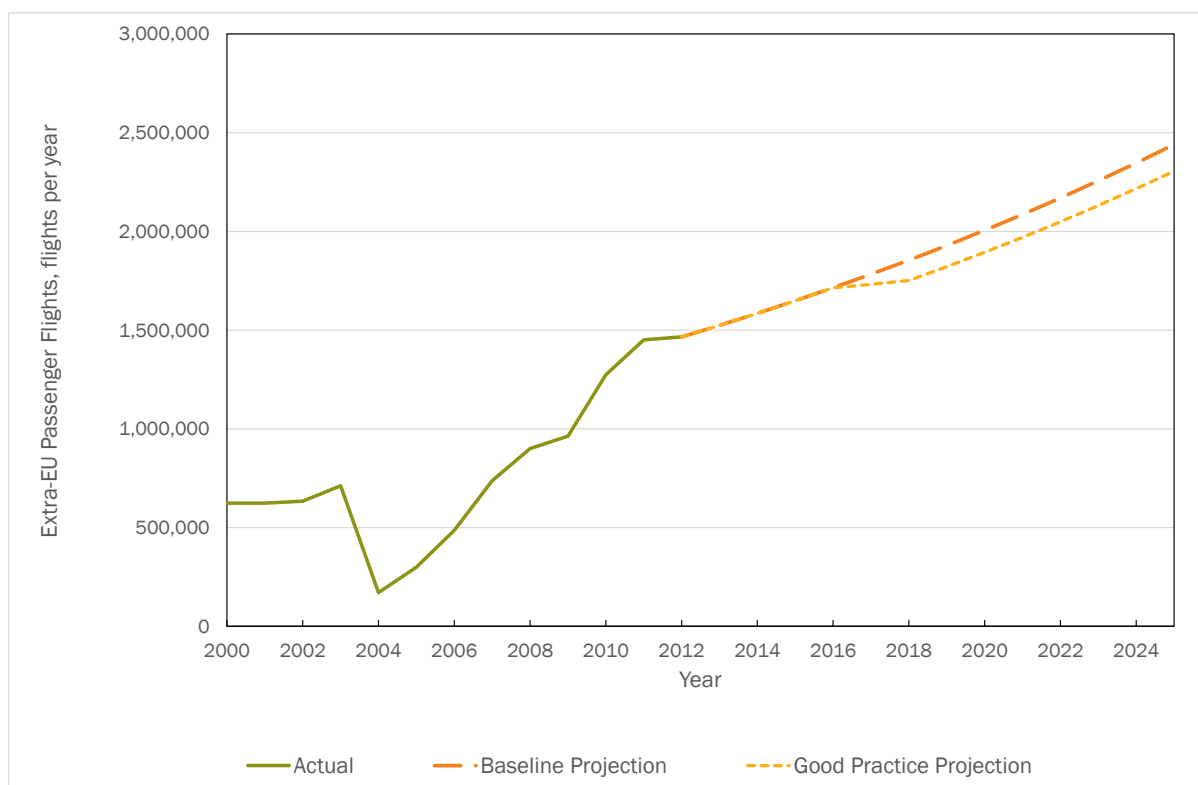


Figure 12-4: Change in Internal Air-freight, tonnes



Figure 12-5: Change in Intra-EU Air-freight, tonnes

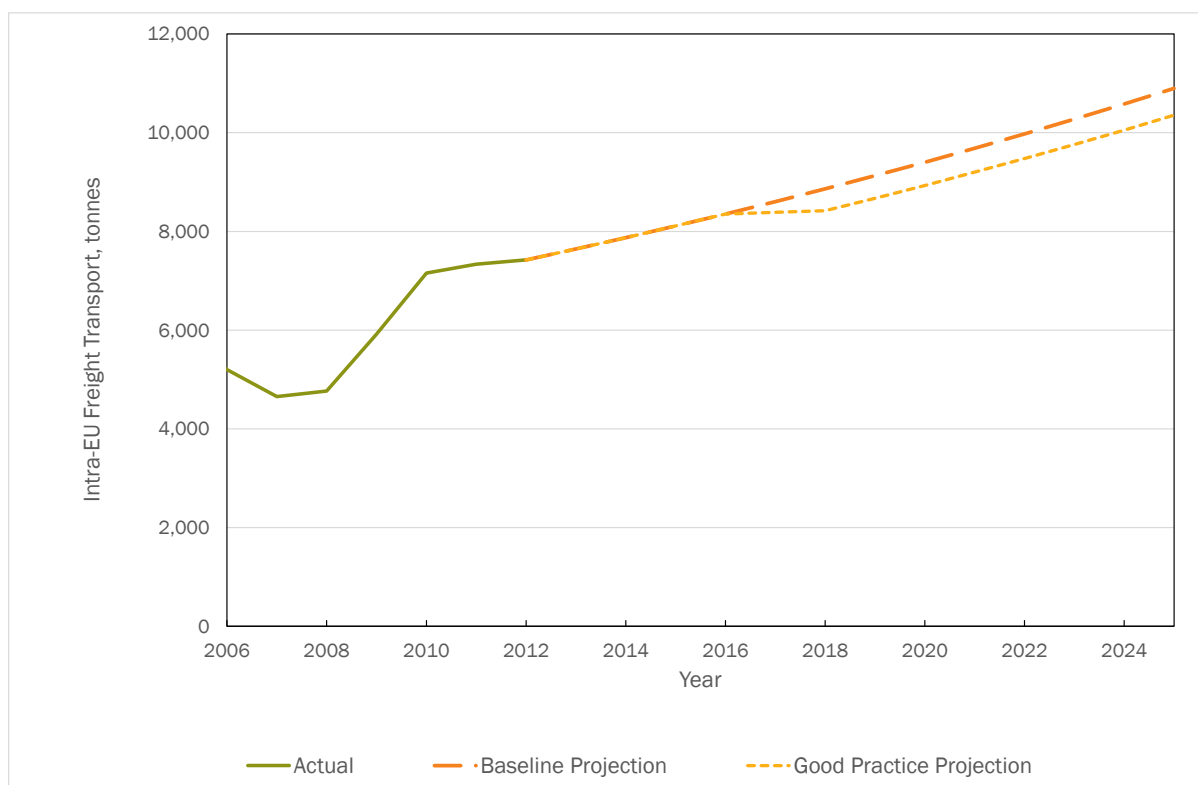


Figure 12-6: Change in Extra-EU Air-freight, tonnes

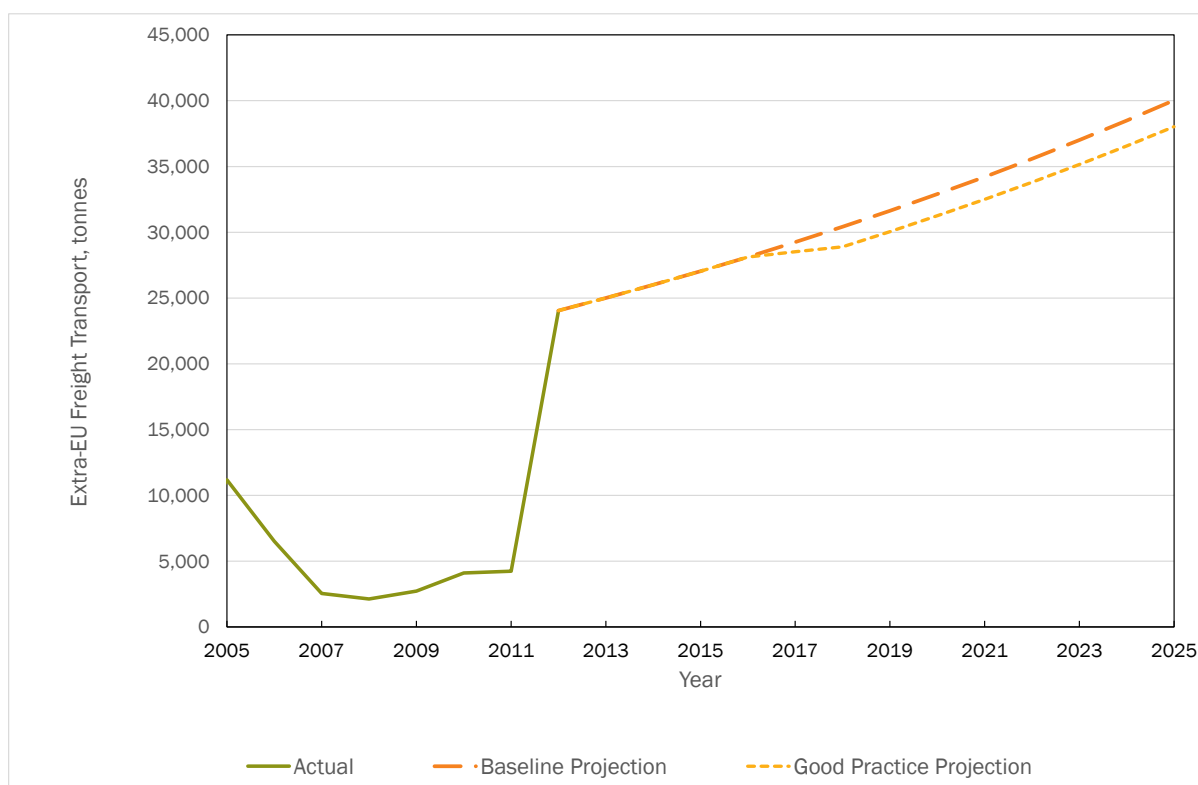


Figure 12-7: Change in Non-Hazardous Waste Landfilled, thousand tonnes

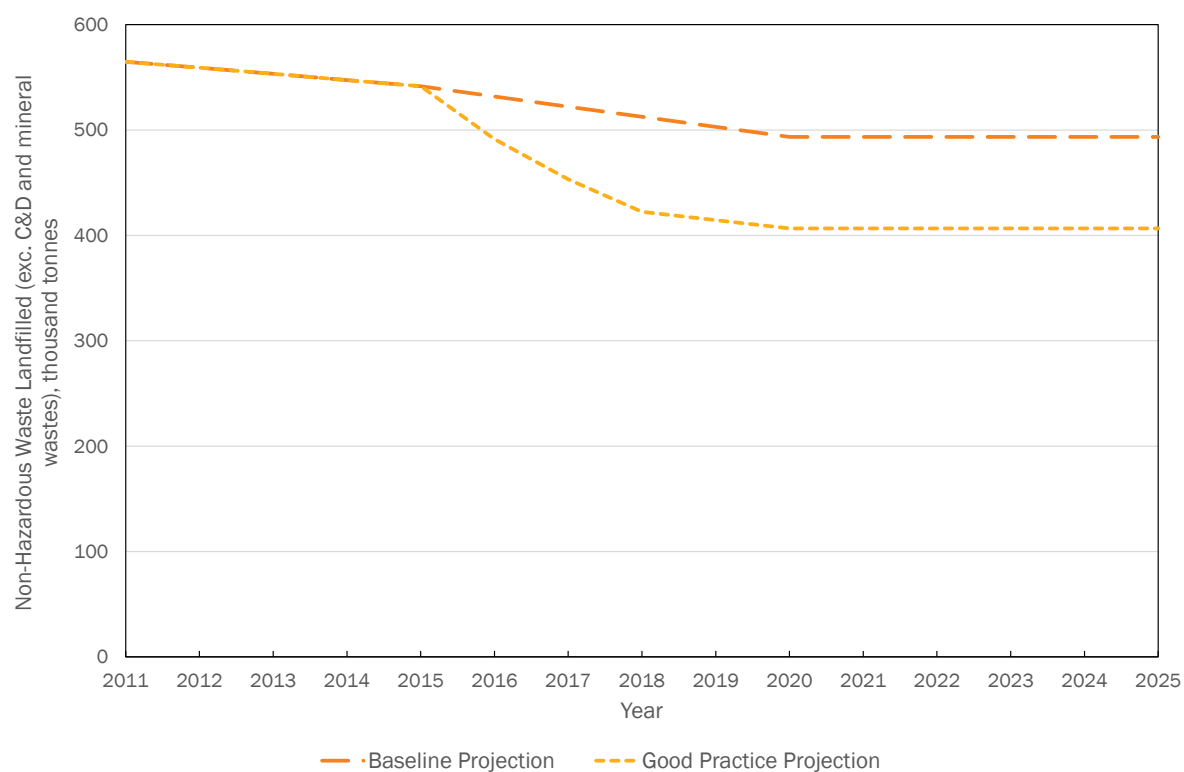


Figure 12-8: Change in MBT/ Incineration, thousand tonnes

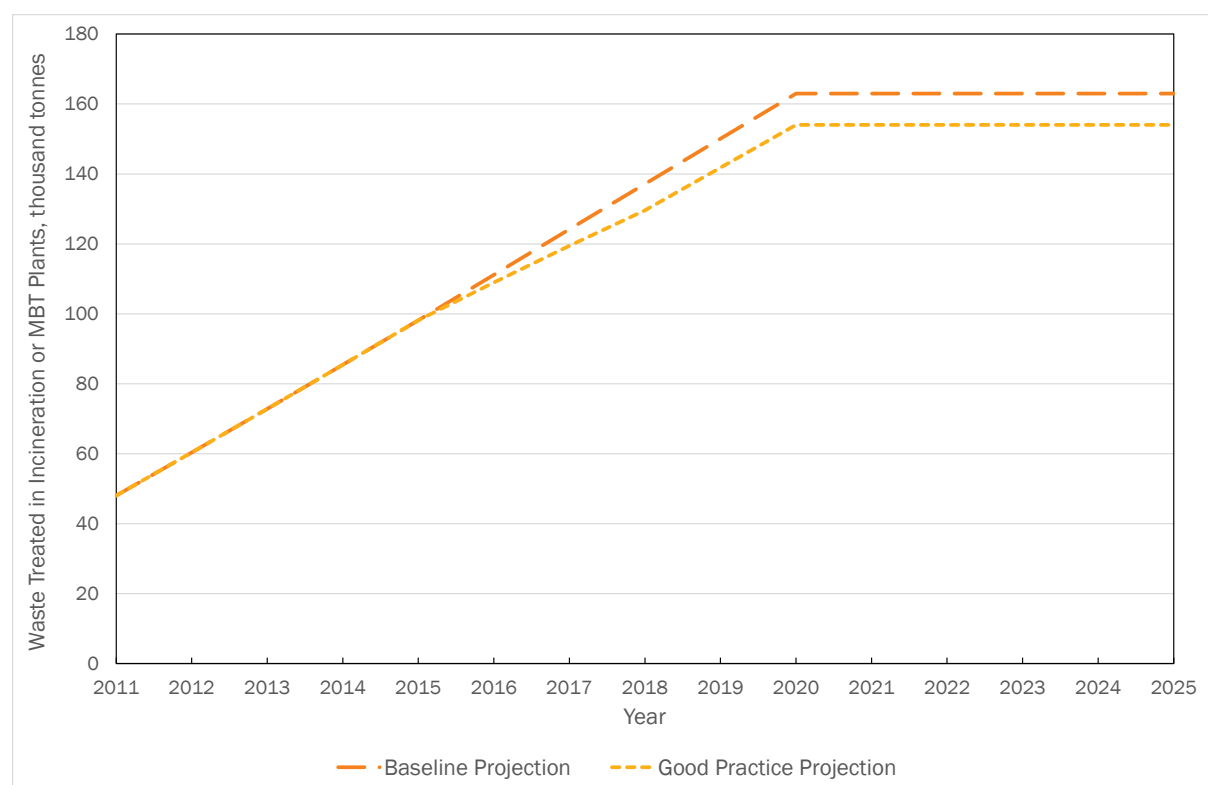


Figure 12-9: Change in SOx Emissions, tonnes



Figure 12-10: Change in NOx Emissions, tonnes

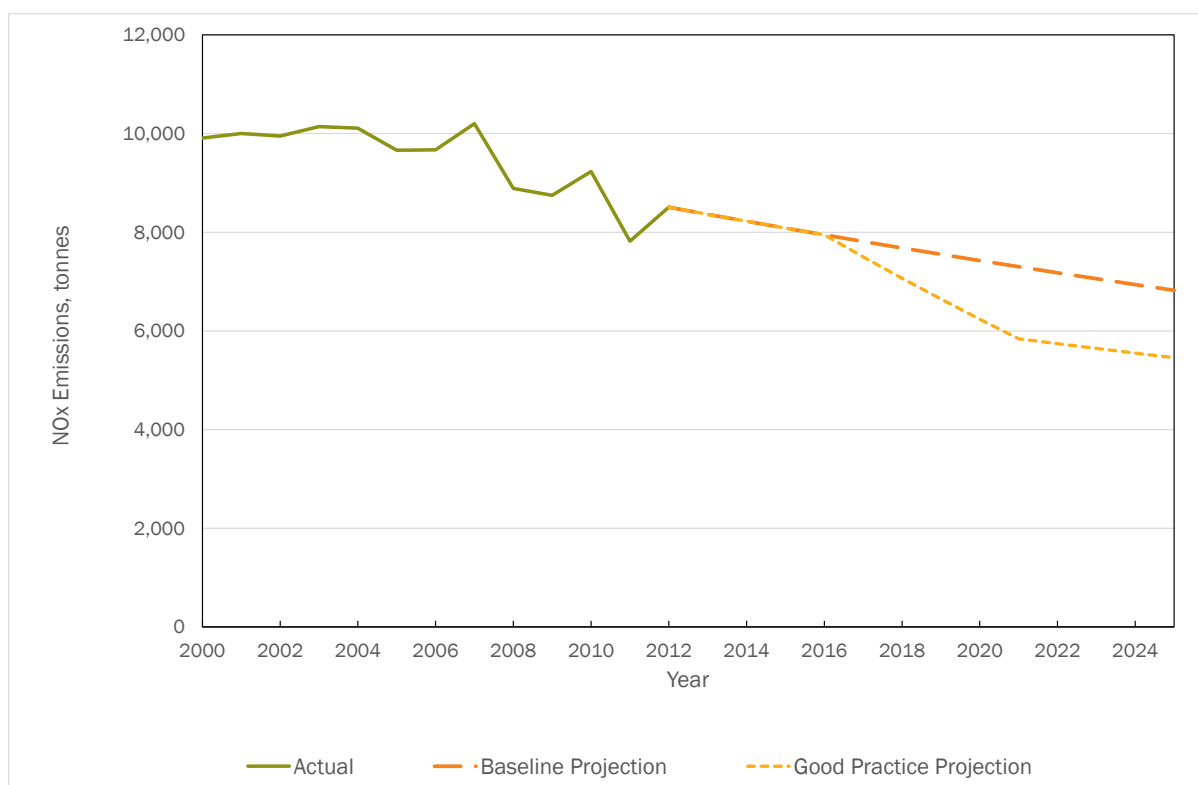


Figure 12-11: Change in PM<sub>10</sub> Emissions, tonnes

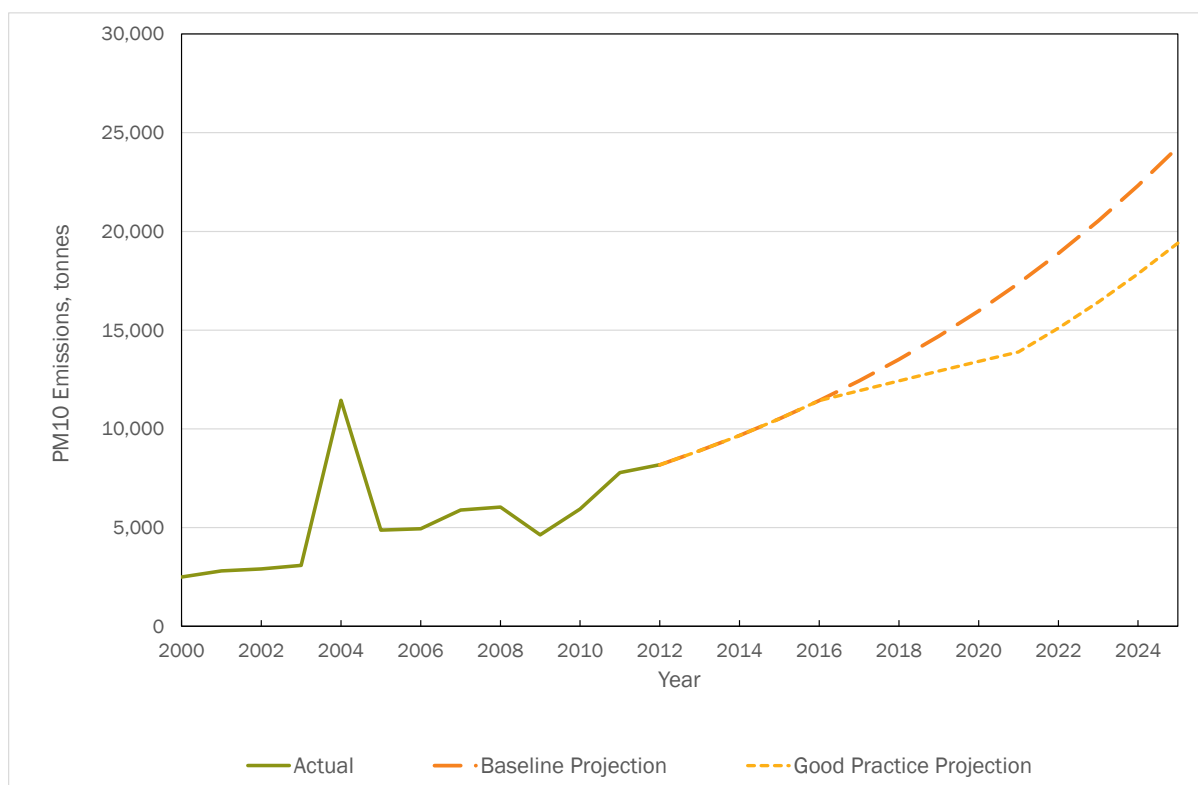


Figure 12-12: Change in Groundwater Abstraction – Public Supply, million cubic metres

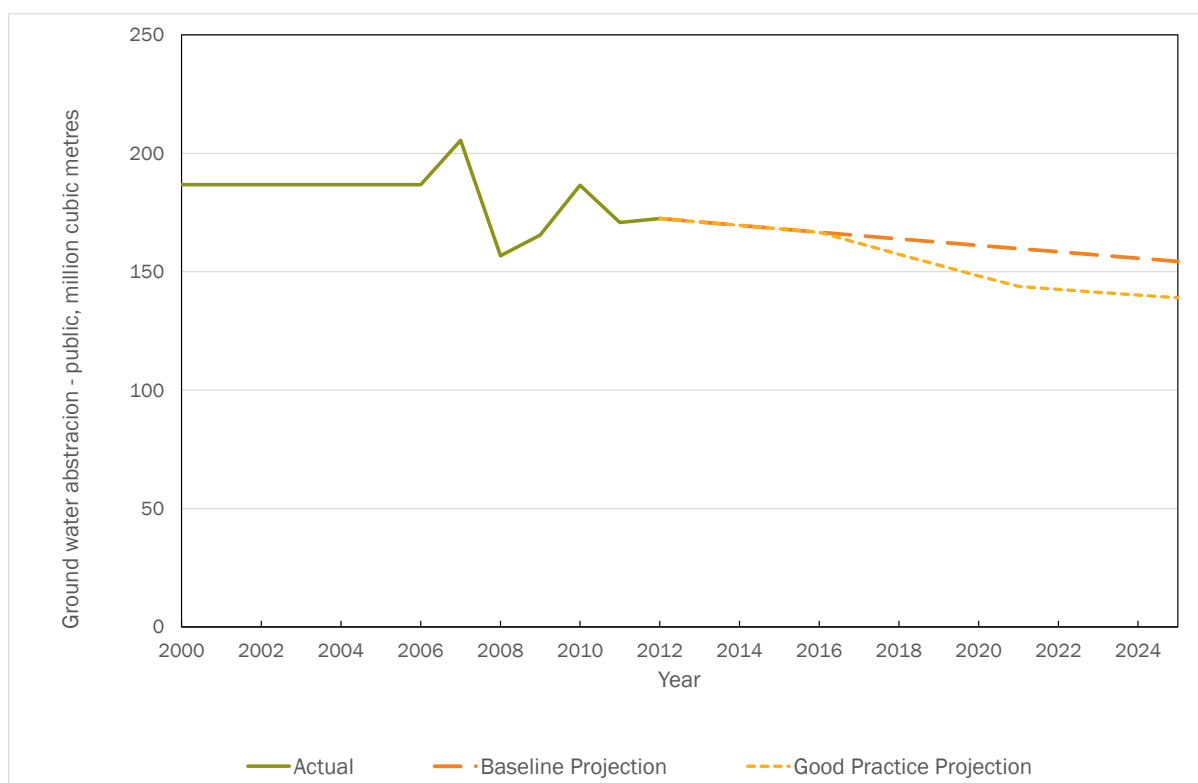




Figure 12-13: Change in Groundwater Abstraction – Manufacturing, million cubic metres

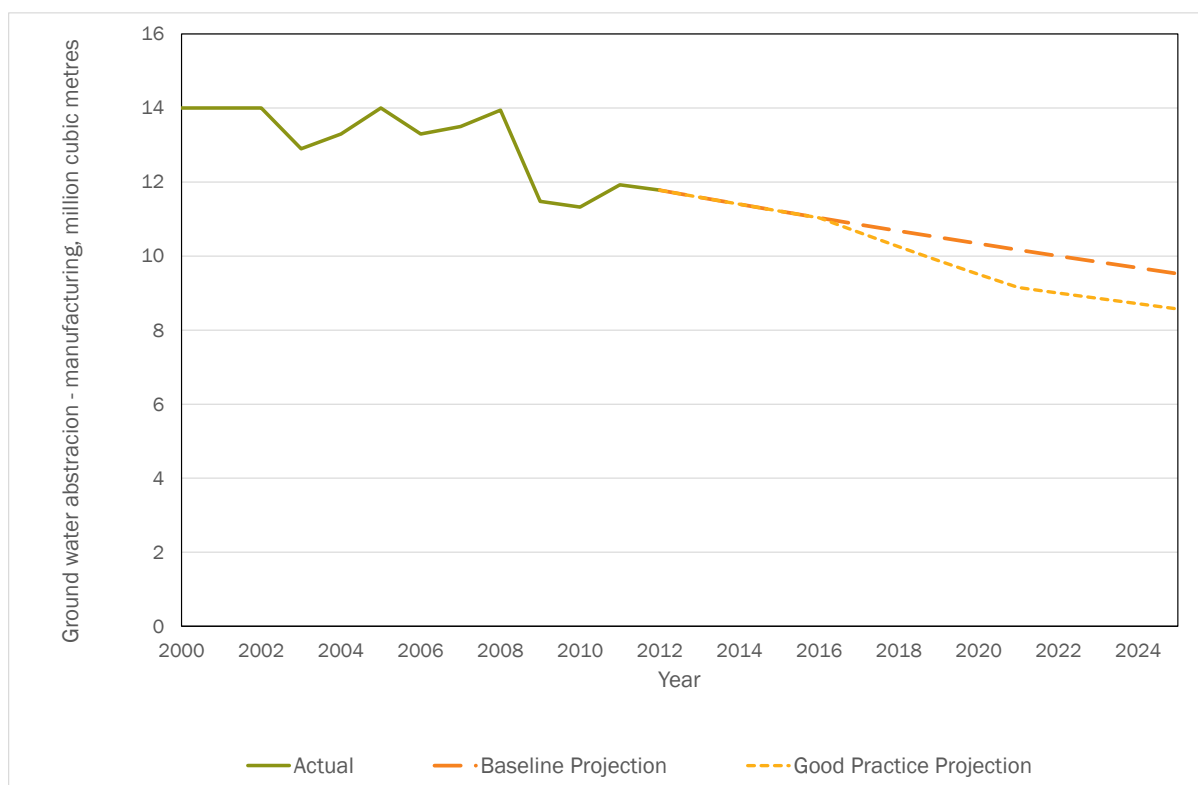


Figure 12-14: Change in Groundwater Abstraction – Agriculture, million cubic metres

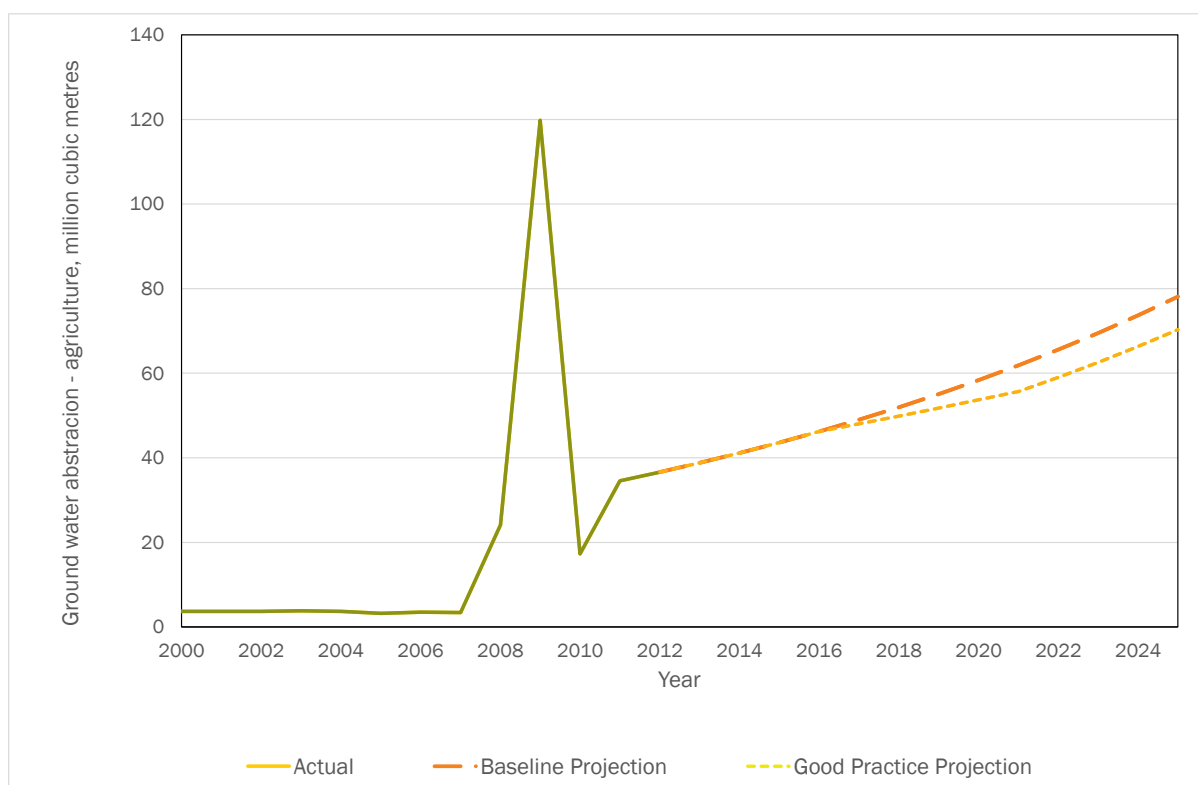


Figure 12-15: Change in Surface Water Abstraction – Public Supply, million cubic metres

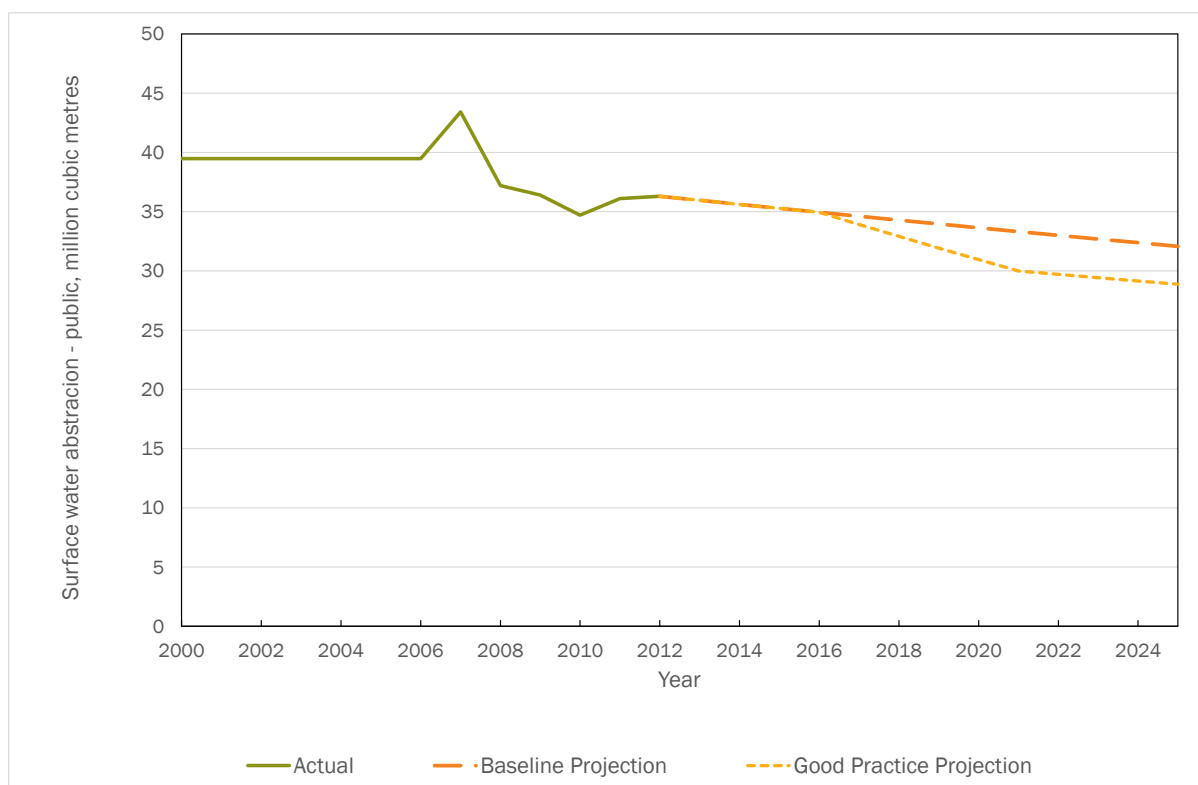


Figure 12-16: Change in Surface Water Abstraction – Manufacturing, million cubic metres

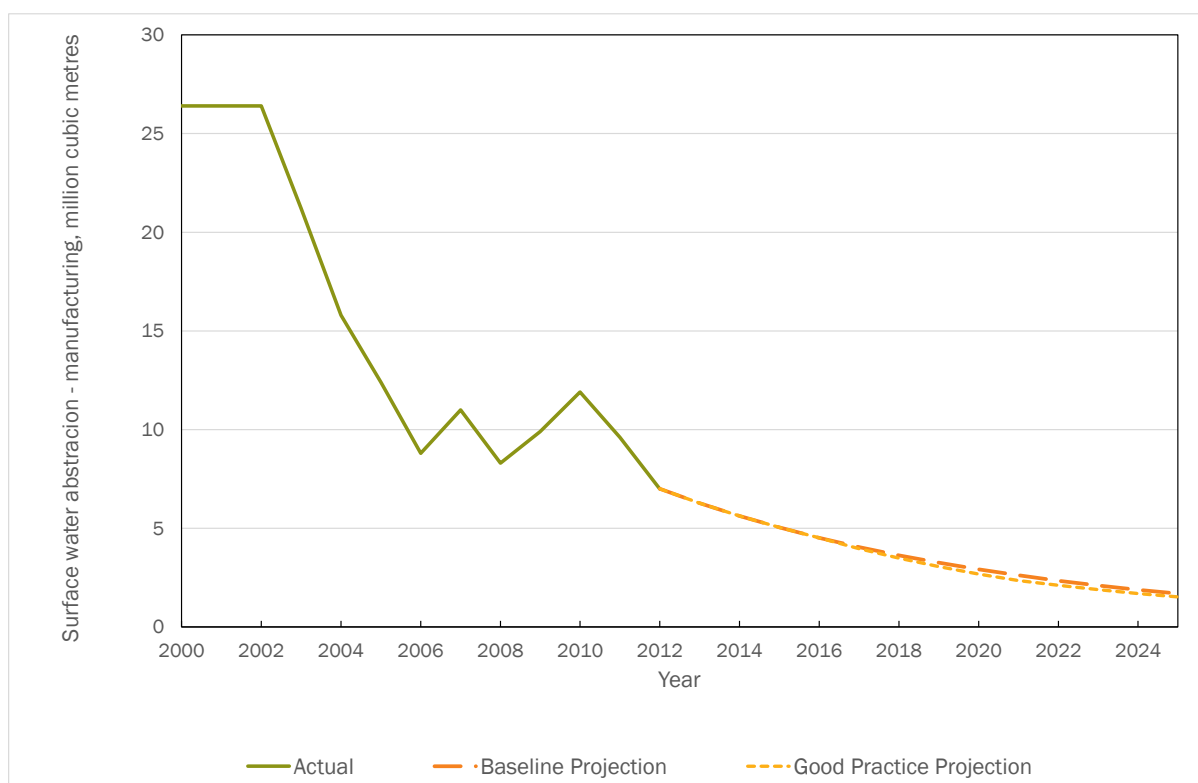


Figure 12-17: Change in Surface Water Abstraction – Agriculture, million cubic metres

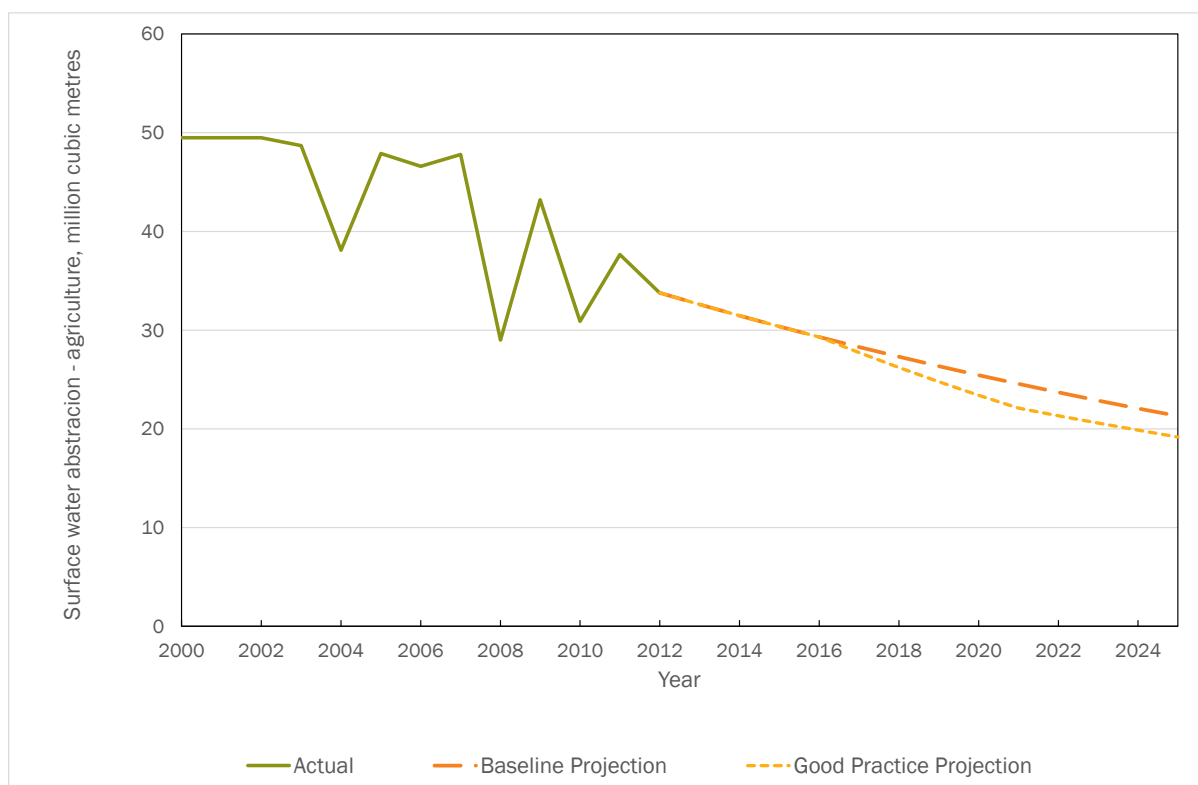


Figure 12-18: Change in Active Ingredients in Pesticides, tonnes

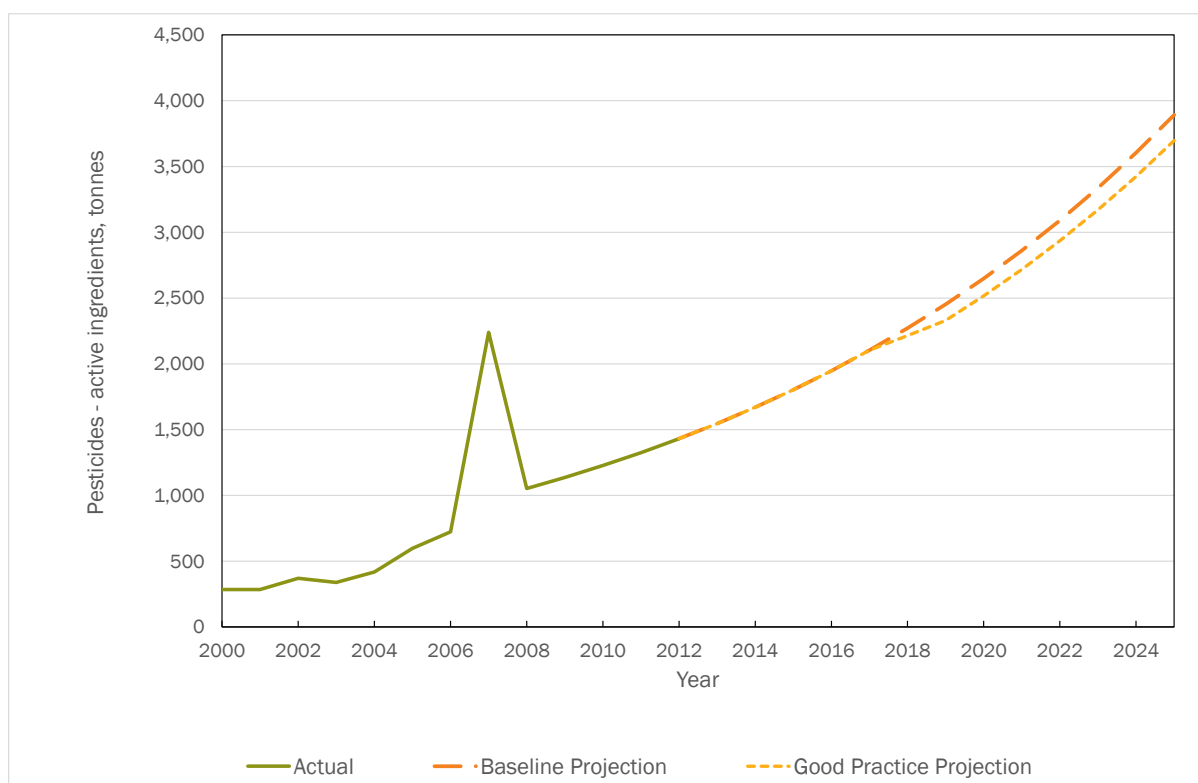


Figure 12-19: Change in Non-organic Nitrogen Sales of Fertilisers, tonnes

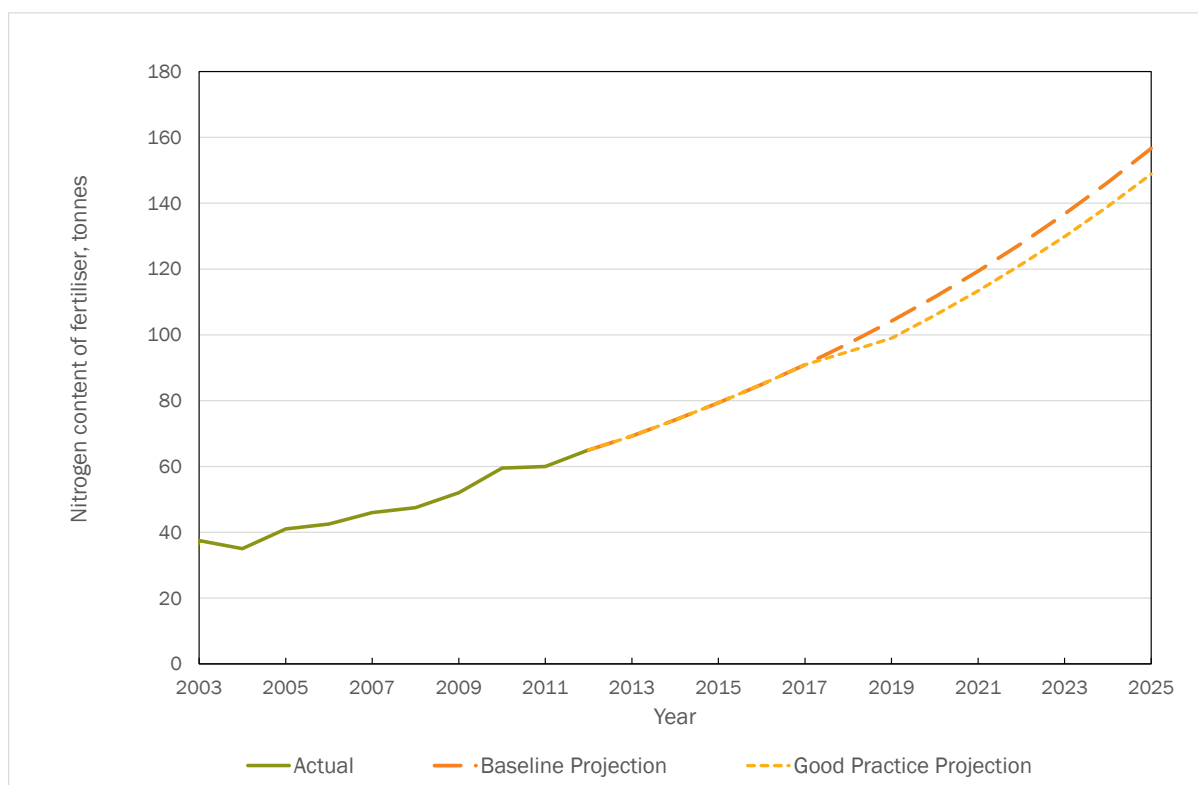


Figure 12-20: Change in Aggregates Extraction, thousand tonnes

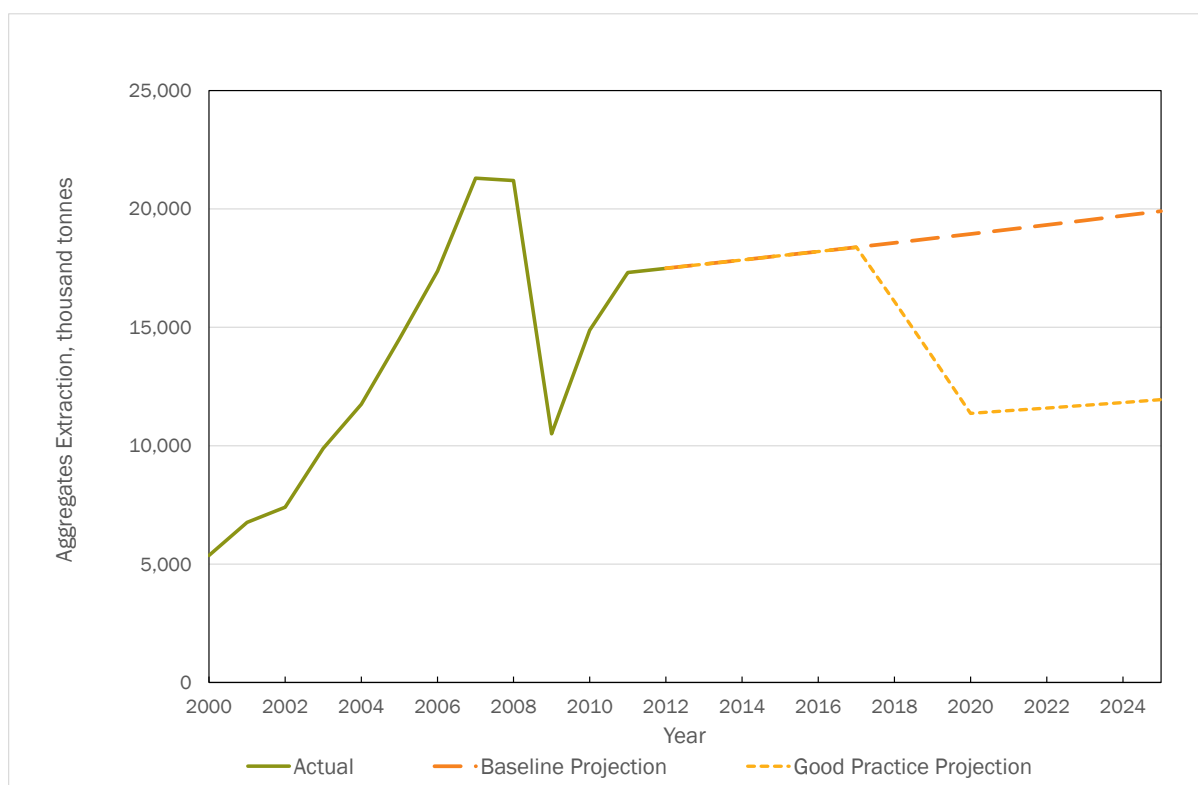


Figure 12-21: Change in Paper & Card Packaging Generation, thousand tonnes

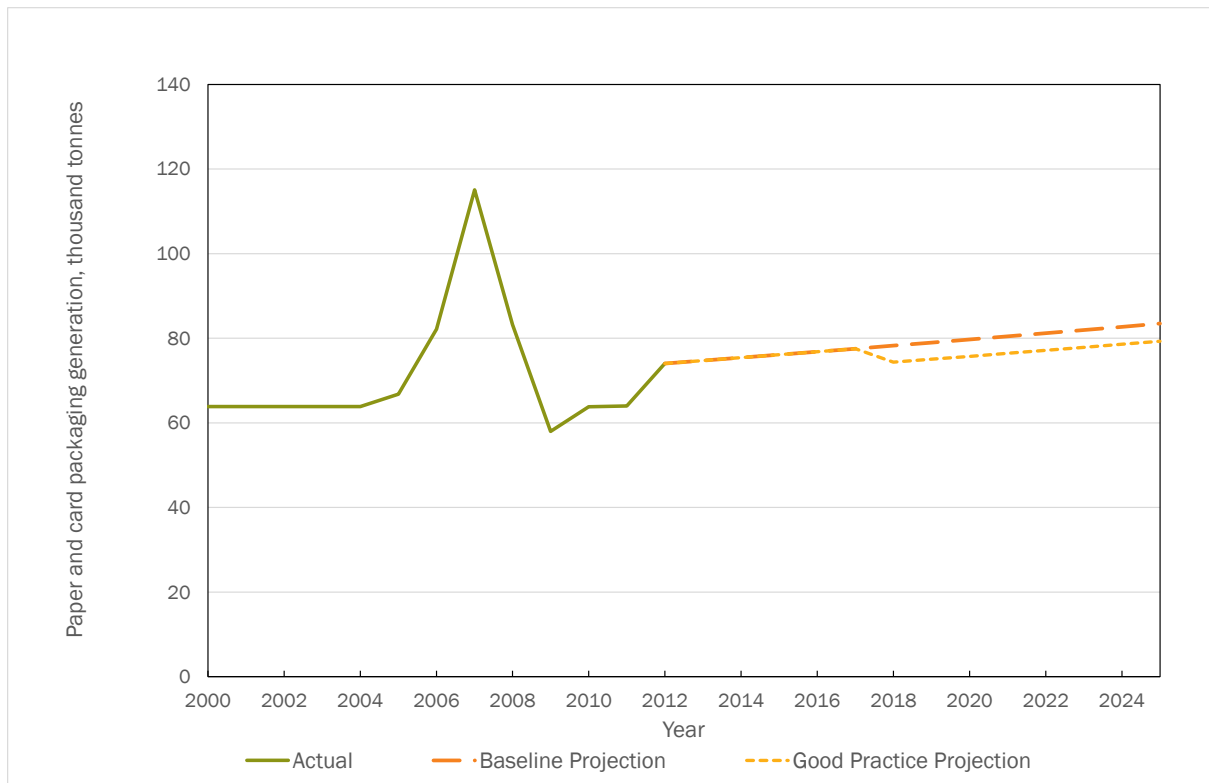


Figure 12-22: Change in Plastic Packaging Generation, thousand tonnes

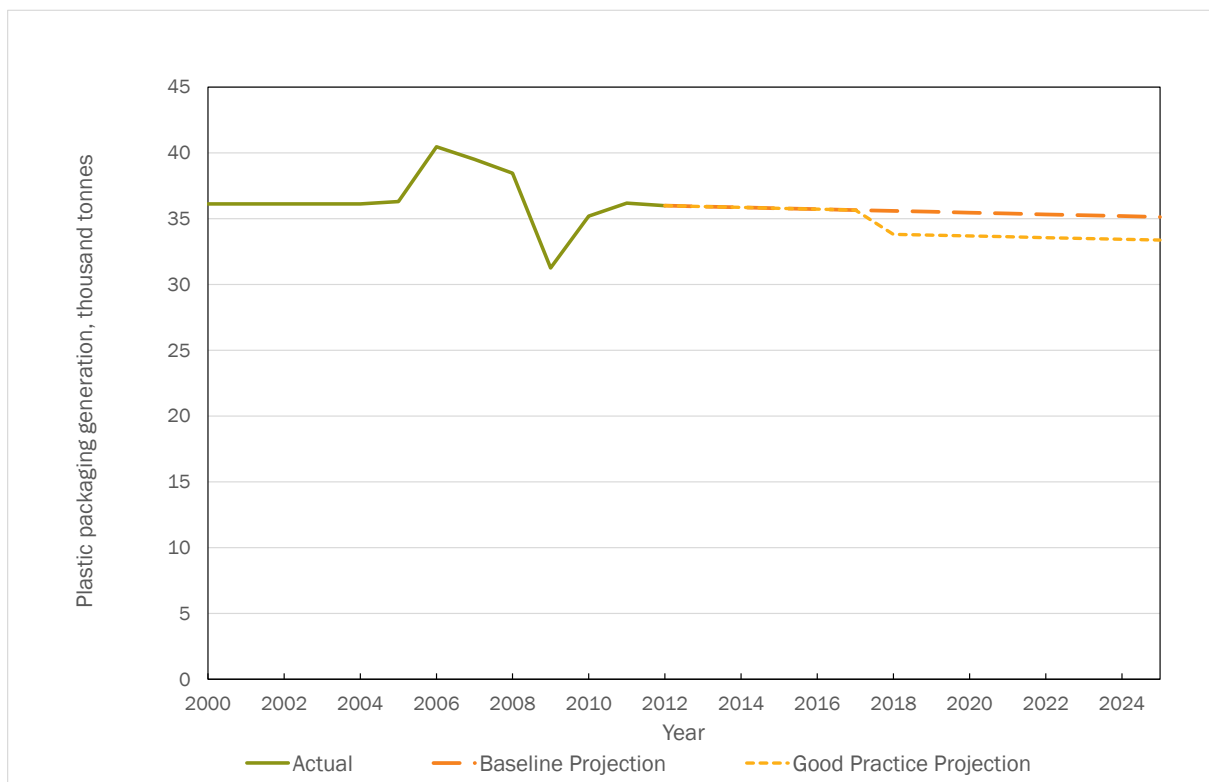


Figure 12-23: Change in Wood Packaging Generation, thousand tonnes

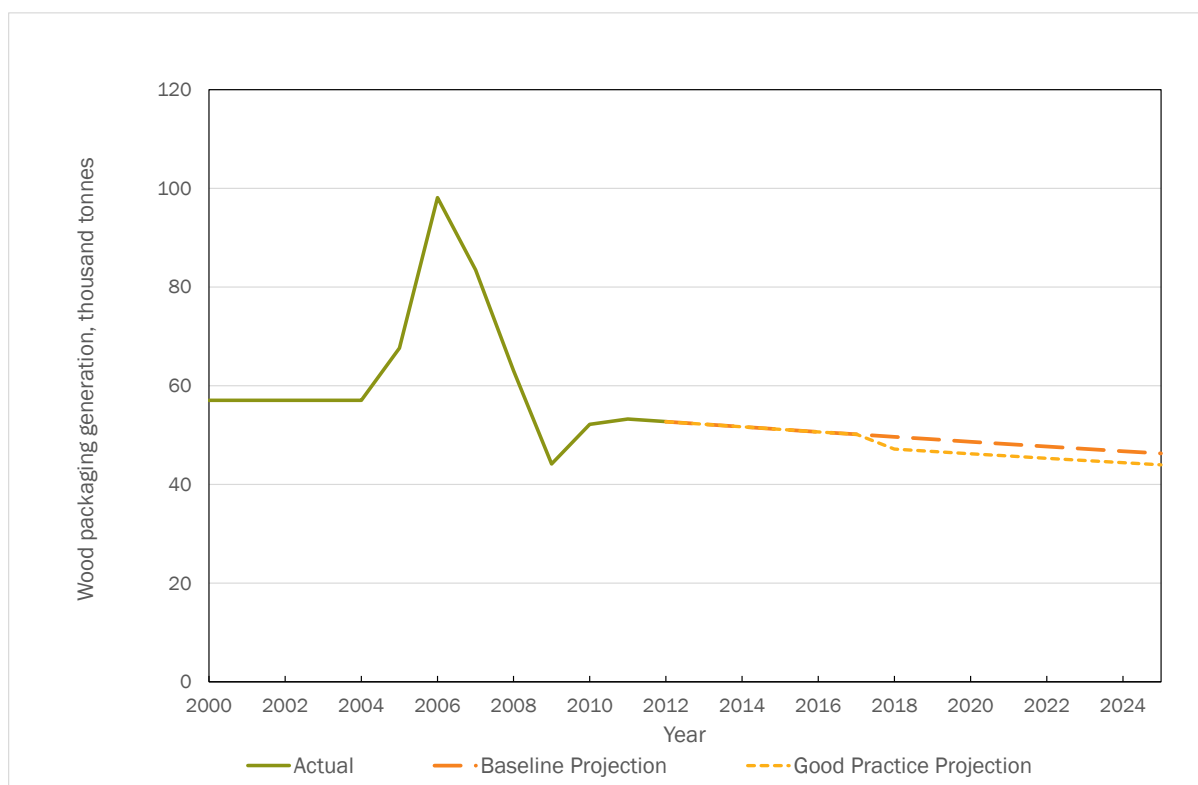


Figure 12-24: Change in Metal Packaging Generation, thousand tonnes



Figure 12-25: Change in Glass Packaging Generation, thousand tonnes

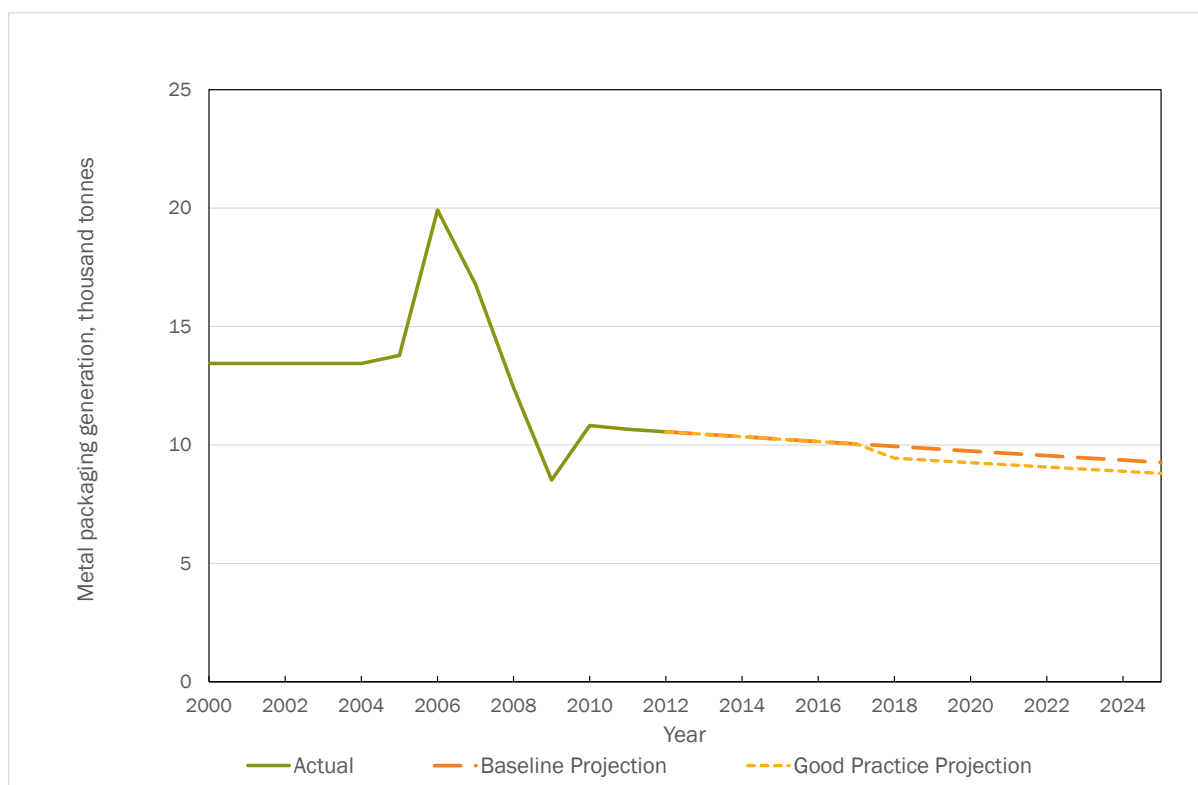
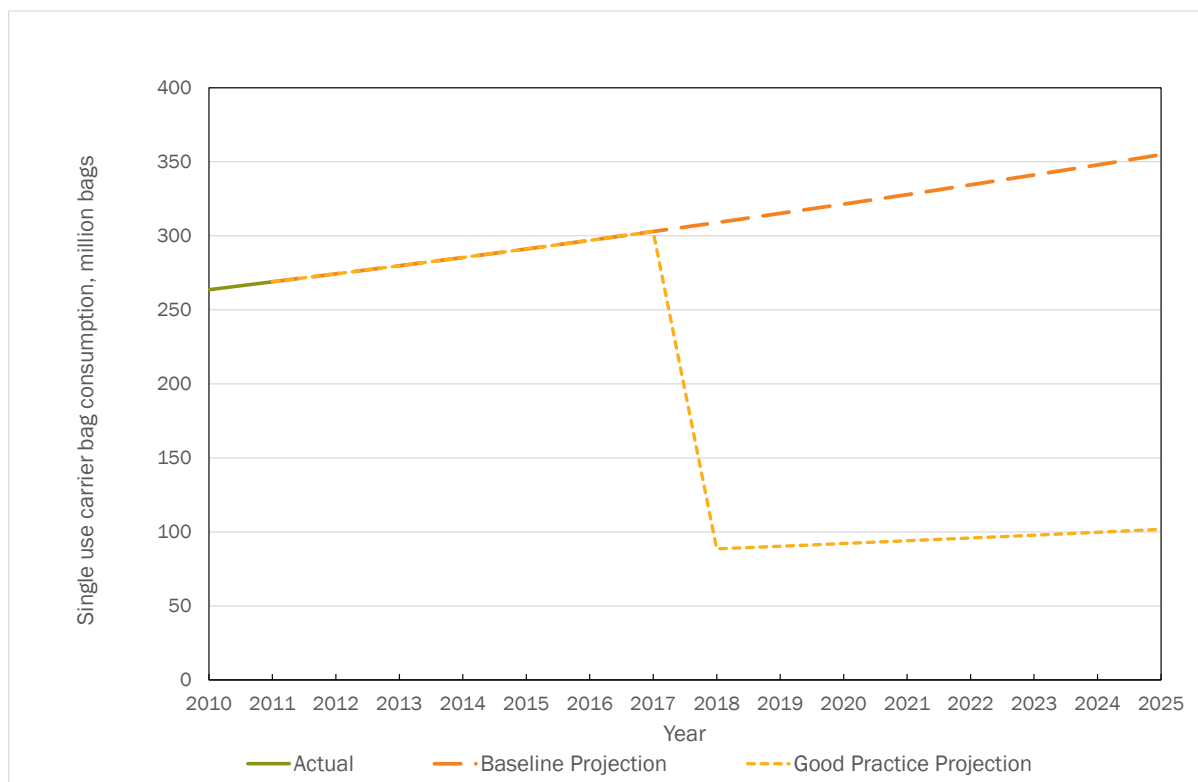


Figure 12-26: Change in Consumption of Single Use Carrier Bags, million bags



## 12.5 Full Revenue Outputs

A summary of the full revenue outputs for each of the suggested reforms to the tax system are presented in the table below.



Table 12-4: Revenue Outturns from Model, million EUR (real 2014 terms)

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Energy Taxes	Transport fuels	0	0	13	26	39	52	64	77	89	89	89
	C&I / Heating	0	0	17	33	50	66	83	99	116	116	116
	Electricity	0	0	0	0	0	0	0	0	0	0	0
	<i>Sub-total Energy, million EUR</i>	0	0	30	59	89	118	147	176	205	205	205
	<i>Sub-total Energy, % GDP</i>	0.0%	0.0%	0.1%	0.2%	0.3%	0.5%	0.6%	0.7%	0.8%	0.8%	0.8%
Transport Taxes (excluding transport fuels)	Vehicle Taxes	0	0	4	7	11	15	19	19	19	19	19
	Passenger Aviation Tax	0	0	102	208	218	227	237	247	257	267	277
	Freight Aviation Tax	0	0	0	0	0	0	0	0	0	0	0
	<i>Sub-total Transport, million EUR</i>	0	0	106	216	229	242	255	265	275	285	296
	<i>Sub-total Transport, % GDP</i>	0.0%	0.0%	0.4%	0.8%	0.9%	0.9%	1.0%	1.0%	1.1%	1.1%	1.1%
Pollution and Resource Taxes	Landfill Tax - Non-haz (excl. C&D)	0	3	6	8	10	12	14	14	14	14	14
	Landfill Tax - Inerts (C&D)	0	0	0	0	0	0	0	0	0	0	0
	Incineration /MBT Tax	0	0	1	1	1	2	2	2	2	2	2

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Air Pollution Tax	0	6	12	18	25	32	32	34	37	39	42
	Water Abstraction Tax	0	6	11	16	21	25	24	24	24	24	24
	Waste Water Tax	0	4	8	12	11	11	11	11	11	11	11
	Pesticides Tax	0	0	3	6	6	6	7	7	8	9	9
	Aggregates Tax	0	0	42	36	31	25	25	25	26	26	26
	Packaging Tax	0	0	6	6	6	6	6	6	6	6	6
	Single Use Bag Tax	0	25	26	5	5	5	5	6	6	6	6
	Fertiliser Tax	0	0	0	0	0	0	0	0	0	0	0
	<b>Sub-total Pollution &amp; Resource, million EUR</b>	0	44	114	108	116	125	128	131	134	137	141
	<b>Sub-total Pollution &amp; Resource, % GDP</b>	0.0%	0.2%	0.4%	0.4%	0.4%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
Total Revenue Stream	<b>Total, million EUR</b>	0	44	250	383	434	485	530	572	614	628	642
	<b>Total, % GDP</b>	0.0%	0.2%	1.0%	1.5%	1.7%	1.9%	2.0%	2.2%	2.4%	2.4%	2.5%

## 13.0 Malta

During the course of the study the latest data available from official sources was sought, namely the TAXUD Taxes in Europe database, energy excise duty tables and the OECD database on environmental taxes and charges. This was supplemented by national data sources where possible. Due to the number of taxes and countries involved, the central case for energy excise duties has been the rates published by TAXUD giving the position as of 1st July 2014. Planned future increases may not be fully captured in this analysis and therefore, the projected increase in revenues would effectively incorporate any revenue from increased rates in early 2015 or shortly thereafter.

### 13.1 Energy Taxes

➤ **Excise duties on energy products:**

- Malta applies differentiated excise rates on petroleum products and other energy products. Excise rates are set by the Central Authority and revenues collected go directly to the Central Administration.
- The legal basis is provided by three legislative acts:
  - The Bunkering (Fuel) Tax Act (Chapter 381 of the Laws of Malta), which regulate taxes on fuels supplied for bunkering and also regulate the distribution of licences to bunker operators;<sup>415</sup>
  - The Electricity Supply Regulations (Chapter 423 of the Laws of Malta);<sup>416</sup>
  - The Excise Duty Act (Chapter 382 of the Laws of Malta), which makes provisions for the imposition of excise duty on goods;<sup>417</sup>
- Under the Excise Duty Act (Chapter 382 of the Laws of Malta),<sup>418</sup> an exemption from the excise duty is granted to fuels used for:<sup>419,420</sup>
  - Electricity generation;
  - International aircrafts travelling outside the EU;

---

<sup>415</sup> Government of Malta (2014), Bunkering (Fuels) Tax Act (Chapter 381), Accessed 11<sup>th</sup> August 2014, <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=8848>

<sup>416</sup> Government of Mala (2014), Electricity Supply Regulations (Chapter 423.01), Accessed 11<sup>th</sup> August 2014, <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=10667>

<sup>417</sup> Government of Malta (2014), Excise Duty Act (Chapter 382), Accessed 11<sup>th</sup> August 2014, <http://justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=8849>

<sup>418</sup> Government of Malta (2014), Excise Duty Act (Chapter 382), Accessed 11<sup>th</sup> August 2014, <http://justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=8849>

<sup>419</sup> IVM (2013), *Budgetary support and tax expenditures for fossil fuels: An inventory for six non-OECD EU countries*, Final Report for the European Commission, January 2013, [http://ec.europa.eu/environment/enveco/taxation/pdf/fossil\\_fuels.pdf](http://ec.europa.eu/environment/enveco/taxation/pdf/fossil_fuels.pdf)

<sup>420</sup> European Commission (2014), Taxes in Europe Database, Accessed 8<sup>th</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=870/1391413804&taxType=Energy+products+and+electricity](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=870/1391413804&taxType=Energy+products+and+electricity)

- Inshore fishing;
- Fuelling and provision of fishing, industrial, commercial and rescue vessels;
- Private and pleasure sea craft with direct voyages outside the EU;
- Biomass content in biodiesel.
- Reduced excise rates are in place for gas oil/diesel used for the following maritime commercial activities:<sup>421</sup>
- Bunkering operations, conveyance of passengers and goods between shore and ocean-going vessels, dredging operations, harbour cruises, inland navigation between Malta and Gozo by vessels of a tonnage less than 3,500 tons, sea farming activities, tugging activities and navigation for commercial purposes within Maltese territorial waters (reduced rate of €142.09 per 1,000 litres is applied).
- Inland Navigation between Malta and Gozo by vessels of a tonnage of 3,500 tons or more (reduced rate of €21.20 per 1,000 litres is applied).
- The Maltese government also applies different tax rates for bunkering of ships outside territorial waters:<sup>422</sup>
  - Gas oil is taxed at €1.28 per 1,000 litres;
  - Fuel oil is taxed at €0.82 per 1,000 kg;
  - In 2012, revenues from the “Bunkering Tax” amounted to €455,311 and to €726,813 in 2013 (equivalent, respectively, to 0.006% and to 0.010% of Maltese GDP).<sup>423</sup>
- Prices for Liquefied Petroleum Gas and Propane cylinders (in force since the 1<sup>st</sup> May 2014) are listed in the table below. Please also note that retail prices of LPG cylinders are set by the Malta Resource Authority.

**Table 13-1: Retail Prices for LPG and Propane Cylinders as Set by the Malta Resource Authority (Rate as of 1<sup>st</sup> October 2014)**

Type of Fuel	Weight of Cylinders	Rate Applied (€)
LPG	10 kg cylinders	15.00
	12 kg cylinders	18.00

<sup>421</sup> Government of Malta (2014), Bunkering (Fuels) Tax Act (Chapter 381), Accessed 11<sup>th</sup> August 2014, <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=8848>

<sup>422</sup> Government of Malta (2014), Bunkering (Fuels) Tax Act (Chapter 381), Accessed 11<sup>th</sup> August 2014, <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=8848>

<sup>423</sup> Government of Malta (2014), Financial Report 2013, Floriana: The Treasury, p. 6.

Type of Fuel	Weight of Cylinders	Rate Applied (€)
	15 kg cylinders	22.50
	25 kg cylinders	37.50
	Loose/kg (other sizes)	1.70
Propane	10 kg cylinders	15.10
	15 kg cylinders	22.65
	25 kg cylinders	37.75
	Loose/kg (other sizes)	1.80

Source: Malta Resource Authority (2014) *Regulated Tariffs*, Accessed 29<sup>th</sup> September 2014, <http://mra.org.mt/news/regulated-tariffs-for-liquified-petroleum-gas-lpg-and-propane-1-october-2014/>

- In 2012, the annual total tax revenues for energy taxes amounted to €108.35 million, accounting for 1.58% of Maltese GDP and 4.70% of total tax revenues.<sup>424</sup>
- A report published in February 2014 pointed out that although the biofuel substitution obligation is not a tax in itself, it is expected to increase the price of fuel in Malta and lead to a decrease in Government revenue equivalent to €4.5 million per year<sup>425</sup> as excise taxes do not apply to the biomass content in biodiesel.<sup>426</sup>

#### ➤ Electricity:

- Tariffs applied for the consumption of electricity are regulated through the *Electricity Supply regulations (Subsidiary legislation 423.01)*<sup>427</sup> and are differentiated between Residential, Domestic and Non-Residential (industry) users. Residential users are Maltese citizens regularly resident in a house. Electricity consumption for unhabitated premises intended for residential use (or second houses) are charged at rates set out for

<sup>424</sup> European Commission (2014), *Taxes in Europe Database*, Accessed 11<sup>th</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=870/1391413804&taxType=Energy+products+and+electricity](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=870/1391413804&taxType=Energy+products+and+electricity)

<sup>425</sup> Malta Resource and Planning Authority (2014), *Report on the present state of Biofuels in Malta and measures for their promotion (an update)*, Final Report, February 2014, <http://mra.org.mt/wp-content/uploads/2012/07/216/state-of-biodiesel-in-malta-20141.pdf>

<sup>426</sup> ECOFYS et al. (2011), *RENEWABLE ENERGY POLICY COUNTRY PROFILES*, 2011 version, [http://www.resaping-res-policy.eu/downloads/RE-SHAPING\\_Renewable-Energy-Policy-Country-profiles-2011\\_FINAL\\_1.pdf](http://www.resaping-res-policy.eu/downloads/RE-SHAPING_Renewable-Energy-Policy-Country-profiles-2011_FINAL_1.pdf), Accessed 04/12/12

<sup>427</sup> Government of Malta (2014) *Subsidiary Legislation 423.01. (Electricity Supply Regulations)*, 29<sup>th</sup> September 2014, <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=10667>

domestic purposes. Non-residential users (industrial and commercial consumers) are also taxed differently from domestic and residential users.

- Residential users exceeding 60 Amps per phase are also subject to a Maximum Demand Tariff at the annual rate of €21.05 per kW of the Maximum Demand.
- According to the *Electricity Supply regulations (Subsidiary legislation 423.01)*,<sup>428</sup> a reduced tariff (*ECO-Reduction*) is applied when only one individual is registered in a Residential Premise (provided as a primary residence of an individual). A reduction of 25% of the entire amount for consumption of electricity for the billing period in question (if the consumption does not exceed the pro rata equivalent consumption of 2.000 kWh per annum).
- For a household of two or more persons, if annual consumption does not exceed 1.750 kWh per person, a 25% discount on the first 1000 kWh is applied (per person, per year). For the remaining 750 kWh annually consumed (per person a year), a 15% discount is applied.
- The approved electricity consumption tariffs (applicable from 31<sup>st</sup> March 2014) for residential consumers are shown in Table 13-2.

**Table 13-2: Electricity Tariffs Applied for Residential Users in Malta**

Bands	Cumulative consumption per annum range (kWh)	Consumption Tariffs VAT Included (€)
Service Charge – for a Single-Phase	-	65
Service Charge – for a Three-Phase	-	195
Band 1	0 – 2,000	0.1047
Band 2	2,001 – 6,000	0.1298
Band 3	6,001 – 1,0000	0.1607
Band 4	10,001 – 20,000	0.3420
Band 5	>20,000 (for every kWh of the remaining consumption)	0.6076

Source: Government of Malta (2014) *Subsidiary Legislation 423.01. (Electricity Supply Regulations)*, 29th September 2014, <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=10667>

<sup>428</sup> Government of Malta (2014) *Subsidiary Legislation 423.01. (Electricity Supply Regulations)*, 29th September 2014, <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=10667>

- Domestic users exceeding 60 Amps per phase are also subject to a Maximum Demand Tariff at the annual rate of €21.05 per kW of the Maximum Demand.
- The approved electricity tariffs (applicable from 31<sup>st</sup> March 2014) for domestic users can be found in Table 13-3.

**Table 13-3: Electricity Tariffs Applied for Domestic Users in Malta**

Bands	Cumulative consumption per annum range (kWh)	Consumption Tariffs VAT Included (€)
Service Charge – for a Single-Phase	-	65
Service Charge – for a Three-Phase	-	195
Band 1	0 – 2,000	0.1365
Band 2	2,001 – 6,000	0.1673
Band 3	6,001 – 1,0000	0.2023
Band 4	10,001 – 20,000	0.4180
Band 5	>20,000 (for every kWh of the remaining consumption)	0.6860

Source: Government of Malta (2014) *Subsidiary Legislation 423.01. (Electricity Supply Regulations)*, 29th September 2014, <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=10667>

- Non-residential users (e.g. industrial and commercial consumers) rates are shown in Table 13-4.

**Table 13-4: Electricity Tariffs Applied for Non-domestic Users in Malta**

Bands	Cumulative consumption per annum range (kWh)	Consumption Tariff VAT Included (€)
Service Charge – for a Single-Phase	-	120
Service Charge – for a Three-Phase	-	360
Band 1	0 – 2,000	0.162
Band 2	2,001 – 6,000	0.170
Band 3	6,001 – 10,000	0.183
Band 4	10,001 – 20,000	0.198

Bands	Cumulative consumption per annum range (kWh)	Consumption Tariff VAT Included (€)
Band 5	20,001 – 60,000	0.215
Band 6	60,001 – 100,000	0.200
Band 7	100,001 – 1,000,000	0.187
Band 8	1,000,001 – 5,000,000	0.170
Band 9	>5,000,000	0.144

Source: Government of Malta (2014) *Subsidiary Legislation 423.01. (Electricity Supply Regulations)*, 29th September 2014, <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=10667>

- According to *Electricity Supply regulations (Subsidiary legislation 423.01)*<sup>429</sup>, consumers registered under a non-residential Service with a consumption exceeding 5,000,000 kWh may apply to be billed at day and night kWh rates at the tariffs shown in Table 13-5.

---

<sup>429</sup> Government of Malta (2014), *Subsidiary Legislation 423.01. (Electricity Supply Regulations)*, 29th September 2014, <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=10667>



Table 13-5: Electricity Tariffs Applied for Non-domestic Users Exceeding 5,000,000 kWh (Day and Night)

Bands	Cumulative consumption per annum range (kWh)	Consumption Tariff VAT Included (€)
<b>Day consumption</b>		
Band 1	0 – 2,000	0.164
Band 2	2,001 – 6,000	0.172
Band 3	6,001 – 10,000	0.185
Band 4	10,001 – 20,000	0.200
Band 5	20,001 – 60,000	0.217
Band 6	60,001 – 100,000	0.202
Band 7	100,001 – 1,000,000	0.189
Band 8	1,000,001 – 5,000,000	0.172
Band 9	>5,000,000	0.146
<b>Night consumption</b>		
Band 1	0 – 2,000	0.127
Band 2	2,001 – 6,000	0.135
Band 3	6,001 – 10,000	0.148
Band 4	10,001 – 20,000	0.163
Band 5	20,001 – 60,000	0.180
Band 6	60,001 – 100,000	0.165
Band 7	100,001 – 1,000,000	0.152
Band 8	1,000,001 – 5,000,000	0.135
Band 9	>5,000,000	0.109

Source: Government of Malta (2014) *Subsidiary Legislation 423.01. (Electricity Supply Regulations)*, 29<sup>th</sup> September 2014, [www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=10667](http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=10667)

- The registered consumer on a Non-Residential Premises Service that is rated above 100 Amps per phase may apply to be metered and billed in kVAh at the tariffs shown in Table 13-6. As per Subsidiary Legislation

423.01, the registered consumer on a non-residential premises service that is rated above 100 Amps per phase may apply to be metered and billed in kVAh at €0.156 for every kVAh of the next 4,000,000 kVAh.

**Table 13-6: Electricity Tariffs Applied for Non-domestic Users Rated Above 100 Amps per Phase**

Bands	Cumulative Consumption (kVAh)	Consumption Tariff VAT Included (€)
Band 1	0 – 2,000	0.149
Band 2	2,001 – 6,000	0.156
Band 3	6,001 – 10,000	0.168
Band 4	10,001 – 20,000	0.182
Band 5	20,001 – 60,000	0.198
Band 6	60,001 – 100,000	0.184
Band 7	100,001 – 1,000,000	0.172
Band 8	1,000,001 – 5,000,000	0.156
Band 9	>5,000,000	0.132

Source: Government of Malta (2014), *Subsidiary Legislation 423.01. (Electricity Supply Regulations)*, 29<sup>th</sup> September 2014, [www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=10667](http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=10667)

- The registered consumer on a Non-Residential Premises Service that is rated above 100 Amps per phase and has a consumption exceeding 5,500,000 kVAh may apply to be billed at day and night kVAh rates shown in Table 13-7.

**Table 13-7: Electricity Tariffs Applied for Non-domestic Users Exceeding 5,000,000 kWh (Day and Night)**

Bands	Cumulative Consumption (kVAh)	Consumption Tariff VAT Included (€)
<b>Day consumption</b>		
Band 1	0 – 2,000	0.151
Band 2	2,001 – 6,000	0.158
Band 3	6,001 – 10,000	0.170
Band 4	10,001 – 20,000	0.184
Band 5	20,001 – 60,000	0.200

Bands	Cumulative Consumption (kVAh)	Consumption Tariff VAT Included (€)
Band 6	60,001 – 100,000	0.186
Band 7	100,001 – 1,000,000	0.174
Band 8	1,000,001 – 5,000,000	0.158
Band 9	>5,000,000	0.134
<b>Night consumption</b>		
Band 1	0 – 2,000	0.114
Band 2	2,001 – 6,000	0.121
Band 3	6,001 – 10,000	0.133
Band 4	10,001 – 20,000	0.147
Band 5	20,001 – 60,000	0.163
Band 6	60,001 – 100,000	0.149
Band 7	100,001 – 1,000,000	0.137
Band 8	1,000,001 – 5,000,000	0.121
Band 9	>5,000,000	0.097

Source: Government of Malta (2014), Subsidiary Legislation 423.01. (Electricity Supply Regulations), 29<sup>th</sup> September 2014, [www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=10667](http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=10667)

- Finally, for Non-residential premises, the Three Phase Service exceeding 60 Amps per phase shall also be subject to a Maximum Demand Tariff set at the rates shown in Table 13-8.

**Table 13-8: Maximum Demand Tariff rates for Non-Residential Consumers**

Level of Consumption	Rate applied (€)
≤ 5,000,000 kW	20.50 per kW
≤ 5,500,000 kVA	19.20 per kVA
> 5,000,000 kW	17.20 per kW
> 5,500,000 kVA	17.20 per kVA

Source: Government of Malta (2014), Subsidiary Legislation 423.01. (Electricity Supply Regulations), 29<sup>th</sup> September 2014, [www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=10667](http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=10667)

- It is also important to note that final retail prices of electricity are directly controlled by the Malta Resource Authority (mainly due to the quasi-monopolistic position on the national market). Electricity is charged on a financial cost recovery basis and the reduction in tariffs followed reflects lower costs and better emissions performance from the decommissioning of ageing plants and their replacement through LNG fuelled facilities, as well as the interconnection with the European grid which are all expected to occur in 2015 and 2016.
- The electricity generation sector in Malta is included in the EU's Emissions Trading Scheme.
- In addition, Malta applies a reduced VAT rate of 5% on the supply of electricity (instead of the normal rate of 18%) as allowed for under Article 102 of Council Directive 2006/112/EC.<sup>430,431</sup>

## 13.2 Transport Taxes (Excluding Transport Fuels)

### ➤ Aviation Taxes:

- Passenger Aviation Tax (Dritt ta' Hlas ta' l'Ajruport ghal Servizz lill-Passiggieri):
  - An Airport (Passenger Service Charge) was in place in Malta between 1997 and 2008.<sup>432</sup> The tax was applied on passengers travelling from Malta to a destination outside the country and on travellers that do not return to Malta on the same day of departure.
  - The tax was repealed from 1 November 2008. At the end of the fiscal year 2008, total revenues from the tax amounted to € 7.06 million, equivalent to 0.11% of Maltese GDP.<sup>433</sup>

### ➤ Shipping Taxes:

- Vessel registration for small ships:
  - The *Small Ship Regulations (Subsidiary Legislation 499.52)*<sup>434</sup> regulates recreational activities in internal and territorial waters. Under the Regulations small ships (vessels under twenty-four metres in length) are to be registered with the Authority for

---

<sup>430</sup> European Commission (2014), Taxes in Europe Database, Accessed 11<sup>th</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=434/1388754868&taxType=VAT](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=434/1388754868&taxType=VAT)

<sup>431</sup> Government of Malta (2014), Excise Duty Act (Chapter 382), Accessed 8<sup>th</sup> August 2014, <http://justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=8849>

<sup>432</sup> OECD/EEA (2013) OECD/EEA Database on Instruments used for Environmental Policy and Natural Resources Management, Accessed 4<sup>th</sup> August 2014, [www2.oecd.org/econinst/queries/index.htm](http://www2.oecd.org/econinst/queries/index.htm)

<sup>433</sup> Government of Malta (2009), Financial Report 2008, Floriana: The Treasury, p. xvi.

<sup>434</sup> Government of Malta (2014), Small Ships Regulations (Subsidiary Legislation 499.52), Accessed 13<sup>rd</sup> August 2014, <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=11374&l=1>

Transport in Malta and are required to pay a once-off registration fee and an annual renewal fee.<sup>435</sup>

- The registration fee for a small ship with an engine is €50. Small ships with no engine and less than 3.65 metres in length do not have to pay an annual renewal fee. Small ships without an engine that exceed 3.65 metres in length have to pay a registration fee of €10 every five years.<sup>436</sup>
- The annual renewal fee for small ships with engines is differentiated according to the engine horse power (HP):
  - Between 9.9 and 25 HP €20.00
  - Between 25 and 50 HP: €30.00
  - Between 50 and 75 HP: €80.00
  - Between 75 and 150 HP: €100.00
  - Above 150 HP: €140.00
- Small ships without an engine are not subject to the annual fee, but are required to pay a €10 fee every 5 years. This also applies to small ships with engines not exceeding 9.9 H.P.
- To operate mechanically-powered small ships<sup>437</sup>, it is necessary to obtain an additional nautical licence at the cost of €23.29.
- Fishing boats registered with the Fisheries Department are exempt from the tax.
- Information on revenues from this tax could not be found.

➤ **Vehicle Taxes:**

- Motor Vehicle Registration Tax (Taxxa tar-Registrazzjoni fuq il-Vetturi):<sup>438</sup>
  - The tax was introduced with the approval of the *Motor Vehicle Registration and Licensing Act* (Chapter 368) and came into force on 1<sup>st</sup> January 1994. The stated objective is to charge a levy “on the registration of every motor vehicle imported [...] into Malta and

---

<sup>435</sup> OECD/EEA (2013) OECD/EEA Database on Instruments used for Environmental Policy and Natural Resources Management, Accessed 13<sup>th</sup> August 2014, [www2.oecd.org/econinst/queries/index.htm](http://www2.oecd.org/econinst/queries/index.htm)

<sup>436</sup> Details of this are prescribed in SL 499.52 Small Ships Regulations, in the First Schedule (relating to Regulation 12) [www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=11374&l=1](http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=11374&l=1)

<sup>437</sup> “Mechanically driven small ship” means any mechanically driven small ship having an engine or engines with a combined power of 10 H.P. or more.

<sup>438</sup> European Commission (2014), Taxes in Europe Database, Accessed 4<sup>th</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=16/1357119635&taxType=Other+indirect+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=16/1357119635&taxType=Other+indirect+tax)

*of every motor vehicle manufactured in Malta*". The tax directly targets importers of vehicles.<sup>439</sup>

- The value of the tax is calculated according to the engine power, EURO emissions standards, particulate matter (for diesel engines only) and CO<sub>2</sub> emissions.<sup>440,441</sup>
- Vehicles which have been brought from abroad for temporary use (for a period not exceeding seven months), that are already registered with another EU Member State, are exempt from the registration tax.
- Vehicles of people residing for less than 185 days per year and students who reside in Malta are also exempt from the tax.<sup>442</sup> Electric cars and special purpose vehicles (battery driven electric and petrol/diesel electric hybrid with a maximum mass up to 12 tonnes) are exempt from the registration tax.
- Exemptions also apply to special purpose vehicles (such as ambulances) and to vehicles brought into Malta with the intention of being re-exported or exported.<sup>443</sup>
- From April 2013, hybrid cars (M1 vehicles) are subject to the registration tax, but the CO<sub>2</sub> value included in the Certificate of Conformity is lowered by 30%.<sup>444</sup>
- Since 2011, registration taxes for commercial vehicles with emissions standards lower than EURO 3 were increased to encourage purchase of newer and less polluting vehicles. In January 2012, this measure was extended to non-commercial vehicles.<sup>445</sup>

---

<sup>439</sup> Government of Malta (2014), Motor Vehicle Registration Act (Chapter 368), Accessed 5<sup>th</sup> August 2014, <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=8837>

<sup>440</sup> Transport Malta (November 2013). Pol 02 - Registering & Licensing of New & Used Motor Vehicles, Accessed 4<sup>th</sup> August 2014, [www.transport.gov.mt/admin/uploads/media-library/files/POL%2002%20-%20Registration%20and%20Licensing%20of%20Vehicles%20\(Versions%2026%20-%205th%20November%202013\).pdf\\_20131108070800.pdf](http://www.transport.gov.mt/admin/uploads/media-library/files/POL%2002%20-%20Registration%20and%20Licensing%20of%20Vehicles%20(Versions%2026%20-%205th%20November%202013).pdf_20131108070800.pdf)

<sup>441</sup> Government of Malta (2014), Act No. XII of 2014 (*An Act to implement measures for the financial year 2014 and other administrative measures*), Accessed 7 August 2014 <http://justiceservices.gov.mt/DownloadDocument.aspx?app=lp&itemid=26033&l=1>

<sup>442</sup> Government of Malta (2014), Motor Vehicle Registration Act (Chapter 368), Accessed 5<sup>th</sup> August 2014, <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=8837>

<sup>443</sup> Transport Malta (1st January 2014), POL 33 – Annual circulation licence fees, Accessed 7<sup>th</sup> August 2014 <http://www.transport.gov.mt/admin/uploads/media-library/files/POL%2033.pdf>,

<sup>444</sup> Transport Malta (November 2013), POL 02 - Registering & Licensing of New & Used Motor Vehicles, [http://www.transport.gov.mt/admin/uploads/media-library/files/POL%2002%20-%20Registration%20and%20Licensing%20of%20Vehicles%20\(Versions%2026%20-%205th%20November%202013\).pdf\\_20131108070800.pdf](http://www.transport.gov.mt/admin/uploads/media-library/files/POL%2002%20-%20Registration%20and%20Licensing%20of%20Vehicles%20(Versions%2026%20-%205th%20November%202013).pdf_20131108070800.pdf), Accessed 7<sup>th</sup> August 2014.

<sup>445</sup> IEEP et al. (2013), Steps towards greening in the EU: Monitoring Member States' achievements in selected environmental policy areas; EU summary report, Final Report - July 2013, [http://ec.europa.eu/environment/enveco/resource\\_efficiency/pdf/Greening.pdf](http://ec.europa.eu/environment/enveco/resource_efficiency/pdf/Greening.pdf)

- In 2013, revenues for this tax were equivalent to €35.55 million, representing 0.52% of Maltese GDP and equivalent to 1.54% of total tax revenue.<sup>446,447</sup>
- In addition, in February 2014 the government introduced a grant scheme (*Għotja mill-Gvern fuq Xiri ta' Vetturi li Jaħdmu bl-Elettriku*) to incentivise the purchase of electric vehicles and reduce the number of old motor vehicles. Citizens that register an electric car are eligible for a grant equivalent to €4,000 (€1500 if it is an electric quadricycle) or €5,000 for de-registering a vehicle with an internal combustion propeller which is at least 10 years old. The Government allocated €300,000 for the scheme.<sup>448</sup>
- Circulation Licence Fee (Licenzja ta' Cirkolazzjoni):<sup>449</sup>
  - Since 1950, vehicles registered with the Authority for Transports in Malta are subject to an annual circulation licence fee. The fee varies according to the age of the car and related CO<sub>2</sub> emissions.<sup>450</sup> It provides economic incentives for the purchase of efficient vehicles.
  - For private petrol vehicles this fee ranges between €100 for a new petrol-powered vehicle with between 0-100g per km CO<sub>2</sub> emissions to €1,110 for a vehicle 14 years old or more with over 250g per km CO<sub>2</sub> emissions. For private diesel vehicles, the fee ranges between €100 for a new car with 0-100g per km CO<sub>2</sub> emissions and with particulate matter emissions up to 0.005g per km, to €1,210 for an old vehicle older than 14 years which emits more than 250g per km with particulate matter emissions exceeding 0.035g per km.<sup>451</sup>
  - These rates have declined over the years. In 2012, the fee on petrol vehicles older than 14 years with over 250g per km CO<sub>2</sub> emissions was €1,474, while the fee on diesel vehicles older than 14 years,

---

<sup>446</sup> European Commission (2014) Taxes in Europe Database, Accessed 4<sup>th</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=1901/1388754867&taxType=Other+indirect+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=1901/1388754867&taxType=Other+indirect+tax)

<sup>447</sup> Data provided by the Ministry of Treasury differs slightly from the figures given by the Eurostat. According to the latest Financial report released, the 'Motor Vehicle Registration Tax' yielded €37.025.558 in 2012 and €32.003.369 in 2013. Please refer to Government of Malta (2014), Financial Report 2013, Floriana: The Treasury, p. 6.

<sup>448</sup> Government of Malta (2014), Government Grant on the Purchase of Electric Vehicles in *The Malta Government Gazette*, No. 19209, p. 1344.

<sup>449</sup> European Commission (2014) Taxes in Europe Database, Accessed 12<sup>th</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=425/1388754867&taxType=Other+indirect+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=425/1388754867&taxType=Other+indirect+tax)

<sup>450</sup> Transport Malta (1st January 2014), POL 33 – Annual circulation licence fees, <http://www.transport.gov.mt/admin/uploads/media-library/files/POL%2033.pdf>, Accessed 7<sup>th</sup> August 2014

<sup>451</sup> Government of Malta (2014), Motor Vehicle Registration Act (Chapter 368), Accessed 5<sup>th</sup> August 2014, <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=8837>



with 250g per km CO<sub>2</sub> emissions and PM emissions higher than 0.036g per km was €1,706.<sup>452</sup>

- Vehicles for disabled persons, vehicles owned by the State or vehicles which belong to official diplomatic staff are exempt from the fee.<sup>453</sup>
- The annual circulation licence fee also applies to electric and hybrid electric motor vehicles.<sup>454</sup>
- Revenues raised from the fee are allocated to the general budget.<sup>455</sup>
- In 2012, revenues from the fee were equivalent to €48.59 million, which amounted to 0.71% of GDP and 2.11 % of total tax revenues collected.<sup>456,457</sup>

### 13.3 Pollution and Resource Taxes

#### ➤ Aggregates:

- Malta has an annual quarrying operating license fee of €699 for operators that quarry and/or sell soft stone or hard stone derivatives.<sup>458</sup> The fee is regulated through subsidiary legislation 128.01 of the *Police Licences Regulations*.<sup>459</sup>
- Apart from the quarrying operating license, there is no tax or fee applied to stones and aggregates extracted from quarries.<sup>460</sup>

---

<sup>452</sup> Transport Malta (January 2012). Registering & Licensing of New & Used Motor Vehicles, <https://secure2.gov.mt/vehicleregistration/file.aspx?f=392>, Accessed 7<sup>th</sup> August 2014

<sup>453</sup> European Commission (2014) Taxes in Europe Database, Accessed 4<sup>th</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=425/1388754867&taxType=Other+indirect+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=425/1388754867&taxType=Other+indirect+tax)

<sup>454</sup> Transport Malta (1st January 2014), POL 33 – Annual circulation licence fees, Accessed 7<sup>th</sup> August 2014 <http://www.transport.gov.mt/admin/uploads/media-library/files/POL%2033.pdf>

<sup>455</sup> European Commission (2014) Taxes in Europe Database, Accessed 11<sup>th</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)

<sup>456</sup> European Commission (2014) Taxes in Europe Database, Accessed 4<sup>th</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxSearch.html](http://ec.europa.eu/taxation_customs/tedb/taxSearch.html)

<sup>457</sup> In this case data provided by Eurostat is in line with the figures the figures given by the Ministry of Treasury. According to the latest Financial report released, the 'Annual Circulation Licence Fee' yielded €48.588.334 in 2012 and €49.866.874 in 2013. Please refer to Government of Malta (2014), Financial Report 2013, Floriana: The Treasury, p. 6.

<sup>458</sup> OECD/EEA (2013) OECD/EEA Database on Instruments used for Environmental Policy and Natural Resources Management, Accessed 13<sup>th</sup> August 2014, [www2.oecd.org/eoicst/queries/index.htm](http://www2.oecd.org/eoicst/queries/index.htm)

<sup>459</sup> Government of Malta (2013), Police Licences Regulations – Subsidiary Legislation 128.01, Accessed 13<sup>th</sup> August 2014, <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=9422>

<sup>460</sup> IEEP et al. (2013), Study supporting the phasing out of environmentally harmful subsidies: Annexes to final report, October 2012, Accessed 11<sup>th</sup> August 2014, [http://ec.europa.eu/environment/enveco/taxation/pdf/annexes\\_phasing\\_out\\_env\\_harmful\\_subsidies.pdf](http://ec.europa.eu/environment/enveco/taxation/pdf/annexes_phasing_out_env_harmful_subsidies.pdf)



- Total revenues obtained from the fee are not available. However, according to data provided by the Malta Environment & Planning Authority (MEPA)<sup>461</sup> there are currently 23 operational hardstone and softstone quarries in Malta.<sup>462</sup>

➤ **Gate fees for MSW and C&D waste:**

- There is currently no landfill tax in Malta; however, gate fees are applied at authorized waste-management facilities.<sup>463</sup> The fees are regulated through the *Deposit of Waste and Rubble (Fees) Regulations (Subsidiary Legislation 435.08)*<sup>464</sup> and are paid by the municipalities. These fees are out of scope of this work, but included here for additional context.
- The gate fee for mixed municipal waste disposal and for Construction and Demolition (C&D) waste was introduced in 1991. The fee was set at €0.77 per tonne<sup>465,466</sup> and provided little incentive for waste prevention or recycling. From 1 October 2009, gate fees for MSW were increased to €20 per tonne for mixed waste and waste deposited for biological treatment. A reduced fee of €0.50 per tonne was also introduced for any type of dry waste separated at source, suitable for recycling and/or recovery.<sup>467</sup>
- The owners of vehicles used to transport any kind of waste (MSW, rubble or hazardous waste) are subject to a registration tax of €23.29 for the registration of the vehicle.
- A C&D waste fee of €3.21 (excluding VAT) for every metric tonne of rubble discharged in any public waste deposit site has been in place since 2010.<sup>468</sup>
- C&D waste from households in “small quantities” may be disposed free of charge in appointed sites.<sup>469</sup>

---

<sup>461</sup> Malta Environment and Planning Authority (2014), *Environmental Permitting (Quarries)*, Accessed 15<sup>th</sup> August 2014, <http://www.mepa.org.mt/quarries-envpermitting>

<sup>462</sup> This would equal to €16072.63 revenue per year, equivalent to 0.0002% of Maltese GDP.

<sup>463</sup> Maltese ministry for Sustainable Development, the Environment and Climate Change (2014), *Waste Management Plan for the Maltese Islands: A Resource Management Approach 2014 - 2020*, Final document, January 2014, p.42, <http://msdec.gov.mt/en/Document%20Repository/Waste%20Management%20Plan%202014%20-%202020%20-%20Final%20Document.pdf>

<sup>464</sup> Government of Malta (2010), *Deposit of Waste and Rubble (Fees) Regulation*, Accessed 13<sup>rd</sup> August 2014, <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=10855>

<sup>465</sup> Government of Malta (1997), L.N. 128 of 1997 – ENVIRONMENT PROTECTION ACT OF 1991 (ACT V OF 1991) FEES ORDINANCE (CAP. 35), Accessed 9<sup>th</sup> September 2014, <http://www.mepa.org.mt/LpDocumentDetails?syskey=432>

<sup>466</sup> Parliamentary Secretariat for Tourism, the Environment and Culture (2010), *Management Strategy for the Maltese Islands – First Update*, December 2010, p. 16

<sup>467</sup> Government of Malta (2010), *Deposit of Waste and Rubble (Fees) Regulation*, Accessed 13<sup>rd</sup> August 2014, <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=10855>

<sup>468</sup> Government of Malta (2010), *Deposit of Waste and Rubble (Fees) Regulation*, Accessed 13<sup>rd</sup> August 2014, <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=10855>

- There are no charges applied on the collection of municipal waste in Malta.
- **Cement tax:**
- Following the approval of Act N. IV of 2011, Malta introduced an excise tax on Portland cement excluding white cement (grey Portland cement).<sup>470</sup>
  - The tax was initially set at €9 per 1000kg, it increased over the years and in March 2014 it was at €27.00 per 1000kg (grey Portland cement remains exempted).<sup>471</sup>
  - In 2012, revenues from the excise tax on cement amounted to € 3.20 million and to €4.11 million in 2013 (respectively, 0.045% and 0.057% of Maltese GDP).<sup>472</sup> This tax amounted to 0.13% of total tax revenues in 2012 and to 0.15% in 2013.
- **ECO-contribution scheme (Att dwar l-Eko-Kontribuzzjoni):**
- The Eco-contribution scheme aims to encourage producers (who manufacture or brings goods into the country) to take responsibility for waste and operate waste recovery schemes.<sup>473</sup>
  - The scheme applies to producers of selected products (listed in the First Schedule of the ECO Contribution Act - Chapter 473 of the Laws of Malta) and is based on the number of products present on the market. Different rates are applied to different products – see Table 13-9.<sup>474</sup>
  - Producers who “take-back” waste products on which they have already paid an eco-contribution could have their future eco-contribution payments reduced totally or partially, according to the value of the eco-contribution paid on recovered waste products.<sup>475</sup> Under the eco-contribution scheme, the following charges are applied per plastic bag:<sup>476</sup>

<sup>469</sup> WasteServ Malta Limited (2014), Waste Management – Construction Waste, Accessed 12<sup>th</sup> August 2014, <https://www.wasteservmalta.com/wastemanagement.aspx?id=110>

<sup>470</sup> Government of Malta (2011), Act No. IV of 2011 entitled the Budget Measures Implementation Act, 2011, Accessed 9<sup>th</sup> August 2014, <http://www.doi-archived.gov.mt/en/parliamentacts/2011/Act%20IV%20of%202011.pdf>

<sup>471</sup> Government of Malta (2014), An act to implement Budget measures for the financial year 2014 and other administrative measures, Accessed 8<sup>th</sup> August 2014, <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lp&itemid=25742&l=1>

<sup>472</sup> Government of Malta (2014), Financial Report 2013, Floriana: The Treasury, p. 6.

<sup>473</sup> OECD/EEA (2013) OECD/EEA Database on Instruments used for Environmental Policy and Natural Resources Management, Accessed 4<sup>th</sup> August 2014, [www2.oecd.org/ecoinst/queries/index.htm](http://www2.oecd.org/ecoinst/queries/index.htm)

<sup>474</sup> Government of Malta (2014), Eco-Contribution Act (Chap. 473), Accessed 8<sup>th</sup> August 2014, <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=8939&l=1>

<sup>475</sup> Government of Malta (2014), Eco-Contribution Act (Chap. 473), Accessed 8<sup>th</sup> August 2014, <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=8939&l=1>

<sup>476</sup> Government of Malta (2014), Eco-Contribution Act (Chap. 473), pg. 16 <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=8939&l=1>, Accessed 15<sup>th</sup> October 2014

- €0.14 on plastic bags excluding: i) bags for the conveyance of goods; ii) sacks and cones; iii) bags, without any handles, loops, slots or any other feature that facilitates the use of the bag for the conveyance of goods; iv) bio-degradable bags v) plastic packaging, without handles, used as part of a production process vi) plastic bags designed for re-use. A charge of €0.14 per piece.
- €0.02 on bags of degradable plastic, excluding bags for the conveyance of goods and bags without any handles, loops, slots or any other feature that facilitates the use of the bag for the conveyance of goods, and without any gussets, not exceeding 26 cm in width and 40 cm in length.
- €0.15 on bags of plastics, for the conveyance of goods, with a handle, loop, slot or any other feature that facilitates the use of the bag for the conveyance of goods, excluding bags which constitute or form an integral part of the packaging in which goods are sealed prior to retail sale or transfer.
- The measure was introduced as a way to discourage the use of plastic bags<sup>477</sup> and has reportedly contributed to a decrease of 5 million plastic bags in the first five months of 2005 as well as improved traceability and monitoring of the production of plastic bags in the country.<sup>478</sup>
- In 2012, annual revenues from the scheme were equivalent to €6.9 million, which represented the 0.10% of Maltese GDP and was equivalent to 0.29% of total tax revenue.<sup>479</sup>

**Table 13-9: Eco-Contribution Tariff Applied on Different Products**

Type of Product	Tariff Applied
Bottles/containers made of plastic, metal or glass for water and beer	€0.02 per item
Bottles/containers made of plastic, metal or glass for wine or liqueurs	€0.12 per item
Cans of aluminium (for beverages)	€0.02 per item
Bottles and containers of shampoo and dental hygiene	€0.05 per item

<sup>477</sup> The Times of Malta (2009), *Eco tax on plastic bags from March*, Accessed 13<sup>rd</sup> October 2014, <http://www.timesofmalta.com/articles/view/20090129/local/eco-tax-on-plastic-bags-from-march-1.242668>

<sup>478</sup> Lyons, L., (2013) *Dynamix Policy Mix Evaluation – Reducing Plastic Bag Use in the UK and Ireland*, [http://dynamix-project.eu/sites/default/files/Plastic%20bags\\_Ireland%20and%20UK.pdf](http://dynamix-project.eu/sites/default/files/Plastic%20bags_Ireland%20and%20UK.pdf)

<sup>479</sup> Data provided by the Ministry of Treasury differs slightly from the figures given by the Eurostat. According to the latest financial report released, the 'Eco-contribution' yielded €6,908,470 in 2012 and €6,457,162 in 2013. Please refer to Government of Malta (2014) Financial Report 2013, Floriana: The Treasury, p. 7.

Type of Product	Tariff Applied
Bottles and containers of creams and shaving	€0.12 per item
Packaging of plastics	€0.12 per item
Tableware and kitchenware of plastics	€0.02 per item
Mattresses and articles of bedding	€6.99-€2.33 per item
Biodegradable and plastic bags	€0,14 per plastic bag €0.02 per degradable plastic bag €0.15 per plastic bag for the conveyance of goods,
Tyres	€4.66 per item
Batteries and accumulators (various types)	€0.06-1.63 per item
Petroleum oils and lubricants	€0.23 per litre
Oil filters	€0.12 per item
Water heaters	€6.99 per item
White goods and electronic equipment (various types)	€27.29-69.88 per item
Monitors and TV equipment	€11.65-34.94 per item
Appliances for washing and cooking	€23.29-6.99 per item
Telecommunication equipment	€5.82 per item
Electronic equipment (various)	€1.16-€69.88per item
Incandescent/halogen lamps	€0.25-0.50 per lamp/per tube

Type of Product	Tariff Applied
Chewing gum	€0.01 per 2g

Sources: IEEP et al. (2013) *Steps to Greening Country Report: Malta, Report for the European Commission*, p. 8; and Government of Malta (2014) *Eco-Contribution Act (Chap. 473)*, Accessed 8<sup>th</sup> August 2014, [www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=8939&l=1](http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=8939&l=1)

➤ **Waste water charges:**

- Wastewater management costs are covered by water tariffs<sup>480</sup> which seek to cover the full costs of provision – see section on water tariffs below.

➤ **Water metering and abstraction fees:**

- Regulations on the registration and use of groundwater resources have been in place in Malta since 1948.<sup>481</sup> Rules for water metering are regulated through the “*Groundwater Abstraction Metering Regulations*” (Subsidiary Legislation 423.40) which requires metering for:
  - All groundwater sources in use since 1955.
  - Registered or notified groundwater sources.
  - Sources which were in use prior to the entry into force of the Malta Resource Authority Act (in February 2001).<sup>482</sup>
  - Water resources used by the Water Services Corporation (which is responsible for the distribution and production of water).
- Exemptions on metering are granted:<sup>483</sup>
  - If no mechanical pump or device is used to abstract groundwater.
  - If a user proves that it is a cultural property (as defined under the *Cultural Heritage Act*).<sup>484</sup>
  - If the source is used for domestic purposes only, abstraction yield does not surpass 1m<sup>3</sup> per day and the source abstracts groundwater from the perched aquifer.
- In 2009, 20,465 households were exempt from paying rent on water meters in Malta.<sup>485</sup>

---

<sup>480</sup> Malta Resource Authority (2014), *Decision on Proposed Water Tariffs March 2014 – Summary of Review Process and Conclusions*, Accessed 18<sup>th</sup> August 2014, <http://mra.org.mt/wp-content/uploads/2014/03/5480/Minister-MECW-Approval-of-new-tariffs-for-supply-of-water-27.03.14.pdf>

<sup>481</sup> Government of Malta (2014), *Subsidiary Legislation 423.03 – Water Supply Regulations*, Accessed 11<sup>th</sup> August 2014, <http://mra.org.mt/wp-content/uploads/2014/03/5480/Water-Supply-Regulations.pdf>

<sup>482</sup> Government of Malta (2014), *Malta Resources Authority Act (Chapter 423 of the Laws of Malta)* Accessed 14<sup>th</sup> August 2014, <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=8889>

<sup>483</sup> IEEP et al. (2013), *Steps to greening country report: Malta, Report for the European Commission*, p. 9.

<sup>484</sup> Government of Malta (2014), *Cultural Heritage Act (Chapter 445)*, Accessed 11<sup>th</sup> August 2014, [http://www.culturalheritage.gov.mt/filebank/chapt445\[1\]%20Latest%20copy%20as%20at%20September%202010.pdf](http://www.culturalheritage.gov.mt/filebank/chapt445[1]%20Latest%20copy%20as%20at%20September%202010.pdf)

- The Schedule of the *Groundwater Abstraction (Metering) Regulations*<sup>486</sup> sets out charges for the installation of meters, annual metering fees, metering regulations and inspections – see Table 13-10.

Table 13-10: Water Metering Fees

Type	Fee (€)
Meter installation fee for each groundwater source	765
Annual metering fee for each groundwater source metered under the regulations	143 (per annum)
Application to Water Service Corporation for testing a meter	50
Application to Water Service Corporation for temporary suspension of metering	100
Application to Malta Resource Authority for closure, sealing and decommissioning of a groundwater source	50

Source: Government of Malta (2014), *Subsidiary Legislation 423.40 – Groundwater Abstraction (Metering) Regulations*, Accessed 11<sup>th</sup> August 2014, <http://mra.org.mt/wp-content/uploads/2012/08/40.Groundwater-Abstraction-Metering-Regulations.pdf>

- Water used for agricultural purposes is exempt from water abstraction fees and the costs of water are limited to the private on-farm costs.<sup>487</sup> Moreover a “flat” volumetric tariff of €0.093 per m<sup>3</sup> is in place for the supply of non-potable water to both agricultural and industrial consumers.<sup>488</sup> Further information on abstraction fees (i.e. charges per m<sup>3</sup> of water abstracted) could not be found.
- Water scarcity is a particular challenge in Malta given its environmental status and reliance on costly and energy intensive reverse osmosis plants for potable water. The need to introduce and enforce tariffs for water abstraction has received particular attention in recent years including from the European Commission which has pressed Malta to fully implement the

<sup>485</sup> IEEP et al. (2013), *Steps to greening country report: Malta*, Report for the European Commission, p. 10.

<sup>486</sup> Government of Malta (2014), *Subsidiary Legislation 423.40 – Groundwater Abstraction (Metering) Regulations*, Accessed 11<sup>th</sup> August 2014, <http://mra.org.mt/wp-content/uploads/2012/08/40.Groundwater-Abstraction-Metering-Regulations.pdf>

<sup>487</sup> European Commission (2012), *The role of water pricing and water allocation in agriculture in delivering sustainable water use in Europe – FINAL REPORT*, February 2012, [http://ec.europa.eu/environment/water/quantity/pdf/agriculture\\_report.pdf](http://ec.europa.eu/environment/water/quantity/pdf/agriculture_report.pdf)

<sup>488</sup> Government of Malta (2014), *Subsidiary Legislation 423.03 – Water Supply Regulations*, Accessed 11<sup>th</sup> August 2014, <http://mra.org.mt/wp-content/uploads/2014/03/5480/Water-Supply-Regulations.pdf>

Water Framework Directive (especially Art. 9).<sup>489</sup> According to an article published in 2013, the Water Service Corporation currently extracts 13 million m<sup>3</sup> a year at the price of €0.10 per m<sup>3</sup>, however, the Maltese water service company obtains 60% of its water from reverse osmosis, with an estimated cost of €0.60 per m<sup>3</sup>.<sup>490</sup>

- Recent estimates have pointed out that the agricultural water demand in the country is equivalent to 28 million m<sup>3</sup> a year. The majority of the water comes from groundwater, and extraction levels are beyond natural replenishment rates, i.e. not currently sustainable.<sup>491</sup>

➤ **Water tariffs:**

- Water tariffs are regulated through the *Water Supply Regulations* (Subsidiary Legislation 423.03).<sup>492</sup>
- Water charges for households were increased between 2008 and 2010; however, in 2014 (following approval of LN 109 of 2014) water fees for households decreased from €1.47 to €1.40 (for annual consumption between 0 and 33 m<sup>3</sup>) and from €5.41 to €5.14 (for annual consumption above 33 m<sup>3</sup>).
- The supply of water services by a public authority is exempt from VAT.<sup>493</sup> Table 13-11 sets out the tariffs applied to residential, non-residential and domestic consumers since 31<sup>st</sup> March 2014 (according to the latest revision of the Water Supply Regulation).<sup>494</sup>

**Table 13-11: Water Tariffs Applied to Different Consumers**

Type of Consumer	Annual Quantity	Charge Applied (€ per m <sup>3</sup> )
Residential	Up to 33 m <sup>3</sup> per person	1.3965
	Over 33 m <sup>3</sup> per person	5.1395

<sup>489</sup> Malta Today (2013), *Higher water prices – a reality Malta must face*, Accessed 1<sup>st</sup> October 2014, [http://www.maltatoday.com.mt/business/business\\_comment/23819/marco-cremona-higher-water-prices-a-reality-malta-must-face-20130109#.VCwJU00cR9A](http://www.maltatoday.com.mt/business/business_comment/23819/marco-cremona-higher-water-prices-a-reality-malta-must-face-20130109#.VCwJU00cR9A)

<sup>490</sup> Malta Today (2013), *Higher water prices – a reality Malta must face*, Accessed 1<sup>st</sup> October 2014, [http://www.maltatoday.com.mt/business/business\\_comment/23819/marco-cremona-higher-water-prices-a-reality-malta-must-face-20130109#.VCwJU00cR9A](http://www.maltatoday.com.mt/business/business_comment/23819/marco-cremona-higher-water-prices-a-reality-malta-must-face-20130109#.VCwJU00cR9A)

<sup>491</sup> Malta Water Association (2012) *Towards Integrated Water Management in Malta – Recommendation to Political Parties*, Final report, July 2012, <http://www.maltastar.com/userfiles/file/mwa.pdf>

<sup>492</sup> Government of Malta (2014), *Water Supply Regulations* (Subsidiary Legislation 423.03), Accessed 6<sup>th</sup> August 2014, <http://mra.org.mt/wp-content/uploads/2014/03/5480/Water-Supply-Regulations.pdf>

<sup>493</sup> European Commission (2014) *Taxes in Europe Database*, Accessed 11<sup>th</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=434/1388754868&taxType=VATc](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=434/1388754868&taxType=VATc)

<sup>494</sup> Government of Malta (2014), *Subsidiary Legislation 423.03 – Water Supply Regulations*, Accessed 11<sup>th</sup> August 2014, <http://mra.org.mt/wp-content/uploads/2014/03/5480/Water-Supply-Regulations.pdf>



Type of Consumer	Annual Quantity	Charge Applied (€ per m <sup>3</sup> )
Non-Residential (including Industrial)	Up to 168 m <sup>3</sup> per person	2.1
	Between 168 and 40,000 m <sup>3</sup> per person	2.5
	Over 40,000 m <sup>3</sup> per person	1.75
Domestic	Up to 33 m <sup>3</sup> per person	2.185
	Over 33 m <sup>3</sup> per person	5.1395

Source: Government of Malta (2014) *Subsidiary Legislation 423.03 – Water Supply Regulations*, Accessed 11<sup>th</sup> August 2014, <http://mra.org.mt/wp-content/uploads/2014/03/5480/Water-Supply-Regulations.pdf>

### 13.4 Modelled Changes in Tax Base

The modelled change in the tax base for each of the suggested reforms to the tax system are shown in the table and figures below.

Table 13-12: Change in Energy Tax Base

Fuel Type	Units	Baseline	After Tax Increase	Change
Gas Oil	million litres	71	69	-2
Petrol	million litres	62	62	0
Kerosene	million litres	75	75	0
LPG	thousand tonnes	14	14	0
Heavy Fuel Oil	thousand tonnes	0	0	0
Natural Gas	TJ (GCV)	0	0	0
Coal	thousand tonnes	1,635	1,627	-8
Electricity	GWh	1,181	1,181	0



Figure 13-1: Change in Internal Passenger Flights, flights per year

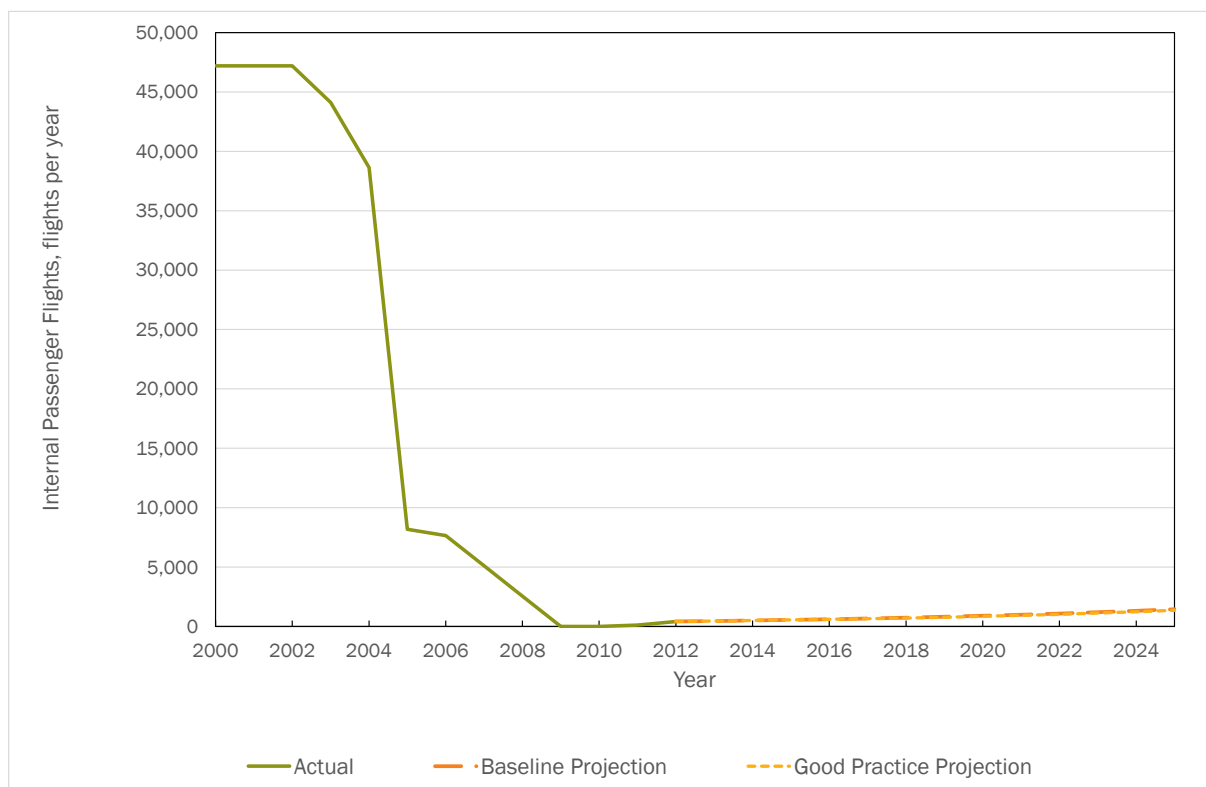


Figure 13-2: Change in Intra-EU Passenger Flights, flights per year

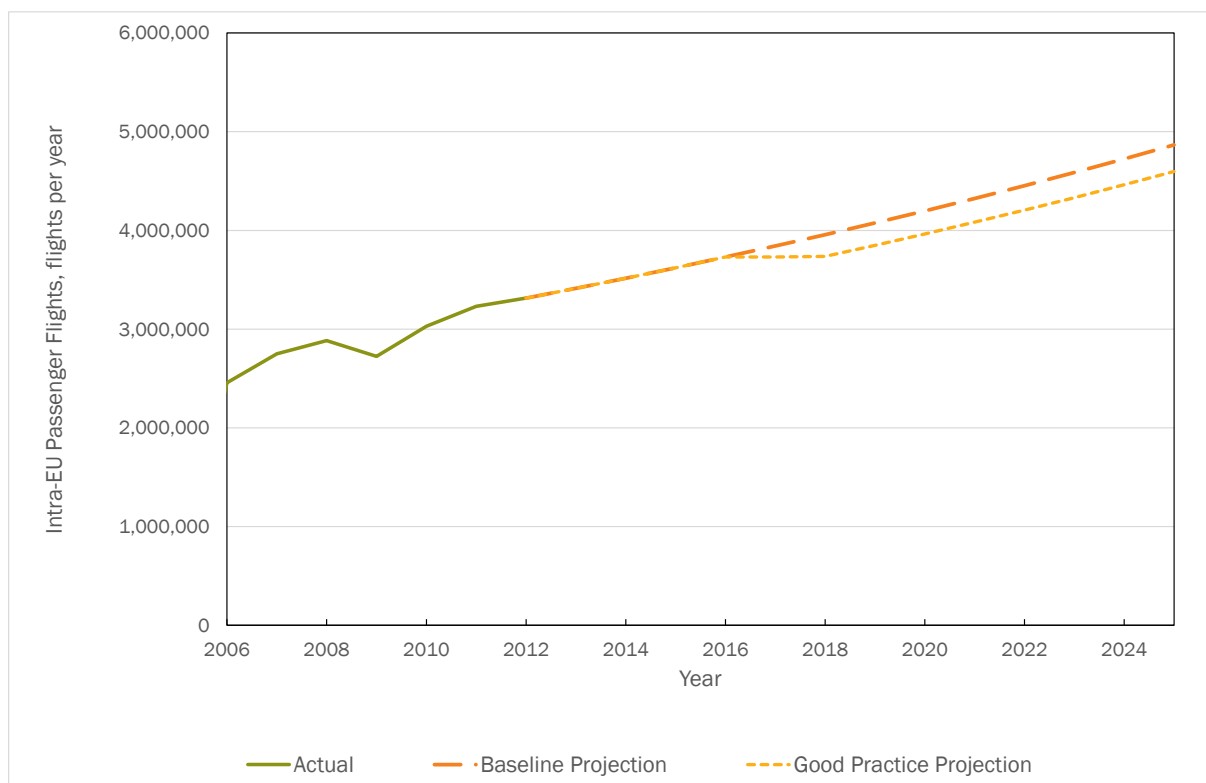


Figure 13-3: Change in Extra-EU Passenger Flights, flights per year

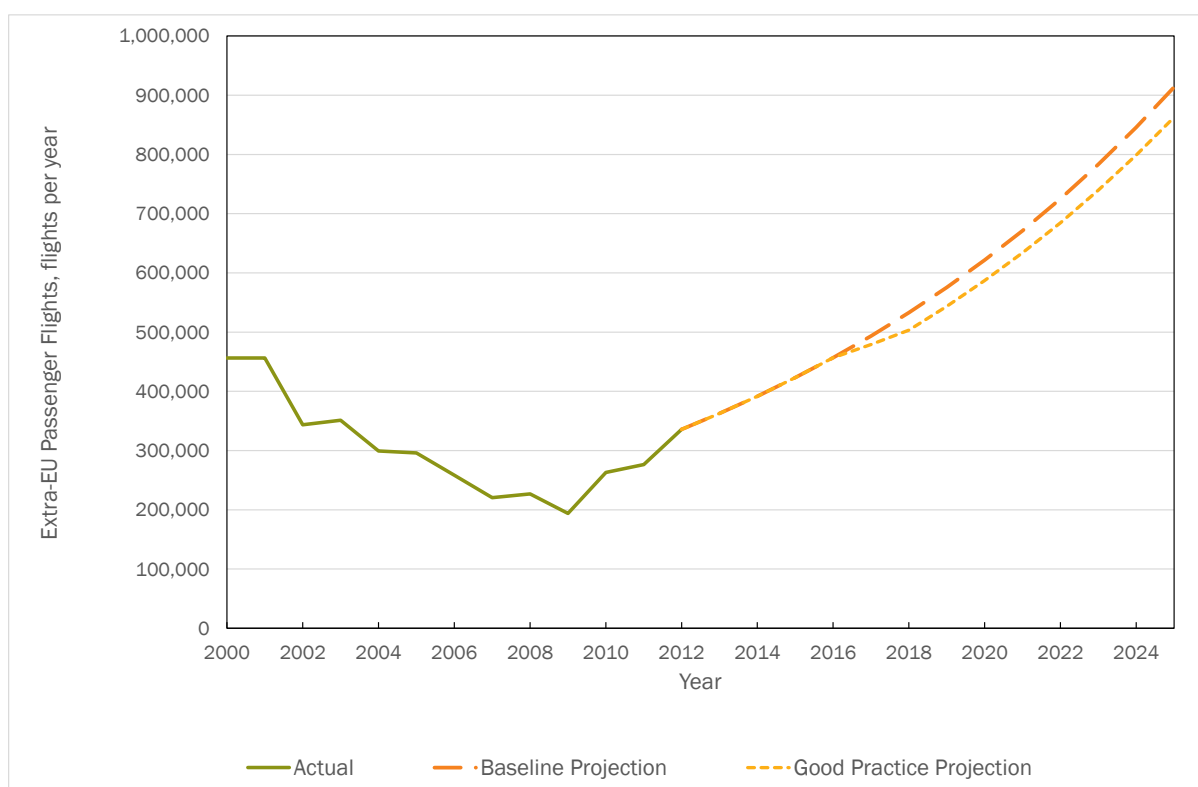


Figure 13-4: Change in Internal Air-freight, tonnes

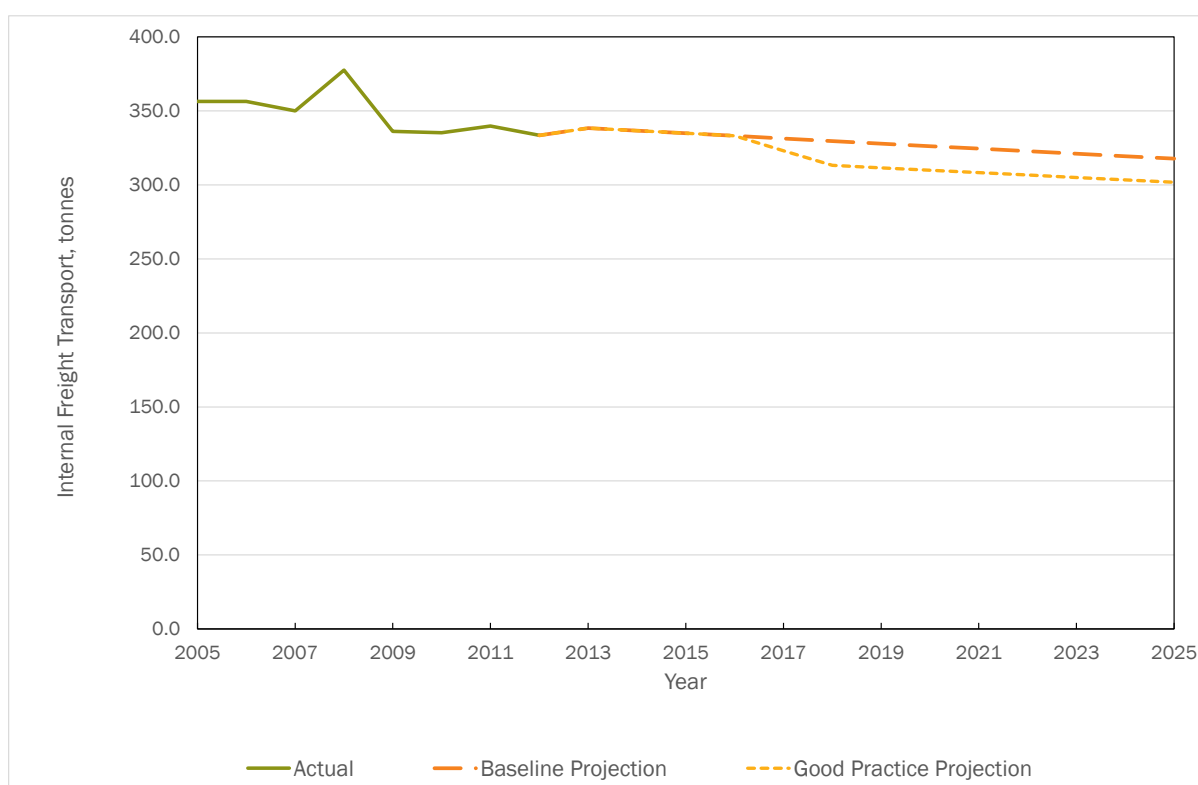


Figure 13-5: Change in Intra-EU Air-freight, tonnes

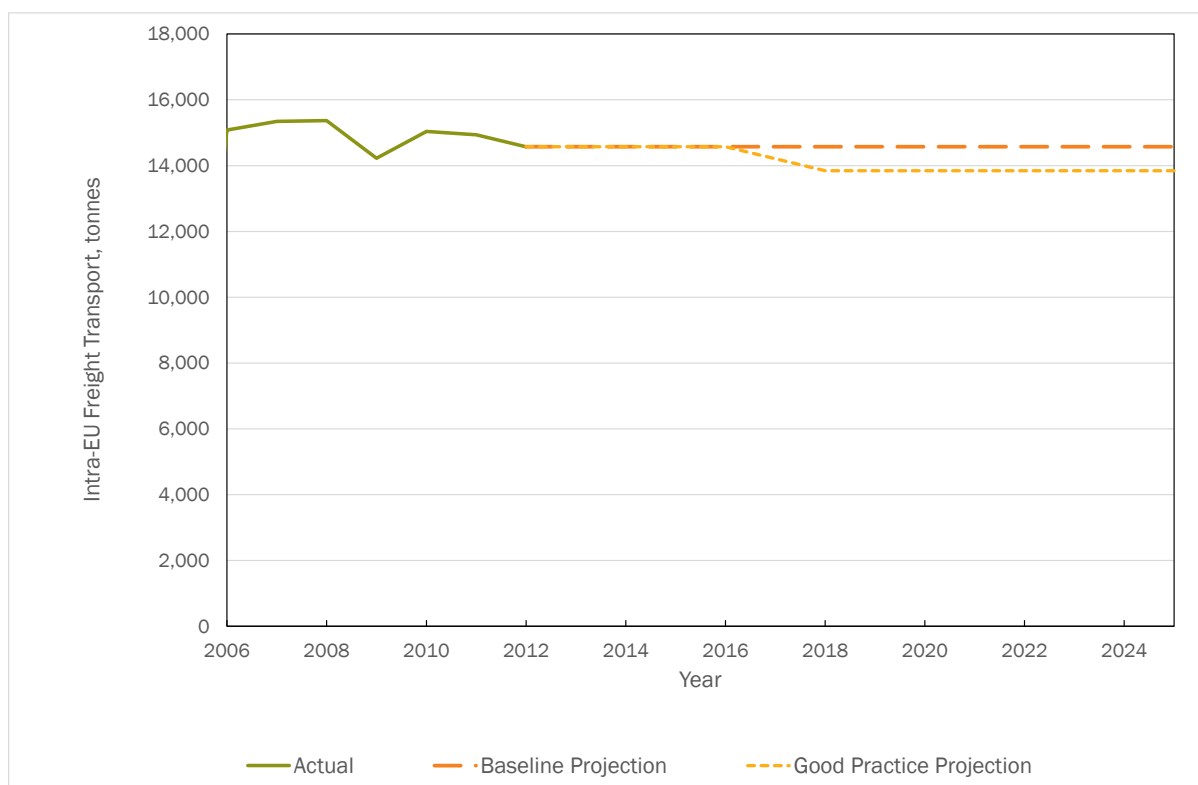


Figure 13-6: Change in Extra-EU Air-freight, tonnes

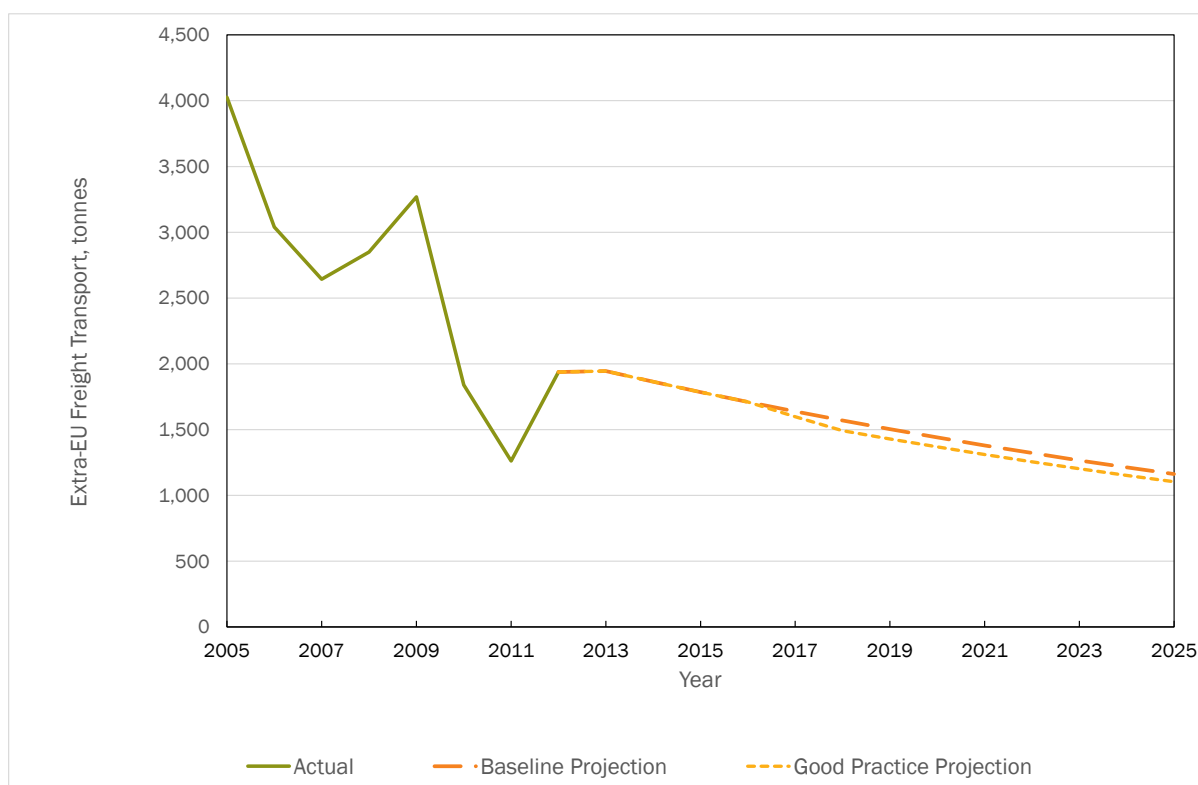


Figure 13-7: Change in Non-Hazardous Waste Landfilled, thousand tonnes

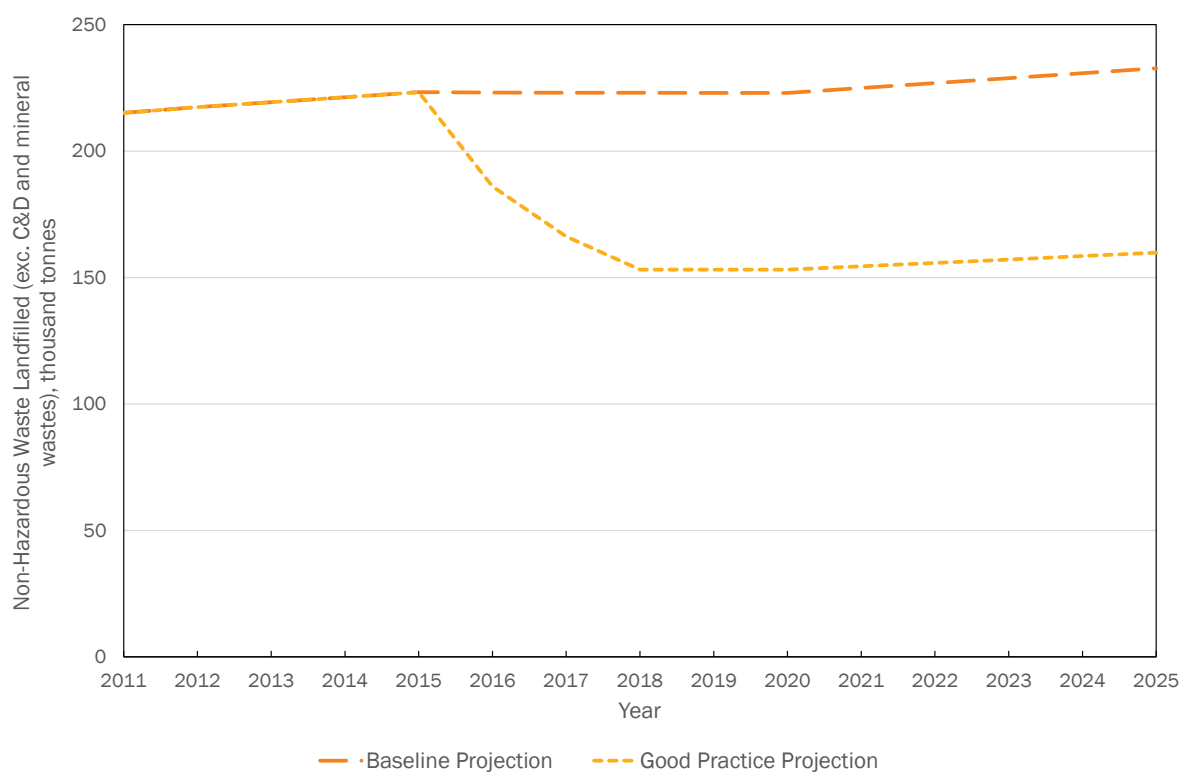


Figure 13-8: Change in MBT/ Incineration, thousand tonnes

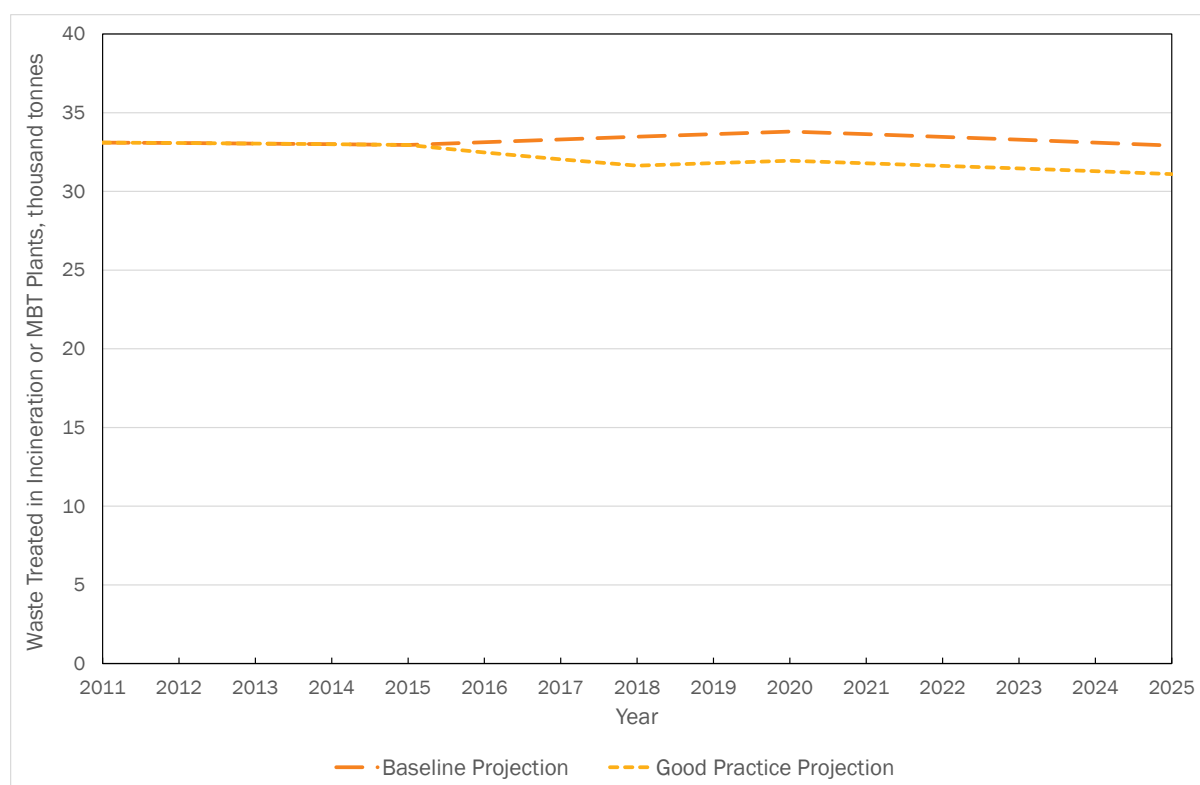


Figure 13-9: Change in SOx Emissions, tonnes

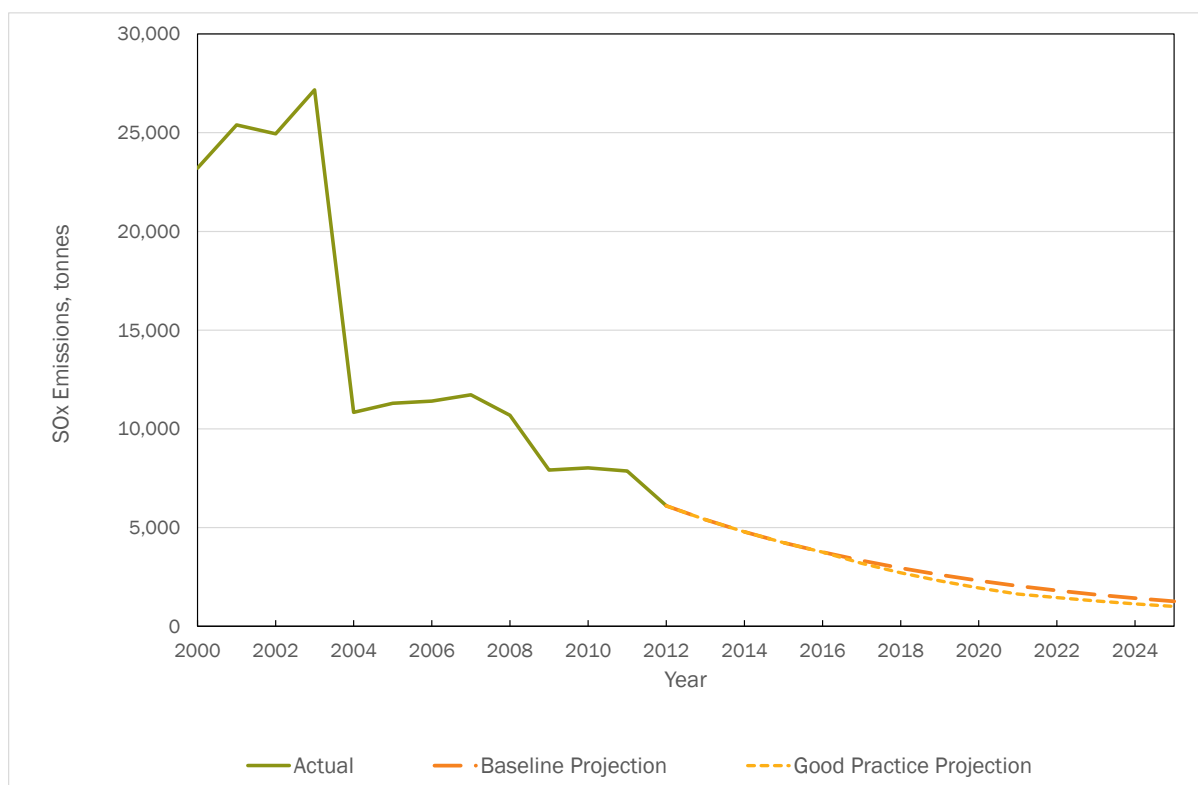


Figure 13-10: Change in NOx Emissions, tonnes

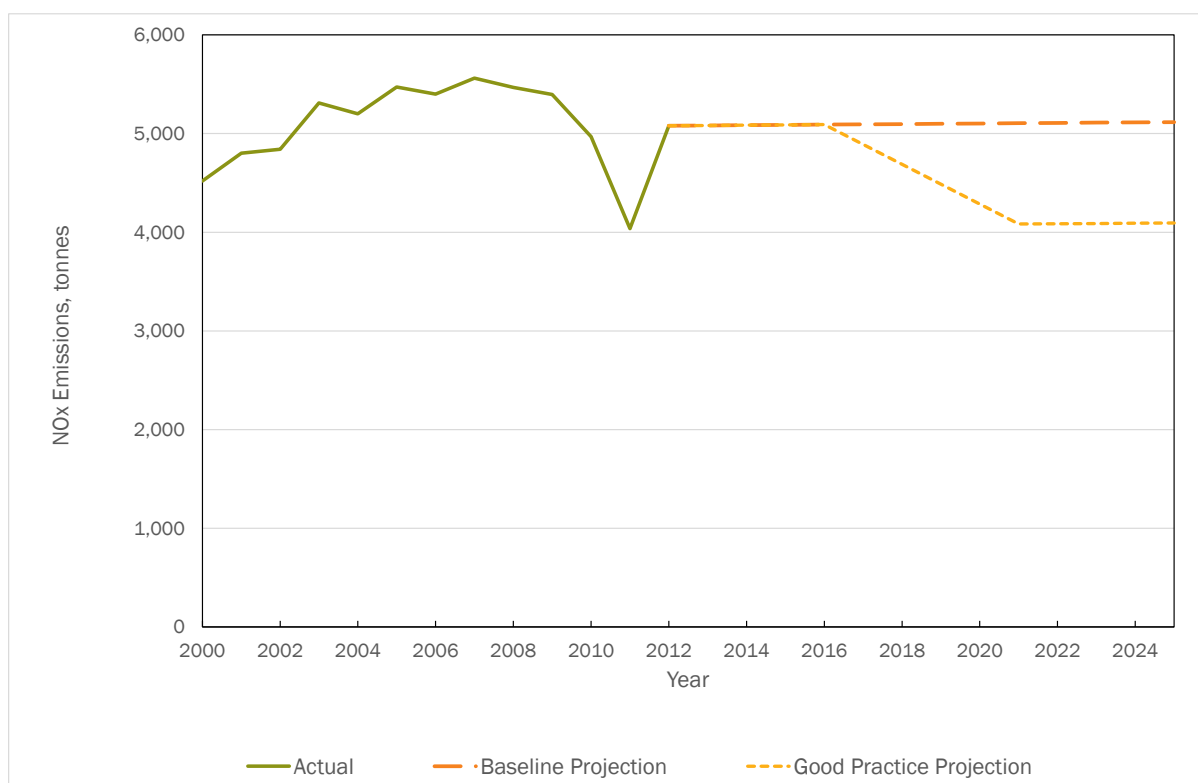


Figure 13-11: Change in PM<sub>10</sub> Emissions, tonnes

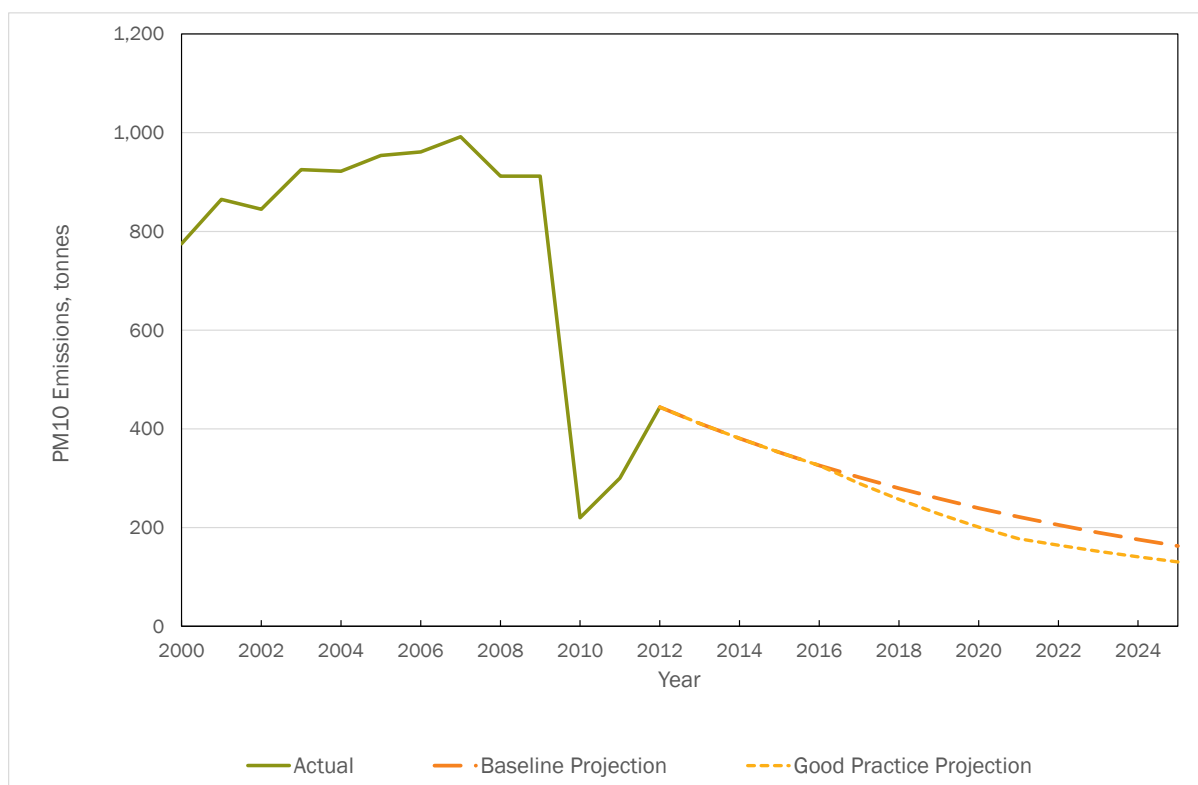


Figure 13-12: Change in Groundwater Abstraction – Public Supply, million cubic metres

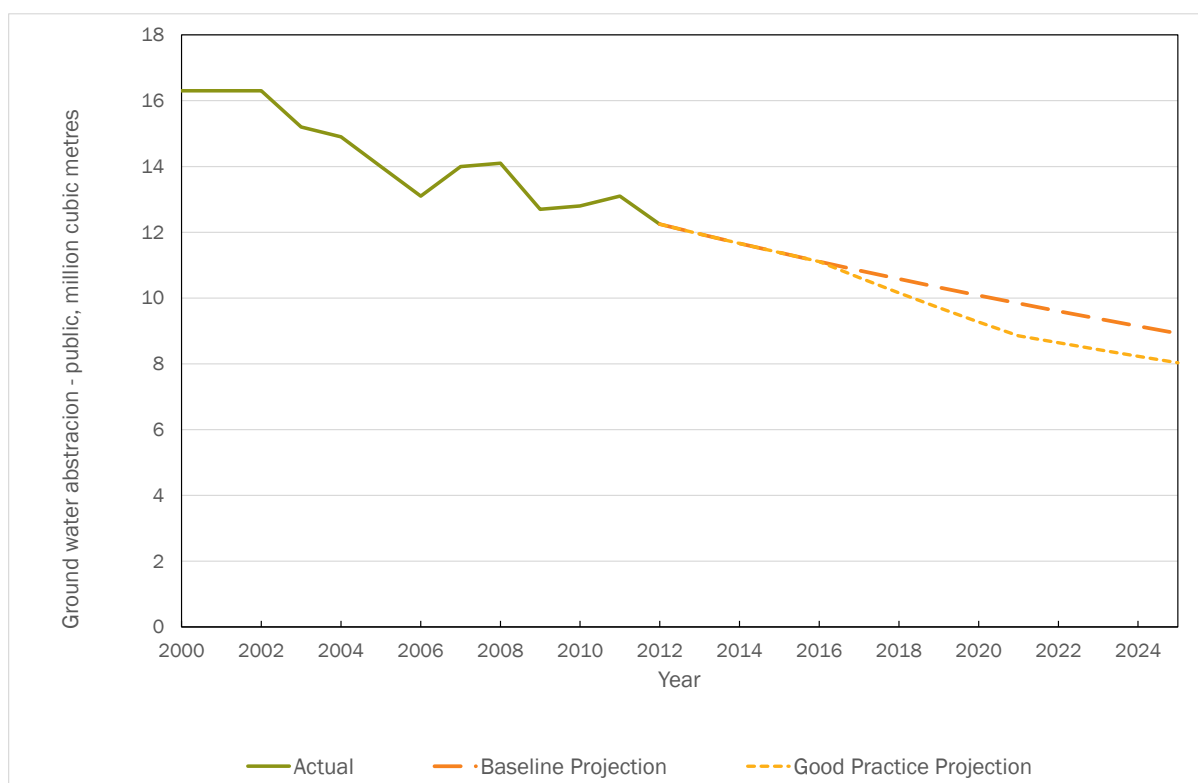


Figure 13-13: Change in Groundwater Abstraction – Manufacturing, million cubic metres

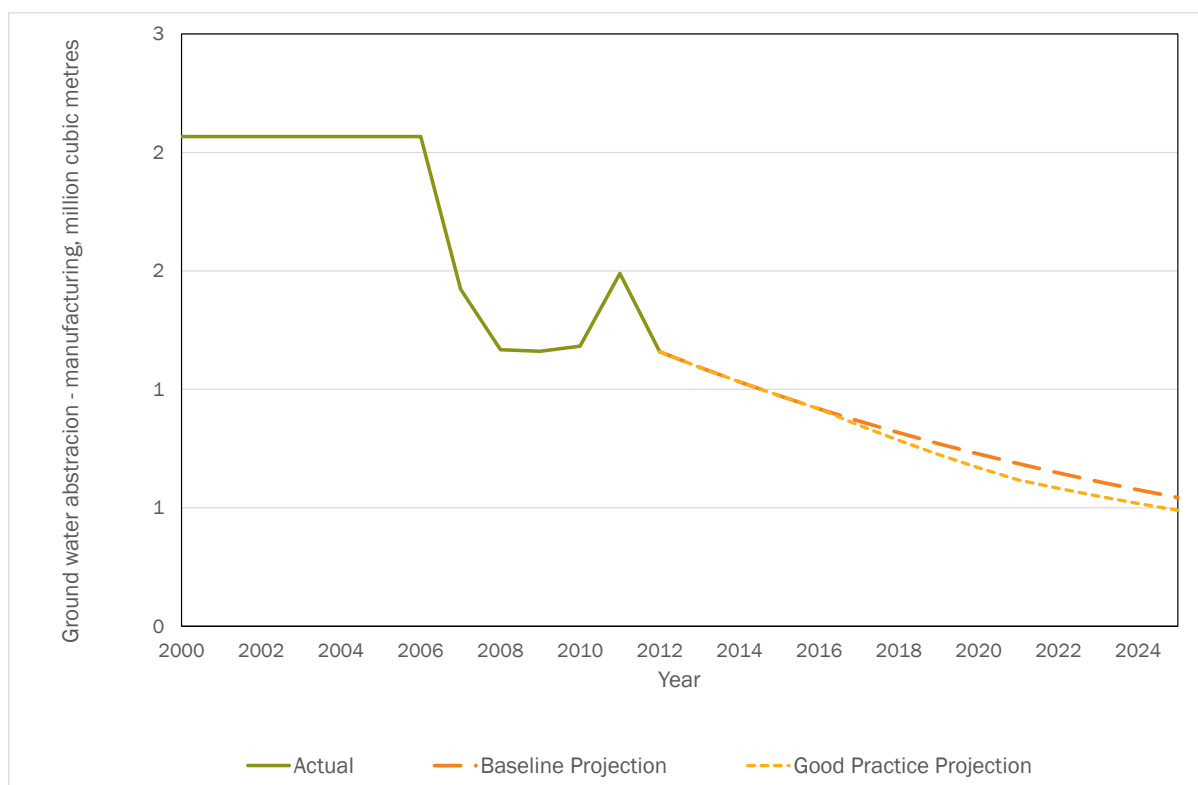


Figure 13-14: Change in Groundwater Abstraction – Agriculture, million cubic metres

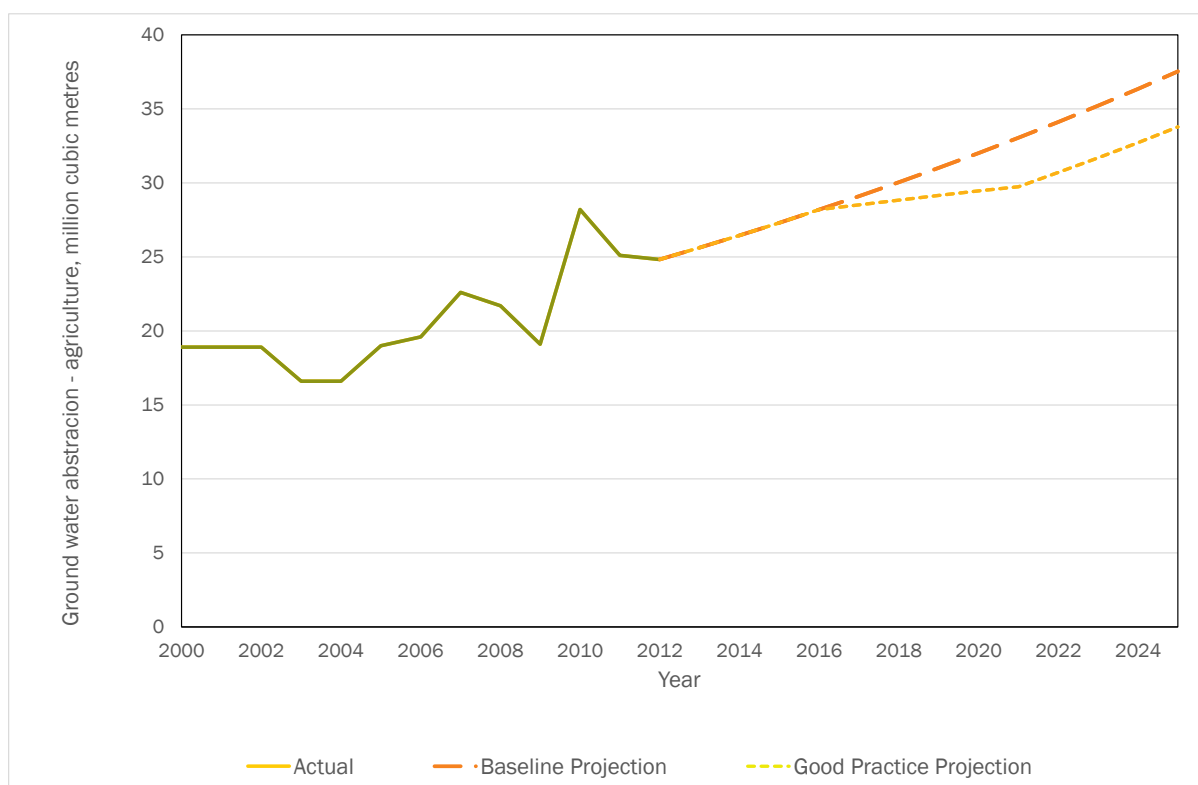


Figure 13-15: Change in Surface Water Abstraction – Public Supply, million cubic metres

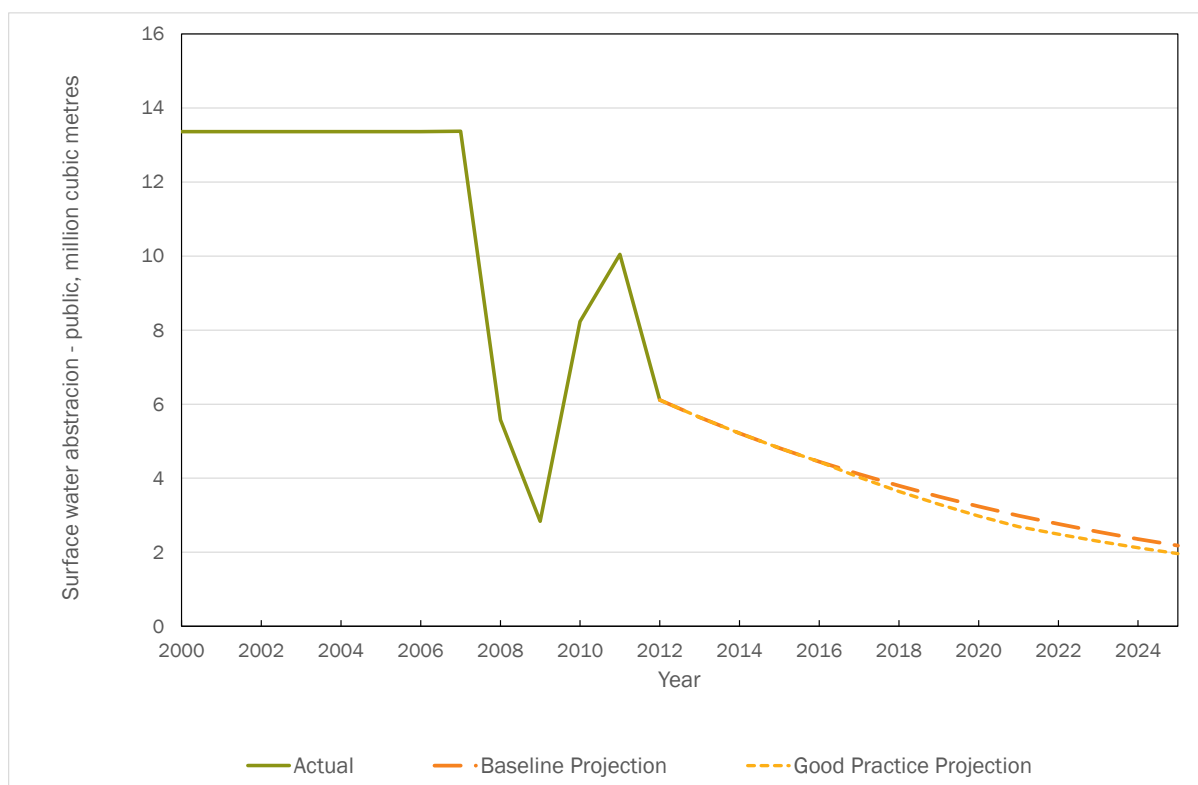


Figure 13-16: Change in Surface Water Abstraction – Manufacturing, million cubic metres

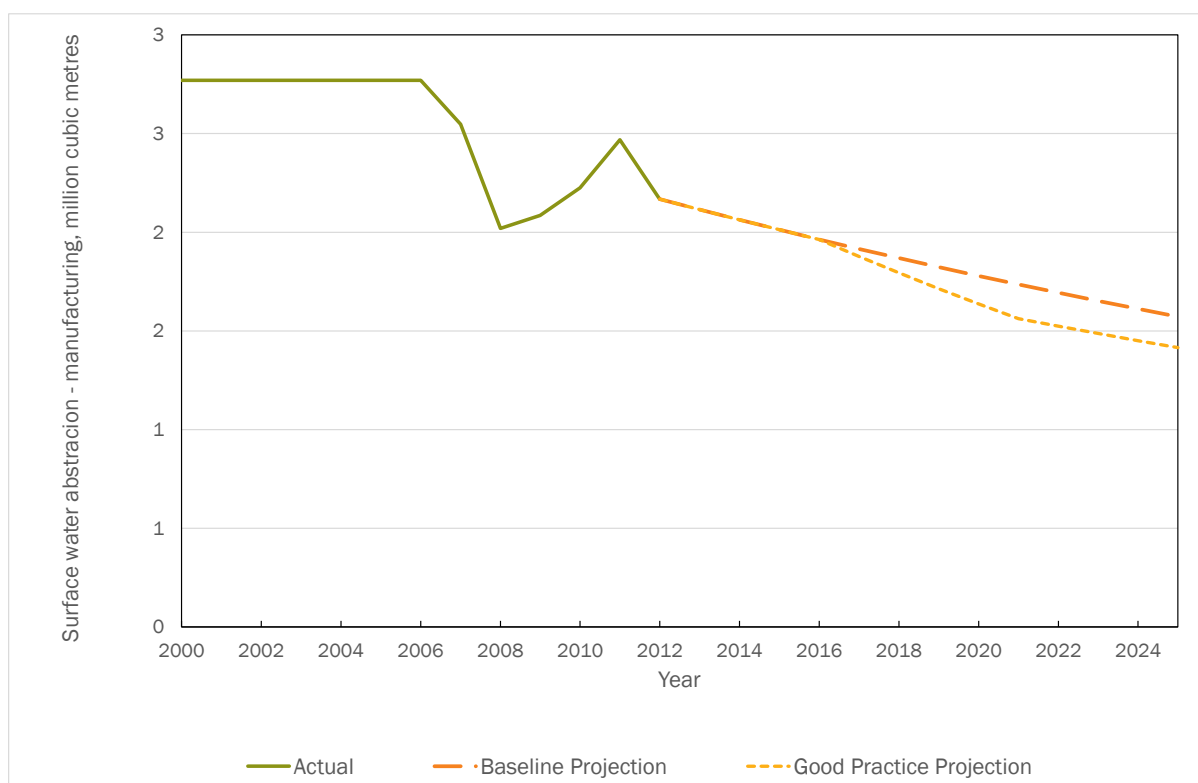




Figure 13-17: Change in Surface Water Abstraction – Agriculture, million cubic metres

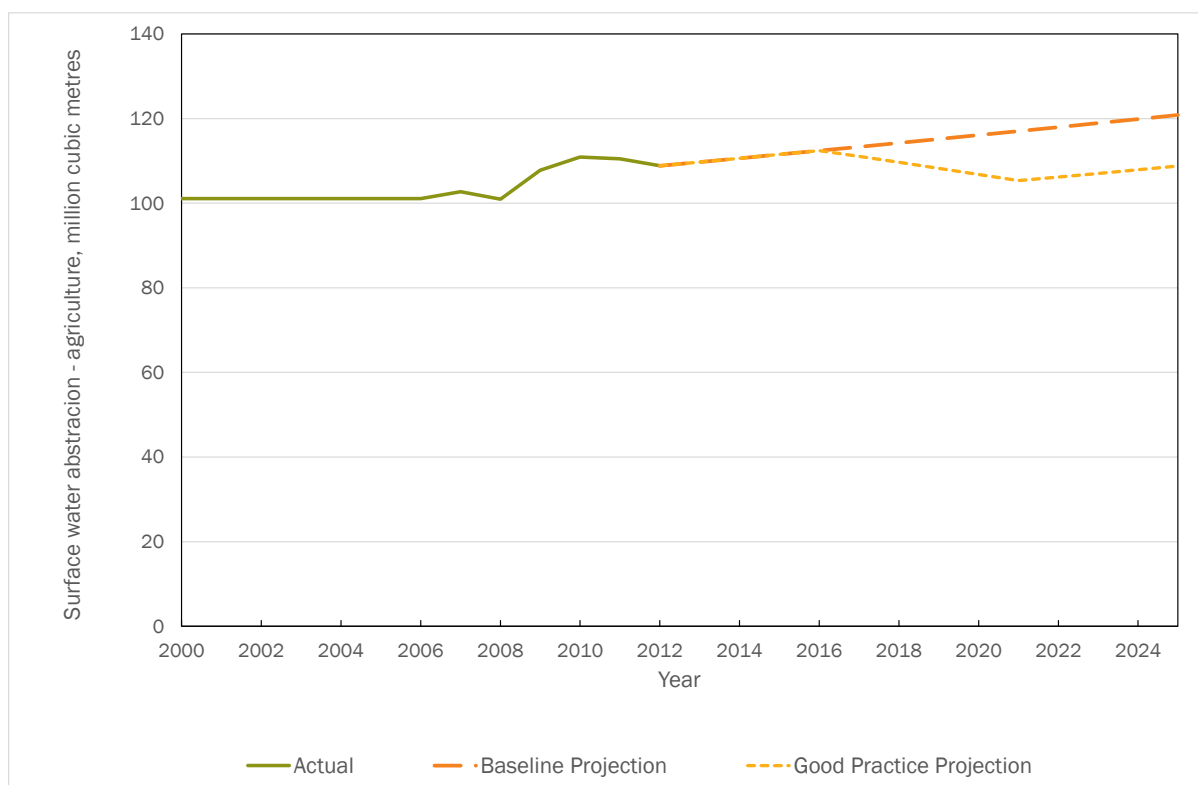


Figure 13-18: Change in Active Ingredients in Pesticides, tonnes

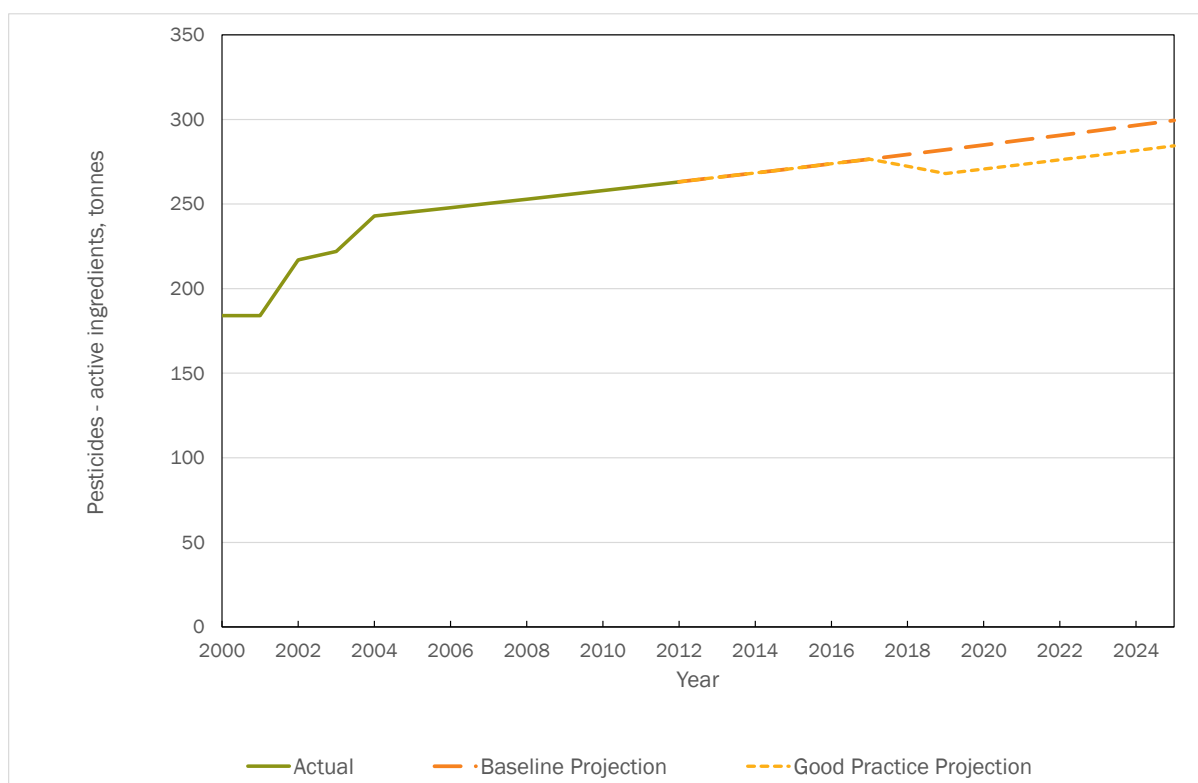


Figure 13-19: Change in Non-organic Nitrogen Sales of Fertilisers, tonnes

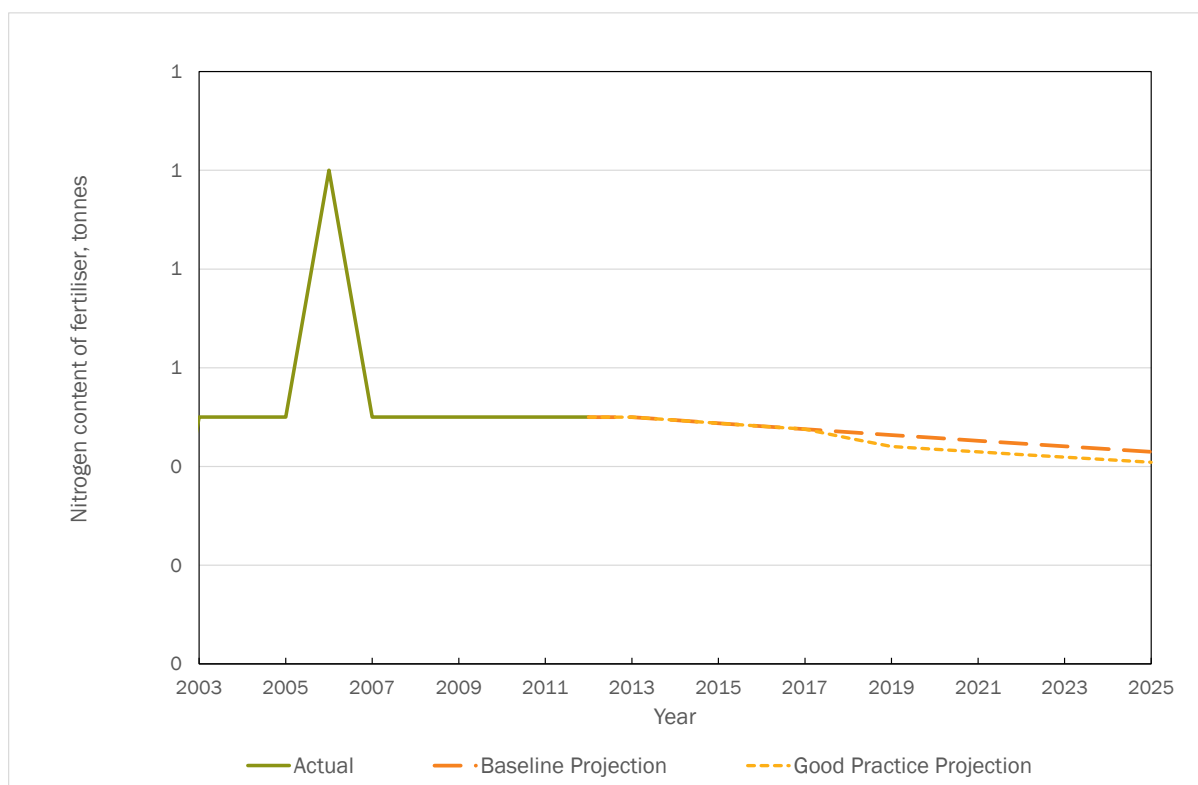


Figure 13-20: Change in Aggregates Extraction, thousand tonnes

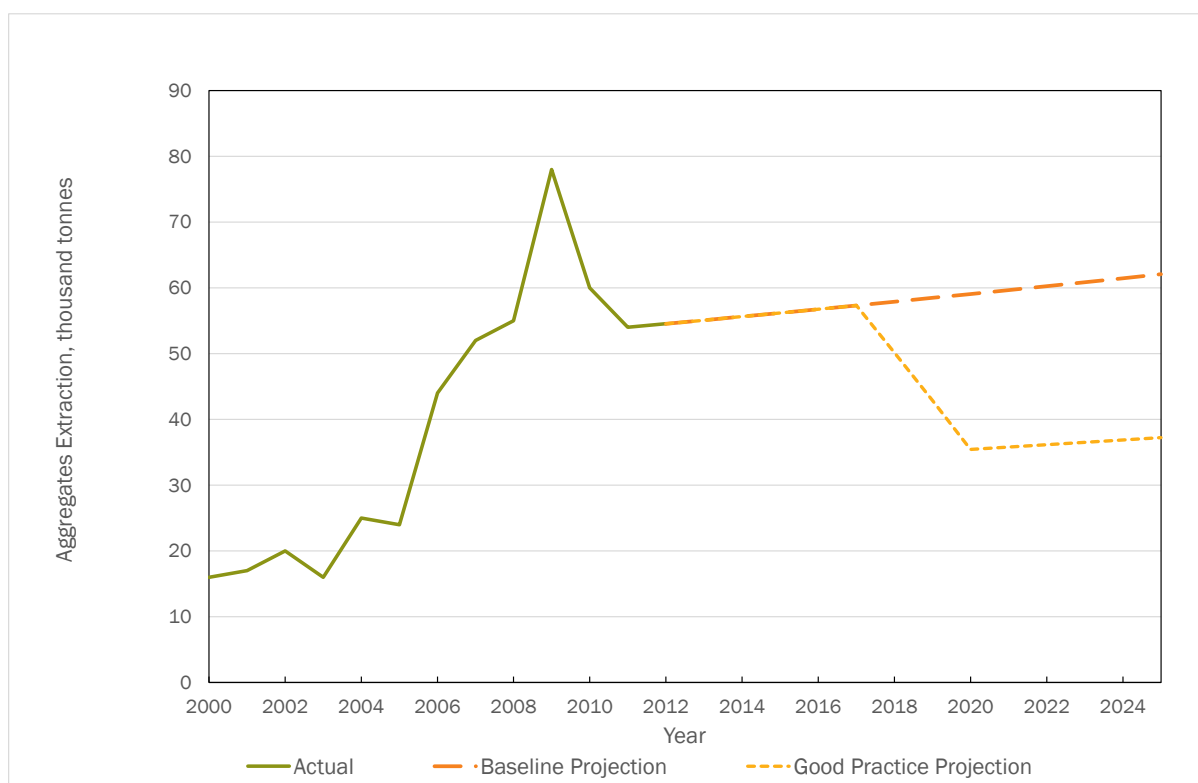


Figure 13-21: Change in Paper & Card Packaging Generation, thousand tonnes

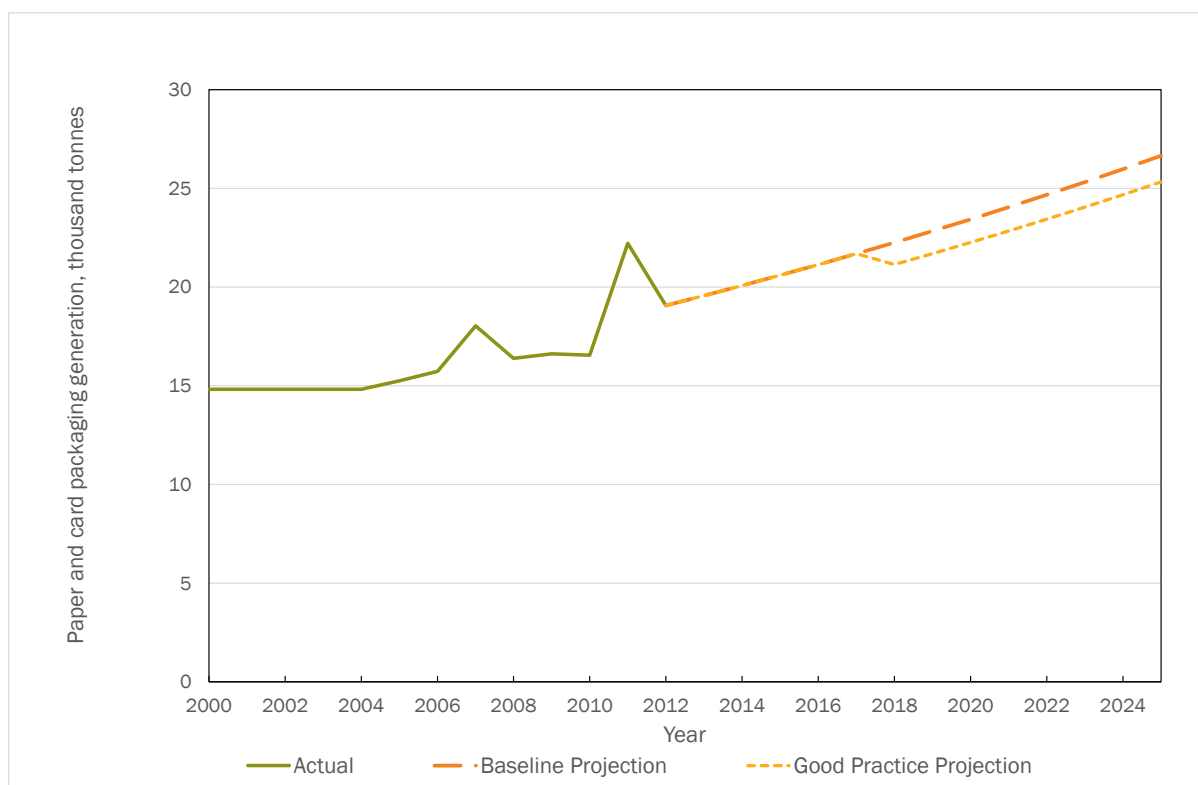


Figure 13-22: Change in Plastic Packaging Generation, thousand tonnes

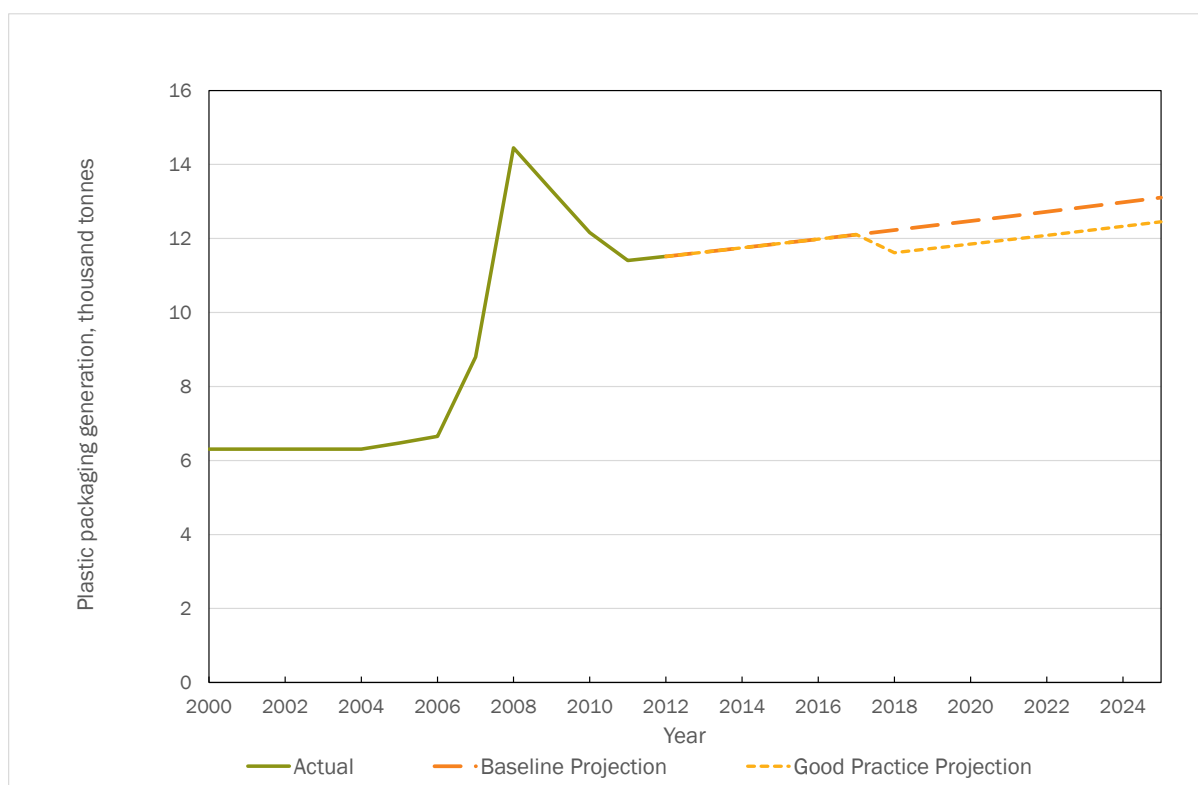


Figure 13-23: Change in Wood Packaging Generation, thousand tonnes

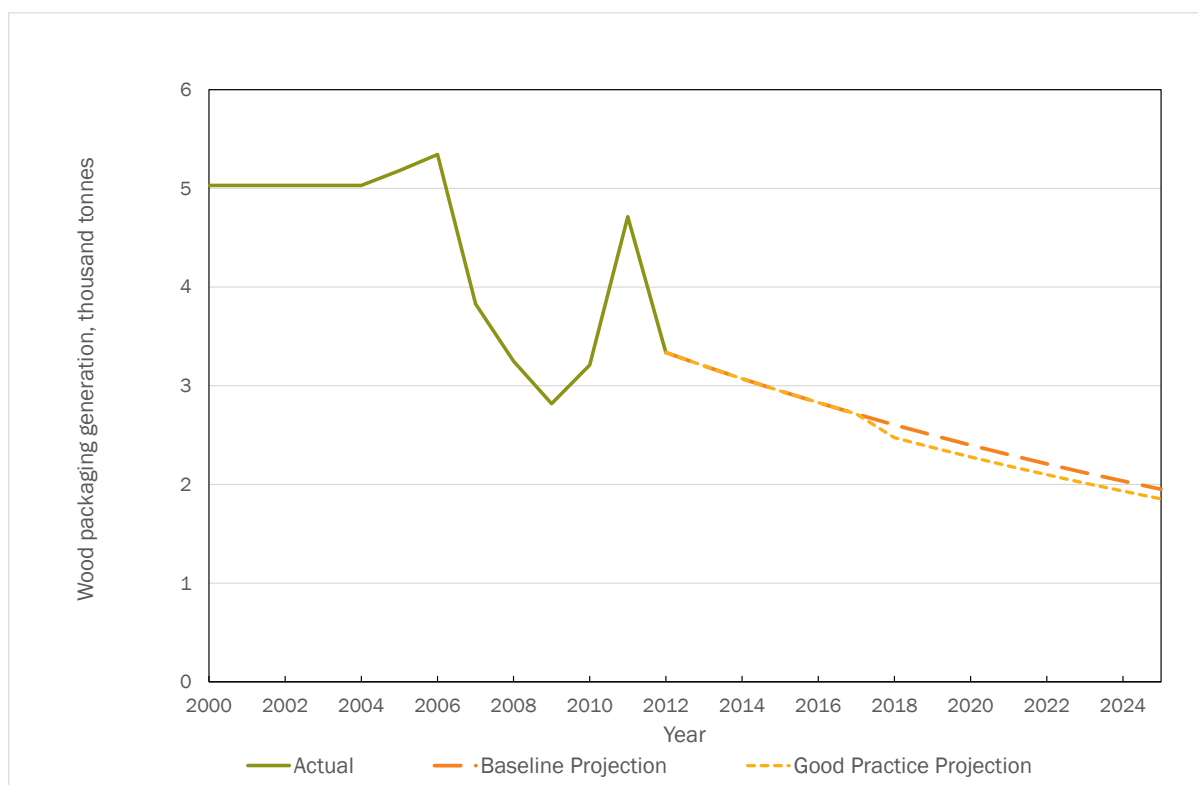


Figure 13-24: Change in Metal Packaging Generation, thousand tonnes

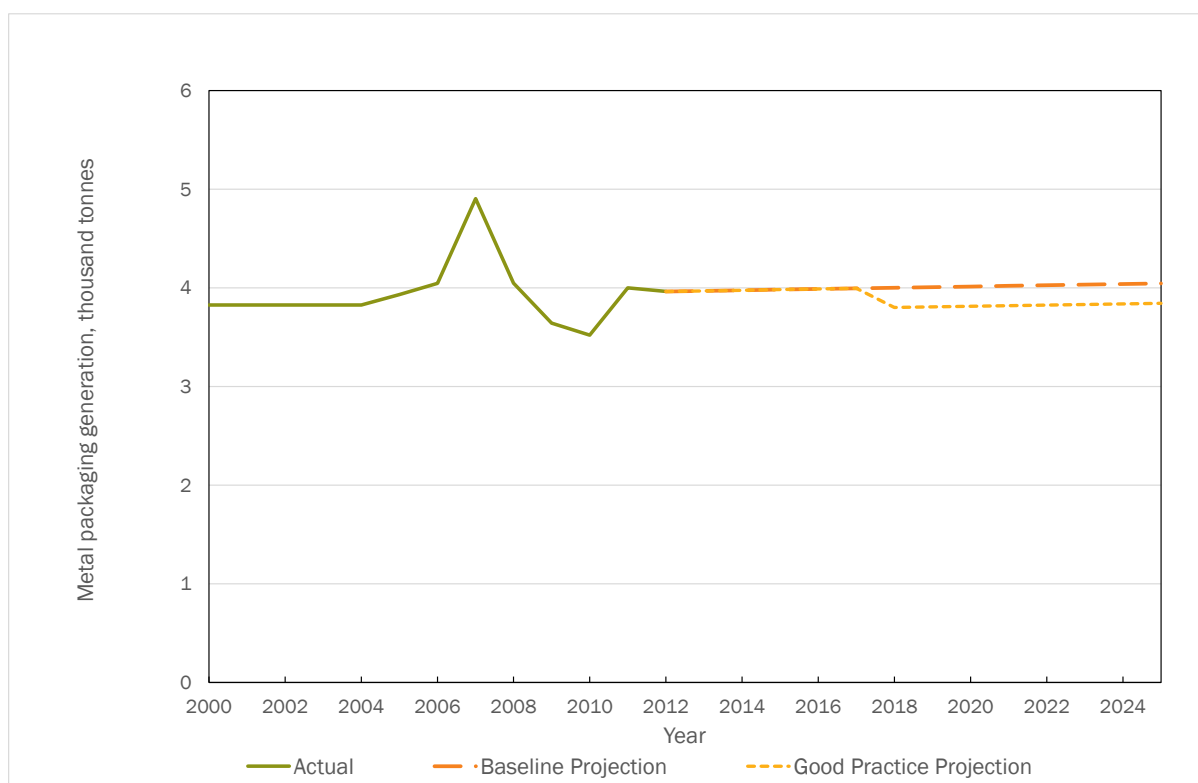


Figure 13-25: Change in Glass Packaging Generation, thousand tonnes

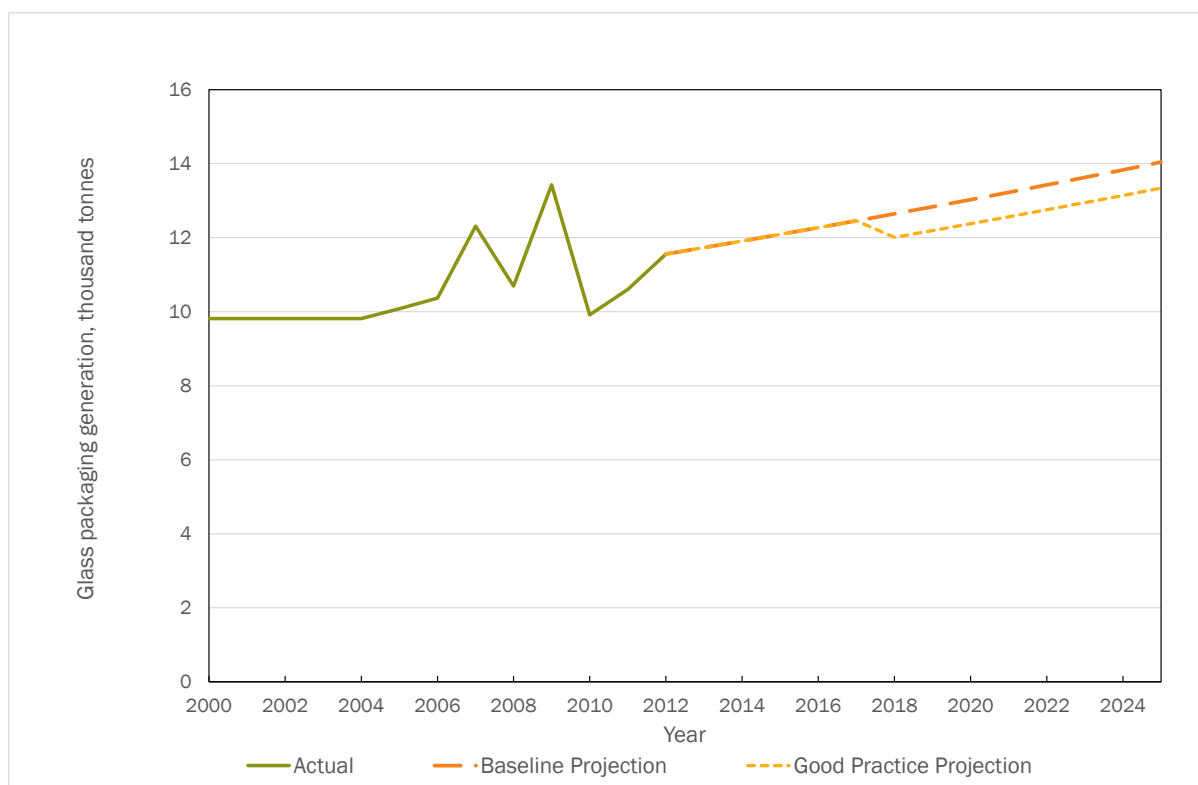
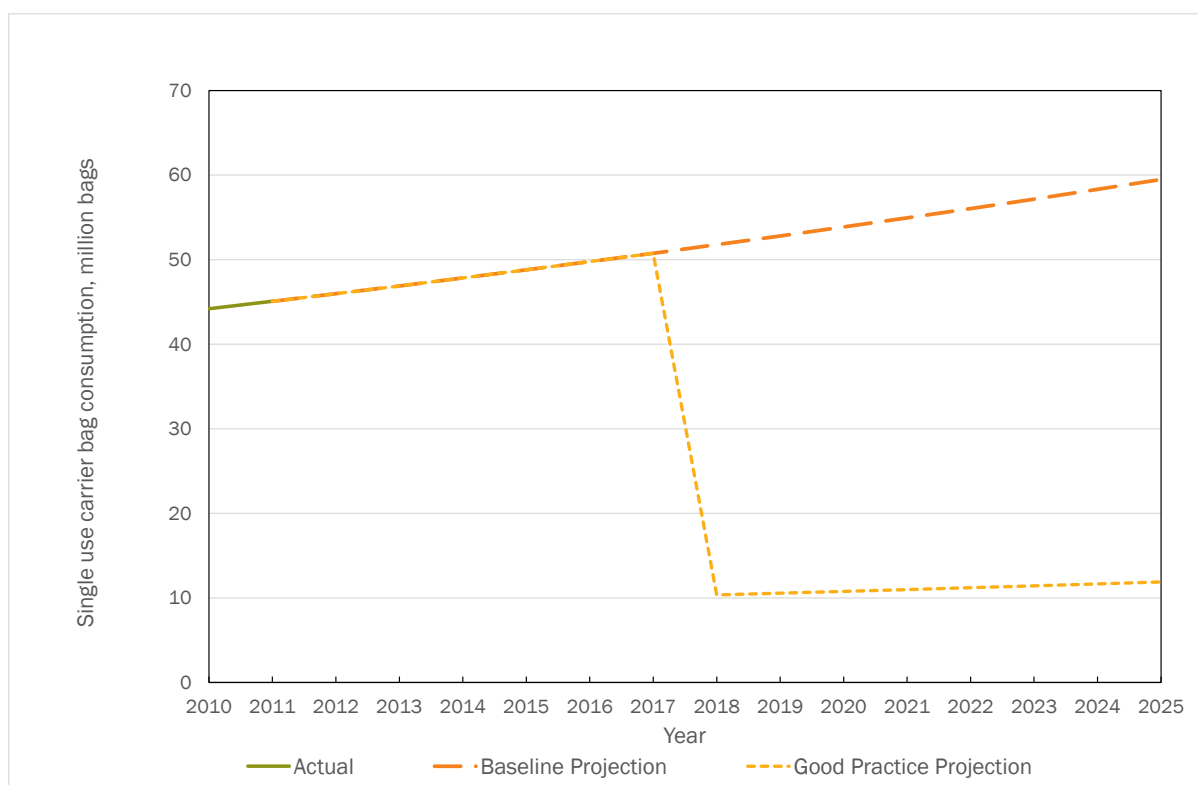


Figure 13-26: Change in Consumption of Single Use Carrier Bags, million bags



## 13.5 Full Revenue Outputs

A summary of the full revenue outputs for each of the suggested reforms to the tax system are presented in the table below.

Table 13-13: Revenue Outturns from Model, million EUR (real 2014 terms)

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Energy Taxes	Transport fuels	0	0	3	5	8	10	13	15	18	18	18
	C&I / Heating	0	0	11	21	32	42	52	63	73	73	73
	Electricity	0	0	0	0	0	0	0	0	0	0	0
	<i>Sub-total Energy, million EUR</i>	0	0	13	26	39	52	65	78	91	91	91
	<i>Sub-total Energy, % GDP</i>	0.0%	0.0%	0.2%	0.3%	0.5%	0.7%	0.9%	1.0%	1.2%	1.2%	1.2%
Transport Taxes (excluding transport fuels)	Vehicle Taxes	0	0	0	0	0	0	0	0	0	0	0
	Passenger Aviation Tax	0	0	59	119	123	128	134	139	145	152	158
	Freight Aviation Tax	0	0	0	0	0	0	0	0	0	0	0
	<i>Sub-total Transport, million EUR</i>	0	0	59	119	123	129	134	139	145	152	158
	<i>Sub-total Transport, % GDP</i>	0.0%	0.0%	0.8%	1.6%	1.6%	1.7%	1.8%	1.8%	1.9%	2.0%	2.1%
Pollution and Resource Taxes	Landfill Tax - Non-haz (excl. C&D)	0	2	4	6	8	8	8	8	8	8	8
	Landfill Tax - Inerts (C&D)	0	0	1	1	1	1	1	1	1	1	1
	Incineration /MBT Tax	0	0	0	0	0	0	0	0	0	0	0

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Air Pollution Tax	0	2	3	5	6	7	6	6	6	6	5
	Water Abstraction Tax	0	2	3	5	6	8	7	7	7	7	7
	Waste Water Tax	0	1	1	1	1	1	1	1	1	1	1
	Pesticides Tax	0	0	2	4	4	4	4	4	4	4	4
	Aggregates Tax	0	0	0	0	0	0	0	0	0	0	0
	Packaging Tax	0	0	2	2	2	2	2	2	2	2	2
	Single Use Bag Tax	0	4	4	1	1	1	1	1	1	1	1
	Fertiliser Tax	0	0	0	0	0	0	0	0	0	0	0
	<b>Sub-total Pollution &amp; Resource, million EUR</b>	0	11	21	25	30	32	31	31	31	31	30
	<b>Sub-total Pollution &amp; Resource, % GDP</b>	0.0%	0.1%	0.3%	0.3%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
Total Revenue Stream	<b>Total, million EUR</b>	0	11	93	170	192	212	230	248	267	273	280
	<b>Total, % GDP</b>	0.0%	0.1%	1.2%	2.2%	2.5%	2.8%	3.0%	3.3%	3.5%	3.6%	3.7%



## 14.0 Netherlands

During the course of the study the latest data available from official sources was sought, namely the TAXUD Taxes in Europe database, energy excise duty tables and the OECD database on environmental taxes and charges. This was supplemented by national data sources where possible. Due to the number of taxes and countries involved, the central case for energy excise duties has been the rates published by TAXUD giving the position as of 1st July 2014. Planned future increases may not be fully captured in this analysis and therefore, the projected increase in revenues would effectively incorporate any revenue from increased rates in early 2015 or shortly thereafter.

### 14.1 Energy Taxes

➤ **Excise duty on mineral oils (“Accijns van minerale oliën”):<sup>495</sup>**

- The excise duty is applied on light oils (petrols), medium oils (kerosene/petroleum), gas oils (diesel), heavy fuel oil, liquefied petroleum gas (LPG) and other energy products like biofuels used as fuel.
- The excise duty is paid by the authorized warehouse keeper from where mineral oil is released for consumption or the importer of mineral oil.
- A tax reduction might apply for LPG in vehicles used in public functions, like buses.
- Exemptions provided for kerosene used for propelling airplanes (other than pleasure craft);
- Refund of excise duty for mineral oils (not kerosene) used for propelling airplanes (other than pleasure craft);
- Excise duty on exports is remitted or refunded.
- Rates applied are outlined in the main report.
- Rates are generally considerably higher than the ETD minimum and the EU-28 average. Only the rates for heavy fuel oil are considerably lower than the EU-28 average, but still higher than the ETD minimum.
- In 2012, revenue from the excise duty on mineral oils, the energy tax and the tax on coal together amounted to: €11,480 million (equivalent to 1.92 % of GDP and to 4.91% of total tax revenue). It should be noted that leaded petrol is not available in the Netherlands. Therefore the excise duty on leaded petrol does not generate any revenue.

---

<sup>495</sup> European Commission (2014) *Taxes in Europe Database*, Accessed 27 August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=873/1395149523&taxType=Energy+products+and+electricity](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=873/1395149523&taxType=Energy+products+and+electricity)

➤ **Energy tax (“Energiebelasting”):**<sup>496</sup>

- The Energy tax is levied on delivery of electricity and natural gas.
- The tax is paid by the distributor of electricity or natural gas.
- Tax credits:
  - An annual tax credit/reduction applies per connection to the electricity grid with a capacity of more than 1 x 6 Amperes. For connections to real estate for working or dwelling, the credit is €318.62. For other connections, the credit is €119.62.
  - A tax reduction applies for the use of natural gas in the horticulture sector (greenhouse heating).
- Exemptions:
  - Natural gas and electricity used as fuel to generate electricity in either an installation with an electrical return of at least 30% or an installation that exclusively uses renewable energy and electricity to generate electricity.
  - Electricity used for chemical reduction and in electrolytic and metallurgical processes.
  - Natural gas used other than as fuel and natural gas used as an additive or filler in products that directly or indirectly are intended to be used, offered for sale or used as natural gas.
- Refunds:
  - Business use of electricity above 10 million kWh per year per electricity connection on condition that it is an energy-intensive business and has obligations to improve energy efficiency under a covenant with the government. The refund is limited: beneficiaries pay at least the minimum EU tax level on electricity.
  - When the tax has been levied while an exemption was applicable.
  - On certain conditions a refund of 50% is given when natural gas or electricity is used in a property that is mainly used by non-profit institutions or for public worship or philosophical reflections.
- Rates are outlined in Table 16-2.

**Table 14-1: Standard Rates of Excise Duties on Fuels and Electricity in the Netherlands**

Excise Duty	Unit	Rate Applied in the Netherlands	Existing ETD Minimum	EU-28 Average	EU-28 Median

<sup>496</sup> European Commission (2014) *Taxes in Europe Database*, Accessed 27 August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=873/1395149523&taxType=Energy+products+and+electricity](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=873/1395149523&taxType=Energy+products+and+electricity)

Excise Duty	Unit	Rate Applied in the Netherlands	Existing ETD Minimum	EU-28 Average	EU-28 Median
<b>Transport Fuels</b>					
Leaded Petrol <sup>1</sup>	€ per 1000 litres	€845.51	€421	€585	€583
Unleaded Petrol	€ per 1000 litres	€759.24	€359	€519	€509
Gas Oil (Diesel)	€ per 1000 litres	€477.76	€330	€427	€405
Kerosene	€ per 1000 litres	€477.76	€330	€440	€405
Liquid Petroleum Gas	€ per 1000 kg	€322.17	€125	€209	€180
Natural Gas <sup>2, 3</sup>	€ per GJ	€5.39 (0 - 170,000m <sup>3</sup> ) €1.27 (170,000 - 1 million m <sup>3</sup> ) €0.46 (1 million - 10 million m <sup>3</sup> ) €0.33 (>10 million m <sup>3</sup> )	€2.60	€3.03	€2.66
<b>Motor Fuels – Industry / Commercial Use</b>					
Gas Oil (Diesel)	€ per 1000 litres	€477.76	€21	€221	€163
Kerosene	€ per 1000 litres	€477.76	€21	€283	€330
Liquid Petroleum Gas	€ per 1000 kg	€322.17	€41	€126	€125
Natural Gas	€ per GJ	€5.39 (0 - 170,000m <sup>3</sup> ) €1.27 (170,000 - 1 million m <sup>3</sup> ) €0.46 (1 million - 10 million m <sup>3</sup> ) €0.33 (>10 million m <sup>3</sup> )	€0.30	€1.76	€1.50
<b>Heating – Business Use</b>					
Gas Oil (Diesel)	€ per 1000 litres	€477.76	€21	€221	€163
Kerosene	€ per 1000 litres	€477.76	€0.00	€270	€330
Heavy Fuel Oil	€ per 1000 kg	€35.83	€15	€70	€25
Liquid Petroleum Gas	€ per 1000 kg	€322.17	€0.00	€82	€40
Natural Gas	€ per GJ	€5.39 (0 - 170,000m <sup>3</sup> )	€0.15	€1.36	€0.46

Excise Duty	Unit	Rate Applied in the Netherlands	Existing ETD Minimum	EU-28 Average	EU-28 Median
		€1.27 (170,000 - 1 million m <sup>3</sup> ) €0.46 (1 million - 10 million m <sup>3</sup> ) €0.33 (>10 million m <sup>3</sup> )			
Coal and Coke <sup>4</sup>	€ per GJ	€0.53	€0.15	€1.27	€0.31
<b>Heating – Non-Business Use</b>					
Gas Oil (Diesel)	€ per 1000 litres	€477.76	€21	€179	€125
Kerosene	€ per 1000 litres	€477.76	€0.00	€279	€330
Heavy Fuel Oil	€ per 1000 kg	€35.83	€15	€85	€26
Liquid Petroleum Gas	€ per 1000 kg	€322.17	€0.00	€111	€42
Natural Gas <sup>5</sup>	€ per GJ	€5.39 (0 - 170,000m <sup>3</sup> ) €1.27 (170,000 - 1 million m <sup>3</sup> ) €0.46 (1 million - 10 million m <sup>3</sup> ) €0.33 (>10 million m <sup>3</sup> )	€0.30	€2.04	€0.94
Coal and Coke	€ per GJ	€0.53	€0.30	€1.77	€0.32
<b>Electricity<sup>6</sup></b>					
Business Use	€ per MWh	€118.5 (0 – 10,000 kWh) €43.1 (10,000- 50,000 kWh) €11.5 (50,000- 10,000,000 kWh) €0.50 (>10,000,000 kWh)	€0.50	€8.42	€1.03

Excise Duty	Unit	Rate Applied in the Netherlands	Existing ETD Minimum	EU-28 Average	EU-28 Median
Non-Business Use	€ per MWh	€118.5 (0-10,000 kWh) <sup>7</sup> €43.1 (10,000-50,000 kWh) €11.5 (50,000-10,000,000 kWh) €1.00 (>10,000,000 kWh)	€1.00	€14.53	€2.06

**Notes:**

1. Leaded petrol is not sold any longer.
2. These rates are approximate because the national tax rate is based on m<sup>3</sup>. Tariffs per m<sup>3</sup> are: € 0.1894 (0 – 170,000 m<sup>3</sup>); €0.0446 (170,000 – 1 million m<sup>3</sup>); € 0.0163 (1 million – 10 million m<sup>3</sup>); 0.0117 (over 10 million m<sup>3</sup>). For propellant use, natural gas used in installations for the production of CNG (compressed natural gas) is taxed at a generic rate of € 0.128 per m<sup>3</sup> (€ 3.64 per GJ).
3. There is a surcharge on this tax in order to finance the subsidy scheme on renewable energy since 1<sup>st</sup> January 2013. Tariffs are € 4.60, €1.70, €0.50 and €0.40, respectively for the four brackets. This also holds for the other uses of natural gas. No distinction is made between business and non-business use.
4. The coal tax is calculated based on weight: €14.27 per 1,000 kg.
5. As noted above, a surplus is applied for financing the development of renewable energy sources. Tariffs applied are as follows: € 4.60, €1.70, €0.50, and €0.40, respectively for the four brackets, no distinction is made between business/non-business use.
6. The rates in the table are given per MWh, whereas national rates are given per kWh. Since 1<sup>st</sup> January 2013 a surcharge on this energy tax is in place in order to finance the subsidy scheme on renewable energy. The rate of this surcharge is expected to increase. No distinction is made between business and non-business use.
7. As of 1<sup>st</sup> January 2014 a tax reduction of 7.7 cent per kWh applies for locally produced sustainable electricity in the first tax bracket (0-10.000 kWh).

Source: DG TAXUD (2014) Excise Duty Tables (Part II – Energy products and Electricity), Situation as at 1 July 2014, [http://ec.europa.eu/taxation\\_customs/index\\_en.htm#](http://ec.europa.eu/taxation_customs/index_en.htm#)

- The rates applied for electricity for deliveries up to 50,000 kWh are much higher than the EU-28 average of €8.42 per MWh. The rates for deliveries between 50,000 and 10 million kWh are closer to the EU-28 average for both business and non-business use, but still considerably higher than the ETD minimum of €0.50. The rate for deliveries above 10 million kWh is equal to the ETD minimum.
- The rates for natural gas respect the ETD minimum for all uses except for transport fuel. In the latter case the rates applied for deliveries of more than 170,000 m<sup>3</sup> are below the ETD minimum of €2.60 per GJ and below the EU-28 average. The rates for deliveries of less than 170,000 m<sup>3</sup> are for all types of use significantly higher than the EU-28 averages.

- In 2012, revenue from the excise duty on mineral oils, the energy tax and the tax on coal together amounted to: €11,480 million (equivalent to 1.92 % of GDP and to 4.91% of total tax revenue).

➤ **Tax on coal (“Kolenbelasting”):**<sup>497</sup>

- The tax is levied on coal or coal products when imported or released from the coal establishment.
- The tax is paid by the licensee of a coal establishment or the one who has coal or coal products on hand that have not yet been taxed.
- Exemptions:
  - Coal or coal products not used as a fuel.
  - Coal or coal products used for dual purposes: coal or coal products used as heating fuel and for other purposes other than as motor or heating fuel.
- Tax refunds:
  - When coal tax has been levied while an exemption was applicable.
  - Coal that has been taken abroad.
- Rates are outlined in the main report.
- The rate (€0.53 per GJ) is higher than the ETD minimum; both for business and non-business use (heating), but lower than the EU-28 average.
- The tax on coal will be terminated by 2016 (i.e. the exemption for electricity production will be introduced again) in exchange for the closing down of five older power plants. This was agreed in the 2013 Energy Agreement for Sustainable Growth (“Energieakkoord voor Duurzame Groei”).
- Revenue in 2012 from the mineral oil excise duties, energy tax and the tax on coal together amounted to €11,480 million (equivalent to 1.92% of GDP and to 4.91% of total tax revenue).

## 14.2 Transport Taxes (Excluding Transport Fuels)

➤ **Tax on passenger cars and motorcycles (“Belasting van personenauto’s en motorrijwielen – BPM”):**<sup>498</sup>

- This one-off registration tax is paid by Dutch residents, individuals or companies, registering a passenger car, motorcycle or van not for use by a

---

<sup>497</sup> European Commission (2014) *Taxes in Europe Database*, Accessed 27 August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=873/1395149523&taxType=Energy+products+and+electricity](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=873/1395149523&taxType=Energy+products+and+electricity)

<sup>498</sup> European Commission (2014) *Taxes in Europe Database*, Accessed 27 August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=443/1388754879&taxType=Other+indirect+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=443/1388754879&taxType=Other+indirect+tax)

company for the first time, or, in the case of a vehicle registered outside the Netherlands, first use of the vehicle on Dutch roads. Temporary use for less than two weeks is not taxed.

- The tax on passenger cars is based on fuel type and CO<sub>2</sub> emissions. The lower the CO<sub>2</sub> emissions, the less tax is paid.
- The tax on motorcycles or vans is levied on the net catalogue price.
- Exemptions:
  - Vans are exempt under certain conditions (meet requirements to guarantee the vehicle could not easily be used as a replacement for a passenger car, registered in the name of an entrepreneur and used for business purposes for at least 10% of the time).
  - New vehicles seating more than eight passengers.
  - Ambulances and animal ambulances.
  - Special vehicles for the transport of prisoners.
  - Police vehicles, military vehicles and fire engines.
  - Zero emission vehicles (e.g. electric cars), i.e. motor vehicles that do not emit CO<sub>2</sub>.
  - Taxis.
- Refund: for vans used by disabled persons.
- Rates:
  - For petrol cars: a fixed surcharge and an emission based amount (rate per g CO<sub>2</sub> per km above minimum of the bracket) (see Table 14-2).
  - For diesel cars: fixed surcharge and an emission based amount (rate per g CO<sub>2</sub> per km above the minimum of the bracket) (see Table 14-2).
  - For petrol vans: 37.7% of the net catalogue price, reduced by €1,283.
  - For diesel vans: 37.7% of the net catalogue price, increased by €273.
  - For motorcycles up to a net price of €2,133: 9.6% of the net catalogue price.
  - For motorcycles at a net price of more than €2,133: 19.4% of the net catalogue price less €210.
  - For used passenger cars, motorcycles and vans: the one-off registration tax is reduced in line with the reduction in value of the vehicle. Optionally, fixed percentages may be used to determine this reduction.
  - A used vehicle over 25 years old is exempt from this tax.
- Revenue in 2012 (the latest year for which figures are available): €1,500 million (equivalent to 0.25% of GDP and to 0.64% of total tax revenue)

- From 2015 onwards the CO<sub>2</sub> emission brackets within this tax will be sharpened in order to encourage consumers to buy increasingly more CO<sub>2</sub> efficient cars.. This is expected to generate additional revenue of €200 million per year. The tariffs for petrol and diesel cars are converging and will be equal from 2015.<sup>499</sup>

**Table 14-2: Tax on Passenger Cars and Motor Bicycles – Rates for Petrol and Diesel Cars**

	Minimum emission (g CO <sub>2</sub> per km)	Maximum emission (g CO <sub>2</sub> per km)	Fixed surcharge	Rate per g CO <sub>2</sub> per km
<b>Petrol Cars</b>				
First bracket	88 <sup>500</sup>	124	€ 0	€ 105
Second bracket	124	182	€ 3,780	€126
Third bracket	182	203	€ 11,088	€ 237
Fourth bracket	203		€ 16,065	€ 474
<b>Diesel Cars</b>				
First bracket	85 <sup>501</sup>	120	€ 0	€ 105
Second bracket	120	175	€ 3,675	€ 126
Third bracket	175	197	€ 10,605	€ 237
Fourth bracket	197		€15,819	€474
On top of this a surcharge of €72.93 per gram CO <sub>2</sub> per km applies on emissions exceeding 70g CO <sub>2</sub> per km.				

Source: European Commission (2014) *Taxes in Europe Database*, Accessed 27<sup>th</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=443/1388754879&taxType=Other+indirect+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=443/1388754879&taxType=Other+indirect+tax)

➤ **Tax on heavy motor vehicles (“Belasting zware motorrijtuigen” or “Eurovignette”):<sup>502</sup>**

<sup>499</sup> Rijksoverheid (2014) *Belastingplan 2014*, Accessed 5 September 2014, <http://www.rijksoverheid.nl/onderwerpen/belastingplan-2014>

<sup>500</sup> Petrol cars with emissions less than 88 g CO<sub>2</sub> per km are not taxed.

<sup>501</sup> Diesel cars with emissions less than 85 g CO<sub>2</sub> per km are not taxed.



- The tax is paid by heavy goods vehicles (gross maximum weight of 12,000 kg or more) for the use of a motorway in the Netherlands.
- The tax is paid by the person in whose name the vehicle is registered, or in case of a foreign vehicle or a non-registered vehicle, the user.
- Rate:
  - Depends on total number of axles of the vehicle and Euro-classification (EURO-0, EURO-I, EURO-II or cleaner).
  - For a week or for a month, reduced rates apply. The rate for one day is €8.00, regardless of the type of vehicle.
- Exemptions:
  - Vehicles used by certain public services, vehicles used, for example, in road-making, vehicles in business-stock and vehicles commonly used for short distances.
  - Based on a treaty between the Netherlands, Belgium, Luxemburg, Sweden and Denmark, a Eurovignette purchased in one of the partner countries is valid in the Netherlands.
- Revenue in 2012 (the latest year for which figures are available): €134 million (equivalent to 0.02% of GDP and to 0.06% of total tax revenue).

**Table 14-3: 2014 Rates of Tax on Heavy Motor Vehicles**

Euro Class	for 1 year		for 1 month		for 1 week	
	max. 3 axles	4 axles or more	max. 3 axles	4 axles or more	max. 3 axles	4 axles or more
Euro class 0	€960	€1,550	€96	€155	€26	€41
Euro class 1	€850	€1,400	€85	€140	€23	€37
Euro class 2 or higher	€750	€1,250	€75	€125	€20	€33

*Note: The tariff for 1 day is €8, regardless of the type of vehicle.*

Source: Belastingdienst (2014) *Tarief Belasting Zware Motorrijtuigen*, Accessed 23<sup>rd</sup> September 2014, [www.belastingdienst.nl/wps/wcm/connect/bldcontentnl/belastingdienst/privé/auto\\_en\\_vervoer/belastingen\\_op\\_auto\\_en\\_motor/belasting\\_zware\\_motorrijtuigen/tarief\\_bzm](http://www.belastingdienst.nl/wps/wcm/connect/bldcontentnl/belastingdienst/privé/auto_en_vervoer/belastingen_op_auto_en_motor/belasting_zware_motorrijtuigen/tarief_bzm)

---

<sup>502</sup> European Commission (2014) *Taxes in Europe Database*, Accessed 27 August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=682/1388754879&taxType=Other+direct+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=682/1388754879&taxType=Other+direct+tax)

➤ **Motor vehicles tax (“Motorrijtuigenbelasting” (MRB)):**<sup>503</sup>

- This annual tax is paid by persons in whose name a passenger car, van, motorcycle or lorry is registered or in case of a foreign registered vehicle by the person/company that has the vehicle at its disposal.
- The amount of the tax for passenger cars depends on:
  - Weight.
  - Type of fuel (petrol, diesel, LPG).
  - CO<sub>2</sub>-emissions (there is a special CO<sub>2</sub>-regime for passenger cars emitting less than 50 g per km, up to and including 2015).
  - Province of residence of the owner. For example: 1,400kg, petrol: from €756 (province of Zeeland) to €820 (province of Zuid-Holland) per year; 1,000kg, petrol: from €396 (province of Zeeland) to €424 (province of Zuid-Holland) per year; 1,000kg, diesel: from €908 (province of Zeeland) to €940 (province of Zuid-Holland) per year; and 1,000kg, LPG 3 and natural gas: from €512 (province of Zeeland) to €540 (province of Zuid-Holland) per year.
- An additional regional surtax for passenger cars and motorcycles also exists.
- The amount of the tax for vans and busses depends on:
  - Weight.
  - Whether the van is used by an entrepreneur. For example: 1,400kg, € 340.00 per year
- The amount of the tax for lorries depends on:
  - Weight.
  - Number of axles.
  - Suspension.
  - EURO-classification.
  - For example: Lorry, up to 25,000kg, no towing-hook, no air-suspension and three axles: € 852.00 per year; and Lorry with Euro 0, 1 or 2, rates are 90%, 75% and 60% higher respectively.
- For motorcycles there is a fixed fee.
- Heavy goods vehicles such as trucks are also subject to the Tax on heavy vehicles using motorways (see above).
- Exemptions:

---

<sup>503</sup> Rijksoverheid (2014) Belastingen op auto en motor, Accessed 4 September 2014, <http://www.rijksoverheid.nl/onderwerpen/belastingen-op-auto-en-motor>

- Motor vehicles with limited road use (for example agriculture and forestry).
- Taxis.
- Motor vehicles used for public functions: ambulances, hearses, public defence, police, fire brigade, specific health services and road maintenance.
- Old vehicles which are 40 years or older.<sup>504</sup>
- Reductions:
  - For old vehicles between 26-40 years old (adapted tariff).<sup>505,506</sup>
  - 100% tax reduction for a motor vehicle equipped and intended to be exclusively powered by: 1) an electric motor on condition that energy is delivered by a battery or fuel cell (this provision will expire in 2016); or 2) a combustion engine which runs on hydrogen.
  - 75% tax reduction for vehicles such as caravans, circus wagons and vehicles used for horse transportation
  - 50% or 75% reduction for campers.
  - For vehicles used as a shop.
- Tax refund:
  - Trucks that are part of a commercial vehicle fleet with more trucks than trailers.
- Revenue in 2012 (the latest year for which figures are available): €5,138 million (equivalent to 0.86% of GDP and to 2.20% of total tax revenue).
- The government initially agreed in its coalition agreement to decrease the rates of the tax. However in its 2014 tax plan, it has decided not to implement this decision.<sup>507</sup>

➤ **Aviation noise tax:**<sup>508</sup>

---

<sup>504</sup> Rijksoverheid, Belastingen op auto en motor, Accessed 4 September 2014, <http://www.rijksoverheid.nl/onderwerpen/belastingen-op-auto-en-motor/vraag-en-antwoord/wat-is-de-overheid-van-plan-met-de-motorrijtuigenbelasting-mrb-voor-oldtimers.html>

<sup>505</sup> Rijksoverheid, Belastingen op auto en motor, Accessed 4 September 2014, <http://www.rijksoverheid.nl/onderwerpen/belastingen-op-auto-en-motor/vraag-en-antwoord/wat-is-de-overheid-van-plan-met-de-motorrijtuigenbelasting-mrb-voor-oldtimers.html>

<sup>506</sup> In 2014 a new arrangement was introduced: the age of old timers for exemption is increased to 40 years. A transition arrangement applies for cars exclusively using petrol: the tariff is a quarter of the regular tariff with a maximum of € 120 per year provided that the car is not being used in the January, February and December.

<sup>507</sup> Rijksoverheid (2014) Belastingplan 2014, Accessed 5 September 2014, <http://www.rijksoverheid.nl/onderwerpen/belastingplan-2014>

- The tax applies to airports where soundproofing projects around the airport have not been completed.
- The tax is paid by owners or holders of an aircraft as part of the airport charge.
- There are three different arrangements:
  - Schiphol airport; the rate is €180.50 per noise-production unit in 2014 (this rate will increase annually by €1.25).
  - Airports of national significance (e.g. Lelystad): rate in 2014 is € 37 per noise-production unit (rate will increase annually by €1 per noise reduction unit).
  - Airports of regional significance: to be arranged by Provinces.
  - Exemptions: all aircraft with a maximum tax-off weight less than 390 kg; propeller driven aircraft with maximum tax-off weight less than 6,000 kg; and landings at airports where soundproofing projects around the airport have been completed.
- Revenue in 2012 (the latest year for which figures are available): €46 million.

➤ **Air passenger duty (now abolished):**

- On 1<sup>st</sup> July 2008 an air passenger duty was introduced.
- The duty was set to zero as of 1<sup>st</sup> July 2009 and then ultimately abolished as of 1<sup>st</sup> January 2010.<sup>509</sup>

### 14.3 Pollution and Resource Taxes

➤ **Waste tax (“Afvalstoffenbelasting”) or landfill tax:**<sup>510,511</sup>

- The tax was abolished on 1 January 2012 and was reinstated on 1 April 2014.
- This tax is levied on the weight of waste landfilled by a waste handling company.

---

<sup>508</sup> OECD (2014) Database on instruments used for environmental policy, Accessed on 2 September 2014, [http://www2.oecd.org/eoicst/queries/AllInformation\\_Result.aspx?Key=f08e343c-a619-4c83-9286-226b1dc20acc&Keys=1773c438-e42c-476c-aede-a7cdada3f820&Ctry=19](http://www2.oecd.org/eoicst/queries/AllInformation_Result.aspx?Key=f08e343c-a619-4c83-9286-226b1dc20acc&Keys=1773c438-e42c-476c-aede-a7cdada3f820&Ctry=19)

<sup>509</sup> PWC (2013) The economic impact of Air Passenger Duty, Accessed 16 April 2014, <http://www.pwc.com/gx/en/psrc/united-kingdom/helping-economic-take-off-devolving-air-passenger-duty.jhtml>

<sup>510</sup> European Commission (2014) Taxes in Europe Database, Accessed 2 September 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=874/1388754878&taxType=Other+indirect+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=874/1388754878&taxType=Other+indirect+tax)

<sup>511</sup> Belastingdienst (2014) Afvalstoffenbelasting, Accessed 3 September 2014, [http://www.belastingdienst.nl/wps/wcm/connect/bldcontentnl/belastingdienst/zakelijk/overige\\_belastingen/belastingen\\_op\\_milieugrondslag/afvalstoffenbelasting/](http://www.belastingdienst.nl/wps/wcm/connect/bldcontentnl/belastingdienst/zakelijk/overige_belastingen/belastingen_op_milieugrondslag/afvalstoffenbelasting/)

- Exemptions: the disposal of dredging's.
- Tax refunds: Waste which originates from an offender towards whom administrative force is applied in accordance with the Environmental Act ("Wet Milieubeheer").
- Tax rate: €17 per 1,000kg that is landfilled (rate as of 1 April 2014).
- Revenue in 2011 (the latest year for which figures are available): €17 million (equivalent to 0.00% of GDP and to 0.01% of total tax revenue). The expected revenue for 2014 is € 25 million.
- The 2015 Fiscal Plan foresees to extend the scope of the tax to waste incinerated by waste incineration plants. The rate for both landfilled and incinerated waste is expected to be €13 per 1,000 kg from 2015.<sup>512</sup>

➤ **Municipal waste charge:**<sup>513</sup>

- Levied to cover the costs of collection and treatment of household waste.
- The charge only applies to households.
- Rate:
  - Rates are decided by local authorities.
  - Some local authorities differentiate the rate according to the volume of waste collected or the number of times waste is offered to the collection service; others differentiate the rate according to the number of household members.
  - The average annual rate per household is €185.
- Revenue in 2010 (the latest year for which figures are available): € 1,277 million.

➤ **Packaging tax ("Verpakkingenbelasting") (now abolished):**<sup>514</sup>

- The tax was abolished and has not been levied since 1<sup>st</sup> January 2013.<sup>515</sup> Replaced by packaging waste management tax – see below.
- The tax rate per kilogram distinguished between eight materials:
  - Glass € 0.0718.
  - Aluminium € 0.9506.

---

<sup>512</sup> Rijksoverheid (2014) Belastingplan 2015, Accessed 23 September 2014, <http://www.rijksoverheid.nl/onderwerpen/belastingplan-2015>

<sup>513</sup> OECD (2014) Database on instruments used for environmental policy, Accessed on 2 September 2014, [http://www2.oecd.org/ecoinst/queries/All\\_Information.aspx](http://www2.oecd.org/ecoinst/queries/All_Information.aspx)

<sup>514</sup> OECD (2014) Database on instruments used for environmental policy, Accessed on 2 September 2014, [http://www2.oecd.org/ecoinst/queries/All\\_Information.aspx](http://www2.oecd.org/ecoinst/queries/All_Information.aspx)

<sup>515</sup> Afvalfonds verpakking (2014) Afvalfonds verpakking, Accessed 3 September 2014, [www.afvalfondsverpakkingen.nl](http://www.afvalfondsverpakkingen.nl)

- Other metals € 0.1585.
- Plastics € 0.4705.
- Bio-plastics € 0.0795.
- Paper and paperboard € 0.0795.
- Wood € 0.0210.
- Other materials € 0.1755.
- Part of the revenue of the packaging tax went to the Treasury.
- Exemptions:
  - Packaging less than 50,000kg.
  - Logistical aid.
  - Products that meet the definition of packaging, but whose main function is not packaging.
- Refund provided to companies that export packaged products on which the packaging tax has been paid earlier in the chain. There is a threshold of 50,000kg.
- Revenue in 2010 (the latest year for which figures are available): €299 million.

➤ **Packaging waste management charge (“Afvalbeheersbijdrage Verpakkingen”):<sup>516</sup>**

- Replaced the packaging tax since 1<sup>st</sup> January 2013.
- The charge is paid by companies which bring 50,000kg or more of packaging waste on the market annually.
- Revenues are allocated to the packaging waste fund (“Afvalfonds Verpakkingen”) for collection and recycling of packaging waste.
- Rate applied distinguishes between eight materials – these are shown in Table 14-4.

**Table 14-4: 2013-2015 Rates of the Packaging Waste Management Charge (Excluding VAT)**

Material Type	Tariff 2015 (€ per kg)	Tariff 2013/2014 (€ per kg)
Glass	0.0595	0.0595
Paper/paperboard	0.0233	0.0233
Plastics	0.3876	0.3876

<sup>516</sup> Afvalfonds verpakking (2014) Afvalfonds verpakking, Accessed 3 September 2014, [www.afvalfondsverpakkingen.nl](http://www.afvalfondsverpakkingen.nl)

Bio plastics	0.0212	0.0212
Aluminium	0.0212	0.0212
Other metals	0.0212	0.0212
Wood	0.0212	0.0212
Other materials	0.0212	0.0212
General tariff	0.4700	0.4700
Beverage cartons	0.1740	-
Deposit bottles	0.2012	0.0212

Source: Afvalfonds verpakking (2014) Afvalfonds Verpakking, Accessed 3<sup>rd</sup> September 2014, [www.afvalfondsverpakkingen.nl](http://www.afvalfondsverpakkingen.nl)

➤ **Tap water tax (“Belasting op leidingwater”):**<sup>517</sup>

- The tax is levied on the supply of tap water to consumers through a fixed connection to the water mains.
- Tap water is taxed to a maximum quantity of 300 m<sup>3</sup> per connection per year. This implies that the most ‘luxurious’ water consumption, such as private swimming pools and excessive garden watering, are not subject to a price incentive from the tax.<sup>518</sup>
- Tax rate<sup>519</sup>: € 0.330 per m<sup>3</sup> (2014), increased from €0.165 per m<sup>3</sup> in 2013, whilst a maximum taxable quantity was introduced.<sup>520</sup>
- Exemptions: tap water delivered through emergency provisions such as fireplugs and sprinkler installations (only under special circumstances).
- Revenue in 2010 (the latest year for which figures are available): €126 million (equivalent to 0.02% of GDP).

➤ **Water system charge (“watersysteemheffing”):**<sup>521</sup>

<sup>517</sup> OECD (2014) Database on instruments used for environmental policy, Accessed on 3 September 2014, [http://www2.oecd.org/eoicinst/queries/All\\_Information.aspx](http://www2.oecd.org/eoicinst/queries/All_Information.aspx)

<sup>518</sup> Ecologic, IEEP, IVM, BIO (2013) Steps towards greening in the EU - Monitoring Member States achievements in selected environmental policy areas, Country Report on the Netherlands, Study under DG Environment's Framework contract for economic analysis ENV.F.1/FRA/2010/0044, Brussels, 2013.

<sup>519</sup> Belastingdienst (2014) Tabellen tarieven milieubelastingen, Accessed 3 September 2014, [http://www.belastingdienst.nl/wps/wcm/connect/bldcontentnl/belastingdienst/zakelijk/overige\\_belastingen/belastingen\\_op\\_milieugrondslag/tarieven\\_milieubelastingen/tabellen\\_tarieven\\_milieubelastingen](http://www.belastingdienst.nl/wps/wcm/connect/bldcontentnl/belastingdienst/zakelijk/overige_belastingen/belastingen_op_milieugrondslag/tarieven_milieubelastingen/tabellen_tarieven_milieubelastingen)

<sup>520</sup> Rijksoverheid (2014) Belasting op leidingwater, Accessed 5 September 2014, <http://www.rijksoverheid.nl/onderwerpen/belastingen-voor-ondernemers/milieubelastingen/belasting-op-leidingwater>

- This charge is levied to finance measures and programmes to prevent flooding, surplus water (after heavy rainfall) and water shortage. The tax is levied by the regional water management board (“waterschap”) with revenues earmarked for regional water management, i.e. dike management, water quality and quantity management.
- The charge consists of two parts:
  - The solidarity part which has to be paid by each inhabitant of the concerned river basin.
  - The profit part which has to be paid by land owners and owners of buildings.
- Rate for solidarity part:
  - fixed amount per household
  - determined by dividing the budgeted costs by the number of households within the water board area
- Rate for the profit part: based on the value of the property or the land.
- The cost recovery rate is deemed to be 100%.<sup>522</sup>
- **Wastewater treatment charge (zuiveringsheffing):**<sup>523,524</sup>
  - The charge is levied on the amount and the qualification of indirect discharges, i.e. discharges into the sewerage system or into wastewater treatment plants in one year.
  - The charge is meant to recover the costs of transport and treatment of wastewater.
  - Tax rate:
    - Based on pollution load of substances discharged in one calendar year, whereby pollution load is expressed in pollution units.

---

<sup>521</sup> Kenniscentrum InfoMil (2014) Handboek water, Accessed 5 September 2014, <http://www.infomil.nl/onderwerpen/klimaat-lucht/handboek-water/wetgeving/waterschapswet-0/inhoud/watersysteemheffing/>

<sup>522</sup> European Commission (2012) Commission Staff Working Document. Member State: the Netherlands. Accompanying the document: Report from the Commission on the implementation of the Water Framework Directive (2000/60) River Basin Management Plans, Brussels, 14.11.2012, SWD (2012)379.

<sup>523</sup> OECD (2014) Database on instruments used for environmental policy, Accessed on 2 September 2014, [http://www2.oecd.org/ecoinst/queries/AllInformation\\_Result.aspx?Key=d3cbd6fe-8f05-4ce7-b055-ed4c48549de8&Keys=d7e349c0-8f0b-4d64-8d57-7d0c43328b76&Ctry=19](http://www2.oecd.org/ecoinst/queries/AllInformation_Result.aspx?Key=d3cbd6fe-8f05-4ce7-b055-ed4c48549de8&Keys=d7e349c0-8f0b-4d64-8d57-7d0c43328b76&Ctry=19) <http://www2.oecd.org/ecoinst/queries/AllInformation.aspx>

<sup>524</sup> Kenniscentrum InfoMil (2014) Handboek water, Accessed 5 September 2014, <http://www.infomil.nl/onderwerpen/klimaat-lucht/handboek-water/wetgeving/waterschapswet-0/inhoud/zuiveringsheffing/>



- Lump charge applied to households: each household is levied on the basis of a fixed number of pollution units (up to 3). A single-person household is levied on the basis of one pollution unit.
- Water boards are free to base the pollution load for a household on its tap water use.
- Revenue in 2010 (the latest year for which figures are available): €1128 million (equivalent of 0.19% of GDP).
- The cost recovery rate is deemed to be 100%.<sup>525</sup>
- **Water pollution charge (“Zuiveringsheffing”):**
  - The charge is levied on the amount and the qualification of direct discharges, i.e. discharges into surface water systems.
  - The calculation of the charge is identical to that of the waste water treatment charge.
- **Municipal sewerage charge:**<sup>526</sup>
  - Local authorities charge households for the costs of the local sewerage system, i.e. for collecting and discharging rain and wastewater.
  - Charges are waived for households with less than minimum income.
  - Rates are determined by local authorities per household, differentiated according to the number of household members.
  - Revenue is used for the collection and discharge of rain and wastewater.
  - Revenue in 2008 (the latest year for which figures are available): €1143 million (equivalent to 0.19% of GDP).
  - The cost recovery rate is 95%.<sup>527</sup>
- **Tax on groundwater extraction (now abolished):**<sup>528</sup>

---

<sup>525</sup> European Commission (2012) Commission Staff Working Document. Member State: the Netherlands. Accompanying the document: Report from the Commission on the implementation of the Water Framework Directive (2000/60) River Basin Management Plans, Brussels, 14.11.2012, SWD (2012)379.

<sup>526</sup> OECD (2014) Database on instruments used for environmental policy, Accessed on 2 September 2014, [http://www2.oecd.org/eoicnst/queries/All\\_Information.aspx](http://www2.oecd.org/eoicnst/queries/All_Information.aspx)  
[http://www2.oecd.org/eoicnst/queries/AllInformation\\_Result.aspx?Key=faa3c4b5-a97d-47bb-934e-0cb9965898ad&Keys=bf122d93-fa70-40d0-942a-f044e849c8bf&Ctry=19](http://www2.oecd.org/eoicnst/queries/AllInformation_Result.aspx?Key=faa3c4b5-a97d-47bb-934e-0cb9965898ad&Keys=bf122d93-fa70-40d0-942a-f044e849c8bf&Ctry=19)

<sup>527</sup> European Commission (2012) Commission Staff Working Document. Member State: the Netherlands. Accompanying the document: Report from the Commission on the implementation of the Water Framework Directive (2000/60) River Basin Management Plans, Brussels, 14.11.2012, SWD(2012)379

<sup>528</sup> OECD (2014) Database on instruments used for environmental policy, Accessed on 2 September 2014, [http://www2.oecd.org/eoicnst/queries/All\\_Information.aspx](http://www2.oecd.org/eoicnst/queries/All_Information.aspx)

- The tax was abolished in 2011 by the first Rutte cabinet. It has not been levied since 1<sup>st</sup> January 2012.
- Tax rate: € 0.1951 per cubic meters groundwater extracted.
- Exemptions on extraction for:
  - A building excavation (not more than 50,000 m<sup>3</sup> and which takes no longer than four consecutive months to complete).
  - Tests (not more than 50,000 m<sup>3</sup> and which takes no longer than four consecutive months to complete).
  - Emergency provisions.
  - Decontamination of groundwater.
  - Country skating rinks.
  - Sprinkling and irrigation purposes.
  - By an establishment with a capacity of max 10 cubic meters per hour.
- Refund: refund of €0.1604 per cubic metre for infiltrated water according to a permit.
- Revenue in 2010 (the latest year for which figures are available): €179 million (equivalent to 0.03% of GDP).

## 14.4 Modelled Changes in Tax Base

The modelled change in the tax base for each of the suggested reforms to the tax system are shown in the table and figures below.

Table 14-5: Change in Energy Tax Base

Fuel Type	Units	Baseline	After Tax Increase	Change
Gas Oil	million litres	6,166	5,845	-321
Petrol	million litres	3,671	3,671	0
Kerosene	million litres	2,882	2,882	0
LPG	thousand tonnes	264	238	-26
Heavy Fuel Oil	thousand tonnes	49	43	-6
Natural Gas	TJ (GCV)	563,001	499,796	-63,204
Coal	thousand tonnes	1,024	1,005	-19
Electricity	GWh	74,169	74,137	-32

Figure 14-1: Change in Internal Passenger Flights, flights per year

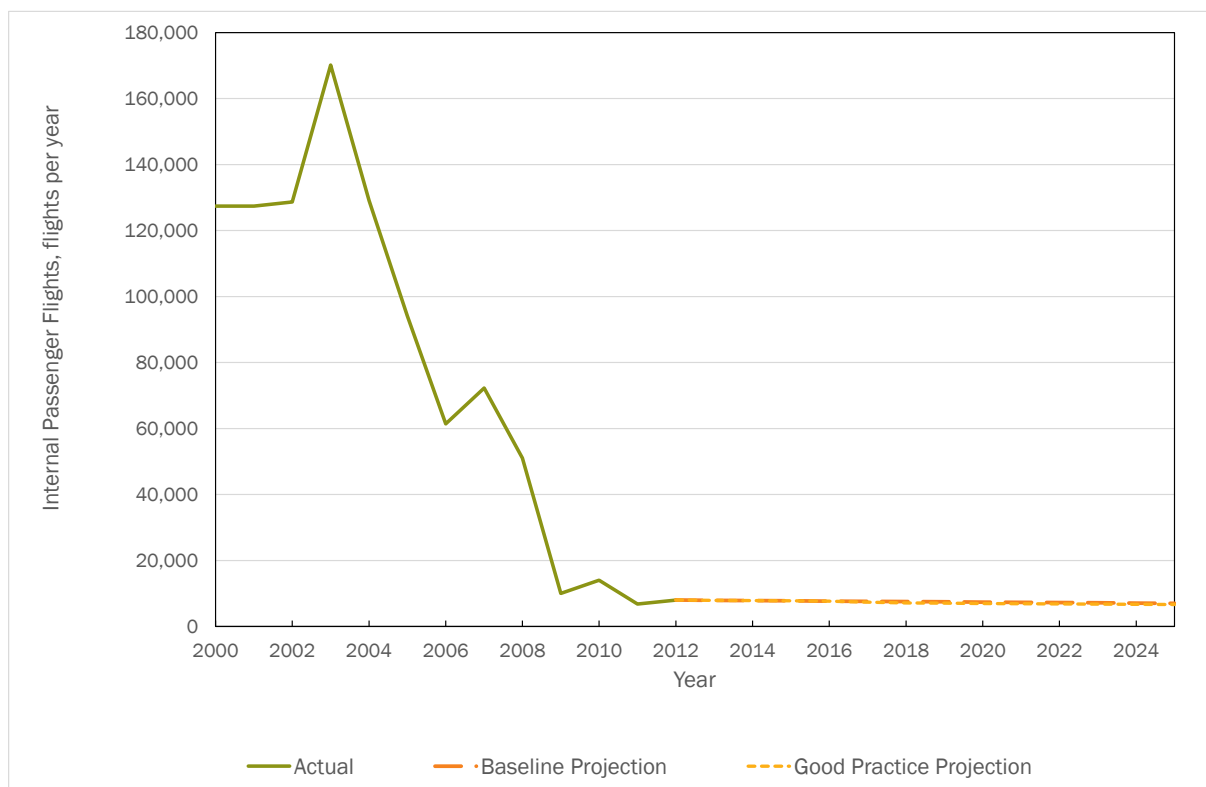


Figure 14-2: Change in Intra-EU Passenger Flights, flights per year

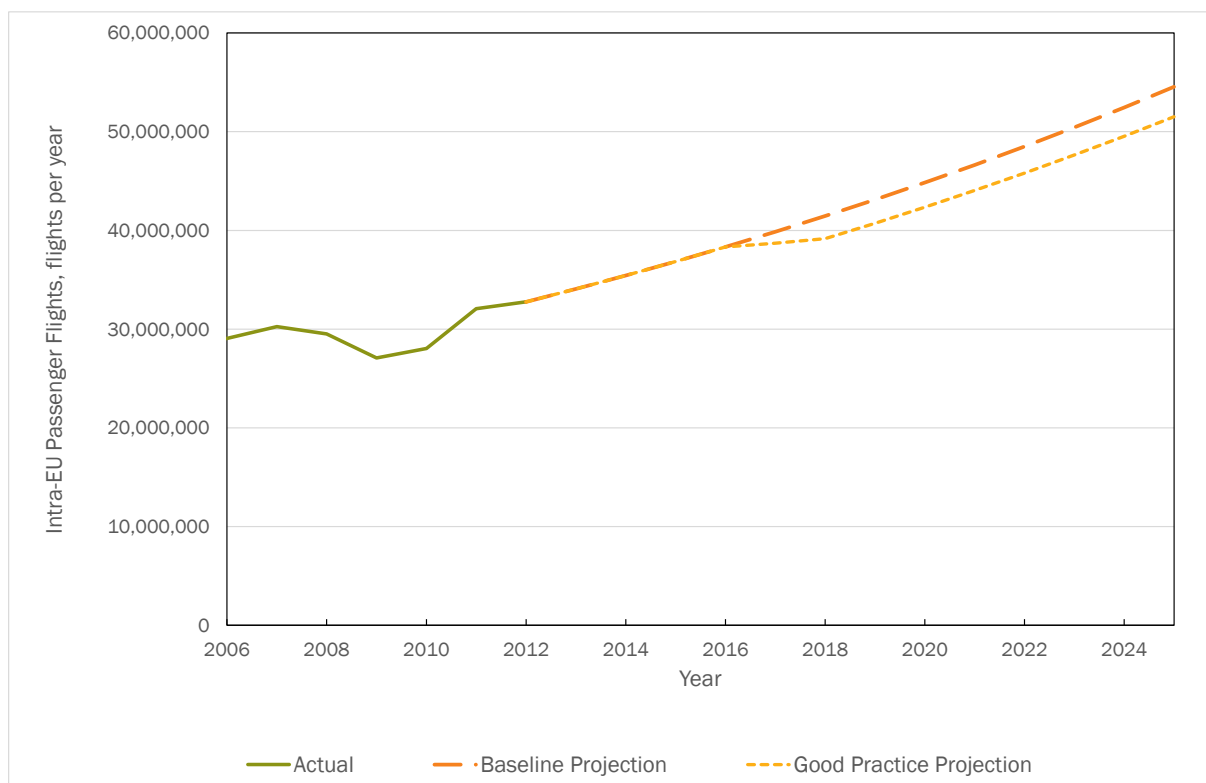


Figure 14-3: Change in Extra-EU Passenger Flights, flights per year

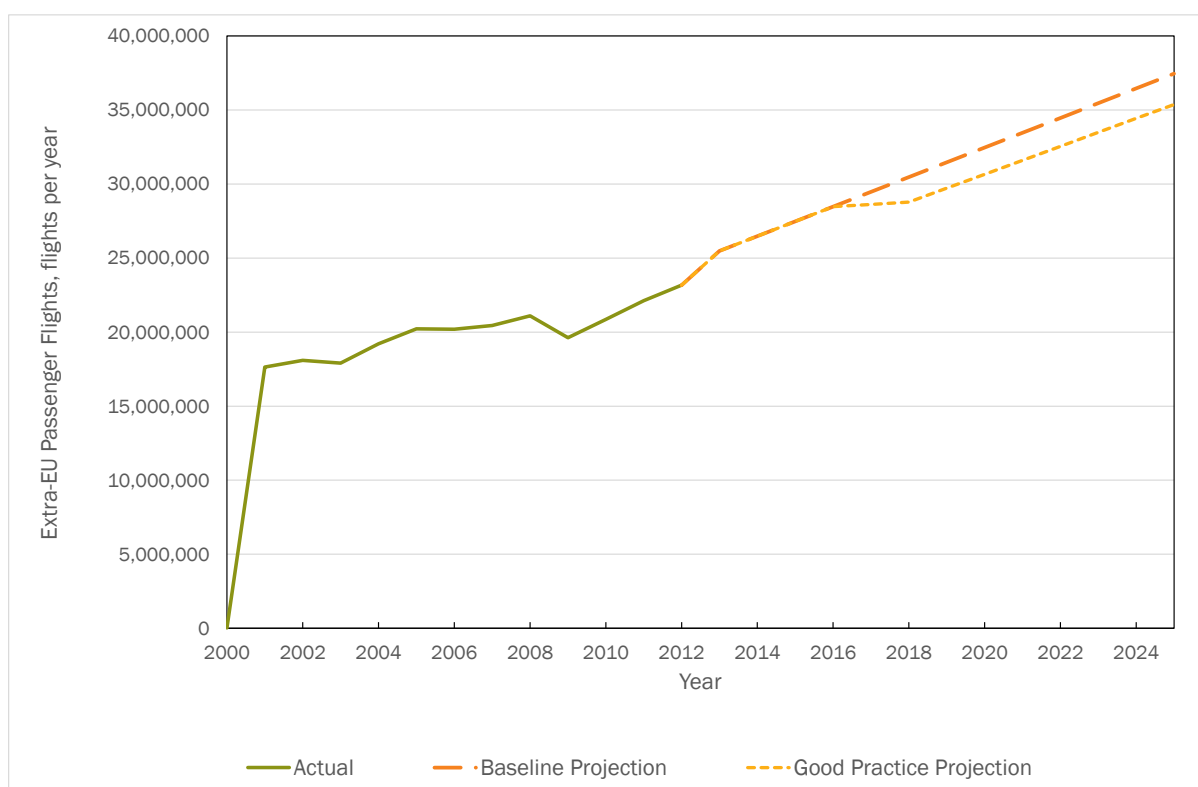


Figure 14-4: Change in Internal Air-freight, tonnes

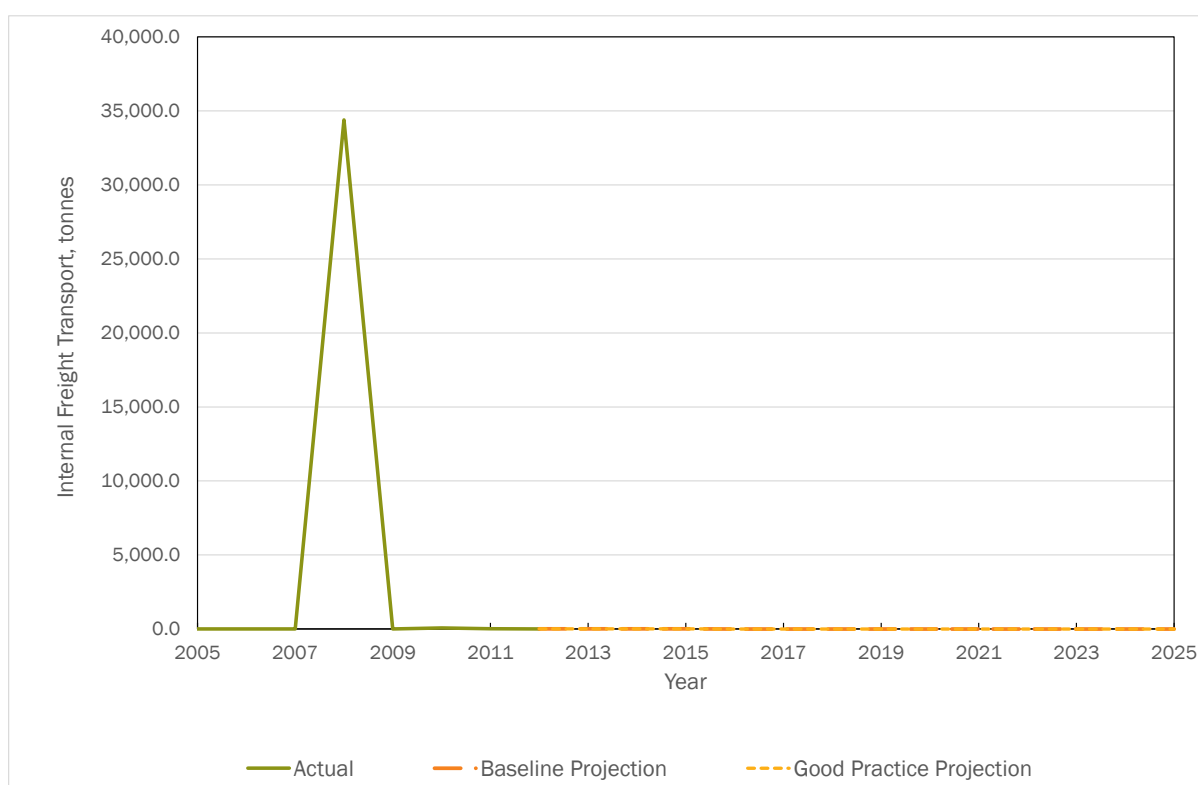


Figure 14-5: Change in Intra-EU Air-freight, tonnes

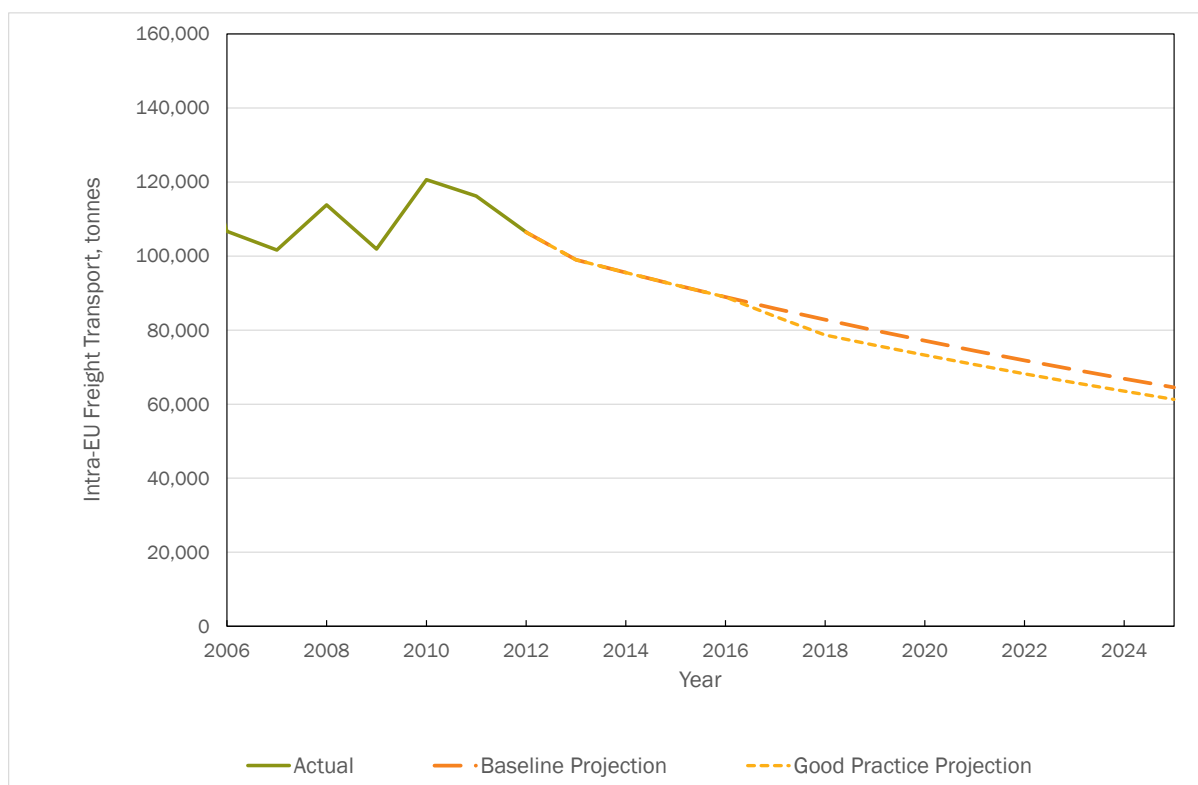


Figure 14-6: Change in Extra-EU Air-freight, tonnes

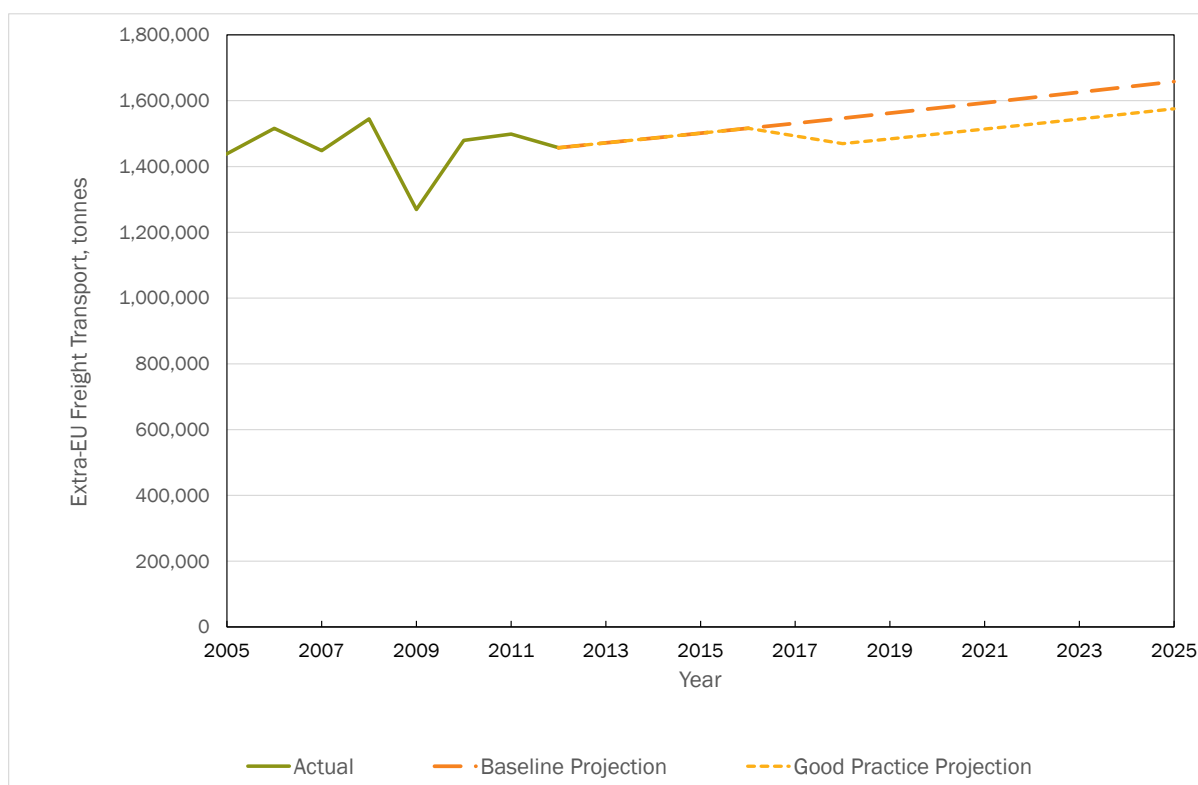


Figure 14-7: Change in Non-Hazardous Waste Landfilled, thousand tonnes

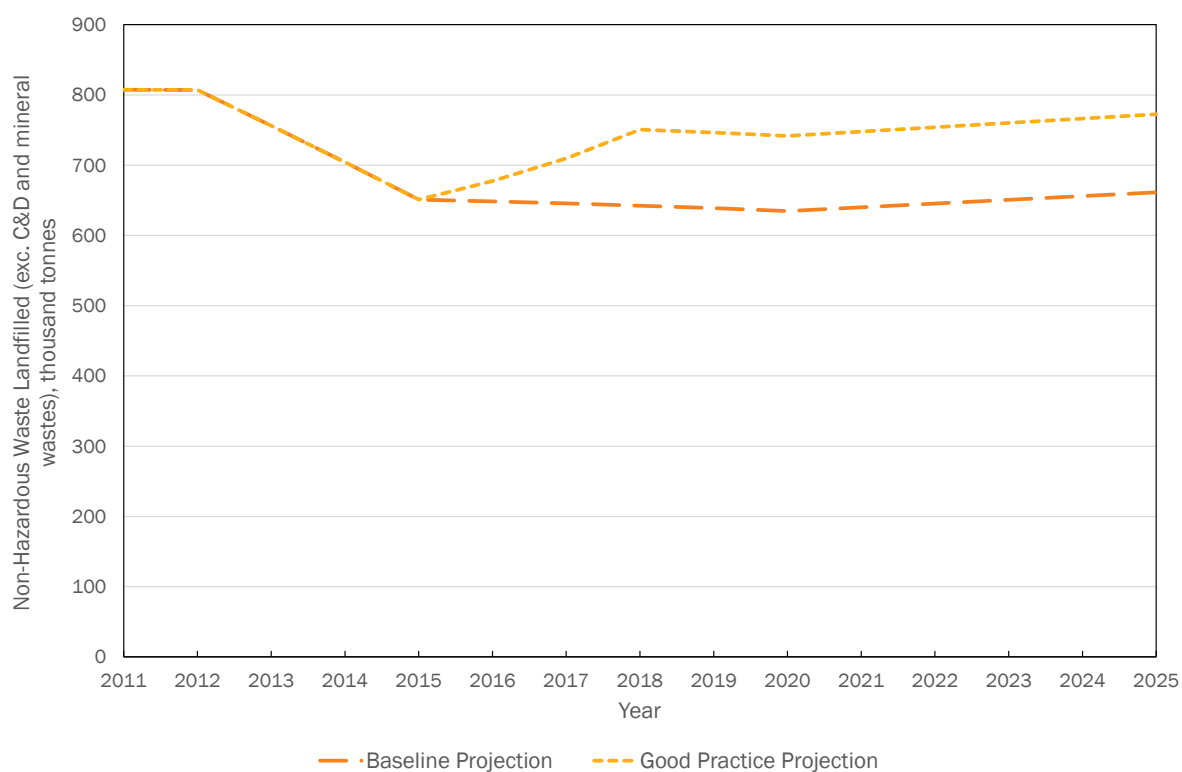


Figure 14-8: Change in MBT/ Incineration, thousand tonnes

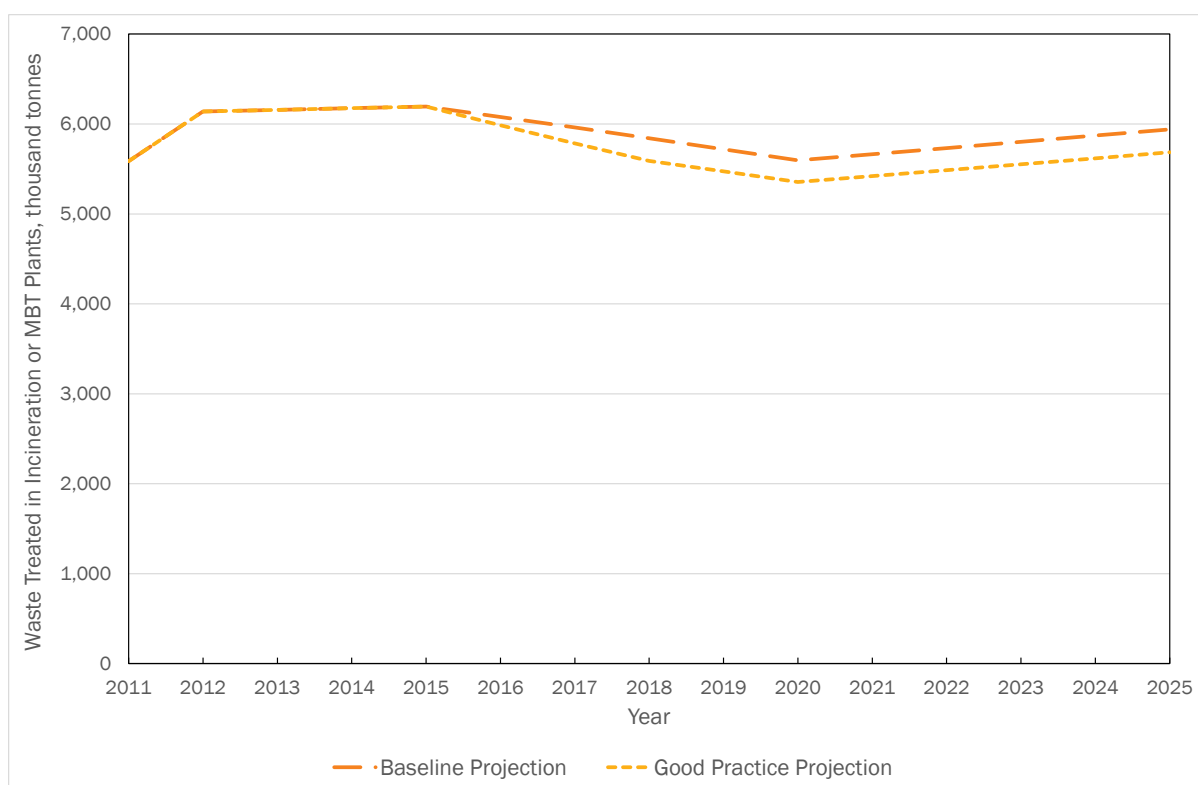


Figure 14-9: Change in SOx Emissions, tonnes

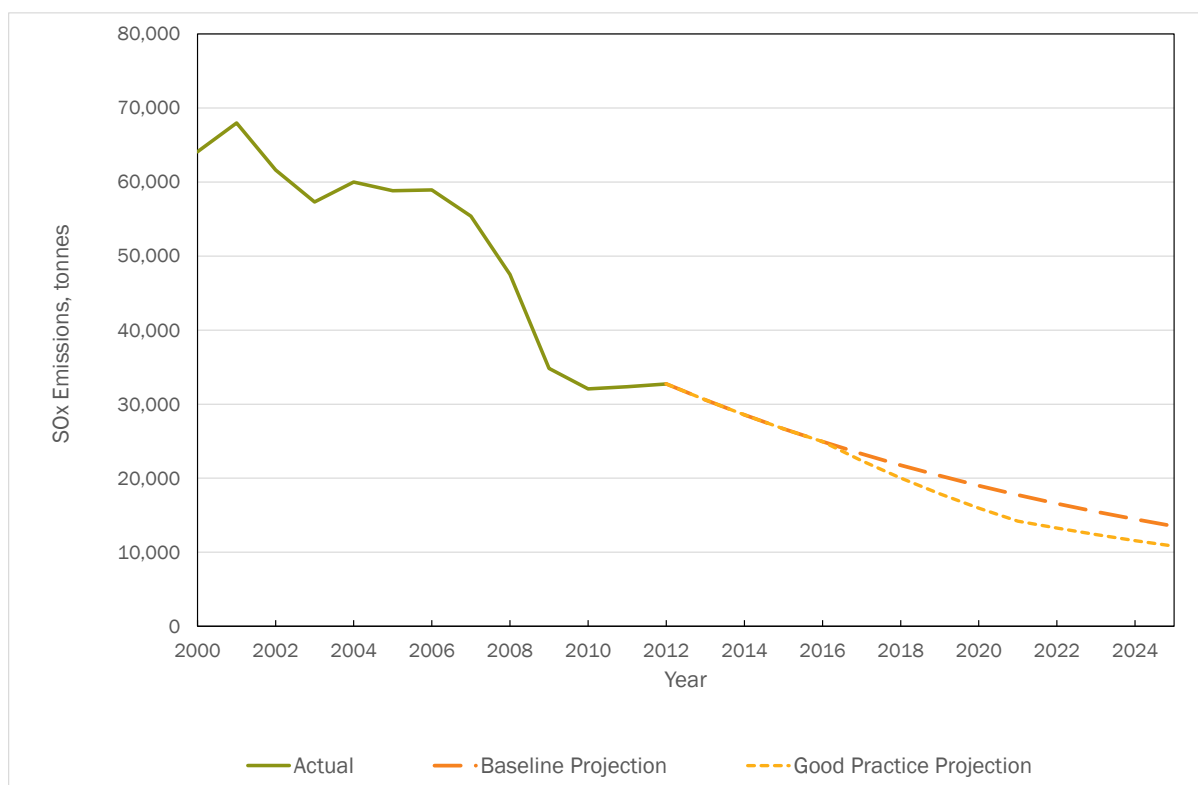


Figure 14-10: Change in NOx Emissions, tonnes

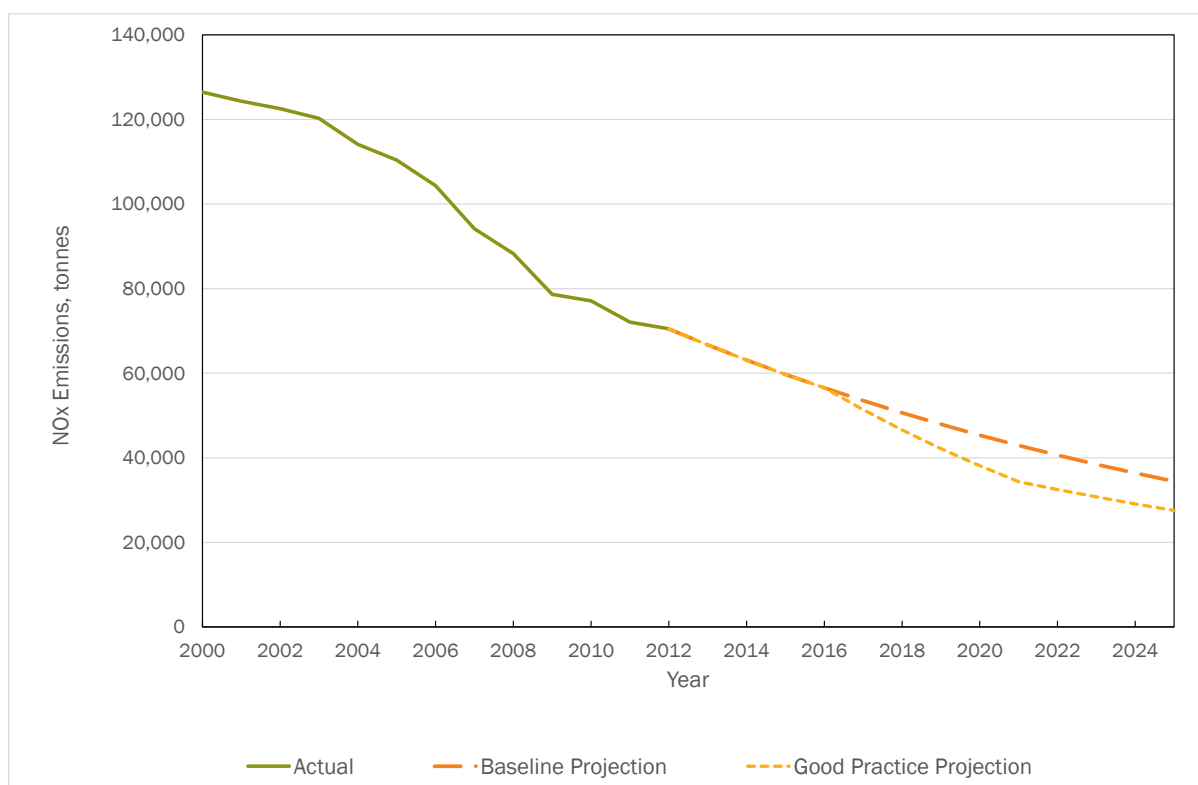


Figure 14-11: Change in PM<sub>10</sub> Emissions, tonnes

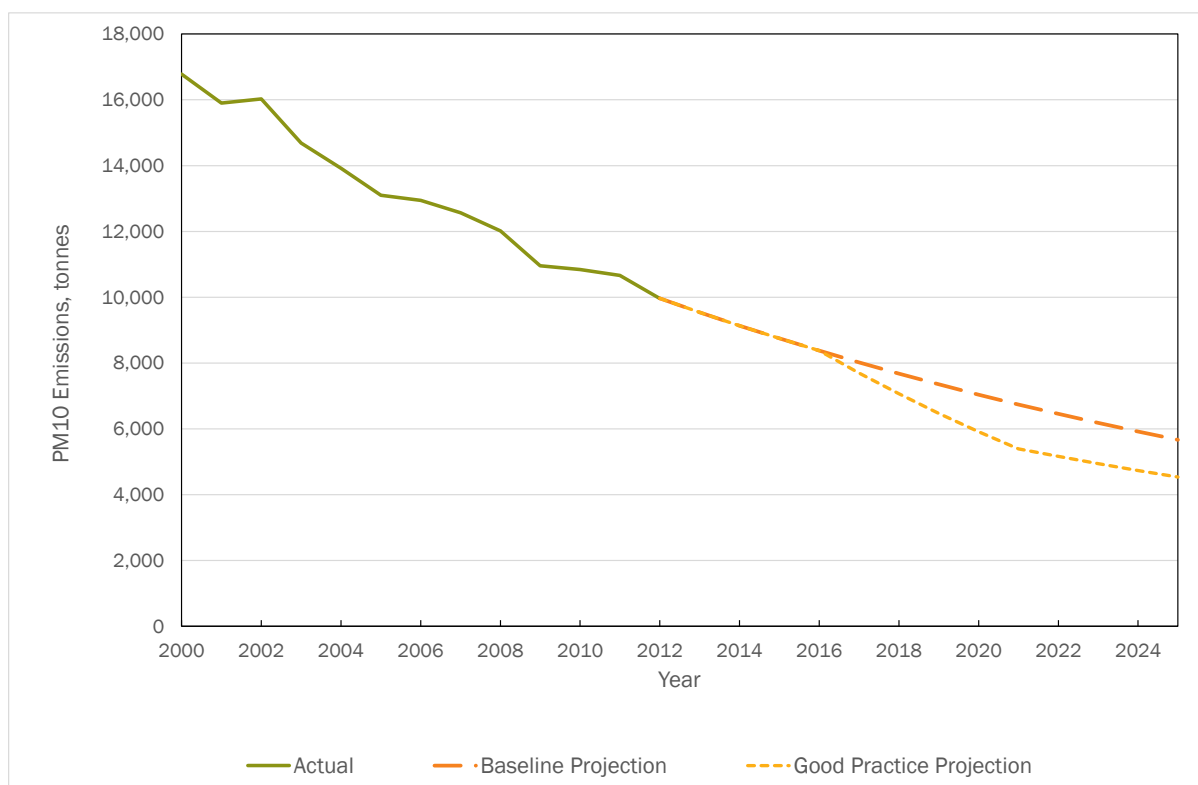


Figure 14-12: Change in Groundwater Abstraction – Public Supply, million cubic metres

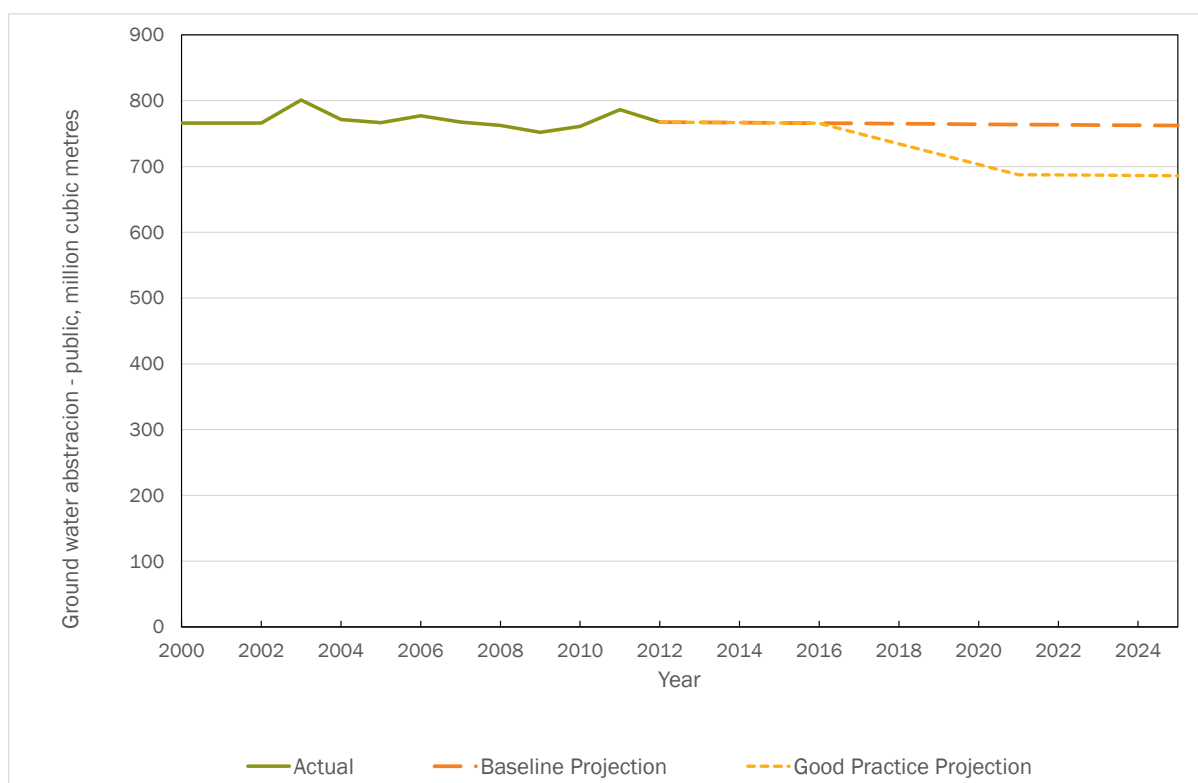




Figure 14-13: Change in Groundwater Abstraction – Manufacturing, million cubic metres

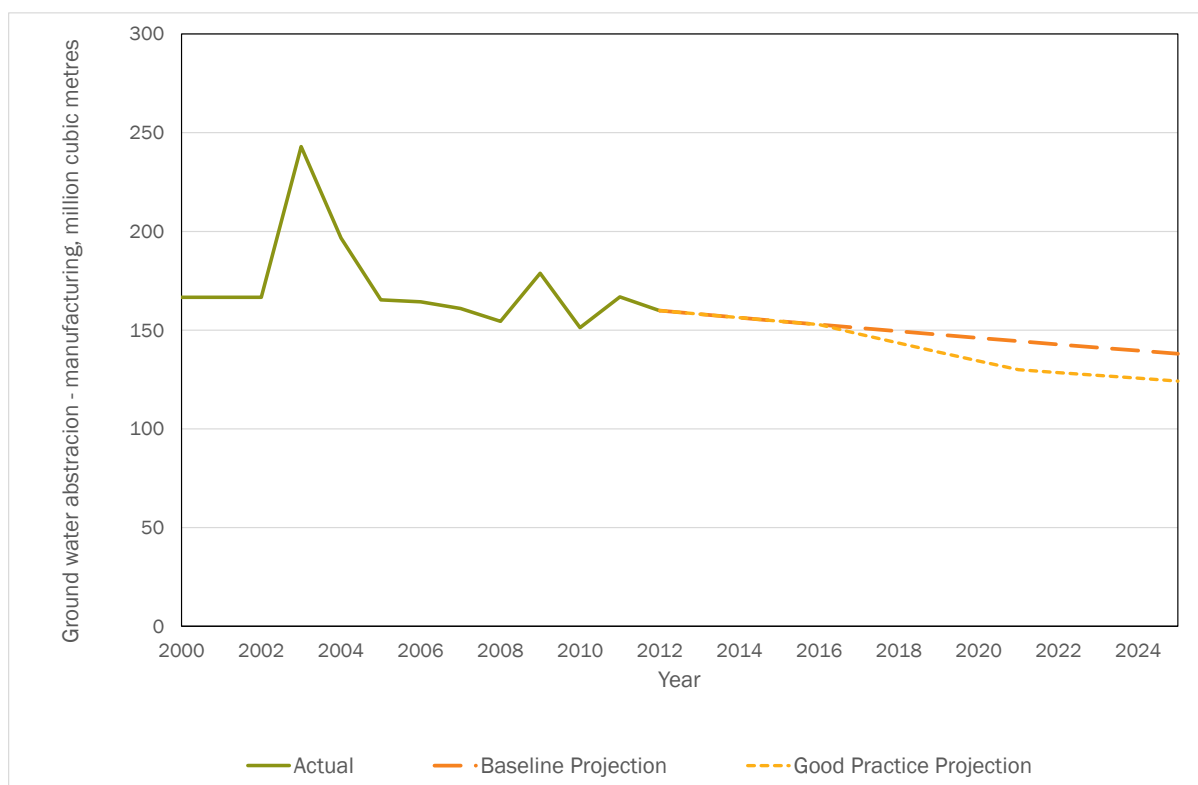


Figure 14-14: Change in Groundwater Abstraction – Agriculture, million cubic metres

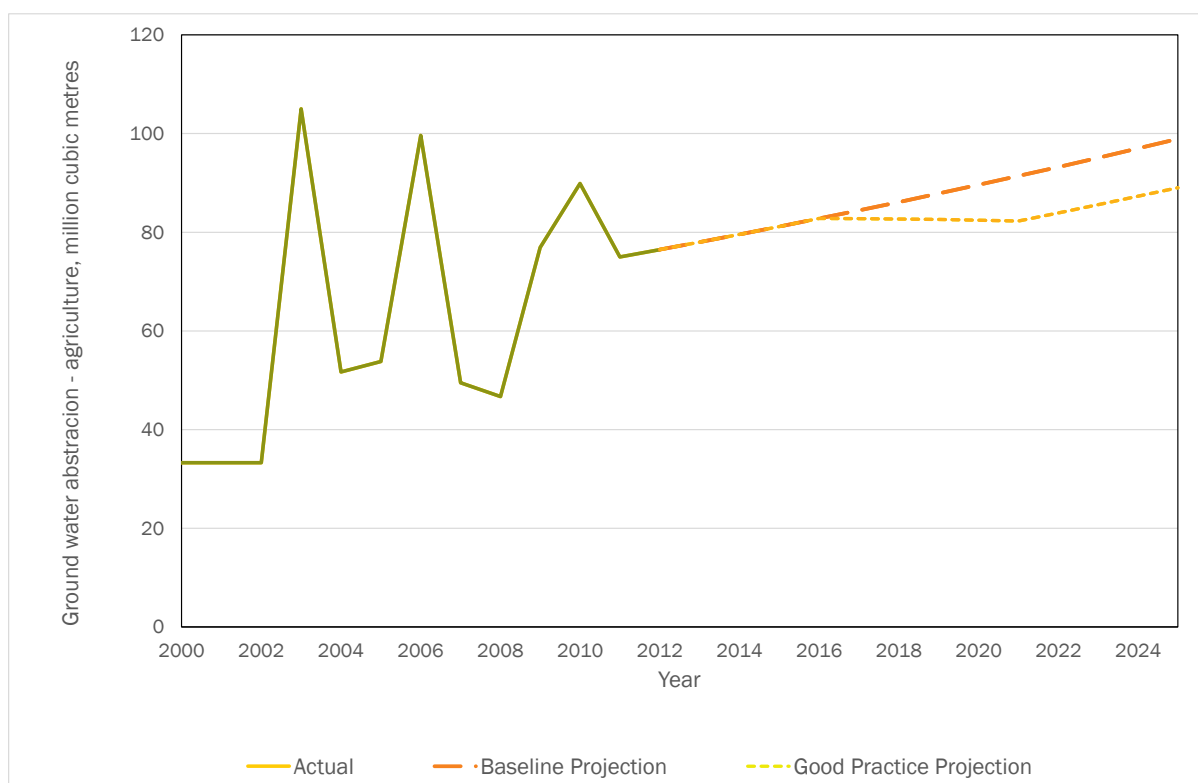


Figure 14-15: Change in Surface Water Abstraction – Public Supply, million cubic metres

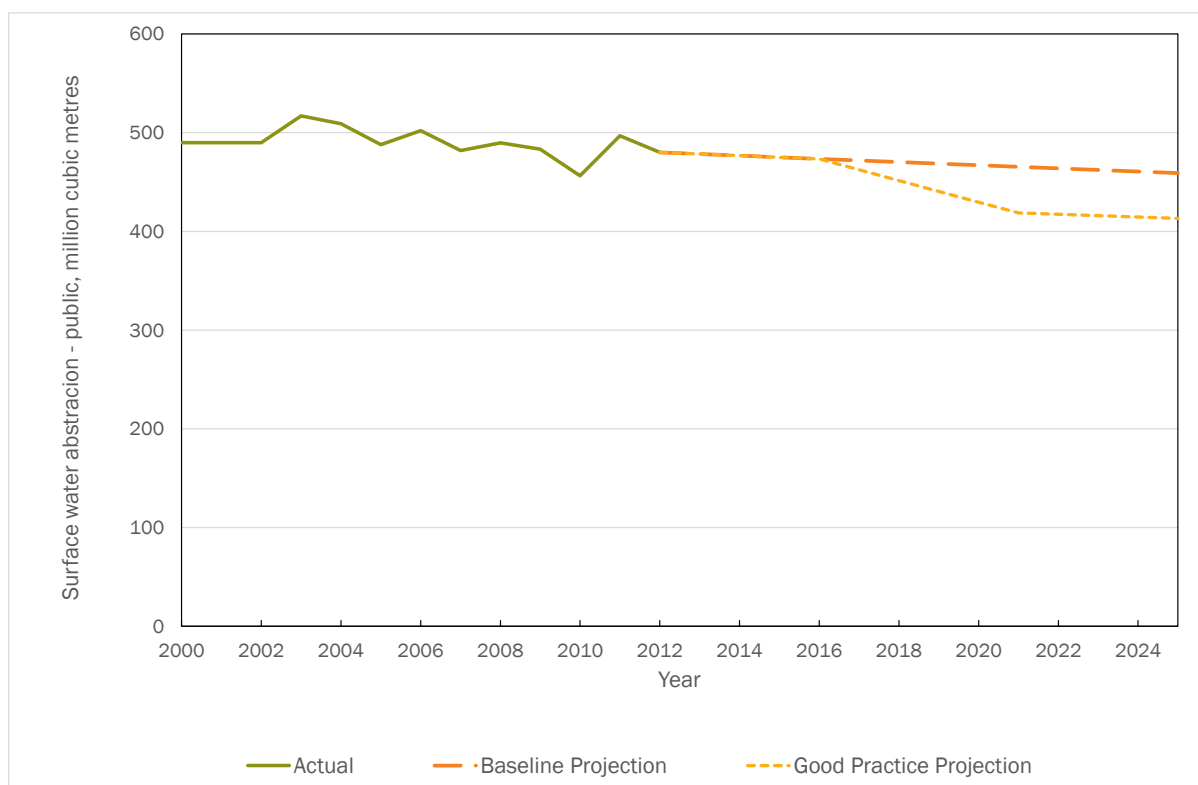


Figure 14-16: Change in Surface Water Abstraction – Manufacturing, million cubic metres

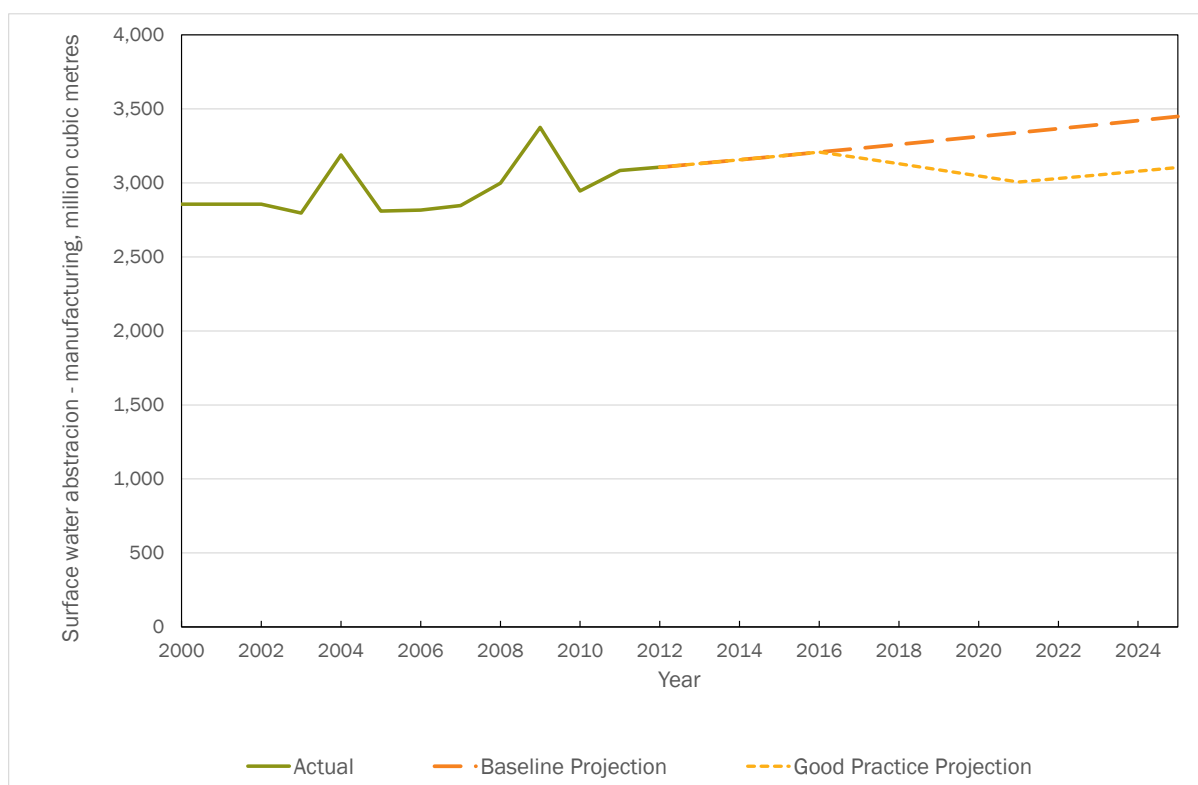


Figure 14-17: Change in Surface Water Abstraction – Agriculture, million cubic metres

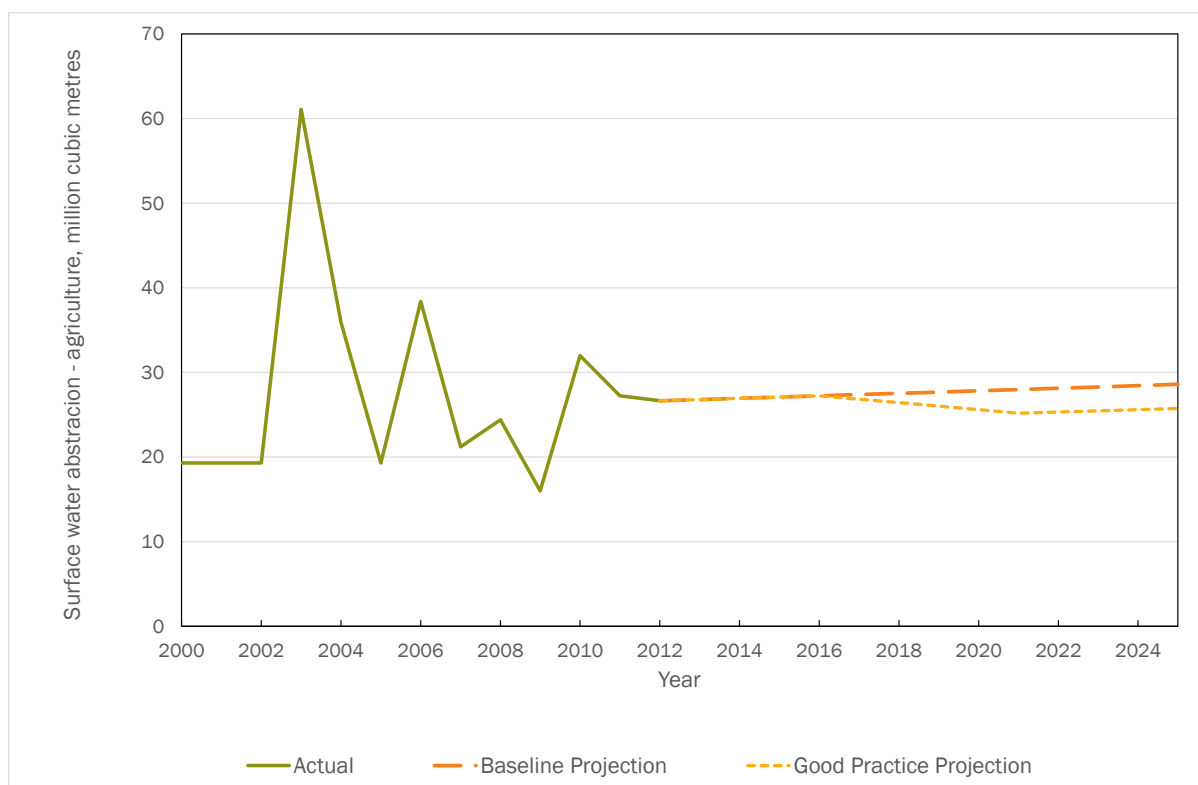


Figure 14-18: Change in Active Ingredients in Pesticides, tonnes



Figure 14-19: Change in Non-organic Nitrogen Sales of Fertilisers, tonnes



Figure 14-20: Change in Aggregates Extraction, thousand tonnes

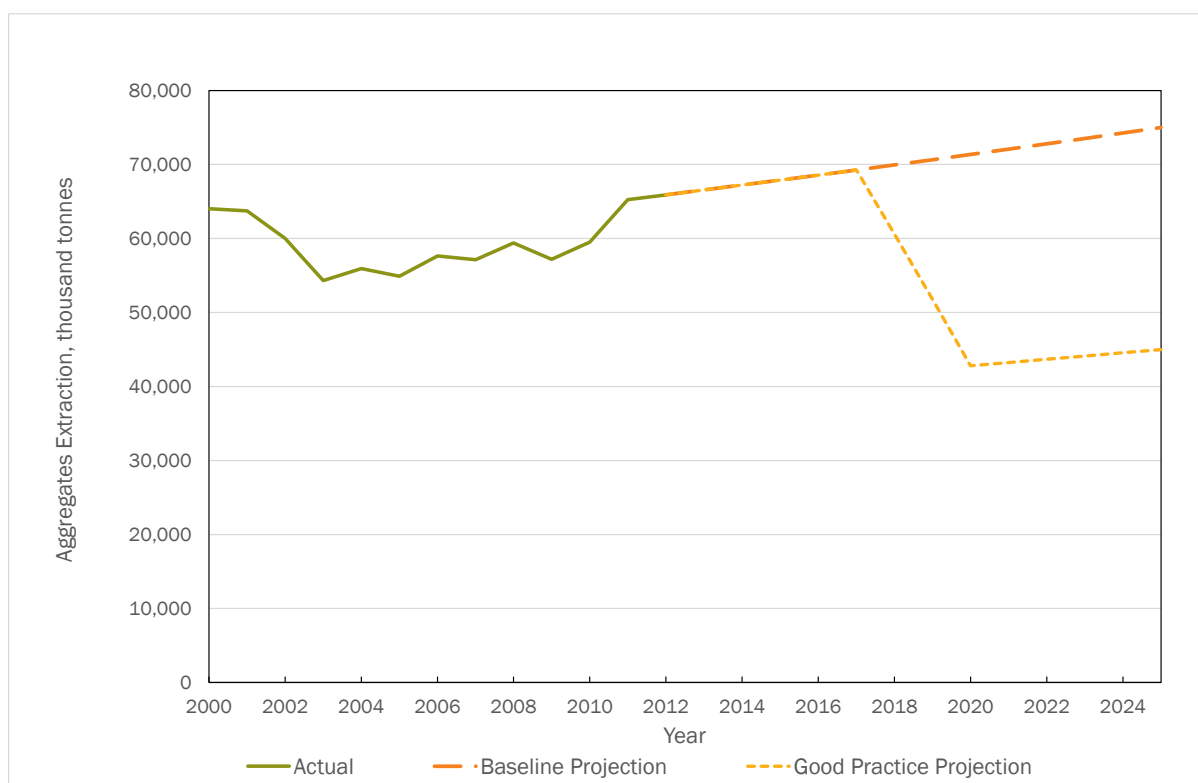


Figure 14-21: Change in Paper & Card Packaging Generation, thousand tonnes

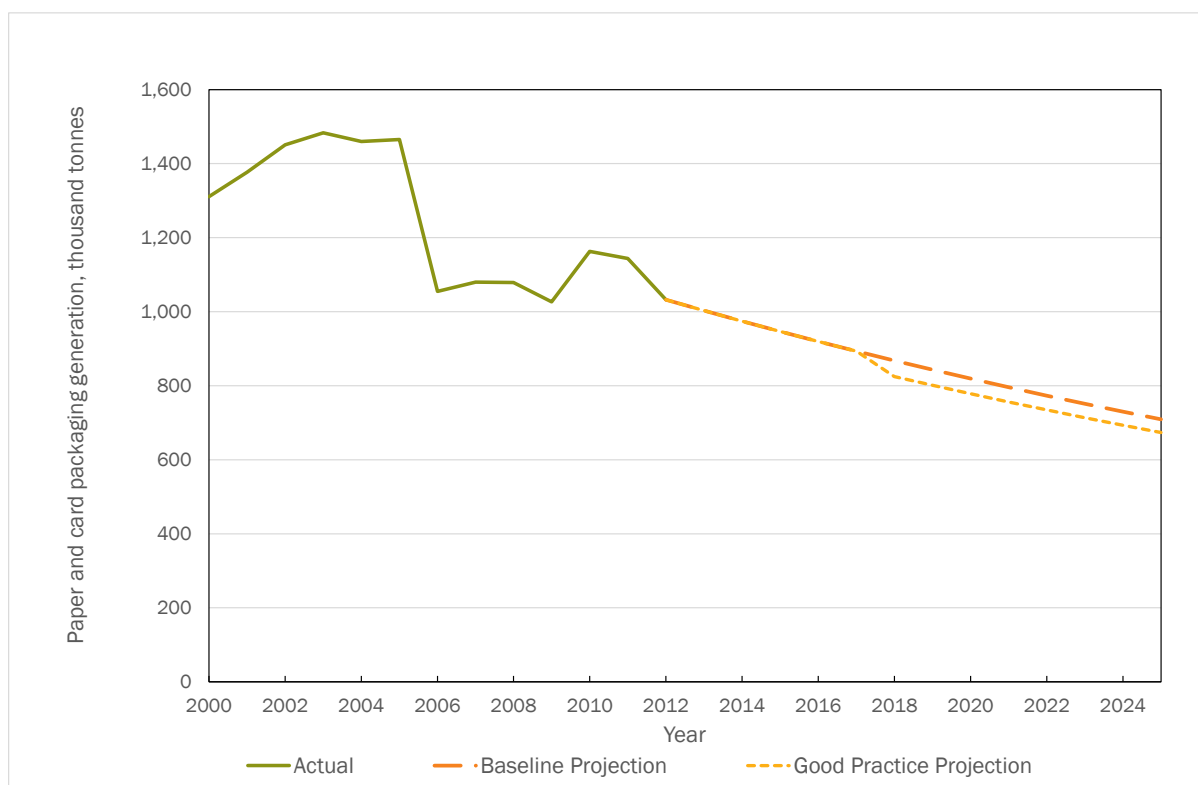


Figure 14-22: Change in Plastic Packaging Generation, thousand tonnes

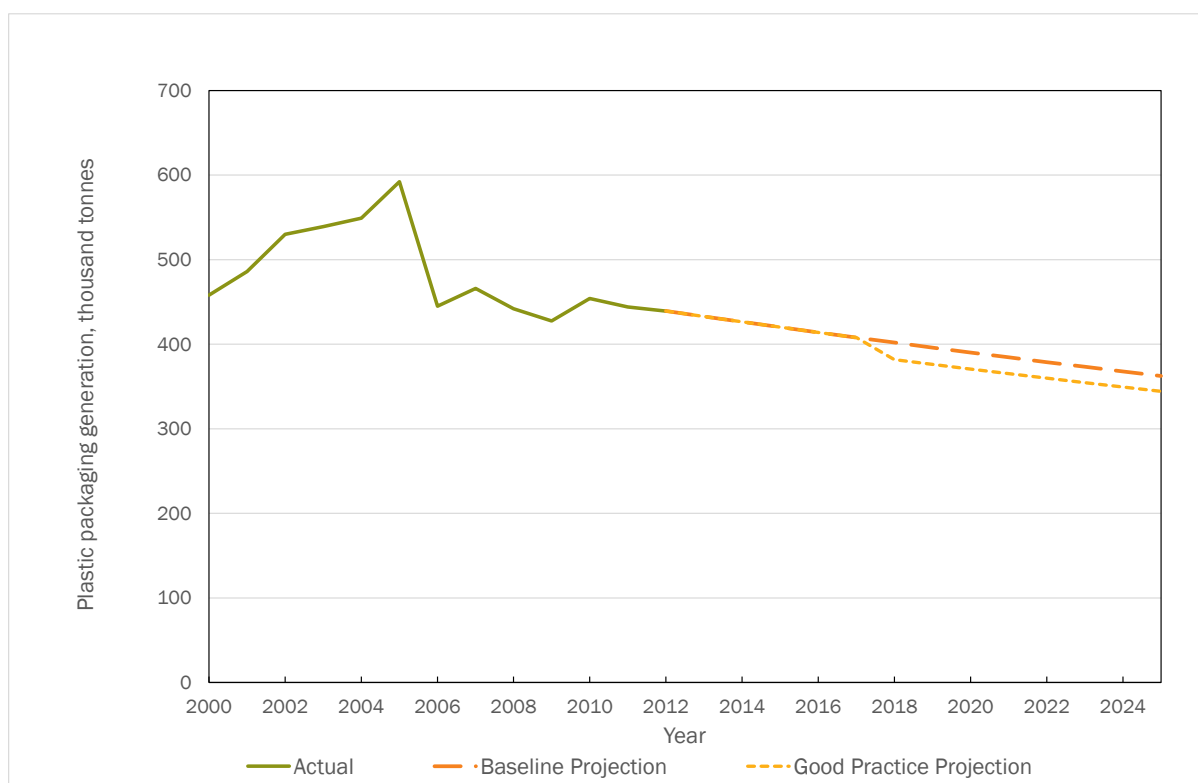


Figure 14-23: Change in Wood Packaging Generation, thousand tonnes

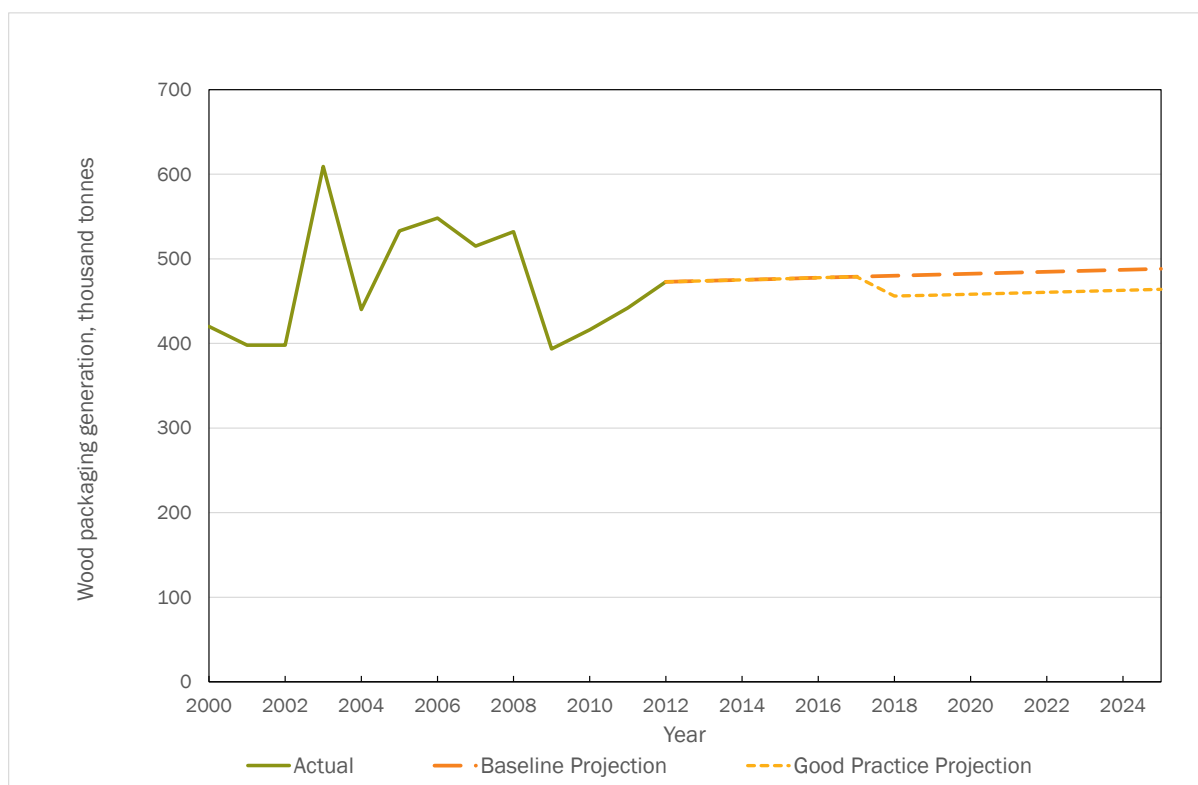


Figure 14-24: Change in Metal Packaging Generation, thousand tonnes

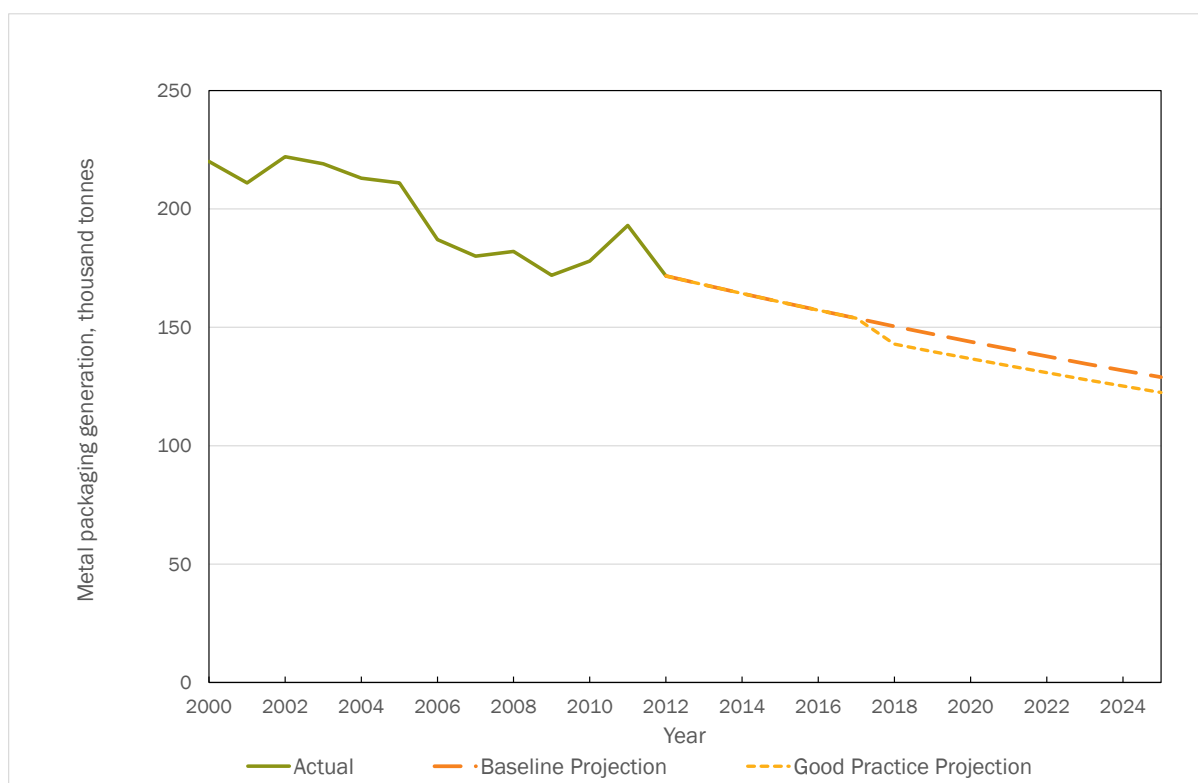


Figure 14-25: Change in Glass Packaging Generation, thousand tonnes

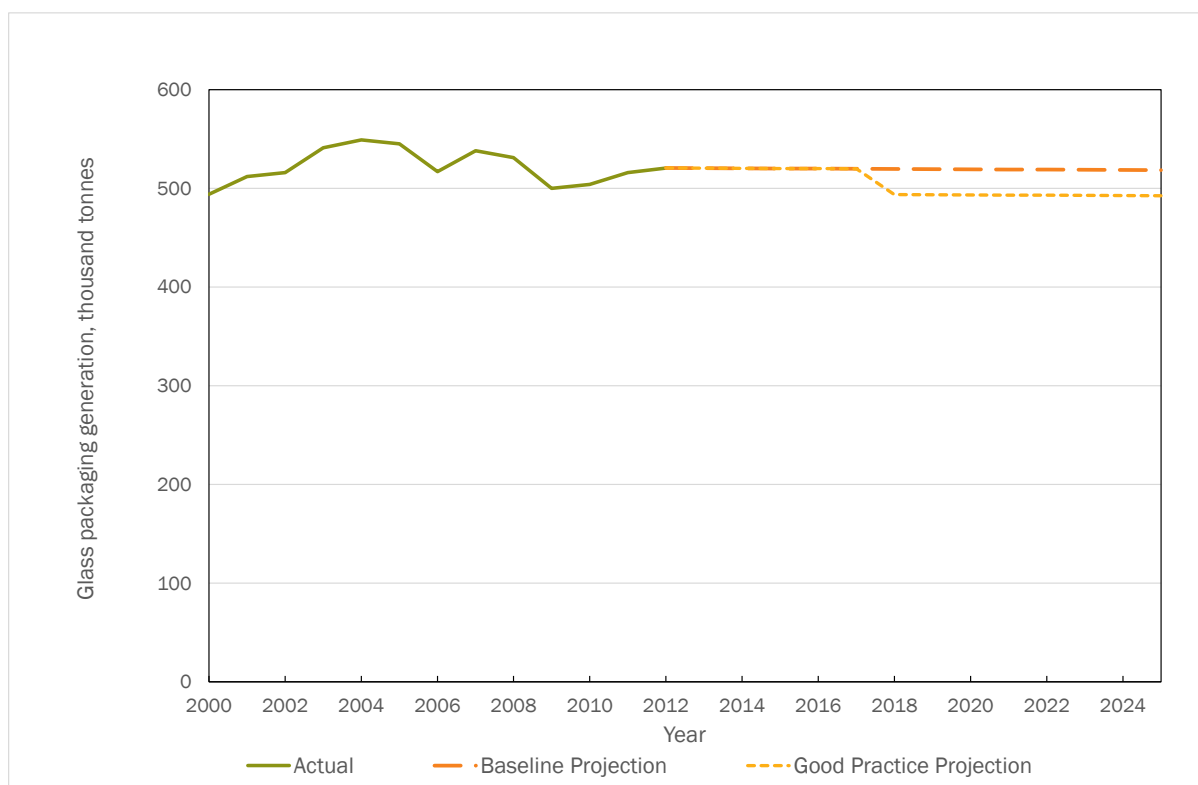
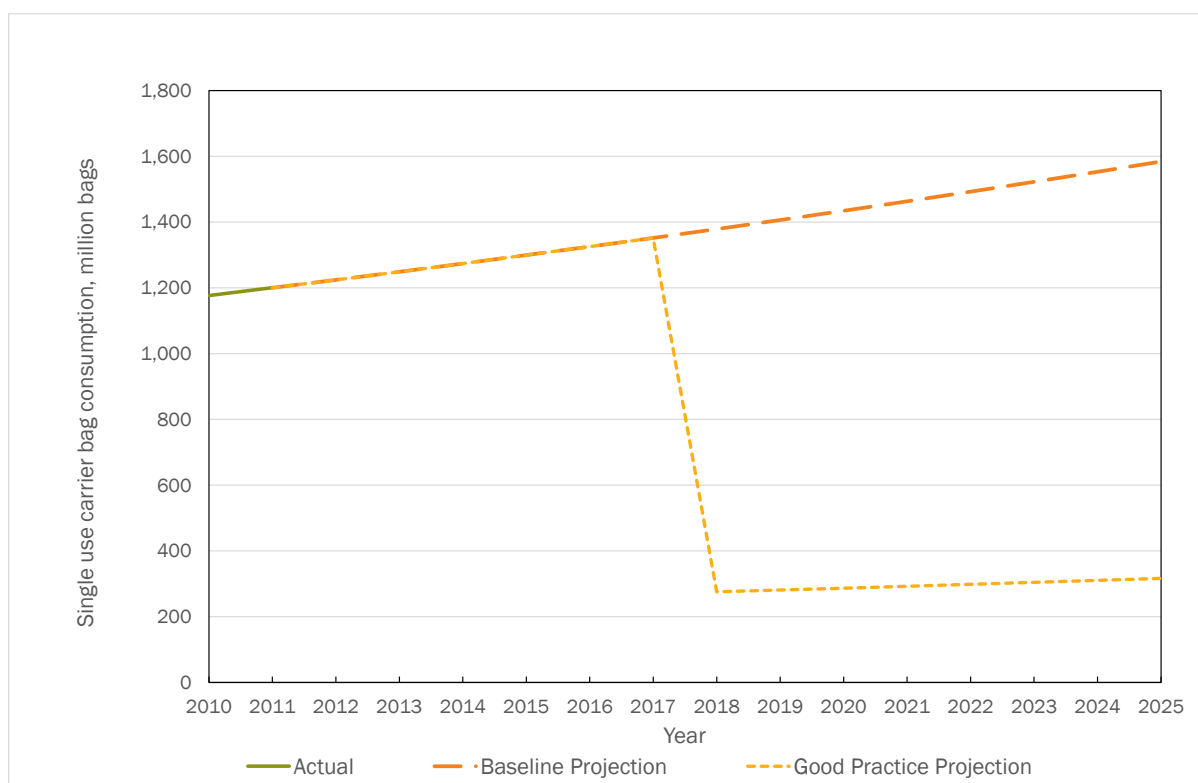


Figure 14-26: Change in Consumption of Single Use Carrier Bags, million bags



## 14.5 Full Revenue Outputs

A summary of the full revenue outputs for each of the suggested reforms to the tax system are presented in the table below.



Table 14-6: Revenue Outturns from Model, million EUR (real 2014 terms)

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Energy Taxes	Transport fuels	0	0	391	777	1,159	1,537	1,911	2,282	2,649	2,649	2,649
	C&I / Heating	0	0	403	792	1,169	1,536	1,891	2,237	2,574	2,574	2,574
	Electricity	6	6	6	6	6	6	6	6	6	6	6
	<i>Sub-total Energy, million EUR</i>	6	6	800	1,575	2,335	3,079	3,808	4,525	5,229	5,229	5,229
	<i>Sub-total Energy, % GDP</i>	0.0%	0.0%	0.1%	0.3%	0.4%	0.5%	0.6%	0.7%	0.8%	0.8%	0.8%
Transport Taxes (excluding transport fuels)	Vehicle Taxes	0	0	0	0	0	0	0	0	0	0	0
	Passenger Aviation Tax	0	0	1,200	2,418	2,504	2,592	2,681	2,773	2,865	2,960	3,057
	Freight Aviation Tax	0	0	1	2	2	2	2	2	2	2	2
	<i>Sub-total Transport, million EUR</i>	0	0	1,201	2,420	2,506	2,594	2,683	2,775	2,868	2,962	3,059
	<i>Sub-total Transport, % GDP</i>	0.0%	0.0%	0.2%	0.4%	0.4%	0.4%	0.4%	0.4%	0.5%	0.5%	0.5%
Pollution and Resource Taxes	Landfill Tax - Non-haz (excl. C&D)	0	0	0	0	0	0	0	0	0	0	0
	Landfill Tax - Inerts (C&D)	0	0	0	0	0	0	0	0	0	0	0
	Incineration /MBT Tax	0	30	58	84	82	80	81	82	83	84	85

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Air Pollution Tax	0	20	36	48	58	66	59	56	53	50	47
	Water Abstraction Tax	0	122	240	355	467	575	567	571	575	580	584
	Waste Water Tax	0	0	0	0	0	0	0	0	0	0	0
	Pesticides Tax	0	0	94	185	182	185	187	189	192	194	197
	Aggregates Tax	0	0	166	145	124	103	104	105	106	107	108
	Packaging Tax	0	0	73	68	67	66	65	64	63	62	61
	Single Use Bag Tax	0	146	149	30	31	32	32	33	33	34	35
	Fertiliser Tax	0	0	0	0	0	0	0	0	0	0	0
	<b>Sub-total Pollution &amp; Resource, million EUR</b>	0	317	814	916	1,012	1,106	1,095	1,100	1,106	1,111	1,117
	<b>Sub-total Pollution &amp; Resource, % GDP</b>	0.0%	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Total Revenue Stream	<b>Total, million EUR</b>	<b>6</b>	<b>323</b>	<b>2,815</b>	<b>4,911</b>	<b>5,853</b>	<b>6,779</b>	<b>7,587</b>	<b>8,400</b>	<b>9,203</b>	<b>9,303</b>	<b>9,405</b>
	<b>Total, % GDP</b>	<b>0.0%</b>	<b>0.1%</b>	<b>0.5%</b>	<b>0.8%</b>	<b>0.9%</b>	<b>1.1%</b>	<b>1.2%</b>	<b>1.4%</b>	<b>1.5%</b>	<b>1.5%</b>	<b>1.5%</b>

## 15.0 Slovenia

During the course of the study the latest data available from official sources was sought, namely the TAXUD Taxes in Europe database, energy excise duty tables and the OECD database on environmental taxes and charges. This was supplemented by national data sources where possible. Due to the number of taxes and countries involved, the central case for energy excise duties has been the rates published by TAXUD giving the position as of 1<sup>st</sup> July 2014. Planned future increases may not be fully captured in this analysis and therefore, the projected increase in revenues would effectively incorporate any revenue from increased rates in early 2015 or shortly thereafter.

### 15.1 Energy Taxes

➤ Excise duties on energy products:

- Tax rates for 2014 are shown in Table 15-1.<sup>529</sup>
- Note that a number of special rates and reductions apply, for example for gas oil used for agriculture and railways.
- In 2012, revenues from energy excise duties amounted to €1.07 billion, equivalent to 3.02% of GDP.<sup>530</sup>
  - €1.03 billion of tax revenue was raised from excise duties on mineral oils and gas.<sup>531</sup>
  - €33 million of tax revenue was raised from excise duties on electricity and coal.

Table 15-1: Standard Rates of Excise Duties on Fuels and Electricity in Slovenia (2014)

Excise Duty	Unit	Rate Applied in Slovenia
<b>Transport Fuels</b>		
Leaded Petrol <sup>1</sup>	€ per 1000 litres	€421.61
Unleaded Petrol	€ per 1000 litres	€549.51 <sup>2</sup>
Gas Oil (Diesel)	€ per 1000 litres	€450.36 <sup>3</sup>
Kerosene	€ per 1000 litres	€330

<sup>529</sup> European Commission (2014) *Excise Duty Tables*, Accessed 13<sup>th</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/excise\\_duties/energy\\_products/rates/excise\\_duties-part\\_ii\\_energy\\_products\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/excise_duties/energy_products/rates/excise_duties-part_ii_energy_products_en.pdf), pp.8-64.

<sup>530</sup> European Commission (2014) *Taxes in Europe Database*, Accessed 13<sup>th</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=534/1389189783&taxType=Energy+products+and+electricity](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=534/1389189783&taxType=Energy+products+and+electricity)

<sup>531</sup> Eurostat (2014) *National Tax Lists*, 28<sup>th</sup> May 2014, [http://epp.eurostat.ec.europa.eu/statistics\\_explained/images/c/c4/National\\_tax\\_lists\\_20140528.xls](http://epp.eurostat.ec.europa.eu/statistics_explained/images/c/c4/National_tax_lists_20140528.xls)

Excise Duty	Unit	Rate Applied in Slovenia
Liquid Petroleum Gas	€ per 1000 kg	€127.50
Natural Gas	€ per GJ	€3.51 <sup>7</sup>
Motor Fuels – Industry / Commercial Use		
Gas Oil (Diesel)	€ per 1000 litres	€43.90 <sup>3</sup>
Kerosene	€ per 1000 litres	€165
Liquid Petroleum Gas	€ per 1000 kg	€63.75
Natural Gas	€ per GJ	€3.51 <sup>7</sup>
Heating – Business Use		
Gas Oil (Diesel)	€ per 1000 litres	€133.09 <sup>3</sup>
Kerosene	€ per 1000 litres	€55.56 <sup>4</sup>
Heavy Fuel Oil	€ per 1000 kg	€61.10 <sup>5</sup>
Liquid Petroleum Gas	€ per 1000 kg	€41.76 <sup>6</sup>
Natural Gas	€ per GJ	€1.35 <sup>7</sup>
Coal and Coke	€ per GJ	€1.47 <sup>8</sup>
		€1.60 <sup>9</sup>
		€1.83 <sup>10</sup>
Heating – Non-Business Use		
Gas Oil (Diesel)	€ per 1000 litres	€133.09 <sup>3</sup>
Kerosene	€ per 1000 litres	€55.56 <sup>4</sup>
Heavy Fuel Oil	€ per 1000 kg	€61.10 <sup>5</sup>
Liquid Petroleum Gas	€ per 1000 kg	€41.76 <sup>6</sup>
Natural Gas	€ per GJ	€1.35 <sup>7</sup>
Coal and Coke	€ per GJ	€1.47 <sup>8</sup>
		€1.60 <sup>9</sup>
		€1.83 <sup>10</sup>
Electricity		
Business Use	€ per MWh	€3.05
Non-Business Use	€ per MWh	€3.05

Excise Duty	Unit	Rate Applied in Slovenia
<p>Notes:</p> <ol style="list-style-type: none"> <li>1. <i>Leaded petrol is forbidden for sale in Slovenia.</i></li> <li>2. <i>Includes CO<sub>2</sub>-tax in the amount of €34.56 per 1000 litres.</i></li> <li>3. <i>Includes CO<sub>2</sub>-tax in the amount of €37.44 per 1000 litres.</i></li> <li>4. <i>Includes CO<sub>2</sub>-tax in the amount of €34.56 per 1000 litres.</i></li> <li>5. <i>Includes CO<sub>2</sub>-tax in the amount of €46.08 per 1000 kg.</i></li> <li>6. <i>Excise duty for LPG used for heating (business and non-business use) is €0, this figure shows only the CO<sub>2</sub>-tax.</i></li> <li>7. <i>Includes CO<sub>2</sub>-tax in the amount of €0.8047 per GJ.</i></li> <li>8. <i>[CN 2701]; Includes CO<sub>2</sub>-tax in the amount of €1.1829 per GJ, energy value used: 1000 kg = 28 GJ.</i></li> <li>9. <i>[CN 2702]; Includes CO<sub>2</sub>-tax in the amount of €1.3091 per GJ, energy value used: 1000 kg = 16.5 GJ.</i></li> <li>10. <i>[CN 2704]. Includes CO<sub>2</sub>-tax in the amount of €1.5393 per GJ, energy value used: 1000 kg = 29 GJ.</i></li> </ol>		

Source: DG TAXUD (2014) *Excise Duty Tables (Part II – Energy products and Electricity)*, Situation as at 1 July 2014, [http://ec.europa.eu/taxation\\_customs/index\\_en.htm#](http://ec.europa.eu/taxation_customs/index_en.htm#)

- A tax on CO<sub>2</sub> came into force in 1997 into Slovenia.<sup>532</sup> This was the first instance of a CO<sub>2</sub> tax being implemented by a Central and Eastern Europe country:
- The tax is levied on all CO<sub>2</sub> emissions from the combustion of fuel and from the incineration of combustible organic substances.
  - The tax is payable by either the importer (customs debtor), or, in the case of fuel production or purchase in the Republic of Slovenia, the producer of the fuel.
  - A tax rate of €14.4 per tonne of CO<sub>2</sub> is charged on all fuels, with specific tax rates calculated according to the carbon content of each fuel; these are listed in the notes in Table 15-1.
  - A number of exemptions exist, including on:<sup>533</sup>
    - Biomass for heating, fuel extracted from biomass and biogas, fuel used in chemical reactions, electrolytic and metallurgical processes;
    - Fuel exported to the EU area;
    - Kerosene used in aviation; and
    - Fuel used by companies that participate in the EU ETS.
  - Tax revenues in 2012 totalled €55 million, equivalent to 0.16% of GDP.

<sup>532</sup> European Commission (2014) *Taxes in Europe Database*, Accessed 13<sup>th</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=714/1388754940&taxType=Other+indirect+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=714/1388754940&taxType=Other+indirect+tax)

<sup>533</sup> OECD (2014) *Database on Instruments Used for Environmental Policy*, Accessed 13<sup>th</sup> August 2014, [http://www2.oecd.org/eoicinst/queries/QueryResult\\_2.aspx?Key=3a15a4ab-7d0c-4b07-b7c6-9f10dbc06b6e&QryCtx=1&QryFlag=3](http://www2.oecd.org/eoicinst/queries/QueryResult_2.aspx?Key=3a15a4ab-7d0c-4b07-b7c6-9f10dbc06b6e&QryCtx=1&QryFlag=3)

- Since 2010, energy suppliers are required to collect an energy efficiency tax from final customers:<sup>534</sup>

- The revenues from this tax are fully earmarked for energy efficiency programmes.
- Tax rates are provided in Table 15-2.

Table 15-2: Energy Efficiency Tax Rates in Slovenia (2014)

Tax base	Tax rate
Automotive diesel oil	€0.002 per litre
District heating	€0.0005 per kWh
Domestic heating gasoil	€0.05 per litre
Electricity	€0.0005 per kWh
Industrial residual fuel	€0.05 per kg
LPG motor fuel	€0.004 per litre
Unleaded petrol motor fuel	€0.004 per litre
Natural gas	€0.005 per m <sup>3</sup>

OECD (2014) *Database on Instruments Used for Environmental Policy*, Accessed 13<sup>th</sup> August 2014, [http://www2.oecd.org/ecoinst/queries/QueryResult\\_4.aspx?Key=4b855ee6-5e38-4ba5-a0cd-e310aa5779d5&QryCtx=3&QryFlag=3](http://www2.oecd.org/ecoinst/queries/QueryResult_4.aspx?Key=4b855ee6-5e38-4ba5-a0cd-e310aa5779d5&QryCtx=3&QryFlag=3)

## 15.2 Transport Taxes (Excluding Transport Fuels)

- Motor vehicles tax (“Davek na motorna vozila”):<sup>535</sup>
  - This tax is paid on a one-off basis at the time of purchase, or first time registration, of a passenger motor vehicle in Slovenia (or at the time of registration of a vehicle imported into Slovenia).
  - The tax is payable on the net purchasing price of the vehicle, excluding VAT.

<sup>534</sup> OECD (2014) *Database on Instruments Used for Environmental Policy*, Accessed 13<sup>th</sup> August 2014, [http://www2.oecd.org/ecoinst/queries/QueryResult\\_2.aspx?Key=3a15a4ab-7d0c-4b07-b7c6-9f10dbc06b6e&QryCtx=1&QryFlag=3](http://www2.oecd.org/ecoinst/queries/QueryResult_2.aspx?Key=3a15a4ab-7d0c-4b07-b7c6-9f10dbc06b6e&QryCtx=1&QryFlag=3)

<sup>535</sup> European Commission (2014) *Taxes in Europe Database*, Accessed 13<sup>th</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=537/1388754941&taxType=Other+indirect+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=537/1388754941&taxType=Other+indirect+tax)

- For passenger cars, the tax rate is determined by the CO<sub>2</sub> emissions and fuel type of the vehicle. Motorcycle and camper vans are taxed according to the power of the engine. An additional premium is charged for motor vehicles with large engine capacities. These rates are outlined in Table 15-3.
- Main exemptions: Exported vehicles, vehicles used by families with three or more children, vehicles for carrying disabled people.
- Revenue in 2012: €34.8 million (equivalent to 0.10% of GDP).

Table 15-3: Motor Vehicle Tax Rates (Slovenia, 2014)

General tax base	Specific tax base (l)	Tax Rate (% of pre-VAT price of the vehicle)
<b>Basic Tax</b>		
Passenger cars – petrol or LPG	0 – 110 g per km CO <sub>2</sub>	0.5%
	110 – 120 g per km CO <sub>2</sub>	1%
	120 – 130 g per km CO <sub>2</sub>	1.5%
	130 – 150 g per km CO <sub>2</sub>	3%
	150 – 170 g per km CO <sub>2</sub>	6%
	170 – 190 g per km CO <sub>2</sub>	9%
	190 – 210 g per km CO <sub>2</sub>	13%
	210 – 230 g per km CO <sub>2</sub>	18%
	230 – 250 g per km CO <sub>2</sub>	23%
	Above 250 g per km CO <sub>2</sub>	28%
Passenger cars - diesel	0 – 110 g per km CO <sub>2</sub>	1%
	110 – 120 g per km CO <sub>2</sub>	2%
	120 – 130 g per km CO <sub>2</sub>	3%
	130 – 150 g per km CO <sub>2</sub>	Not listed
	150 – 170 g per km CO <sub>2</sub>	11%
	170 – 190 g per km CO <sub>2</sub>	16%
	190 – 210 g per km CO <sub>2</sub>	18%
	210 – 230 g per km CO <sub>2</sub>	22%

General tax base	Specific tax base (I)	Tax Rate (% of pre-VAT price of the vehicle)
	230 – 250 g per km CO <sub>2</sub>	26%
	Above 250 g per km CO <sub>2</sub>	31%
Camping vans	Up to 60 kW	6%
	60 – 90 kW	9%
	90 – 120 kW	13%
	Above 120 kW	18%
Motorcycles	Up to 25 kW	1.5%
	25 – 50 kW	2%
	50 – 75 kW	3%
	Above 75 kW	5%
<b>Additional Premium</b>		
All types of new vehicles except for motorcycles	Engine capacity between 2500 and 2999 cm <sup>3</sup>	8%
	Engine capacity between 3000 and 3499 cm <sup>3</sup>	10%
	Engine capacity between 3500 and 3999 cm <sup>3</sup>	13%
	Engine capacity between above 4000 cm <sup>3</sup>	16%
Motorcycles	Engine capacity above 1000 cm <sup>3</sup>	5%

Source: OECD (2014) Database on Instruments Used for Environmental Policy, Accessed 13<sup>th</sup> August 2014, [http://www2.oecd.org/ecoinstd/queries/QueryResult\\_4.aspx?Key=311407f7-153f-4771-afbf-194e42f9b838&OryCtx=3&OryFlag=3](http://www2.oecd.org/ecoinstd/queries/QueryResult_4.aspx?Key=311407f7-153f-4771-afbf-194e42f9b838&OryCtx=3&OryFlag=3)

➤ Circulation Taxes:



- The annual fee on the use of motor vehicles “Letna dajatev za uporabo vozil v cestnem prometu” is paid annually by the owners of all registered motor vehicles and trailers.<sup>536</sup>
- The tax rate is calculated on the basis of a number of different features, as follows:
  - Motorcycle and passenger vehicles (related to engine capacity);
  - Buses (per passenger seat);
  - Trucks and trailers (related to maximum permissible weight); and
  - Traction vehicles (related to engine capacity, to maximum permissible weight, or to maximum permissible weight of vehicle group).
- The tax rate also varies by a fixed percentage depending on vehicle emissions (measured by EURO standards).
- These rates are outlined in Table 15-4 and Table 15-5.
- Main exemptions: Electric vehicles, tractors and tractor trailers, motorcycles, three-wheeled small capacity cycles, light four wheeled cycles, light trailers, public service vehicles, vehicles for disabled persons.
- Revenue in 2012: €109 million (equivalent to 0.31% of GDP).

Table 15-4: Annual Fee on the Use of Motor Vehicles Tax Rates (Slovenia, 2014)

General tax base	Specific tax base (I)	Annual Fee
Motorbikes	Engine capacity up to 125 cc	€13
	Engine capacity between 125 and 500 cc	€21
	Engine capacity between 500 and 1000 cc	€29
	Engine capacity above 1000 cc	€33
Personal Cars	Engine capacity up to 1350 cc	€62
	Engine capacity between 1350 and 1800 cc	€96
	Engine capacity between 1800 and 2500 cc	€153
	Engine capacity between 2500 and 3000 cc	€282
	Engine capacity between 3000 and 4000 cc	€452

---

<sup>536</sup> European Commission (2014) *Taxes in Europe Database*, Accessed 13<sup>th</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=812/1388754940&taxType=Other+direct+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=812/1388754940&taxType=Other+direct+tax)

General tax base	Specific tax base (I)	Annual Fee
	Engine capacity above 4500 cc	€565
Buses	Number of seats	€3.16 per seat
Trucks	Up to 4 tonnes (max. allowed weight)	€101.94
	Above 4 tonnes (max. allowed weight)	€22.86 per tonne
Trucks with trailer	Up to 190 kW	€5.37 per kW
	Above 190 kW	€1019.37 per truck
Trailers	Up to 2 tonnes	€38.22
	Above 2 tonnes	€19.11

Source: European Commission (2014) *Taxes in Europe Database*, Accessed 13<sup>th</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=812/1388754940&taxType=Other+direct+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=812/1388754940&taxType=Other+direct+tax)

Table 15-5: Emissions Related Adjustment to Motor Vehicles Tax Rates (Slovenia, 2014)

Emissions Standard	Percentage Adjustment to Annual Fee
EURO VI and higher	35% reduction
EURO V	25% reduction
EURO III	10% increase
EURO II	20% increase
EURO I	30% increase
EURO 0 or lower	40% increase

Source: European Commission (2014) *Taxes in Europe Database*, Accessed 13<sup>th</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=812/1388754940&taxType=Other+direct+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=812/1388754940&taxType=Other+direct+tax)

➤ Other transport taxes:

- End-of-life vehicles tax:<sup>537</sup>

<sup>537</sup> OECD (2014) *Database on Instruments Used for Environmental Policy*, Accessed 13<sup>th</sup> August 2014, [http://www2.oecd.org/eoicinst/queries/QueryResult\\_2.aspx?Key=3a15a4ab-7d0c-4b07-b7c6-9f10dbc06b6e&QryCtx=1&QryFlag=3](http://www2.oecd.org/eoicinst/queries/QueryResult_2.aspx?Key=3a15a4ab-7d0c-4b07-b7c6-9f10dbc06b6e&QryCtx=1&QryFlag=3)

- An end-of-life vehicles tax is payable on all new vehicles in Slovenia, with a tax rate of €0.0063 per kg of vehicle.
- The tax is returned if the vehicle is exported
- Revenue in 2012: €0.5 million, equivalent to 0.001% of GDP.
- Road toll:<sup>538</sup>
  - Slovenia has a toll system in place for most motorways and expressways, implemented on the 1 July 2008. This is split into two distinct systems, as follows:
    - **Vignettes** are required for all motorcycles, private cars and vans whose maximum permitted weight does not exceed 3.5 tonnes. Vignettes are sold on a yearly, half-yearly, monthly, or weekly basis.
    - **Open and closed tolling systems** for vehicles weighing over 3.5 tonnes. The amount payable is determined by the distance covered, and can be linked to an electronic tag in the vehicle.
  - Rates: see Table 15-6 for details of the Vignette rates. The rates for vehicles exceeding 3.5 tonnes depend on:
    - The class of vehicle: R3 (motor vehicles and groups of motor vehicles with two or three axles), R4 (motor vehicles with more than three vehicles);
    - The emissions (as represented through EURO class); and
    - The particular toll road (or section of toll road)

Table 15-6: Vignette Road Toll Prices (Slovenia, 2014)

Vehicle Category	Vignette Price (including VAT)		
	Yearly	Half-year	Weekly
1 (motorcycle)	€55	€30	€7.50
2A (caravans and two-track motor vehicles with vehicle height above front axis up to 1.30 m)	€110	€30	€15
2B (two-track motor vehicles with vehicle height above front axis 1.30 m or more)	€220	€80	€40

Source: DARS (2014) Toll Price List, Accessed 14<sup>th</sup> August 2014, [www.dars.si/Dokumenti/Toll/Toll\\_price\\_303.aspx](http://www.dars.si/Dokumenti/Toll/Toll_price_303.aspx)

---

<sup>538</sup> DARS (2014) Tolling System and Roads, Accessed 14<sup>th</sup> August 2014, [http://www.dars.si/Dokumenti/Toll/Tolling\\_system\\_and\\_roads\\_298.aspx](http://www.dars.si/Dokumenti/Toll/Tolling_system_and_roads_298.aspx)

## 15.3 Pollution and Resource Taxes

- Landfilling of waste in Slovenia has been subject to a landfill tax since 2001.
  - The tax is payable by all landfill operators.
  - The tax basis is the number of units of waste, multiplied by a set number of “soil load units” and “air pollution units”, reduced for the recalculated amount of burned or captured landfill gas. Different numbers of load units are assigned to each category of inert, non-hazardous and hazardous waste (units of 1, 5 and 10, respectively).<sup>539</sup>
  - Tax rates of €0.0022 per unit of soil load, and €0.0125 per unit of air pollution apply.<sup>540</sup> The overall tax rates are therefore: €5.5 per tonne for inert waste, €11 per tonne for non-hazardous waste, and €22 per tonne for hazardous waste.
  - Revenue in 2012: €4.6 million (equivalent to 0.013% of GDP).
- Electronic and electrical equipment (EEE), pneumatic tyres, and packaging waste placed on the market are taxed in Slovenia:<sup>541</sup>
  - The tax is payable by all legal entities placing these products on the market in Slovenia.
  - The tax basis is the mass of EEE, pneumatic tyres, or packaging waste, multiplied by a “unit of environmental load”. The unit of environmental load measure aims to account for the environmental impacts of disposal of WEEE, end-of-life tyres, and packaging waste. A different unit of environmental load applies to each type of EEE.
  - According to TAXUD a yearly reimbursement of €33.38 is provided for keeping a register of producers and suppliers.
  - The following tax rates apply:
    - WEEE: €0.0083 per unit of environmental load.
    - End-of-life tyres: €0.0054 per unit of environmental load.
    - Packaging waste: €0.0017 per unit of environmental load.
  - Revenues in 2012:
    - Tax on WEEE: €0.4 million (equivalent to 0.001% of GDP)

---

<sup>539</sup> Source: European Commission (2014) *Taxes in Europe Database*, Accessed 13<sup>th</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=814/1388754940&taxType=Other+indirect+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=814/1388754940&taxType=Other+indirect+tax)

<sup>540</sup> OECD (2012), *OECD Environmental Performance Review: Slovenia 2012*, <http://dx.doi.org/10.1787/9789264169265-en>

<sup>541</sup> Source: European Commission (2014) *Taxes in Europe Database*, Accessed 13<sup>th</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=814/1388754940&taxType=Other+indirect+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=814/1388754940&taxType=Other+indirect+tax)

- Tax on end-of-life tyres: €0.1 million (equivalent to 0.0003% of GDP)
- Tax on packaging waste: €1.0 million (equivalent to 0.002% of GDP)
- A mineral extraction tax was implemented in 2012 in Slovenia:<sup>542</sup>
  - The tax is applied on the extraction of all mineral resources in Slovenia.
  - The tax rate is calculated by multiplying a fixed value per point by a 'number of points', which varies according to the type of material and extraction type. This rate is then multiplied by the quantity extracted in previous years (in m<sup>3</sup>) to obtain the final tax rate
  - The current value of one point is €0.009
- As part of the same package of taxes as the mineral extraction tax, Slovenia implemented a tax on land used for mining in 2012:<sup>543</sup>
  - The tax is applied on the extraction of all mineral resources in Slovenia.
  - The tax rate is calculated by multiplying a fixed value per point by a 'number of points', which varies according to the type of material and extraction type. This rate is then multiplied by the area of land used for mining (ha) to obtain the final tax rate.
  - The current value of one point is €0.009.
- Slovenia has a tax on lubricating oils and fluids:<sup>544</sup>
  - A tax rate of €0.1586 per kg applies. The full tax rate is applied to lubricating oils used in vehicles, while industrial lubricating oils are subject to a 50% tax rate.
  - Revenue in 2012: €2.5 million (equivalent to 0.007% of GDP)
- Volatile organic compounds are subject to a tax in Slovenia:<sup>545</sup>
  - A tax rate of €0.001 per unit load applies.
  - Revenue in 2012: €0.1 million (equivalent to 0.0003% of GDP).
- Slovenia has a tax on fluorinated greenhouse gases.<sup>546</sup>

---

<sup>542</sup> Personal communication with Andrej Udovč, Professor of Environmental Economics, University of Ljubljana

<sup>543</sup> Personal communication with Andrej Udovč, Professor of Environmental Economics, University of Ljubljana

<sup>544</sup> OECD (2014) *Database on Instruments Used for Environmental Policy*, Accessed 13<sup>th</sup> August 2014, [http://www2.oecd.org/eoicinst/queries/QueryResult\\_2.aspx?Key=3a15a4ab-7d0c-4b07-b7c6-9f10dbc06b6e&QryCtx=1&QryFlag=3](http://www2.oecd.org/eoicinst/queries/QueryResult_2.aspx?Key=3a15a4ab-7d0c-4b07-b7c6-9f10dbc06b6e&QryCtx=1&QryFlag=3)

<sup>545</sup> OECD (2014) *Database on Instruments Used for Environmental Policy*, Accessed 13<sup>th</sup> August 2014, [http://www2.oecd.org/eoicinst/queries/QueryResult\\_2.aspx?Key=3a15a4ab-7d0c-4b07-b7c6-9f10dbc06b6e&QryCtx=1&QryFlag=3](http://www2.oecd.org/eoicinst/queries/QueryResult_2.aspx?Key=3a15a4ab-7d0c-4b07-b7c6-9f10dbc06b6e&QryCtx=1&QryFlag=3)

- A tax applies to the disposal of waste water in Slovenia:<sup>547</sup>
  - The tax is payable by all legal entities using water in their industrial processes, and the owner or manager of a building where municipal waste water arises.
  - The tax basis is the number of waste water load units in the taxation period.
  - A tax rate of €26.40 per unit of waste water load applies.
  - Revenue in 2012: €29.8 million (equivalent to 0.084% of GDP).<sup>548</sup>
- Slovenia has a “payment for water rights” charge which applies to a number of activities requiring access to (or use of) water. Table 15-7 provides a list of chargeable activities and fees.

**Table 15-7: Payment for Water Rights Charges (Slovenia, 2014)**

Activity	Charge
Hydroelectric power production up to 10MW	The water right is paid as a percentage of the average sell value of heat sold in the previous year. An example fee rate from a previous year is €0.0842 per kWh
Usage of marine farm organisms: clams	€0.75 per kg of clams
Usage of marine farm organisms: native marine fish	€5.79 per kg of fish
Usage of marine farm organisms: salmonid fish	€3.03 per kg of fish
Mineral water extraction	€1.754 per 1000 litres
Use of thermal underground waters	€0.0248 per 1000 kJ of heat

OECD (2014) *Database on Instruments Used for Environmental Policy*, Accessed 13<sup>th</sup> August 2014, [http://www2.oecd.org/eoicinst/queries/QueryResult\\_4.aspx?Key=4b855ee6-5e38-4ba5-a0cd-e310aa5779d5&QryCtx=3&QryFlag=3](http://www2.oecd.org/eoicinst/queries/QueryResult_4.aspx?Key=4b855ee6-5e38-4ba5-a0cd-e310aa5779d5&QryCtx=3&QryFlag=3)

<sup>546</sup> Statistical Office of the Republic of Slovenia (2013) *Improvement and Upgrading of the Existing Environmental Accounts (Environmentally Related Taxes)*, January 2013, <http://www.cbd.int/financial/fiscalenviron/slovenia-environcount.pdf>

<sup>547</sup> European Commission (2014) *Taxes in Europe Database*, Accessed 13<sup>th</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=814/1388754940&taxType=Other+indirect+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=814/1388754940&taxType=Other+indirect+tax)

<sup>548</sup> OECD (2014) *Database on Instruments Used for Environmental Policy*, Accessed 13<sup>th</sup> August 2014, [http://www2.oecd.org/eoicinst/queries/QueryResult\\_2.aspx?Key=3a15a4ab-7d0c-4b07-b7c6-9f10dbc06b6e&QryCtx=1&QryFlag=3](http://www2.oecd.org/eoicinst/queries/QueryResult_2.aspx?Key=3a15a4ab-7d0c-4b07-b7c6-9f10dbc06b6e&QryCtx=1&QryFlag=3)

- Wastewater collection and treatment is subject to a charge in Slovenia:<sup>549</sup>
  - Two pricing structures are used for households and industry:<sup>550</sup>
    - Mixed rate: fixed rate per connection plus variable rate per cubic metre.
    - Simple variable rate: variable rate per cubic metre.
  - Charges vary across municipalities depending on a number of factors (e.g. the level of service provided, service costs, population distribution and density, etc.).
  - Rates vary between €0.089 and €2.405 per m<sup>3</sup> for households, and between €0.129 and €2.436 per m<sup>3</sup> for industry.
  - Revenue in 2012: €30 million (equivalent to 0.085% of GDP).<sup>551</sup>
- A water abstraction tax is levied in Slovenia:<sup>552</sup>
  - Rates vary according to the use to which the abstracted water is applied (see Table 15-8).
  - Revenue in 2012: €26 million (equivalent to 0.074% of GDP).<sup>553</sup>

Table 15-8: Water Abstraction Taxes (Slovenia, 2014)

Water Abstraction Type	Rate
Abstractions for bottling, public swimming pools and natural spas	€0.0666 per m <sup>3</sup>
Abstractions for drinking water supply	€0.0555 per m <sup>3</sup>
Abstractions for electricity production in hydropower plants above 10 MW	€1.50 per MWh
Abstractions for electricity production in hydropower plants below 10 MW	€0.1863 per MWh

<sup>549</sup> OECD (2014) *Database on Instruments Used for Environmental Policy*, Accessed 13<sup>th</sup> August 2014, [http://www2.oecd.org/eoicst/queries/QueryResult\\_2.aspx?Key=3a15a4ab-7d0c-4b07-b7c6-9f10dbc06b6e&QryCtx=1&QryFlag=3](http://www2.oecd.org/eoicst/queries/QueryResult_2.aspx?Key=3a15a4ab-7d0c-4b07-b7c6-9f10dbc06b6e&QryCtx=1&QryFlag=3)

<sup>550</sup> European Environment Agency (2013) *Assessment of Cost Recovery Through Water Pricing*, <http://www.eea.europa.eu/publications/assessment-of-full-cost-recovery>

<sup>551</sup> Eurostat (2014) *National Tax Lists*, 28<sup>th</sup> May 2014, [http://epp.eurostat.ec.europa.eu/statistics\\_explained/images/c/c4/National\\_tax\\_lists\\_20140528.xls](http://epp.eurostat.ec.europa.eu/statistics_explained/images/c/c4/National_tax_lists_20140528.xls)

<sup>552</sup> OECD (2014) *Database on Instruments Used for Environmental Policy*, Accessed 13<sup>th</sup> August 2014, [http://www2.oecd.org/eoicst/queries/QueryResult\\_2.aspx?Key=3a15a4ab-7d0c-4b07-b7c6-9f10dbc06b6e&QryCtx=1&QryFlag=3](http://www2.oecd.org/eoicst/queries/QueryResult_2.aspx?Key=3a15a4ab-7d0c-4b07-b7c6-9f10dbc06b6e&QryCtx=1&QryFlag=3)

<sup>553</sup> Eurostat (2014) *National Tax Lists*, 28<sup>th</sup> May 2014, [http://epp.eurostat.ec.europa.eu/statistics\\_explained/images/c/c4/National\\_tax\\_lists\\_20140528.xls](http://epp.eurostat.ec.europa.eu/statistics_explained/images/c/c4/National_tax_lists_20140528.xls)

Water Abstraction Type	Rate
Abstractions for irrigation of agricultural land	€0.0008 per m <sup>3</sup>
Abstractions for irrigation of non-agricultural land	€0.0555 per m <sup>3</sup>
Abstractions for technological purposes and cooling in thermal power plants	€0.0041 per m <sup>3</sup>
For breeding cyprinid fish species	€0.0008 per m <sup>3</sup>
For breeding salmonid fish species	€0.0029 per 100 m <sup>3</sup>
Power water mills, saws or similar devices	€0.1694 per MWh
The use of sand	€2.46 per m <sup>3</sup>
The use of water land for the operation of anchoring vessels	€0.0111 per m <sup>2</sup> of water surface area
The use of water land for the operation of ports to vessels	€0.2086 per m <sup>2</sup> of water surface area
The use of water land for the operation of swimming	€0.8346 per m <sup>2</sup> of water surface area
Water used for commercial fish farms in ponds	€0.0160 per m <sup>3</sup>
Water used for heat production	€0.8470 per MWh
Water used for shellfish farms	€0.0041 per m <sup>2</sup> of sea used for shellfish farms

OECD (2014) *Database on Instruments Used for Environmental Policy*, Accessed 13<sup>th</sup> August 2014, [http://www2.oecd.org/ecoinst/queries/QueryResult\\_4.aspx?Key=4b855ee6-5e38-4ba5-a0cd-e310aa5779d5&QryCtx=3&QryFlag=3](http://www2.oecd.org/ecoinst/queries/QueryResult_4.aspx?Key=4b855ee6-5e38-4ba5-a0cd-e310aa5779d5&QryCtx=3&QryFlag=3)

- Water consumption is subject to a charge in Slovenia:<sup>554</sup>
  - Two pricing structures are used for households and industry:<sup>555</sup>

<sup>554</sup> OECD (2014) *Database on Instruments Used for Environmental Policy*, Accessed 13<sup>th</sup> August 2014, [http://www2.oecd.org/ecoinst/queries/QueryResult\\_2.aspx?Key=3a15a4ab-7d0c-4b07-b7c6-9f10dbc06b6e&QryCtx=1&QryFlag=3](http://www2.oecd.org/ecoinst/queries/QueryResult_2.aspx?Key=3a15a4ab-7d0c-4b07-b7c6-9f10dbc06b6e&QryCtx=1&QryFlag=3)

<sup>555</sup> European Environment Agency (2013) *Assessment of Cost Recovery Through Water Pricing*, <http://www.eea.europa.eu/publications/assessment-of-full-cost-recovery>



- Mixed rate: fixed rate per connection plus variable rate per cubic metre.
- Simple variable rate: variable rate per cubic metre.
- Charges vary across municipalities depending on a number of factors (e.g. the level of service provided, service costs, population distribution and density, etc.).
- Rates vary between €0.19 and €1.48 per m<sup>3</sup> of drinking water.

## 15.4 Modelled Changes in Tax Base

The modelled change in the tax base for each of the suggested reforms to the tax system are shown in the table and figures below.

Table 15-9: Change in Energy Tax Base

Fuel Type	Units	Baseline	After Tax Increase	Change
Gas Oil	million litres	1,771	1,729	-42
Petrol	million litres	586	586	0
Kerosene	million litres	25	25	0
LPG	thousand tonnes	73	71	-2
Heavy Fuel Oil	thousand tonnes	7	7	0
Natural Gas	TJ (GCV)	20,077	20,073	-4
Coal	thousand tonnes	416	415	-1
Electricity	GWh	10,995	10,995	0

Figure 15-1: Change in Internal Passenger Flights, flights per year

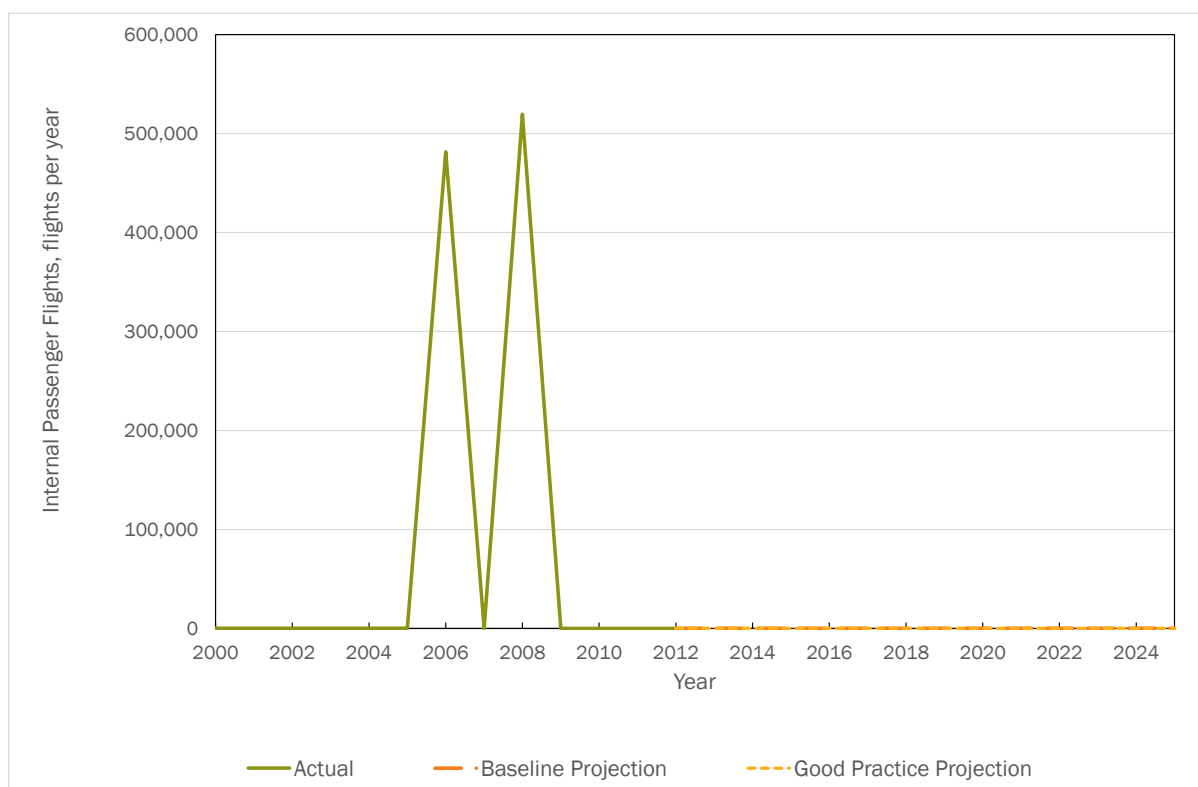


Figure 15-2: Change in Intra-EU Passenger Flights, flights per year

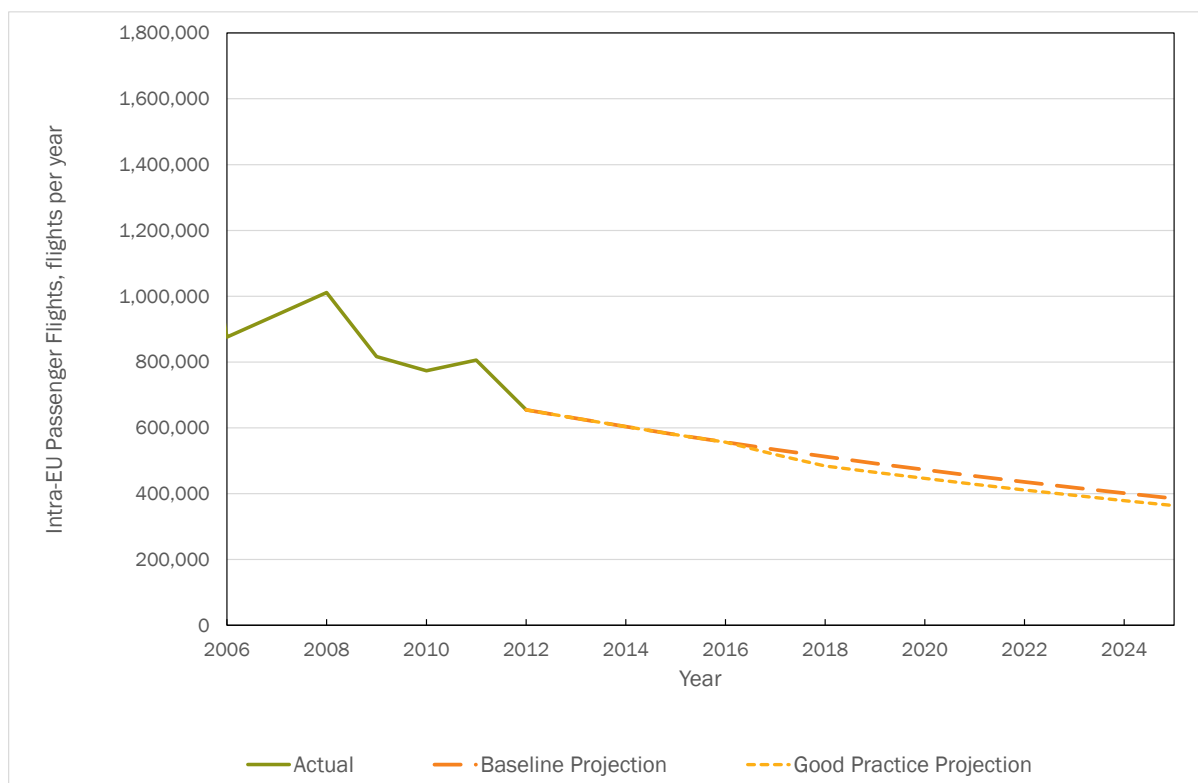


Figure 15-3: Change in Extra-EU Passenger Flights, flights per year

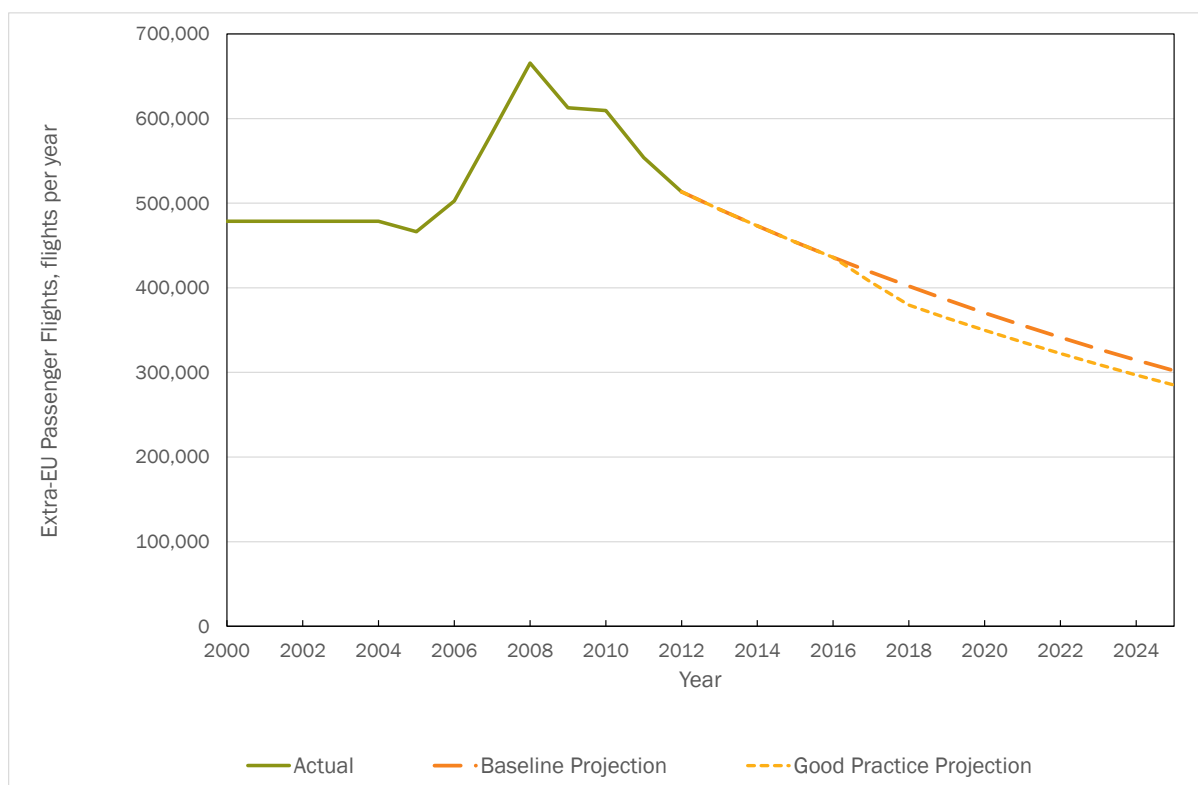


Figure 15-4: Change in Internal Air-freight, tonnes



Figure 15-5: Change in Intra-EU Air-freight, tonnes

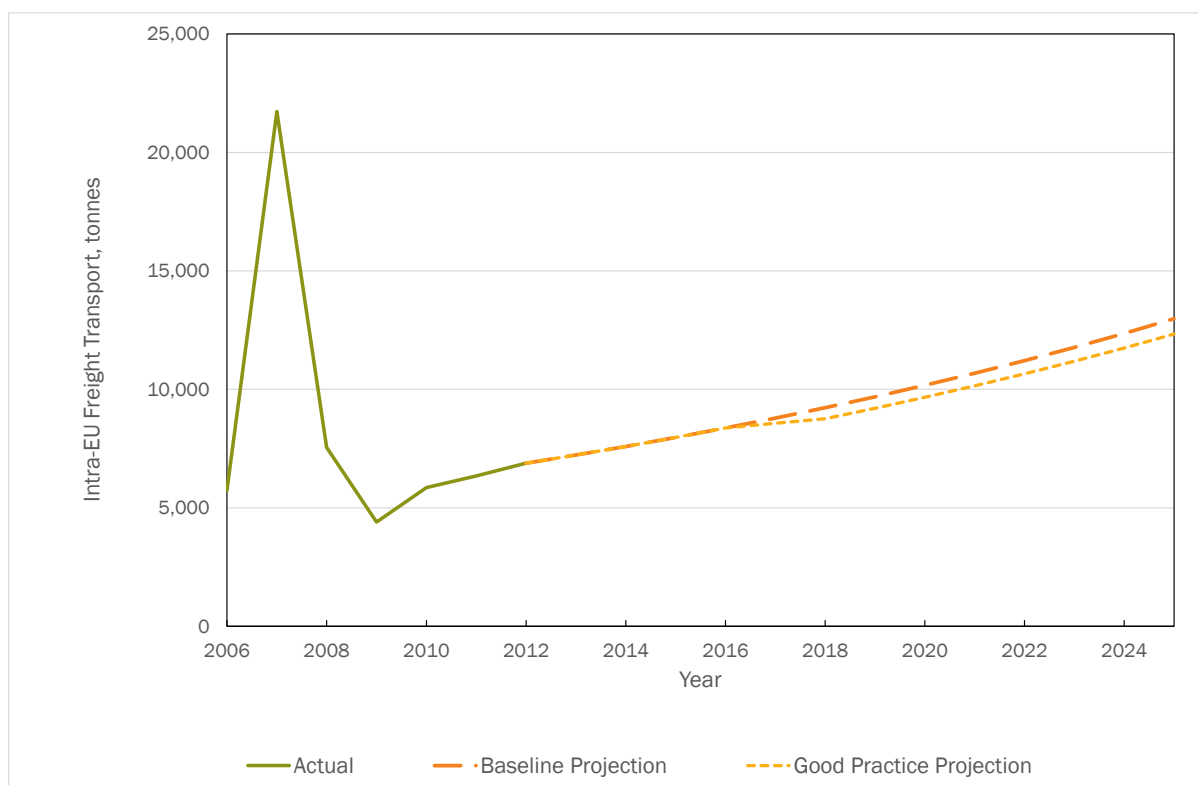


Figure 15-6: Change in Extra-EU Air-freight, tonnes



Figure 15-7: Change in Non-Hazardous Waste Landfilled, thousand tonnes

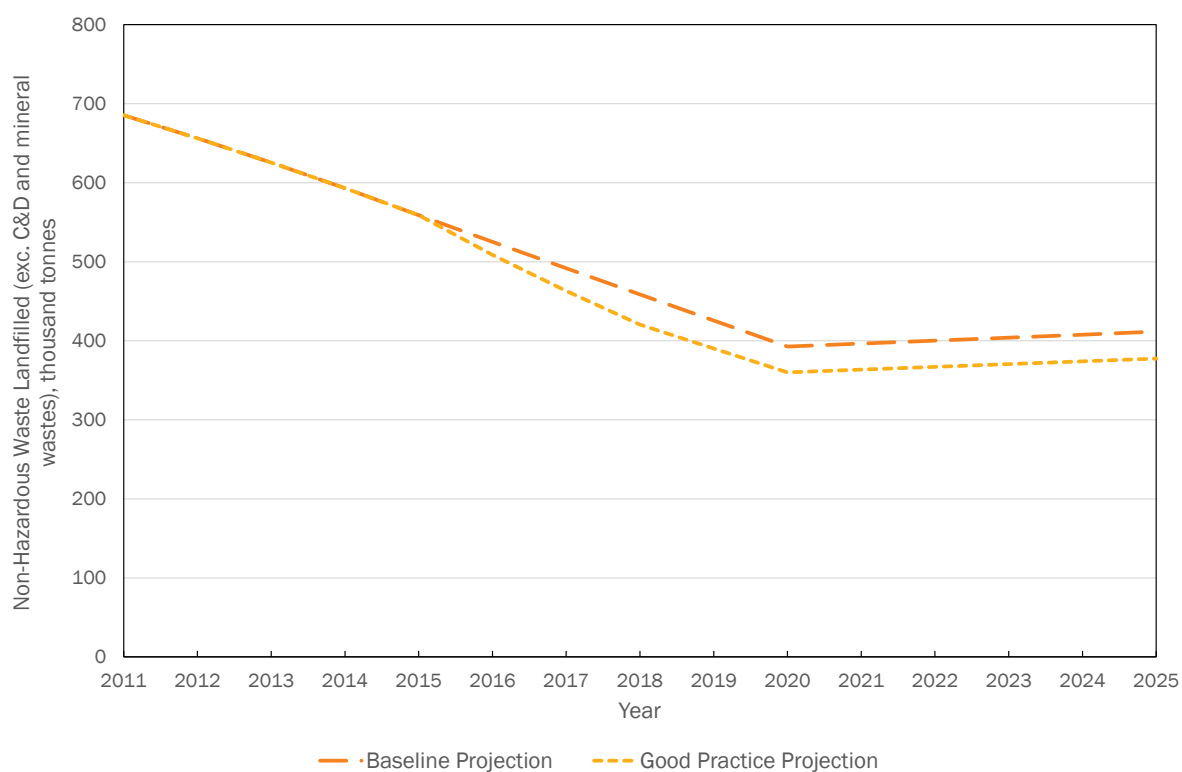


Figure 15-8: Change in MBT/ Incineration, thousand tonnes

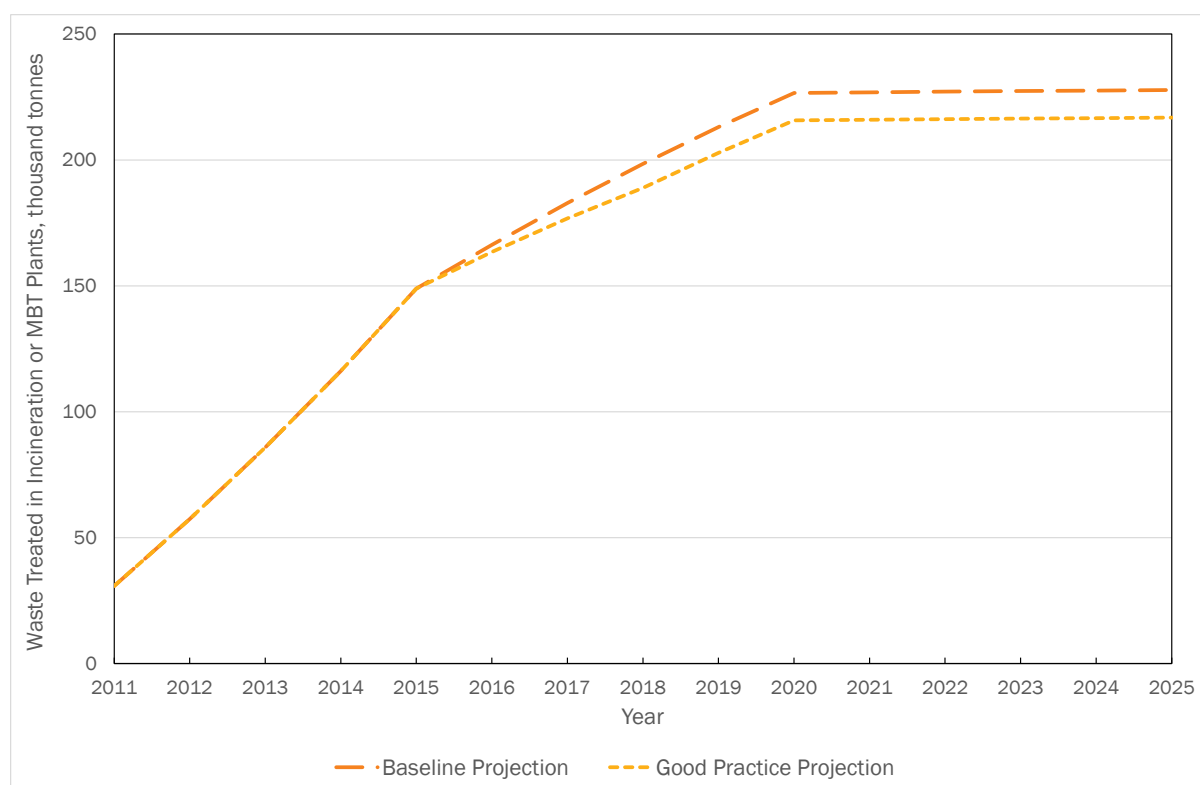


Figure 15-9: Change in SOx Emissions, tonnes

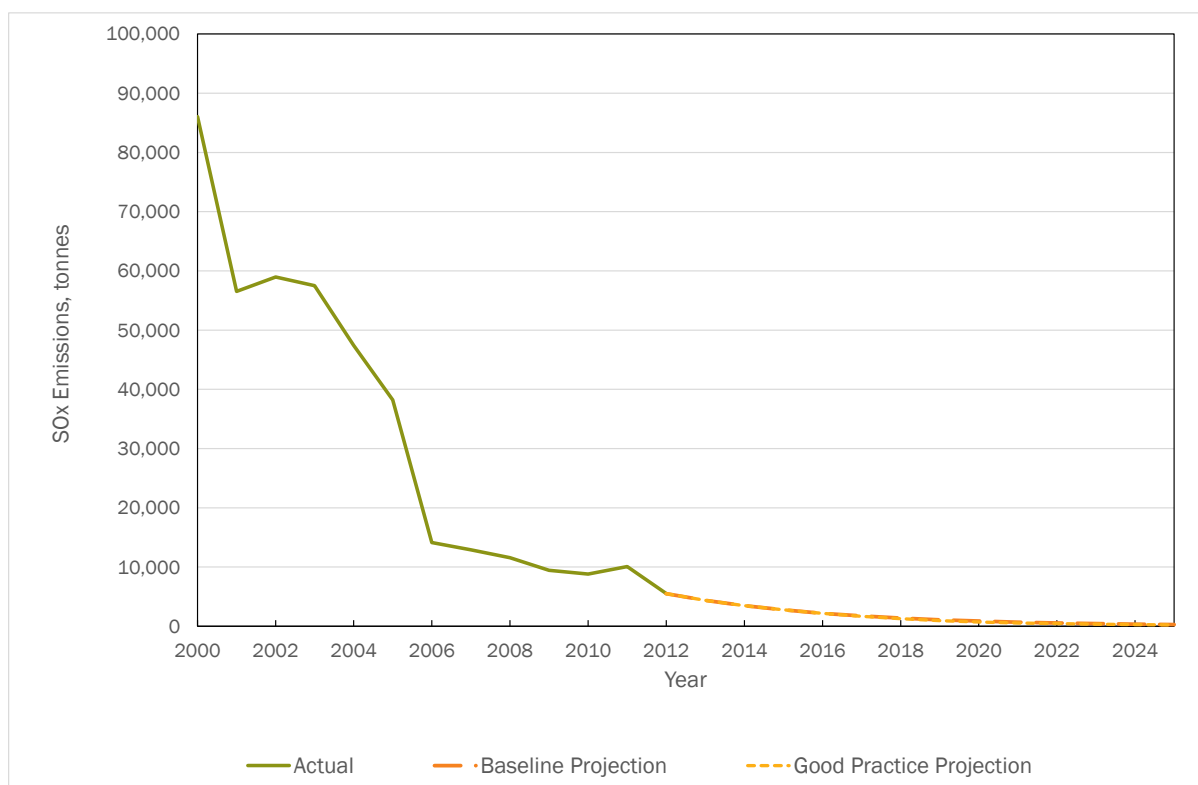


Figure 15-10: Change in NOx Emissions, tonnes



Figure 15-11: Change in PM<sub>10</sub> Emissions, tonnes

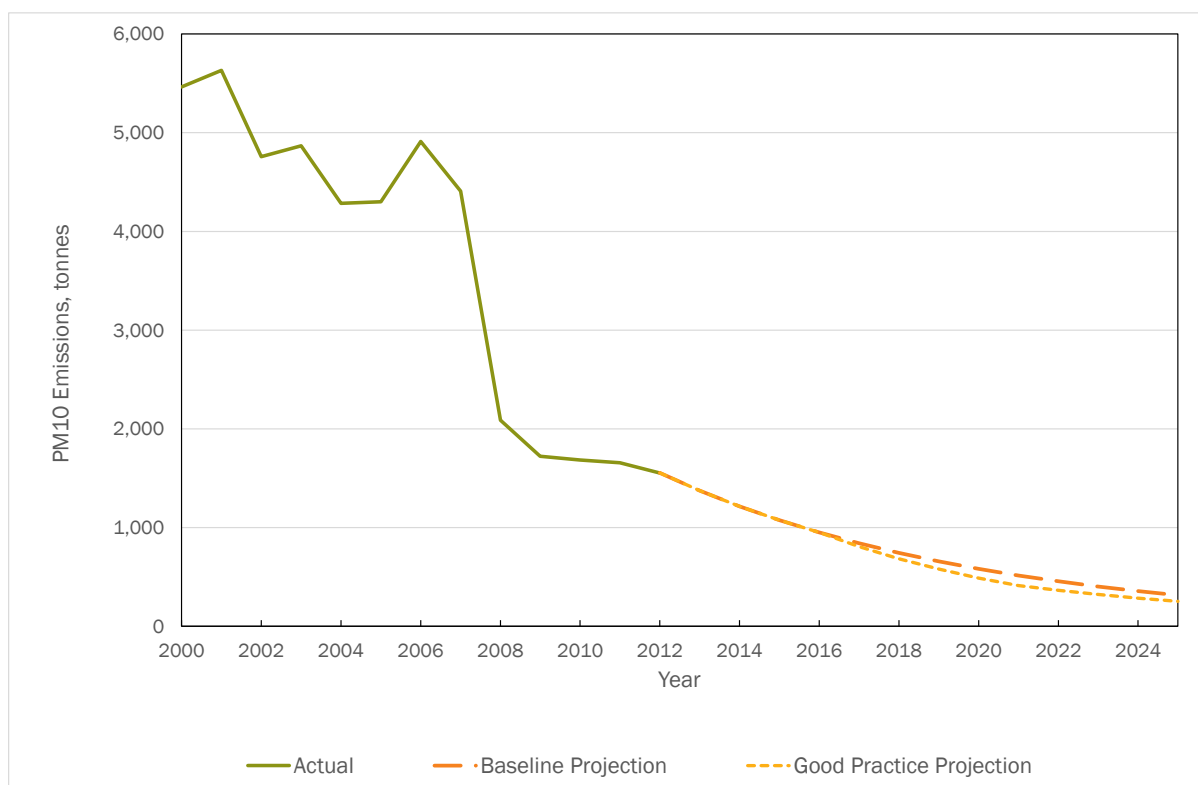


Figure 15-12: Change in Groundwater Abstraction – Public Supply, million cubic metres

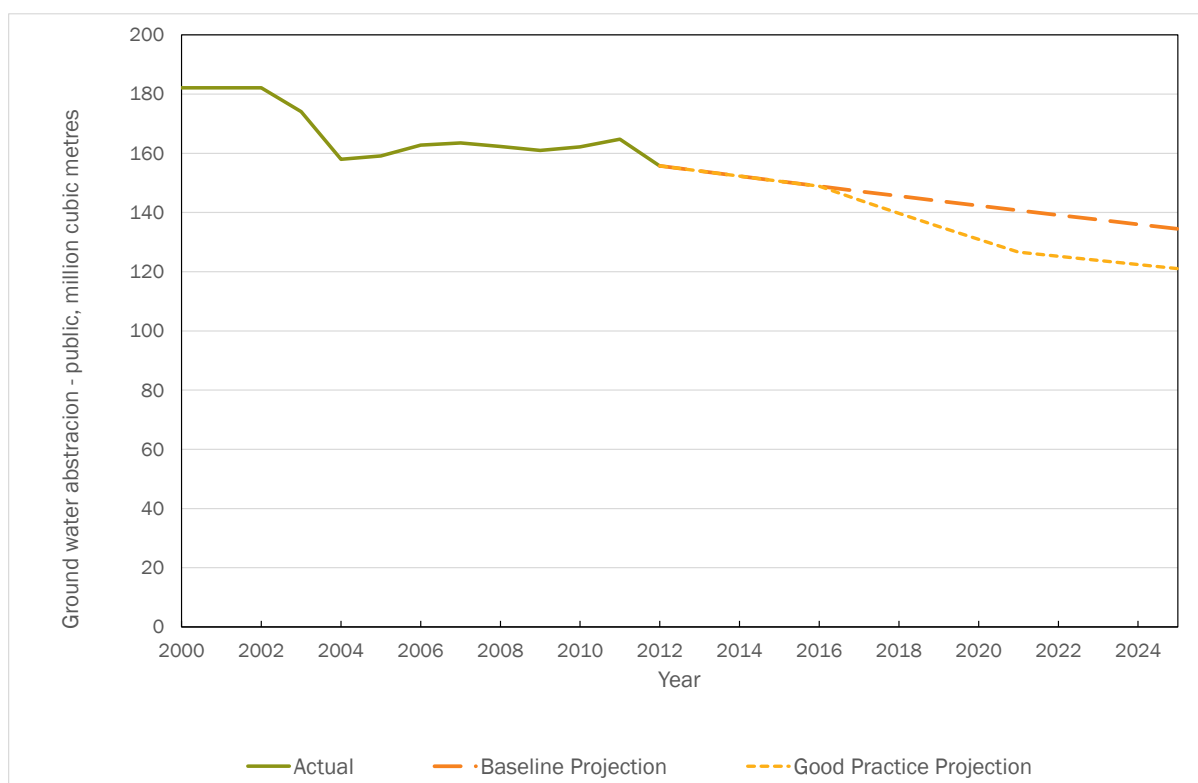


Figure 15-13: Change in Groundwater Abstraction – Manufacturing, million cubic metres

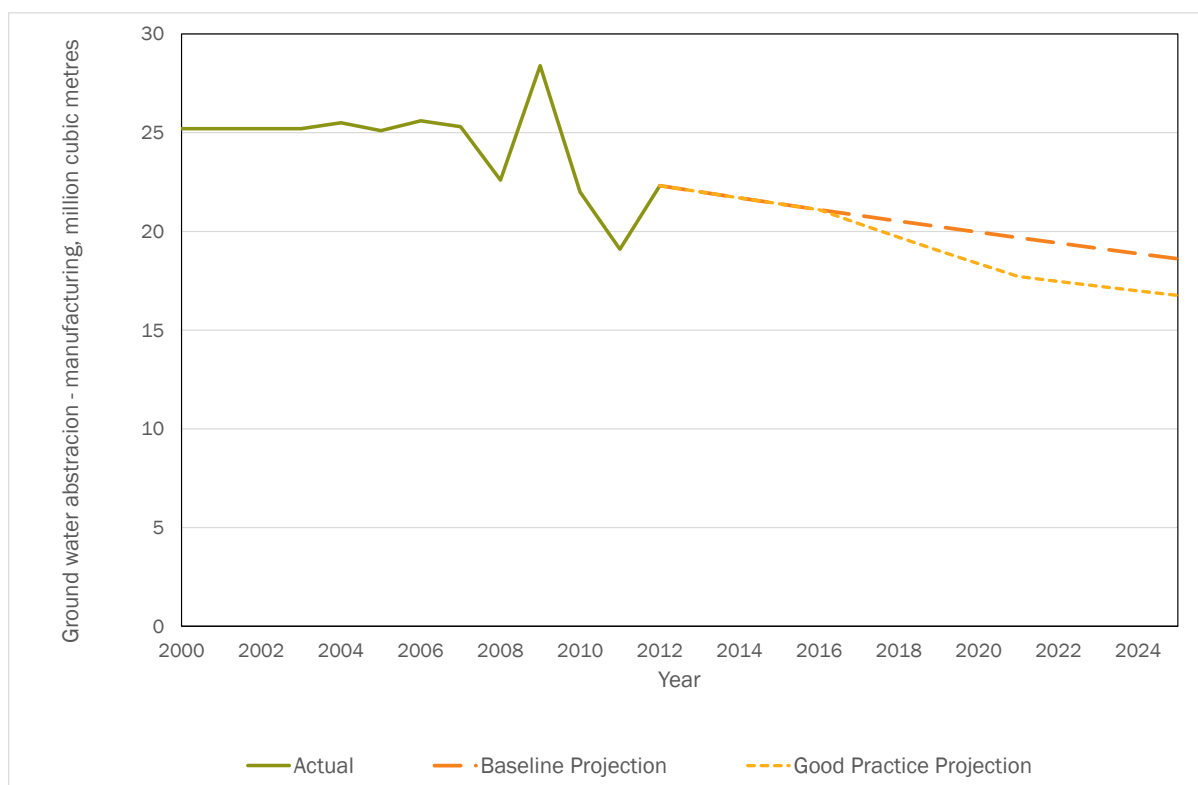


Figure 15-14: Change in Groundwater Abstraction – Agriculture, million cubic metres

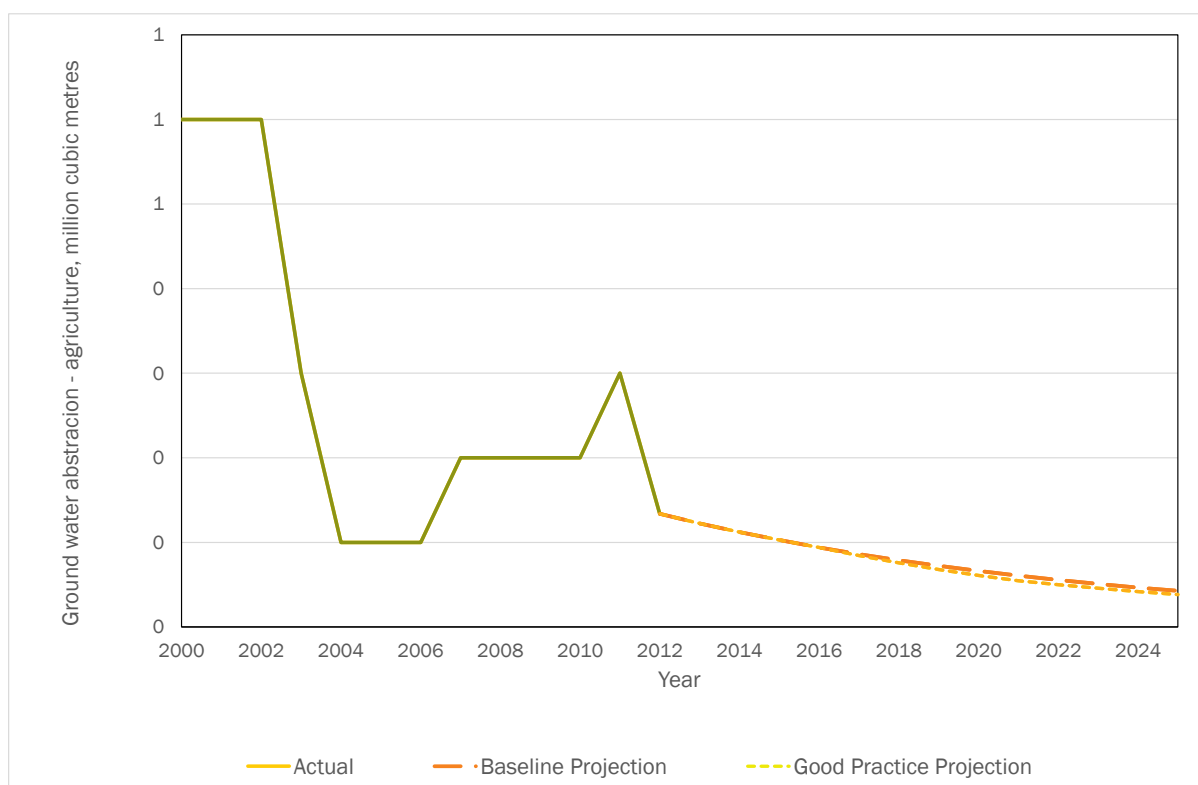




Figure 15-15: Change in Surface Water Abstraction – Public Supply, million cubic metres

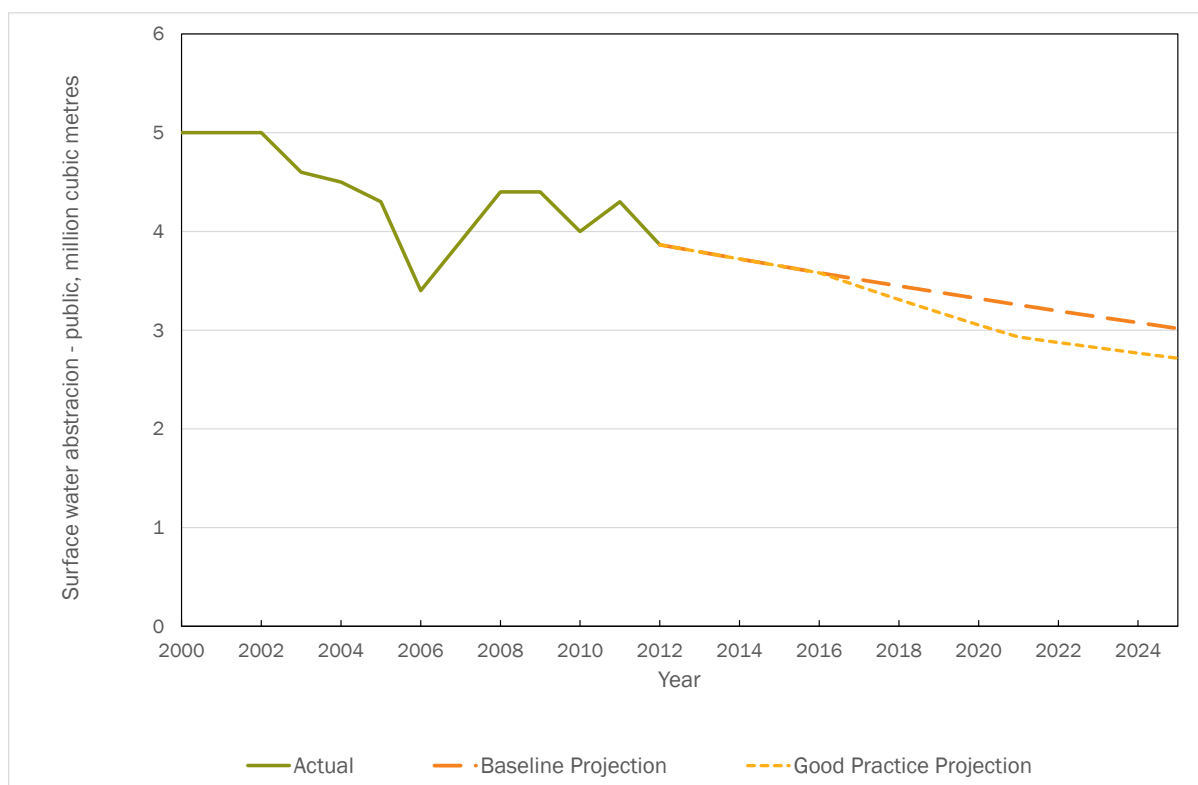


Figure15-16: Change in Surface Water Abstraction – Manufacturing, million cubic metres



Figure 15-17: Change in Surface Water Abstraction – Agriculture, million cubic metres



Figure 15-18: Change in Active Ingredients in Pesticides, tonnes

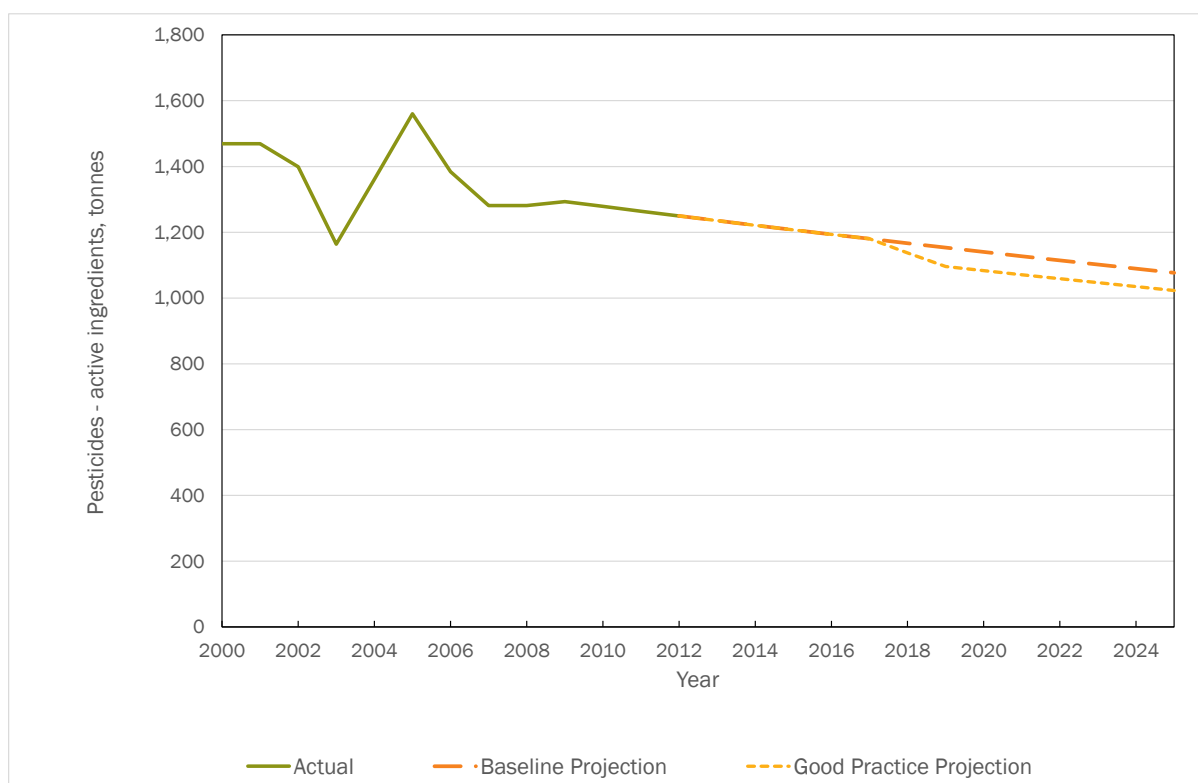


Figure 15-19: Change in Non-organic Nitrogen Sales of Fertilisers, tonnes



Figure 15-20: Change in Aggregates Extraction, thousand tonnes

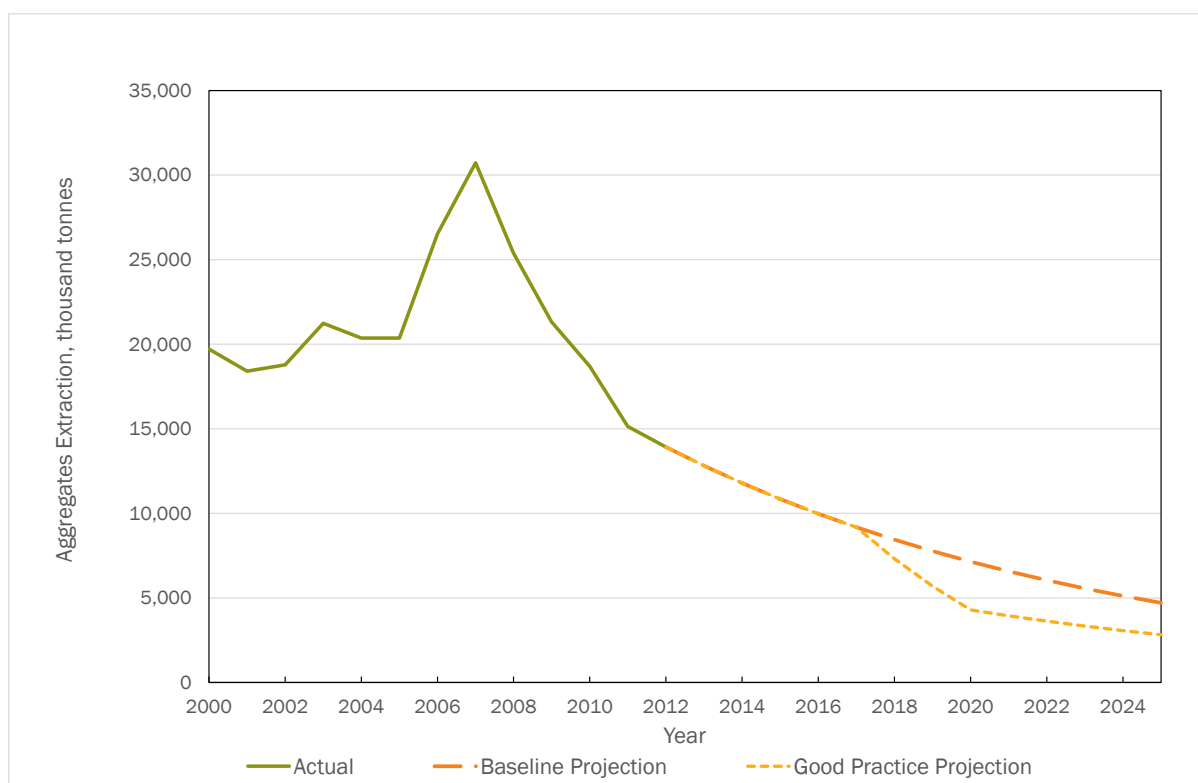


Figure 15-21: Change in Paper & Card Packaging Generation, thousand tonnes

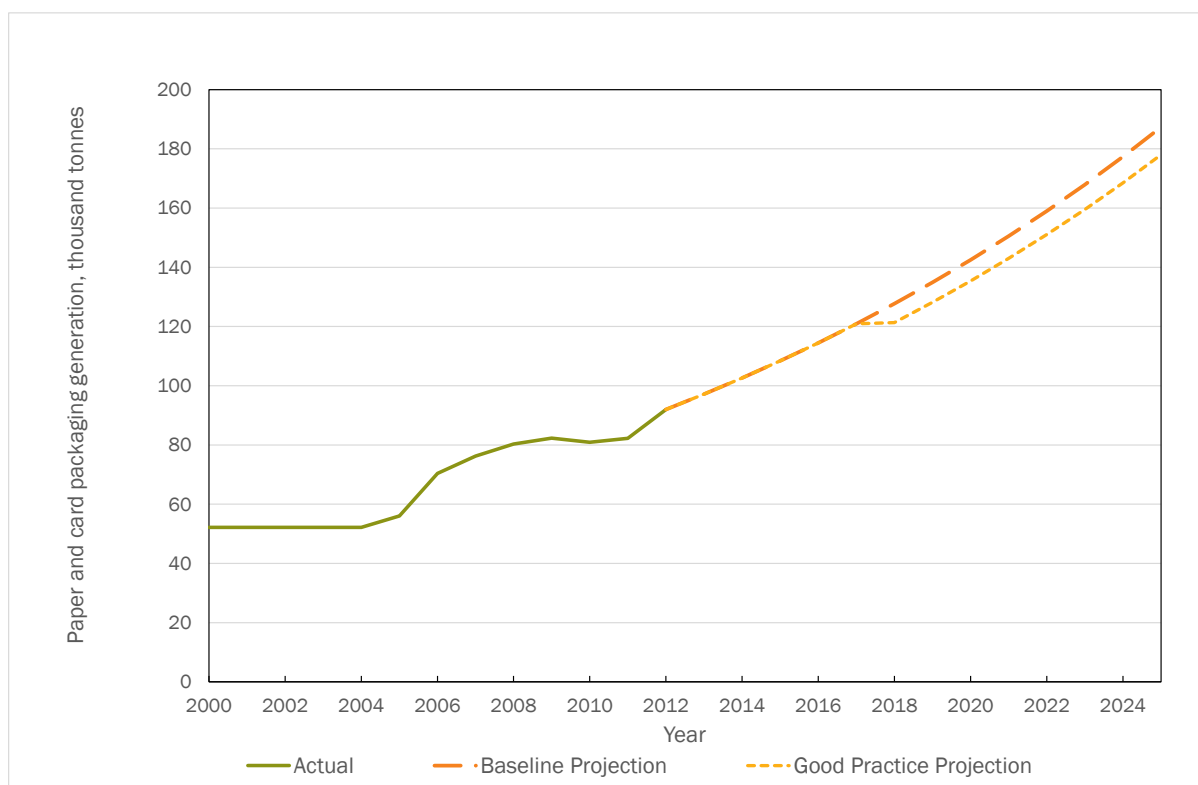


Figure 15-22: Change in Plastic Packaging Generation, thousand tonnes

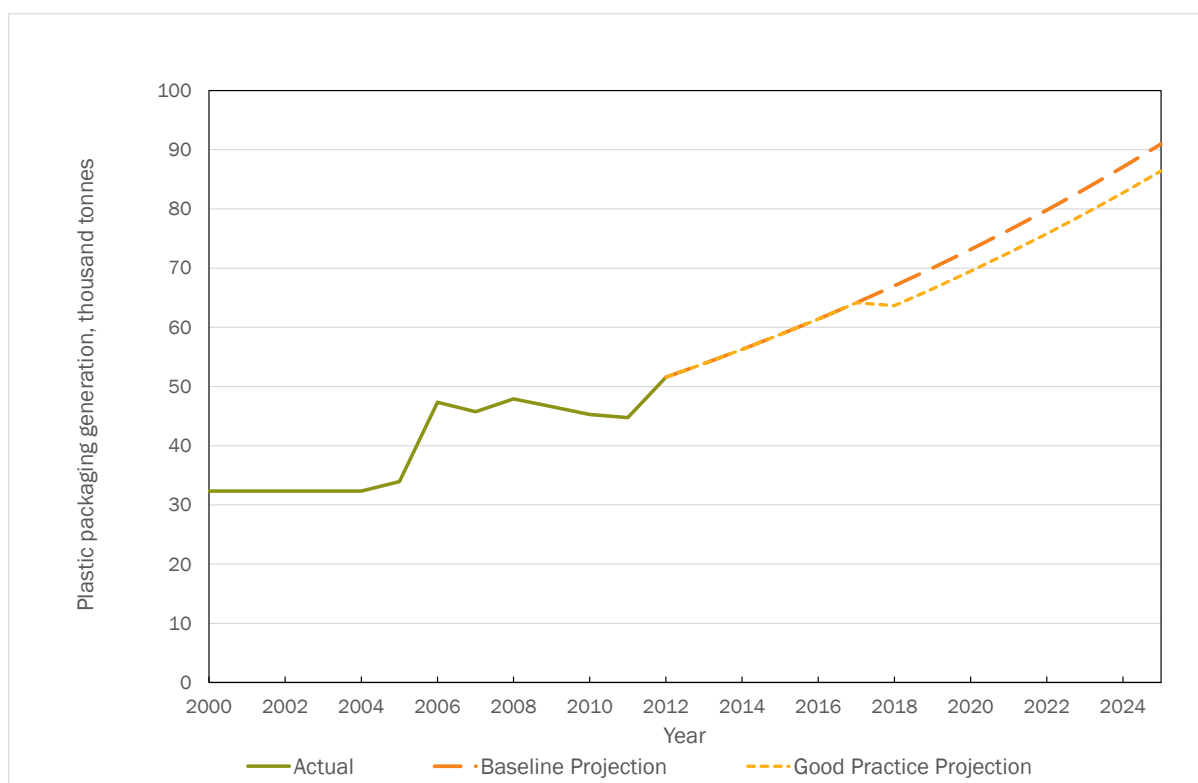


Figure 15-23: Change in Wood Packaging Generation, thousand tonnes

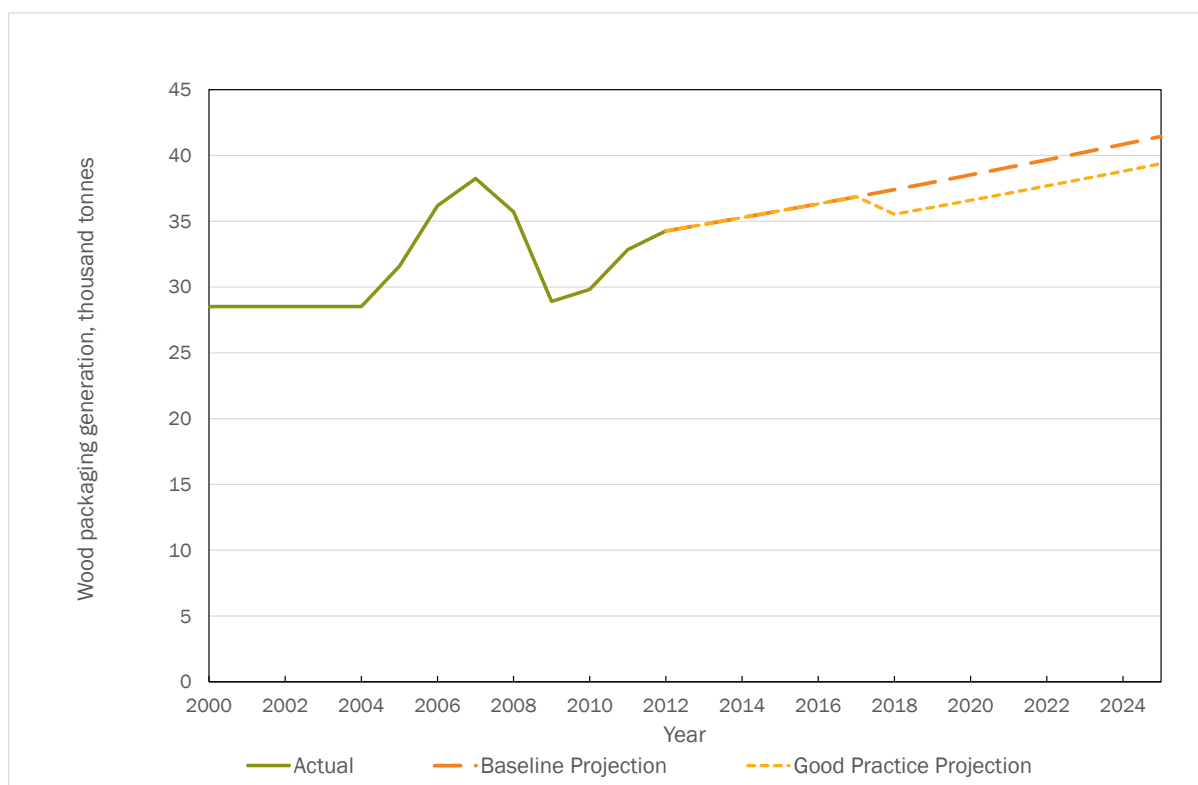


Figure 15-24: Change in Metal Packaging Generation, thousand tonnes

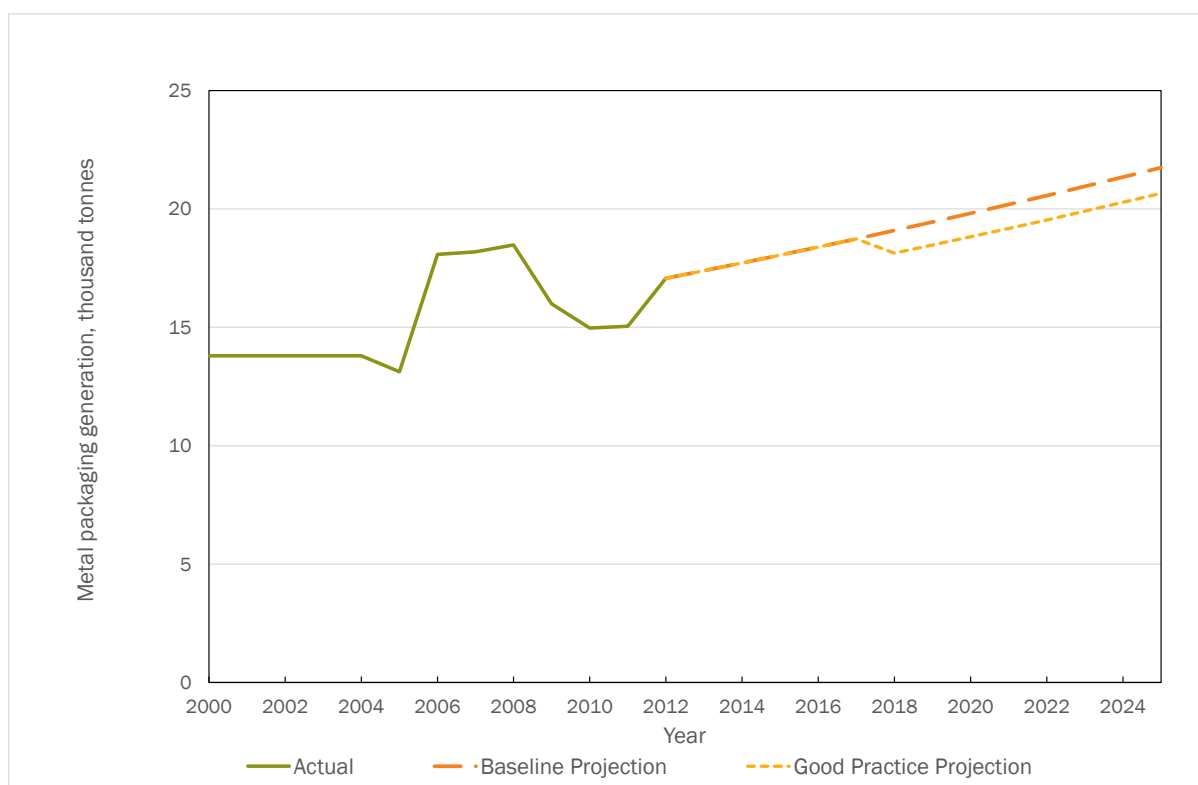


Figure 15-25: Change in Glass Packaging Generation, thousand tonnes

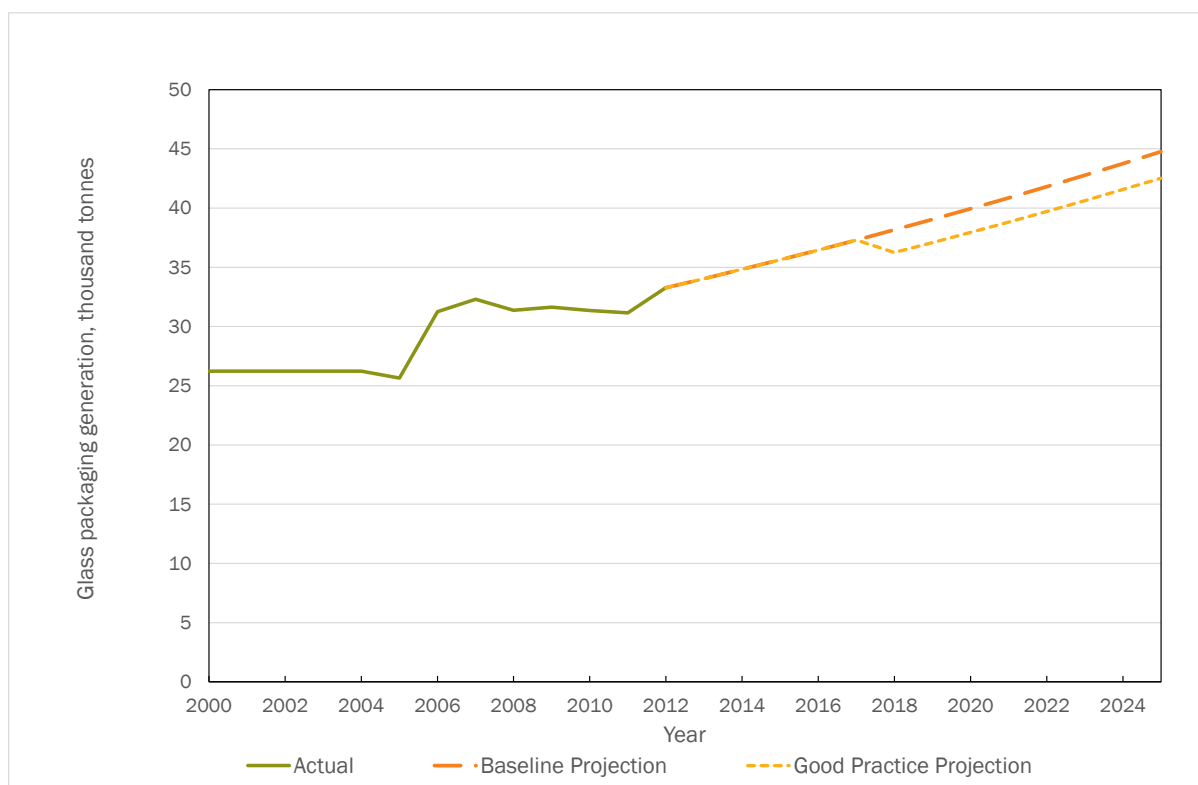
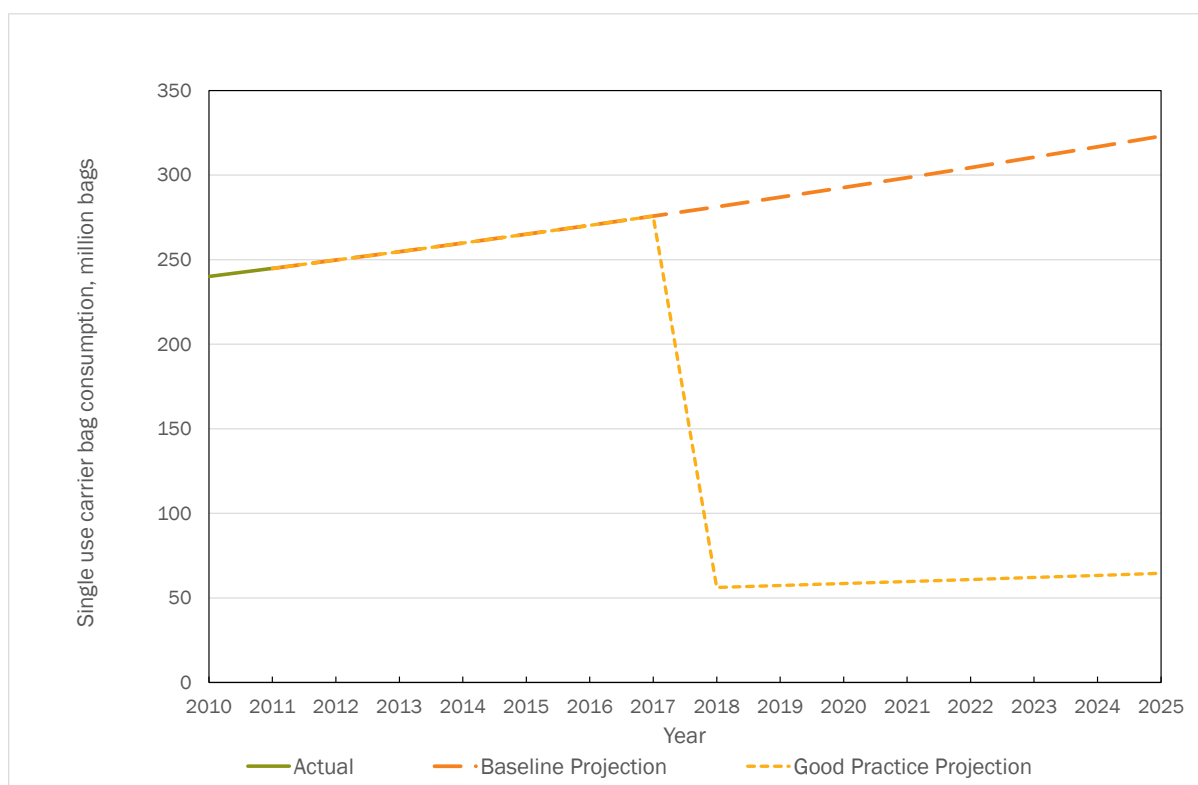


Figure 15-26: Change in Consumption of Single Use Carrier Bags, million bags



## 15.5 Full Revenue Outputs

A summary of the full revenue outputs for each of the suggested reforms to the tax system are presented in the table below.

Table 15-10: Revenue Outturns from Model, million EUR (real 2014 terms)

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Energy Taxes	Transport fuels	0	0	26	52	78	103	129	154	179	179	179
	C&I / Heating	0	0	2	4	6	8	10	12	14	14	14
	Electricity	0	0	0	0	0	0	0	0	0	0	0
	<i>Sub-total Energy, million EUR</i>	0	0	28	56	84	111	139	166	193	193	193
	<i>Sub-total Energy, % GDP</i>	0.0%	0.0%	0.1%	0.2%	0.2%	0.3%	0.4%	0.5%	0.5%	0.5%	0.5%
Transport Taxes (excluding transport fuels)	Vehicle Taxes	0	0	0	0	0	0	0	0	0	0	0
	Passenger Aviation Tax	0	0	17	31	30	29	27	26	25	24	23
	Freight Aviation Tax	0	0	0	0	0	0	0	0	0	0	0
	<i>Sub-total Transport, million EUR</i>	0	0	17	31	30	29	28	26	25	24	23
	<i>Sub-total Transport, % GDP</i>	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Pollution and Resource Taxes	Landfill Tax - Non-haz (excl. C&D)	0	5	9	12	15	14	14	14	14	14	14
	Landfill Tax - Inerts (C&D)	0	0	0	0	0	0	0	0	0	0	0
	Incineration /MBT Tax	0	1	1	2	3	3	3	3	3	3	3



Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Air Pollution Tax	0	3	6	8	10	11	10	10	9	9	8
	Water Abstraction Tax	0	4	7	11	14	17	16	16	16	15	15
	Waste Water Tax	0	3	6	8	8	8	8	8	8	8	8
	Pesticides Tax	0	0	6	11	11	11	11	11	10	10	10
	Aggregates Tax	0	0	22	18	14	10	9	9	8	7	7
	Packaging Tax	0	0	9	9	10	10	10	11	11	12	12
	Single Use Bag Tax	0	22	22	5	5	5	5	5	5	5	5
	Fertiliser Tax	0	0	0	0	0	0	0	0	0	0	0
	<b>Sub-total Pollution &amp; Resource, million EUR</b>	0	37	89	84	88	88	86	85	85	84	83
	<b>Sub-total Pollution &amp; Resource, % GDP</b>	0.0%	0.1%	0.3%	0.2%	0.2%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%
Total Revenue Stream	<b>Total, million EUR</b>	0	37	134	171	202	228	252	278	303	301	299
	<b>Total, % GDP</b>	0.0%	0.1%	0.4%	0.5%	0.6%	0.6%	0.7%	0.8%	0.9%	0.9%	0.8%

## 16.0 Spain

During the course of the study the latest data available from official sources was sought, namely the TAXUD Taxes in Europe database, energy excise duty tables and the OECD database on environmental taxes and charges. This was supplemented by national data sources where possible. Due to the number of taxes and countries involved, the central case for energy excise duties has been the rates published by TAXUD giving the position as of 1st July 2014. Planned future increases may not be fully captured in this analysis and therefore, the projected increase in revenues would effectively incorporate any revenue from increased rates in early 2015 or shortly thereafter.

### 16.1 Energy Taxes

#### ➤ Motor fuels (refund, full and partial exemptions):

- Energy excise rates for motor fuels are regulated through the Art. 50 of the *Ley 38/1992, de 28 de diciembre, de Impuestos Especiales* (Law 38/1992),<sup>556</sup> and rates are published by the *Dirección General de Tributos*, which part of the Ministry of Economy<sup>557</sup>. These rates are summarised in Table 16-1.

Table 16-1: Standard Rates of Excise Duties on Fuels and Electricity in Spain

Excise Duty	Unit	Rate Applied in Spain	Existing ETD Minimum	EU-28 Average	EU-28 Median
<b>Transport Fuels</b>					
Leaded Petrol	€ per 1000 litres	€457.79	€421	€585	€583
Unleaded Petrol <sup>1</sup>	€ per 1000 litres	€424.69	€359	€519	€509
Gas Oil (Diesel)	€ per 1000 litres	€331.00	€330	€427	€405
Kerosene	€ per 1000 litres	€330.00	€330	€440	€405
Liquid Petroleum Gas	€ per 1000 kg	€57.47	€125	€209	€180
Natural Gas	€ per GJ	€1.66	€2.60	€3.03	€2.66
<b>Motor Fuels – Industry / Commercial Use</b>					
Gas Oil (Diesel) <sup>2</sup>	€ per 1000 litres	€84.71	€21	€221	€163

<sup>556</sup> Government of Spain (2013), *Ley 38/1992, de 28 de diciembre, de Impuestos Especiales*, Accessed 9th September 2014

<sup>557</sup> Values found in the Law 38/1992 are slightly different than the values given by DG TAXUD

Excise Duty	Unit	Rate Applied in Spain	Existing ETD Minimum	EU-28 Average	EU-28 Median
Kerosene	€ per 1000 litres	€330.00	€21	€283	€330
Liquid Petroleum Gas	€ per 1000 kg	€57.47	€41	€126	€125
Natural Gas	€ per GJ	€1.15 – €0.65 <sup>3</sup>	€0.30	€1.76	€1.50
<b>Heating – Business Use</b>					
Gas Oil (Diesel) <sup>1</sup>	€ per 1000 litres	€84.71	€21	€221	€163
Kerosene	€ per 1000 litres	€78.71	€0.00	€270	€330
Heavy Fuel Oil	€ per 1000 kg	€12.00 – €15.00 <sup>4</sup>	€15	€70	€25
Liquid Petroleum Gas	€ per 1000 kg	€15.00	€0.00	€82	€40
Natural Gas	€ per GJ	€0.65 – €0.15 <sup>5</sup>	€0.15	€1.36	€0.46
Coal and Coke	€ per GJ	€0.65 <sup>6</sup>	€0.15	€1.27	€0.31
<b>Heating – Non-Business Use</b>					
Gas Oil (Diesel) <sup>1</sup>	€ per 1000 litres	€84.71	€21	€179	€125
Kerosene	€ per 1000 litres	€78.71	€0.00	€279	€330
Heavy Fuel Oil	€ per 1000 kg	€15.00	€15	€85	€26
Liquid Petroleum Gas	€ per 1000 kg	€15.00	€0.00	€111	€42
Natural Gas	€ per GJ	€0.65	€0.30	€2.04	€0.94
Coal and Coke	€ per GJ	€0.65	€0.30	€1.77	€0.32
<b>Electricity</b>					
Business Use	€ per MWh	€0.50 <sup>7</sup>	€0.50	€8.42	€1.03
Non-Business Use	€ per MWh	€1 <sup>7</sup>	€1.00	€14.53	€2.06
<b>Notes:</b> <ol style="list-style-type: none"> <li>1. The rate shown is for &lt;98 octane I.O.</li> <li>2. Diesel intended for electric power production and/or cogeneration of electricity and heat costs €29.15.</li> <li>3. €0.64 excise rate is applied on natural gas used for stationary motors.</li> <li>4. €12 excise rate is applied on heavy fuel oil used for electric power production and/or cogeneration of electricity and heat costs (See Council Directive 2003/96/EC).</li> <li>5. The rate for natural gas and biogas applicable for industrial users is €0.15.</li> <li>6. The rate for coal used for “professional uses” is €0.15 (following approval of Real Decreto-Ley 9/2013)</li> <li>7. The rates applied for electricity used for business and non-business use are minimum tax rates. The actual electricity rates applied are higher, for example in the case of electricity used for non-business purposes, tax rates around €9 per MWh are common.</li> </ol>					

Source: DG TAXUD (2014) *Excise Duty Tables (Part II – Energy products and Electricity)*, Situation as at 1<sup>st</sup> July 2014,  
[http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/excise\\_duties/energy\\_products/rates/excise\\_duties-part\\_ii\\_energy\\_products\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/excise_duties/energy_products/rates/excise_duties-part_ii_energy_products_en.pdf)

- Exemptions from excise duties on motor fuels are applied to:
  - Diplomats and international organisations.
  - Deliveries to foreign armies.
  - Domestic and international navigation fuels (gas oil/diesel and heavy fuel oil) not for leisure activity.
  - Rail fuel (Gas oil/diesel).
  - International and domestic aviation (not for leisure activity).
  - The manufacture and import of coal gas, water gas, producer gas and similar gases (other than petroleum gases and other gaseous hydrocarbons) used for the production of electricity in power plants, power generation and cogeneration of electricity and heat in combined power plants or their own consumption on the premises where it was generated.<sup>558</sup>
- According to estimates from the OECD, the above tax exemptions corresponded to consumer support of €394 million in 2011.<sup>559</sup>
- Since 1996, a reduced excise rate for petroleum products has been applied to LPG, heavy fuel oil and gas oil/diesel used in the agriculture and mining sectors.
- Gas oil/diesel used for farming purposes is taxed at the lower rate of €78.71 per 1,000 litres. Since 2006, a partial refund scheme for gas oil/diesel used in agriculture and livestock is also in place.<sup>560,561</sup> This action was taken to partially offset the economic effects of increased oil prices on the agricultural sector. According to estimates from the OECD, this support was equivalent to €170 million in 2011.<sup>562</sup>
- Between 2007 and 2008, fuel tax exemptions were granted to the fisheries sector in order to protect it from rising energy prices. These

---

<sup>558</sup> European Commission (2014), *Taxes in Europe Database*, Accessed 2<sup>nd</sup> September 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetails.html](http://ec.europa.eu/taxation_customs/tedb/taxDetails.html)

<sup>559</sup> OECD (2013), *Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels*, OECD Publishing, p. 329.

<sup>560</sup> OECD (2013), *Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels*, OECD Publishing, p. 327.

<sup>561</sup> Government of Spain (1992), *Ley 38/1992, de 28 de diciembre, de Impuestos Especiales*, Accessed 9<sup>th</sup> September 2014, <http://www.boe.es/buscar/act.php?id=BOE-A-2008-20744>

<sup>562</sup> OECD (2013), *Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels*, OECD Publishing, p. 327-9.

exemptions are regulated through *Real Decreto 1517/2007* (Royal Decree 785/01) (aids granted to undertakings with fuel consumption in the period 1/11/2004 – 31/10/2005) and temporary measures in 2008.<sup>563</sup> Moreover, according to Art. 51, of Ley 38/1992, diesel fuel used for fishing purposes continues to be exempt from the excise duties.

- All fuels used for industrial, heating or propellant purposes are subject to the standard VAT rate of 21% (with the exception of the Canary Islands where a differentiated VAT rate is applied).<sup>564</sup>
- According to Ley 22/2005 (Law 22/2005)<sup>565</sup>, a special rate of €0 per 1,000 litre was applied on biofuels between November 2005 and 1<sup>st</sup> January 2013. The rate was applied to the volume of biofuels and blends with other products. Since June 2007, Ley 34/1998 established that fuel suppliers in the country must include certain biofuels and renewable fuels in their overall sales.<sup>566</sup>
- Part of the excise tax on gas oil/diesel and the regional tax is refunded on professional transport sector.<sup>567</sup>
- In 2012, total revenues from electricity, coal and hydrocarbons excise duties (*Impuesto sobre Hidrocarburos, Impuesto sobre la Electricidad and Impuesto sobre el Carbón*) amounted to €11.087 million.<sup>568</sup> This accounted for 1.08% of Spanish GDP and 3.31% of total tax revenues. The *Impuesto sobre Hidrocarburos* (excise duty on hydrocarbons) alone yielded €9.4 billion in 2012 (equivalent to 0.91% of the GDP).<sup>569</sup>

➤ **Tax on Hydrocarbons (Impuesto sobre Hidrocarburos):**

---

<sup>563</sup> Martini, R. (2012), “Fuel Tax Concessions in the Fisheries Sector” in *OECD Food, Agriculture and Fisheries Papers*, No. 56, OECD Publishing, p. 27.

<sup>564</sup> OECD/IEA (2014), *Energy Prices and Taxes: Quarterly Statistics (Second Quarter 2014)*, OECD Publishing, p. 250.

<sup>565</sup> Government of Spain (1992), *Ley 22/2005, de 18 de noviembre, por la que se incorporan al ordenamiento jurídico español diversas directivas comunitarias en materia de fiscalidad de productos energéticos y electricidad y del régimen fiscal común aplicable a las sociedades matrices y filiales de estados miembros diferentes, y se regula el régimen fiscal de las aportaciones transfronterizas a fondos de pensiones en el ámbito de la Unión Europea.*, Accessed 9<sup>th</sup> September 2014, [https://www.boe.es/diario\\_boe/txt.php?id=BOE-A-2005-19003](https://www.boe.es/diario_boe/txt.php?id=BOE-A-2005-19003)

<sup>566</sup> Antón, A.A. (2012), Promotion of biofuels and EU State aid rules: the case of Spain, in Kreiser, L. et al. (ed.) *Green Taxation and Environmental Sustainability*, Northampton: Edward Elgar Publishing Ltd, pp.43-55.

<sup>567</sup> OECD/IEA (2014), *Energy Prices and Taxes: Quarterly Statistics (Second Quarter 2014)*, OECD Publishing, p. 250.

<sup>568</sup> European Commission (2014), Taxes in Europe Database, Accessed 2<sup>nd</sup> September 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetails.html](http://ec.europa.eu/taxation_customs/tedb/taxDetails.html)

<sup>569</sup> Agencia Tributaria (2013), 4. Hidrocarburos, p. 23, Accessed 5<sup>th</sup> September 2014, [http://www.agenciatributaria.es/static\\_files/AEAT/Aduanas/Contenidos\\_Privados/Impuestos\\_especiales/Estudio\\_relativo\\_2012/4HIDROCARBUROS.docx](http://www.agenciatributaria.es/static_files/AEAT/Aduanas/Contenidos_Privados/Impuestos_especiales/Estudio_relativo_2012/4HIDROCARBUROS.docx)

- A Tax on hydrocarbons (*Impuesto sobre Hidrocarburos*) is applied in Spain. This tax comprises of rates applied by the state (*Tipo Estatal*) and rates applied by the autonomous communities (*Tipo autonómico*). In total, 58% of revenues obtained from the *Tipo Estatal* are distributed to the autonomous communities, while all the revenues obtained through the *Tipo autonómico* are retained by the autonomous communities.<sup>570</sup>
- The state tax comprises of two different types of rates (the *tipo general* and *tipo especial*). The *Tipo especial*, originally named Tax on the retail sale of certain mineral oils (*Impuesto sobre ventas minoristas de determinados hidrocarburos*) was introduced with the *Ley 24/2001* (Law 24/2001) and has been in place since 2002.<sup>571</sup> Initially, the tax proposed to raise revenues for healthcare services provided by the autonomous communities and for environmental objectives. Following the approval of the *Ley 2/2012* of 29<sup>th</sup> June, the tax was integrated within the *Impuesto sobre Hidrocarburos* in 2013, under the *Tipo especial*. The 2013 national rates for the *Tipo Especial* are shown in Table 16-2.

Table 16-2: Special Excise Duty as Part of the Hydrocarbon Tax (2013)

Type of Fuel	Rate Applied (€)	Unit
Petrol	24	per 1,000 litres
Gas oil/diesel	24	per 1,000 litres
Gas oil/diesel (special uses)	6	per 1,000 litres
Fuel oil	1	per 1,000 Kg
Kerosene	24	per 1,000 litres

Source: Government of Spain (2014), *Ley 38/1992, de 28 de diciembre, de Impuestos Especiales*, Accessed 9th September 2014, <https://www.boe.es/buscar/act.php?id=BOE-A-1992-28741>

- Within the legislative framework set by *Ley 38/1992*, autonomous communities can choose to put an additional regional excise rate in addition to those set at a national levels. This is done through the *Tipo autonómico* tax. Initially, the *Tipo Autonómico* was called *Impuesto sobre Ventas Minoristas de Determinados Hidrocarburos* (tax on the retail sale of certain hydrocarbons) and it was a separate tax from the *Impuestos sobre los Hidrocarburos* until 2013 when it was inserted into the *Impuesta sobre Hidrocarburos*.

<sup>570</sup> Economics for Energy (2013), *Impuestos energético-ambientales en España [Informe 2013]*, Accessed URL: [http://eforenergy.org/docpublicaciones/informes/Informe\\_Completo\\_EfE\\_2013.pdf](http://eforenergy.org/docpublicaciones/informes/Informe_Completo_EfE_2013.pdf)

<sup>571</sup> Government of Spain (2001), *Ley 24/2001, de 27 de diciembre, de Medidas Fiscales, Administrativas y del Orden Social*, Accessed 3<sup>rd</sup> September 2014, [http://www.boe.es/diario\\_boe/txt.php?id=BOE-A-2001-24965](http://www.boe.es/diario_boe/txt.php?id=BOE-A-2001-24965)

- The autonomous communities are allowed to impose maximum rates for petrol (up to €48 per 1,000l), diesel (up to €48 per 1000l), fuel oil (up to €12 per 1,000l); kerosene (up to €48 per 1,000l) and biodiesel used as transportation fuel (€48 per 1,000l) or combustion (up to €12 per 1,000l). Table 16-3 shows tax rates applied by the autonomous communities (rates as of January 2014).<sup>572</sup>
- The Regions of Aragon, Navarra, La Rioja and Basque countries do not apply the *Tipo autonómico* tax, while Madrid and Cantabria have introduced rather low rates. Most of the rates were increased between 2012 and 2014, with exceptions being Cantabria, Andalusia and Navarra.<sup>573,574</sup>

**Table 16-3: Tax Rates on Hydrocarbons Applied by the Autonomous Communities (*Tipo Autonómico*)(2014)**

Type of Fuel	Autonomous Community	Rate Applied (€)	Unit	Range
Petrol	Andalusia	48	1,000 litres	0-48 € per 1000litres
	Aragon	0		
	Asturias	48		
	Balearic Islands	48		
	Cantabria	24		
	Castilla and Leon	48		
	Castilla-La Mancha	48		
	Catalonia	48		
	Extremadura	48		
	Galicia	48		
	Madrid	17		
	Murcia	48		
	Navarra	0		
	Basque Countries	0		
	La Rioja	0		
	Valencian Community	48		

<sup>572</sup> Agencia Tributaria (2014), 10. ANEXOS, Accessed 3<sup>rd</sup> September 2014, [http://www.agenciatributaria.es/static\\_files/AEAT/Aduanas/Contenidos\\_Privados/Impuestos\\_especiales/Estudio\\_relativo\\_2012/10ANEXOS.docx](http://www.agenciatributaria.es/static_files/AEAT/Aduanas/Contenidos_Privados/Impuestos_especiales/Estudio_relativo_2012/10ANEXOS.docx)

<sup>573</sup> Agencia Tributaria (2014), 10. ANEXOS, Accessed 3<sup>rd</sup> September 2014, [http://www.agenciatributaria.es/static\\_files/AEAT/Aduanas/Contenidos\\_Privados/Impuestos\\_especiales/Estudio\\_relativo\\_2012/10ANEXOS.docx](http://www.agenciatributaria.es/static_files/AEAT/Aduanas/Contenidos_Privados/Impuestos_especiales/Estudio_relativo_2012/10ANEXOS.docx)

<sup>574</sup> Please also note that the autonomous community of Navarra has not decided to remove the supplementary tax rate and just leave the national charge.

Type of Fuel	Autonomous Community	Rate Applied (€)	Unit	Range
Diesel (Transportation)	Andalusia	48	1,000 litres	0-48 € per 1000litres
	Aragon	0		
	Asturias	40		
	Balearic Islands	48		
	Cantabria	24		
	Castilla and Leon	48		
	Castilla-La Mancha	48		
	Catalonia	48		
	Extremadura	48		
	Galicia	48		
	Madrid	17		
	Murcia	48		
	Navarra	0		
	Basque Countries	0		
	La Rioja	0		
	Valencian Community	48		
Diesel (Non transportation)	Andalusia	48	1,000 litres	0-48 € per 1,000litres
	Aragon	0		
	Asturias	40		
	Balearic Islands	48		
	Cantabria	24		
	Castilla and Leon	48		
	Castilla-La Mancha	48		
	Catalonia	48		
	Extremadura	48		
	Galicia	48		
	Madrid	17		
	Murcia	48		
	Navarra	0		
	Basque Countries	0		
	La Rioja	0		
	Valencian Community	48		
Diesel (Special Purposes)	Andalusia	0	1,000 litres	0-12 € per 1,000litres
	Aragon	0		
	Asturias	6		
	Balearic Islands	12		
	Cantabria	0		
	Castilla and Leon	0		
	Castilla-La Mancha	4		
	Catalonia	6		
	Extremadura	0		
	Galicia	0		
	Madrid	4,25		
	Murcia	6		
	Navarra	0		
	Basque Countries	0		
	La Rioja	0		
	Valencian Community	0		



Type of Fuel	Autonomous Community	Rate Applied (€)	Unit	Range
Fuel oil	Andalusia	2	1,000 kg	0-2 € per 1,000 kg
	Aragon	0		
	Asturias	2		
	Balearic Islands	2		
	Cantabria	1		
	Castilla and Leon	2		
	Castilla-La Mancha	2		
	Catalonia	2		
	Extremadura	2		
	Galicia	2		
	Madrid	0,7		
	Murcia	2		
	Navarra	0		
	Basque Countries	0		
	La Rioja	0		
	Valencian Community	2		
Kerosene	Andalusia	48	1,000 litres	0-48 € per 1,000litres
	Aragon	0		
	Asturias	48		
	Balearic Islands	48		
	Cantabria	24		
	Castilla and Leon	48		
	Castilla-La Mancha	48		
	Catalonia	48		
	Extremadura	48		
	Galicia	48		
	Madrid	17		
	Murcia	48		
	Navarra	0		
	Basque Countries	0		
	La Rioja	0		
	Valencian Community	48		
Biodiesel, Biomethane and Biodiesel (Fuel)	Andalusia	48	1,000 litres	0-48 € per 1,000litres
	Aragon	0		
	Asturias	48		
	Balearic Islands	48		
	Cantabria	24		
	Castilla and Leon	0		
	Castilla-La Mancha	48		
	Catalonia	48		
	Extremadura	48		
	Galicia	48		
	Madrid	17		
	Murcia	48		
	Navarra	0		
	Basque Countries	0		
	La Rioja	0		
	Valencian Community	48		

Type of Fuel	Autonomous Community	Rate Applied (€)	Unit	Range
Biodiesel, Biomethane and Biodiesel (Other uses)	Andalusia	0	1,000 litres	0-12 € per 1,000litres
	Aragon	0		
	Asturias	6		
	Balearic Islands	12		
	Cantabria	0		
	Castilla and Leon	0		
	Castilla-La Mancha	4		
	Catalonia	6		
	Extremadura	0		
	Galicia	0		
	Madrid	4,25		
	Murcia	6		
	Navarra	0		
	Basque Countries	0		
	La Rioja	0		
	Valencian Community	0		

Sources: Agencia Tributaria (2013), *Impuestos especiales - Estudio relativo al año 2012 - ANEXOS*, Accessed 4th September 2014, [www.agenciatributaria.es/static\\_files/AEAT/Aduanas/Contenidos\\_Privados/Impuestos\\_especiales/Estudio\\_relativo\\_2012/10ANEXOS.docx](http://www.agenciatributaria.es/static_files/AEAT/Aduanas/Contenidos_Privados/Impuestos_especiales/Estudio_relativo_2012/10ANEXOS.docx); and Economics for Energy (2013), *Impuestos energético-ambientales en España [Informe 2013]*, Accessed URL: [http://eforenergy.org/docpublicaciones/informes/Informe\\_Completo\\_EfE\\_2013.pdf](http://eforenergy.org/docpublicaciones/informes/Informe_Completo_EfE_2013.pdf)

- Exemptions are granted for fuels used in the production of electricity, co-generation and heat and for the construction and maintenance of aircraft or vessels. Moreover, fuels used for international aviation and navigation (not for leisure) and within the framework of diplomatic relationships are also exempt.<sup>575</sup>
- The Canary Islands, Ceuta and Melilla are exempt from the tax, however the local governments of Ceuta and Melilla apply a local tax on the same products as the national tax.<sup>576</sup>
- The *Impuesto sobre Hidrocarburos* yielded €9.933 million (equivalent to 0.96% of GDP) in 2013.<sup>577</sup>

➤ Electricity:

- A fee on the use of continental waters for the production of electricity (*Canon por utilización de las aguas continentales para la producción de energía eléctrica*) was introduced in Spain in 2013. Following the approval

<sup>575</sup> European Commission (2014), *Taxes in Europe Database*, Accessed 2<sup>nd</sup> September 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetails.html](http://ec.europa.eu/taxation_customs/tedb/taxDetails.html)

<sup>576</sup> OECD and EEA (2014), *Database on instruments used for environmental policy*, Accessed 3<sup>rd</sup> September 2014, [http://www2.oecd.org/ecoinst/queries/All\\_Information.aspx](http://www2.oecd.org/ecoinst/queries/All_Information.aspx)

<sup>577</sup> Agencia Tributaria (2013), 9. *Impuesto sobre las ventas minoristas de determinados hidrocarburos*, p. 13, Accessed 3<sup>rd</sup> September 2014, [http://www.agenciatributaria.es/static\\_files/AEAT/Aduanas/Contenidos\\_Privados/Impuestos\\_especiales/Estudio\\_relativo\\_2012/9VENTASMINORISTAS.docx](http://www.agenciatributaria.es/static_files/AEAT/Aduanas/Contenidos_Privados/Impuestos_especiales/Estudio_relativo_2012/9VENTASMINORISTAS.docx)

of Ley 15/2012 de 27 de Diciembre (Law 15/2012 of 27 December),<sup>578</sup> a levy equivalent to 22% on the value of electricity generated by hydroelectric plants is applied on the value on the use of inland waters. Revenues from this tax are invested to protect and reinforce water infrastructure in Spain.

- According to Art. 112 bis of Ley 15/2012, hydroelectric installations with power output equal or less than 50MW enjoy a reduction of 90% on this tax.<sup>579</sup>
- Expected revenues for this tax in 2013 were estimated to be €298 million, equivalent to 0.02% of GDP.<sup>580,581</sup>
- An *Impuesto especial sobre la electricidad* (Special Tax on Electricity) has been levied following approval of the Ley 66/1997 (Law 66/1997)<sup>582</sup> and it is regulated through the Ley 38/1992 of 28<sup>th</sup> December.
- The tax was originally introduced to “compensate” fiscal transfers to coal mines and is now applied to the production or import of electricity. The tax has been revised over the years and is currently calculated based on the following formula:<sup>583</sup>

$$4,864 \times (\text{contracted power} + \text{power consumed}) \times 1,05113$$

- Exemptions are granted for electricity delivered in the framework of diplomatic relations or international organisations; for consumption in third countries in the framework of international agreements, international aviation and navigation.<sup>584</sup>

---

<sup>578</sup> Government of Spain (2012), *Ley 15/2012, de 27 de diciembre, de medidas fiscales para la sostenibilidad energética*, Accessed 19th September 2014, [http://www.boe.es/diario\\_boe/txt.php?id=BOE-A-2012-15649](http://www.boe.es/diario_boe/txt.php?id=BOE-A-2012-15649)

<sup>579</sup> Government of Spain (2012), *Ley 15/2012, de 27 de diciembre, de medidas fiscales para la sostenibilidad energética*, Accessed 19th September 2014, [http://www.boe.es/diario\\_boe/txt.php?id=BOE-A-2012-15649](http://www.boe.es/diario_boe/txt.php?id=BOE-A-2012-15649)

<sup>580</sup> Economics for Energy (2013), *Impuestos energético-ambientales en España* [Informe 2013], Accessed 23<sup>rd</sup> September 2014, [http://eforenergy.org/docpublicaciones/informes/Informe\\_Completo\\_EfE\\_2013.pdf](http://eforenergy.org/docpublicaciones/informes/Informe_Completo_EfE_2013.pdf)

<sup>581</sup> Agencia Tributaria (2014), *Informe Anual de Recaudacion Tributaria: AÑO 2013*, Accessed 24<sup>th</sup> September 2014, [http://www.agenciatributaria.es/static\\_files/AEAT/Estudios/Estadisticas/Informes\\_Estadisticos/Informes\\_Anuales\\_de\\_Recaudacion\\_Tributaria/Ejercicio\\_2013/IART\\_13.pdf](http://www.agenciatributaria.es/static_files/AEAT/Estudios/Estadisticas/Informes_Estadisticos/Informes_Anuales_de_Recaudacion_Tributaria/Ejercicio_2013/IART_13.pdf)

<sup>582</sup> Government of Spain (1997), *Ley 66/1997, de 30 de diciembre, de Medidas Fiscales, Administrativas y del Orden Social* (Law 66/1997), Accessed 3<sup>rd</sup> September 2014, [https://www.boe.es/diario\\_boe/txt.php?id=BOE-A-1997-28053](https://www.boe.es/diario_boe/txt.php?id=BOE-A-1997-28053)

<sup>583</sup> Agencia Tributaria (2013), *6. IMPUESTO SOBRE LA ELECTRICIDAD*, p. 18, Accessed 3<sup>rd</sup> September 2014, [http://www.agenciatributaria.es/static\\_files/AEAT/Aduanas/Contenidos\\_Privados/Impuestos\\_especiales/Estudio\\_relativo\\_2012/6ELECTRICIDAD.docx](http://www.agenciatributaria.es/static_files/AEAT/Aduanas/Contenidos_Privados/Impuestos_especiales/Estudio_relativo_2012/6ELECTRICIDAD.docx)

<sup>584</sup> European Commission (2014), *Taxes in Europe Database*, Accessed 9<sup>th</sup> September 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetails.html](http://ec.europa.eu/taxation_customs/tedb/taxDetails.html)

- In 2012, the tax generated revenues of €1.6 billion, equivalent to 0.15% of Spanish GDP.<sup>585</sup>
- Since 2013, Spain has implemented taxes on the production of electric energy, the production of radioactive fuel and on the storage of radioactive waste. These taxes are regulated under *Ley 15/2012* (Law 15/2012)<sup>586</sup>:
- A 7% charge on the value of production of electric energy has been applied to power generators since January 2013. No data was found on the revenues generated from this charge. Exemptions are granted to facilities producing electricity for self-consumption, manufacturers and imports of electricity for self-consumption, manufacture, imports or intra-EU acquisition of electricity for use in chemical reduction and electrolytic processes, mineralogical and metallurgical processes.<sup>587</sup>
- A tax on the production of radioactive waste (*producción combustible nuclear gastado*) is levied on the production of used nuclear fuel and radioactive waste from nuclear power generation. The tax rate for nuclear fuel is calculated according to the kilograms of heavy metal content (uranium and plutonium) in the nuclear fuel produced in a given tax year and according to the amount of nuclear fuel extracted from the reactor. The tax rate on radioactive waste is calculated on the cubic meters of intermediate, low and very low radioactive level waste temporarily stored in the power plant.<sup>588</sup> The rates are shown in Table 16-4. No data was found on revenues from this tax.

**Table 16-4: Tax Rates Applied on Production of Radioactive Waste**

Type of Waste	Tax rate (€)	Unit
Uranium and Plutonium	2.190	kg
Low – Intermediate waste	6.000	m <sup>3</sup>
Low	1.000	m <sup>3</sup>

Source: Agencia Tributaria (2013), 6. *Impuesto Sobre La Electricidad*, Accessed 3<sup>rd</sup> September 2014, [www.agenciatributaria.es/AEAT.internet/Inicio\\_es\\_ES/La\\_Agencia\\_Tributaria/Memorias\\_y\\_estadisticas\\_tr](http://www.agenciatributaria.es/AEAT.internet/Inicio_es_ES/La_Agencia_Tributaria/Memorias_y_estadisticas_tr)

<sup>585</sup> Agencia Tributaria (2013), 6. *IMPUESTO SOBRE LA ELECTRICIDAD*, p. 18, Accessed 3<sup>rd</sup> September 2014, [http://www.agenciatributaria.es/static\\_files/AEAT/Aduanas/Contenidos\\_Privados/Impuestos\\_especiales/Estudio\\_relativo\\_2012/6ELECTRICIDAD.docx](http://www.agenciatributaria.es/static_files/AEAT/Aduanas/Contenidos_Privados/Impuestos_especiales/Estudio_relativo_2012/6ELECTRICIDAD.docx)

<sup>586</sup> Government of Spain (2012), *Ley 15/2012, de 27 de diciembre, de medidas fiscales para la sostenibilidad energética* (Law 15/2012), Accessed 3<sup>rd</sup> September 2014, [http://www.boe.es/diario\\_boe/txt.php?id=BOE-A-2012-15649](http://www.boe.es/diario_boe/txt.php?id=BOE-A-2012-15649)

<sup>587</sup> European Commission (2014), *Taxes in Europe Database*, Accessed 2<sup>nd</sup> September 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetails.html](http://ec.europa.eu/taxation_customs/tedb/taxDetails.html)

<sup>588</sup> Government of Spain (2012), *Ley 15/2012, de 27 de diciembre, de medidas fiscales para la sostenibilidad energética* (Law 15/2012), Accessed 3<sup>rd</sup> September 2014, [http://www.boe.es/diario\\_boe/txt.php?id=BOE-A-2012-15649](http://www.boe.es/diario_boe/txt.php?id=BOE-A-2012-15649)

- The tax on the storage of radioactive waste (*almacenamiento combustible nuclear gastado*) is in place to address the cost linked to the centralized warehousing of radioactive waste. The tax is calculated according to the difference in weight of heavy metal content in nuclear fuel stored between the beginning and the end of a tax year and on the volume of radioactive waste produced. The rates are shown in Table 16-5. No data was found on revenues from this specific tax.

**Table 16-5: Tax Rates Applies on Storage of Radioactive Waste**

Type of Waste	Tax Rate (€)	Unit
Heavy metal content	70	kg
High radioactive level waste	30,000	m <sup>3</sup>
Low – Intermediate radioactive level waste	10,000	m <sup>3</sup>
Very low radioactive level waste	2,000	m <sup>3</sup>

Source: European Commission (2014), *Taxes in Europe Database*, Accessed 2<sup>nd</sup> September 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetails.html](http://ec.europa.eu/taxation_customs/tedb/taxDetails.html)

- The above three taxes yielded €1.570 million in 2013, equivalent to 0.15% of Spanish GDP.<sup>589</sup>

➤ **Coal and coke:**

- A special excise duty on coal (*Impuesto especial sobre el carbon*) has been in place in Spain since 2005, following the introduction of the Ley 22/2005 of 18<sup>th</sup> November).<sup>590</sup> The excise duty was introduced following the transposition of the EU Energy Taxation Directive (2003/96/EC) and aims to tax the extraction, production and consumption of coal in Spain. The tax is calculated on the energetic value of the product (GJ).<sup>591</sup>

<sup>589</sup> Agencia Tributaria (2014), *Informe Anual de Recaudación Tributaria: AÑO 2013*, Accessed 24<sup>th</sup> September 2014,

[http://www.agenciatributaria.es/static\\_files/AEAT/Estudios/Estadísticas/Informes\\_Estadísticos/Informes\\_Anuales\\_de\\_Recaudación\\_Tributaria/Ejercicio\\_2013/IART\\_13.pdf](http://www.agenciatributaria.es/static_files/AEAT/Estudios/Estadísticas/Informes_Estadísticos/Informes_Anuales_de_Recaudación_Tributaria/Ejercicio_2013/IART_13.pdf)

<sup>590</sup> Government of Spain (2005), Ley 22/2005, de 18 de noviembre, *por la que se incorporan al ordenamiento jurídico español diversas directivas comunitarias en materia de fiscalidad de productos energéticos y electricidad y del régimen fiscal común aplicable a las sociedades matrices y filiales de estados miembros diferentes, y se regula el régimen fiscal de las aportaciones transfronterizas a fondos de pensiones en el ámbito de la Unión Europea*, Accessed 19<sup>th</sup> September 2014,

<http://www.boe.es/buscar/doc.php?id=BOE-A-2005-19003>

<sup>591</sup> Economics for Energy (2013), *Impuestos energético-ambientales en España [Informe 2013]*, Accessed URL: [http://eforenergy.org/docpublicaciones/informes/Informe\\_Completo\\_EfE\\_2013.pdf](http://eforenergy.org/docpublicaciones/informes/Informe_Completo_EfE_2013.pdf)

- For professional uses (exception made for electricity production and cogeneration) the rate is €0.15 per GJ, while coal consumed for other uses is taxed at €0.65 per GJ.
- Coal and Coke used for power generation and cogeneration of electricity and heat, for electrolytic and metallurgical processes, mineralogical processes and as a fuel for domestic consumption and any other use that does not involve combustion are exempt from this excise duty.<sup>592</sup>
- According to data provided by the *Agencia Tributaria*, the tax on carbon yielded €148 million in 2013, equivalent to 0.014% of Spanish GDP.<sup>593</sup>

## 16.2 Transport Taxes (Excluding Transport Fuels)

### ➤ Vehicle registration tax (Impuesto Especial sobre Determinados Medios de Transporte):<sup>594</sup>

- A tax on certain means of transport has been in place since January 1993, following approval of *Ley 38/1992* (Law 34/1992) and *Real Decreto 1165/1995* (Royal Decree No 1165/1995 on the regulation of excise duties).<sup>595</sup>
- The tax covers the registration of small vessels and boats for pleasure and or water sports (with a total length of seven and half meters), mechanically powered aircrafts and self-propelled vehicles powered by an engine.
- The amount of the tax varies according to different criteria. In case of a used product, the tax is calculated according to the market value and CO<sub>2</sub> emissions per kilometre. For motorcycles and quads, the tax is also differentiated to take into account overall engine power.<sup>596</sup>
- A full exemption is granted for cars and vehicles registered for use by handicapped people and a 50% reduction for cars used by large families.

---

<sup>592</sup> European Commission (2014), *Taxes in Europe Database*, Accessed 2<sup>nd</sup> September 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetails.html](http://ec.europa.eu/taxation_customs/tedb/taxDetails.html)

<sup>593</sup> Agencia Tributaria (2014), *Informe Anual de Recaudacion Tributaria: AÑO 2013*, Accessed 24 September 2014, [http://www.agenciatributaria.es/static\\_files/AEAT/Estudios/Estadisticas/Informes\\_Estadisticos/Informes\\_Anuales\\_de\\_Recaudacion\\_Tributaria/Ejercicio\\_2013/IART\\_13.pdf](http://www.agenciatributaria.es/static_files/AEAT/Estudios/Estadisticas/Informes_Estadisticos/Informes_Anuales_de_Recaudacion_Tributaria/Ejercicio_2013/IART_13.pdf)

<sup>594</sup> European Commission (2014), *Taxes in Europe Database*, Accessed 2<sup>nd</sup> September 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetails.html](http://ec.europa.eu/taxation_customs/tedb/taxDetails.html)

<sup>595</sup> European Commission (2014), *Taxes in Europe Database*, Accessed 2<sup>nd</sup> September 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetails.html](http://ec.europa.eu/taxation_customs/tedb/taxDetails.html)

<sup>596</sup> Agencia Tributaria (2014), *Impuesto especial sobre determinados medios de transporte*, Accessed 2<sup>nd</sup> September 2014, [http://www.agenciatributaria.es/AEAT/Contenidos\\_Comunes/La\\_Agencia\\_Tributaria/Modelos\\_y\\_formularios/Declaraciones/Modelos\\_500\\_al\\_599/576/Instrucciones/instr\\_mod576.pdf](http://www.agenciatributaria.es/AEAT/Contenidos_Comunes/La_Agencia_Tributaria/Modelos_y_formularios/Declaraciones/Modelos_500_al_599/576/Instrucciones/instr_mod576.pdf)

- General tax rates applied at the national level on different categories of vehicles are shown Table 16-6.<sup>597</sup> Please also note that different rates are applied to motorcycles. Motorcycles with engine power equal or above 74 kW (100 cv) are subject to rates calculated according to CO<sub>2</sub> emissions.

**Table 16-6: Special Vehicle Tax Rates Applied at the National Level**

Category (Epigraph)	Type of Vehicle	CO2 Emissions (g per km)	Special Tax Rate Applied
1a	All vehicles (except quads and motorcycles)	≤ 120	0%
1b	Single engine without internal combustion (except quads)	0	
6	Motorcycles (with engine power ≥ 74 kW)	≤ 100	
2	All vehicles (except quads and motorcycles)	between 120 - 160	4,75%
7	Motorcycles (with engine power ≥ 74 kW)	between 100 - 120	
3	All vehicles (except quads and motorcycles)	between 160 - 200	9,75%
8	Motorcycles (with engine power ≥ 74 kW)	between 120 - 140	
4a	All vehicles (except quads and motorcycles)	≥ 200	14,75%
4b	All vehicles (except quads and motorcycles)	when no data is available	
4c	Motor homes	n/a	
4d	Quads		
4e	Jet Skis		
9a	Motorcycles (with engine power ≥ 74 kW)	≥ 140	
9c	Motorcycles (with engine power ≥ 74 kW)	when no data is available	

<sup>597</sup> Agencia Tributaria (2013), *Impuestos especiales - Estudio relativo al año 2012*, Accessed 3<sup>rd</sup> September 2014,

[http://www.agenciatributaria.es/AEAT.internet/Inicio\\_es\\_ES/La\\_Agencia\\_Tributaria/Memorias\\_y\\_estadisticas\\_tributarias/Estadisticas/Estadisticas\\_por\\_impuesto/Impuestos\\_especiales/Estudio\\_relativo\\_al\\_ano\\_2012/Estudio\\_relativo\\_al\\_ano\\_2012.shtml](http://www.agenciatributaria.es/AEAT.internet/Inicio_es_ES/La_Agencia_Tributaria/Memorias_y_estadisticas_tributarias/Estadisticas/Estadisticas_por_impuesto/Impuestos_especiales/Estudio_relativo_al_ano_2012/Estudio_relativo_al_ano_2012.shtml)



Category (Epigraph)	Type of Vehicle	CO <sub>2</sub> Emissions (g per km)	Special Tax Rate Applied
5b	Vessels and Leisure/Sport boats	n/a	12%
5c	Airplanes		
5a	Other (Not listed above)		

Sources: Government of Spain (2013), *Ley 38/1992, de 28 de diciembre, de Impuestos Especiales*, Accessed 9th September 2014, [http://noticias.juridicas.com/base\\_datos/Fiscal/I38-1992.html](http://noticias.juridicas.com/base_datos/Fiscal/I38-1992.html); and Economics for Energy (2013), *Impuestos energético-ambientales en España [Informe 2013]*, Accessed 9th September 2014, [http://eforenergy.org/docpublicaciones/informes/Informe\\_Completo\\_EfE\\_2013.pdf](http://eforenergy.org/docpublicaciones/informes/Informe_Completo_EfE_2013.pdf)

- The rates mentioned above are generally applied “by default” at national level if the autonomous communities do not take any action to increase them. However, autonomous communities are entitled to set local rates up to 15% higher than the national ones under the provisions laid down by Art. 51 of *Ley 22/2009 (Law 22/2009)*.<sup>598</sup>
- According to Art. 70 (par. b and c) of *Ley 38/1992*, Canary Island and Ceuta y Melilla (in particular the cities of Ceuta and Melilla)<sup>599</sup> are entitled to apply different tax rates than the rest of the regions.<sup>600</sup>
- Table 16-7 shows the rates applied for the autonomous communities which apply different tax rates for certain types of vehicles: Andalusia, Asturias, Balearic Islands, Canary Islands, Cantabria, Catalonia, Ceuta y Melilla and Extremadura:

Table 16-7: Special vehicle tax rates applied in the autonomous communities

Category (Epigraph)	Autonomous Community	Type of Vehicle	CO <sub>2</sub> Emissions (g per km)	Special Tax Rate
4a	Andalucía	All vehicles (except quads and motorcycles)	≥ 200	16,90%

<sup>598</sup> Government of Spain (2009), *Ley 22/2009, de 18 de diciembre, por la que se regula el sistema de financiación de las Comunidades Autónomas de régimen común y Ciudades con Estatuto de Autonomía y se modifican determinadas normas tributarias*, Accessed 22nd September 2014, [http://noticias.juridicas.com/base\\_datos/Fiscal/I22-2009.t3.html#a51](http://noticias.juridicas.com/base_datos/Fiscal/I22-2009.t3.html#a51)

<sup>599</sup> Agencia Tributaria (2014), *Impuesto especial sobre determinados medios de transporte*, Accessed 2nd September 2014, [http://www.agenciatributaria.es/AEAT/Contenidos\\_Comunes/La\\_Agencia\\_Tributaria/Modelos\\_y\\_formularios/Declaraciones/Modelos\\_500\\_al\\_599/576/Instrucciones/instr\\_mod576.pdf](http://www.agenciatributaria.es/AEAT/Contenidos_Comunes/La_Agencia_Tributaria/Modelos_y_formularios/Declaraciones/Modelos_500_al_599/576/Instrucciones/instr_mod576.pdf)

<sup>600</sup> Government of Spain (2013), *Ley 38/1992, de 28 de diciembre, de Impuestos Especiales*, Accessed 9th September 2014: [http://noticias.juridicas.com/base\\_datos/Fiscal/I38-1992.html](http://noticias.juridicas.com/base_datos/Fiscal/I38-1992.html)



Category (Epigraphe)	Autonomous Community	Type of Vehicle	CO2 Emissions (g per km)	Special Tax Rate
4b		All vehicles (except quads and motorcycles)	when no data is available	
4c		Motor homes	n/a	
4d		Quads		
4e		Jet Skis		
9a		Motorcycles (with engine power ≥ 74 kW)	≥ 140	
9c		Motorcycles (with engine power ≥ 74 kW)	when no data is available	
5b		Vessels and Leisure/Sport boats	n/a	13,80%
5c		Airplanes		
5a		Other (Not listed above)		
4a	Asturias	All vehicles (except quads and motorcycles)	≥ 200	16%
4b		All vehicles (except quads and motorcycles)	when no data is available	
4c		Motor homes	n/a	
4d		Quads		
4e		Jet Skis		
9a		Motorcycles (with engine power ≥ 74 kW)	≥ 140	
9c		Motorcycles (with engine power ≥ 74 kW)	when no data is available	
4a	Balearic Islands	All vehicles (except quads and motorcycles)	≥ 200	16%
4b		All vehicles (except quads and motorcycles)	when no data is available	
4c		Motor homes	n/a	
4d		Quads		
4e		Jet Skis		

Category (Epigraphe)	Autonomous Community	Type of Vehicle	CO2 Emissions (g per km)	Special Tax Rate
1a	Canary Islands	All vehicles (except quads and motorcycles)	≤ 120	0%
1b		Single engine without internal combustion (except quads)	0	
6		Motorcycles (with engine power ≥ 74 kW)	≤ 100	
2		All vehicles (except quads and motorcycles)	between 120 - 160	3,75%
7		Motorcycles (with engine power ≥ 74 kW)	between 100 - 120	
3		All vehicles (except quads and motorcycles)	between 160 - 200	8,75%
8		Motorcycles (with engine power ≥ 74 kW)	between 120 - 140	
4a		All vehicles (except quads and motorcycles)	≥ 200	13,75%
4b		All vehicles (except quads and motorcycles)	when no data is available	
4c		Motor homes	n/a	
4d		Quads		
4e		Jet Skis		
9a		Motorcycles (with engine power ≥ 74 kW)	≥ 140	
9c		Motorcycles (with engine power ≥ 74 kW)	when no data is available	
5b		Vessels and Leisure/Sport boats	n/a	11%
5c		Airplanes		
5a		Other (Not listed above)		
3	Cantabria	All vehicles (except quads and motorcycles)	between 160 - 200	11%
4a		All vehicles (except quads and motorcycles)	≥ 200	16%

Category (Epigraphe)	Autonomous Community	Type of Vehicle	CO2 Emissions (g per km)	Special Tax Rate
4b		All vehicles (except quads and motorcycles)	when no data is available	
4c		Motor homes	n/a	
4d		Quads		
4e		Jet Skis		
9a		Motorcycles (with engine power ≥ 74 kW)	≥ 140	
9c		Motorcycles (with engine power ≥ 74 kW)	when no data is available	
5b		Vessels and Leisure/Sport boats	n/a	13%
5c		Airplanes		
5a		Other (Not listed above)		
4a	Catalonia	All vehicles (except quads and motorcycles)	≥ 200	16%
4b		All vehicles (except quads and motorcycles)	when no data is available	
4c		Motor homes	n/a	
4d		Quads		
4e		Jet Skis		
9a		Motorcycles (with engine power ≥ 74 kW)	≥ 140	
9c		Motorcycles (with engine power ≥ 74 kW)	when no data is available	
1a	Ceuta y Melilla	All vehicles (except quads and motorcycles)	≤ 120	0%
1b		Single engine without internal combustion (except quads)	0	
6		Motorcycles (with engine power ≥ 74 kW)	≤ 100	
2		All vehicles (except quads and motorcycles)	between 120 - 160	

Category (Epigraphe)	Autonomous Community	Type of Vehicle	CO2 Emissions (g per km)	Special Tax Rate
7		Motorcycles (with engine power ≥ 74 kW)	between 100 - 120	
3		All vehicles (except quads and motorcycles)	between 160 - 200	
8		Motorcycles (with engine power ≥ 74 kW)	between 120 - 140	
4a		All vehicles (except quads and motorcycles)	≥ 200	
4b		All vehicles (except quads and motorcycles)	when no data is available	
4c		Motor homes	n/a	
4d		Quads		
4e		Jet Skis		
9a		Motorcycles (with engine power ≥ 74 kW)	≥ 140	
9c		Motorcycles (with engine power ≥ 74 kW)	when no data is available	
5b		Vessels and Leisure/Sport boats	n/a	
5c		Airplanes		
5a		Other (Not listed above)		
2		Extremadura	All vehicles (except quads and motorcycles)	
7	Motorcycles (with engine power ≥ 74 kW)		between 100 - 120	
3	All vehicles (except quads and motorcycles)		between 160 - 200	11%
8	Motorcycles (with engine power ≥ 74 kW)		between 120 - 140	
4a	All vehicles (except quads and motorcycles)		≥ 200	16%
4b	All vehicles (except quads and motorcycles)		when no data is available	

Category (Epigraphe)	Autonomous Community	Type of Vehicle	CO2 Emissions (g per km)	Special Tax Rate
4c		Motor homes	n/a	
4d		Quads		
4e		Jet Skis		
9a		Motorcycles (with engine power $\geq 74$ kW)	$\geq 140$	
9c		Motorcycles (with engine power $\geq 74$ kW)	when no data is available	
5b		Vessels and Leisure/Sport boats	n/a	13%
5c		Airplanes		
5a		Other (Not listed above)		

Source: Agencia Tributaria (2013), *Impuestos especiales - Estudio relativo al año 2012 - ANEXOS*, Accessed 4<sup>th</sup> September 2014, [www.agenciatributaria.es/static\\_files/AEAT/Aduanas/Contenidos\\_Privados/Impuestos\\_especiales/Estudio\\_relativo\\_2012/10ANEXOS.docx](http://www.agenciatributaria.es/static_files/AEAT/Aduanas/Contenidos_Privados/Impuestos_especiales/Estudio_relativo_2012/10ANEXOS.docx)

- In 2012, total revenues from the tax amounted to €339million, equivalent to 0.32% of GDP.<sup>601</sup> The tax is collected by the *Agencia Tributaria* (Spanish State Tax Agency).

➤ **Vehicle circulation tax (Impuesto sobre los Vehículos de Tracción Mecánica):**

- A tax on “mechanically powered vehicles” has been in place since November 1988, initially under the Municipal Road Tax (*Impuesto municipal sobre circulación de vehículos*) and now under Royal Legislative Decree No 2/2004 of 5 March.<sup>602</sup>
- The tax applies to the whole Spanish territory and is aimed at all vehicle owners. The tax is municipal but it is regulated at national level. All classes and categories of mechanically powered vehicles which are suitable for use on public highways or roads are subject to the tax. The tax lasts for one year and it is paid each first day of the year.

<sup>601</sup> Economics for Energy (2013), *Impuestos energético-ambientales en España [Informe 2013]*, Accessed 9<sup>th</sup> September 2014, [http://eforenergy.org/docpublicaciones/informes/Informe\\_Completo\\_EfE\\_2013.pdf](http://eforenergy.org/docpublicaciones/informes/Informe_Completo_EfE_2013.pdf)

<sup>602</sup> European Commission (2014), *Taxes in Europe Database*, Accessed 2<sup>nd</sup> September 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetails.html](http://ec.europa.eu/taxation_customs/tedb/taxDetails.html)

- Exemptions are provided for vehicles used by disabled people, diplomatic vehicles, tractors, agricultural machines, buses and coaches used for public transportation. Moreover, according to Art. 95 of the *Real Decreto* 2/2004 (Royal Decree 2/2004) local governments may provide an exemption from the tax of 75% for low-polluting cars or a full exemption for vehicles older than 25 years.<sup>603</sup>
- The tax rate is calculated according to the engine rating, type of vehicle and weight (for certain vehicles). National Rates are set through Art. 95 of the *Real Decreto Legislativo* 2/2004<sup>604</sup> (see Table 16-8) and the autonomous communities are entitled a coefficient between 1 and 2 to these taxes.

Table 16-8: Vehicle Circulation Tax Rates (2014)

Type of Vehicle		Tax Rate €
Cars	less than 8 taxable horsepower	12.62
	between 8 - 11,99 taxable horsepower	34.08
	between 12 - 15,99 taxable horsepower	71.94
	between 16 - 19,99 taxable horsepower	89.61
	more than 20 taxable horsepower	112
Buses	less than 22 seats	83.3
	between 21 - 50 seats	118.64
	more than 50 seats	148.3
Trucks	less than 1000 kgs payload	42.28
	between 1000 - 2999 kgs payload	83.3
	between 2999 - 9999 kgs payload	118.64
	more than 9999 kgs payload	148.3
Tractors	less than 16 taxable horsepower	17.67

<sup>603</sup> Government of Spain (2004), *Real Decreto Legislativo* 2/2004, de 5 de marzo, por el que se aprueba el texto refundido de la Ley Reguladora de las Haciendas Locales., Accessed 9th September 2014, <http://www.boe.es/buscar/act.php?id=BOE-A-2004-4214>

<sup>604</sup> Government of Spain (2014), *Real Decreto Legislativo* 2/2004, de 5 de marzo, por el que se aprueba el texto refundido de la Ley Reguladora de las Haciendas Locales (Vigente hasta el 15 de Julio de 2015), Accessed 22nd September, 2014, [http://noticias.juridicas.com/base\\_datos/Admin/rdleg2-2004.t2.html#c2s3ss4](http://noticias.juridicas.com/base_datos/Admin/rdleg2-2004.t2.html#c2s3ss4)

Type of Vehicle		Tax Rate €
	between 16 - 25 taxable horsepower	27.77
	more than 25 taxable horsepower	83.3
Trailers pulled by motor vehicles	between 750 - 1000 kgs	17.67
	between 1000 - 2999 kgs payload	27.77
	more than 2999 kgs payload	83.3
Motorcycles	up to 125 Cm3	4.42
	between 125 - 250 cm3	7.57
	between 250 - 500 cm3	15.15
	between 500 to 1000 cm3	30.29
	more than 1000 cm3	60.58

- In 2012, total revenue from the tax amounted to €2,243 million, equivalent to 0.22 % of GDP and 0.67% of total tax revenue.<sup>605</sup>

➤ **Company car treatment:**

- Spain has a specific tax benefit on company cars. The taxable benefit is calculated as a percentage of the cost price and is equivalent to 20% of the acquisition cost.<sup>606</sup> According to Art. 43 of Ley 35/2006 (Law 35/2006), when an employee uses the car of its employer, the annual benefit would be equal to 20% of the market value of the car.<sup>607,608</sup>

---

<sup>605</sup> European Commission (2014), Taxes in Europe Database, Accessed 22<sup>nd</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetails.html](http://ec.europa.eu/taxation_customs/tedb/taxDetails.html)

<sup>606</sup> Harding, M. (2014), "Personal Tax Treatment of Company Cars and Commuting Expenses: Estimating the Fiscal and Environmental Costs", *OECD Taxation Working Papers*, No. 20, OECD Publishing, pp. 53.

<sup>607</sup> Government of Spain (2014), Ley 35/2006, de 28 de noviembre, del Impuesto sobre la Renta de las Personas Físicas y de modificación parcial de las leyes de los Impuestos sobre Sociedades, sobre la Renta de no Residentes y sobre el Patrimonio. Accessed 22 september 2014, [http://noticias.juridicas.com/base\\_datos/Fiscal/I35-2006.t3.html#a42](http://noticias.juridicas.com/base_datos/Fiscal/I35-2006.t3.html#a42)

<sup>608</sup> PWC (2014), International Assignment Services : taxation of International Assignees Country – Spain, Accessed 22<sup>nd</sup> September 2014, <http://www.pwc.com/us/en/hr-international-assignment-services/assets/spain-folio.pdf>

- Commuting expenses are not deductible in Spain for company cars, reimbursement for public transport costs is exempt from taxation to a maximum level.<sup>609</sup>
- According to Art. 65 of *Ley 38/1992*, there are exemptions currently in place for certain vehicles used only for commercial, industrial and scientific activities.

## 16.3 Pollution and Resource Taxes

### ➤ Landfill and incineration taxes:

- No national landfill or incineration tax exists in Spain, although Article 16 of the Spanish Waste Act (*Ley 22/2011, de 28 de julio, de residuos y suelos contaminados*) gives the possibility for waste authorities to introduce economic and fiscal measures in order to promote waste prevention and separate collection including landfill and incineration taxes on municipal waste.<sup>610</sup> The same law gives autonomous communities (i.e. the Spanish Regions) the possibility to impose regional taxes on waste (art. 16.1), such as the Catalanian landfill and waste incineration tax, or Murcia's landfill tax.
- Nine autonomous communities have introduced fiscal instruments on waste:
  - Catalonia introduced taxes on municipal waste, either through incineration or landfill.
  - Cantabria introduced a landfill tax on industrial non-hazardous waste.
  - Andalusia introduced a landfill tax on hazardous waste and on radioactive waste.
  - Valencia, Murcia, Madrid and la Rioja introduced a general tax on waste management except for the municipal waste. All of them except La Rioja included also a landfill tax on construction waste.
  - Castile and Leon and Extremadura introduced a tax on the landfill of any type of waste (on municipal, industrial, hazardous and construction waste)

---

<sup>609</sup> Harding, M. (2014), "Personal Tax Treatment of Company Cars and Commuting Expenses: Estimating the Fiscal and Environmental Costs", *OECD Taxation Working Papers*, No. 20, OECD Publishing, pp. 36-44.

<sup>610</sup> Ignasi Puig Ventosa, I. (2011) *Landfill and Waste incinerated taxes – the Spanish case*, [http://ec.europa.eu/environment/waste/pdf/strategy/5.%20Landfill%20and%20incineration%20taxes%20in%20Spain%20Ignasi%20Puig%20\(2\).pdf](http://ec.europa.eu/environment/waste/pdf/strategy/5.%20Landfill%20and%20incineration%20taxes%20in%20Spain%20Ignasi%20Puig%20(2).pdf)



- In 2010, revenues from all waste related taxes in Spain amounted to about €315 million<sup>611</sup>, representing 0.03% of its GDP (based on Eurostat data on GDP measures).
- *Tax on municipal waste in Catalonia*: A landfill tax was introduced in Catalonia in 2004.<sup>612,613</sup> The tax rate has been modified several times. As of 2014 the tax rate applied is €15.80 per tonne for sorted municipal waste and €25.40 per tonne of controlled municipal waste from local authorities that do not operate a separate collection of organic waste yet, according to the development project approved by the Waste Agency of Catalonia. Incineration has been charged since 2011. As of 2014 the tax rate is €7.40 per tonne for incinerated municipal waste and €18.60 per tonne for incinerated municipal waste from local authorities that don't do a separate collection of organic waste, according to the development project approved by the Waste Agency of Catalonia (Article 15 of *Ley 8/2008 de 10 de julio de financiación de las infraestructuras de gestión de los residuos y de los cánones sobre la disposición del desperdicio de los residuos*).<sup>614,615</sup>
- Landfill managers collect the money from municipalities and other customers and pass it on to a special fund (*Fons de Gestió de Residus*) created by the regional government.<sup>616</sup> In 2011, revenues generated accounted for €24.4 million.<sup>617</sup> At least 50% of these revenues are 'devoted to the treatment of organic waste, including treatments that reduce the quantity or improve the quality of waste for disposal, especially regarding the reduction of the organic fraction contained in the residual fraction' (Law 8/2008). The remaining part is used for 'the separate collection of organic matter, to the collection and recycling of other waste fractions, to other forms of material recovery and to promote awareness

---

<sup>611</sup> European Environment Agency (2012), *Environmental Fiscal Reform – Illustrative Potential in Spain*, EEA Staff Position Note, September 2012, [http://www.eea.europa.eu/highlights/fiscal-reform-can-create-jobs/EEABriefingNoteforETRWorkshop\\_Madrid.pdf](http://www.eea.europa.eu/highlights/fiscal-reform-can-create-jobs/EEABriefingNoteforETRWorkshop_Madrid.pdf)

<sup>612</sup> ADEME (2008), *Taxes sur l'élimination des déchets en Europe: quel enseignement pour la France?*, Novembre 2008, <http://www.ademe-et-vous.ademe.fr/sites/default/files/strategie-etudes/16/ademe-strategie-et-etudesn16.pdf>

<sup>613</sup> ENDS Europe (2003) *Catalonia introduces Spain's first landfill tax*, Accessed 12<sup>th</sup> August 2014, <http://www.endseurope.com/8305>

<sup>614</sup> Ignasi Puig Ventosa, I. (2011) *Landfill and Waste incinerated taxes – the Spanish case*, [http://ec.europa.eu/environment/waste/pdf/strategy/5.%20Landfill%20and%20incineration%20taxes%20in%20Spain%20Ignasi%20Puig%20\(2\).pdf](http://ec.europa.eu/environment/waste/pdf/strategy/5.%20Landfill%20and%20incineration%20taxes%20in%20Spain%20Ignasi%20Puig%20(2).pdf)

<sup>615</sup> Government of Spain (2014), *Ley 8/2008, de 10 de julio, de financiación de las infraestructuras de gestión de los residuos y de los cánones sobre la disposición del desperdicio de los residuos* (Vigente hasta el 31 de Enero de 2014), Accessed 24<sup>th</sup> September 2014, [http://noticias.juridicas.com/base\\_datos/Anterior/r3-ca-l8-2008.html](http://noticias.juridicas.com/base_datos/Anterior/r3-ca-l8-2008.html)

<sup>616</sup> Puig Ventosa, I., (2004), *Green Budget News*, no. 8-6/2004, Accessed 12<sup>th</sup> August 2014, <http://files.foes.de/de/downloads/GreenBudgetNews/GBN8.pdf>

<sup>617</sup> OECD and EEA (2014) *Database on instruments used for environmental policy*, Accessed 12<sup>th</sup> August 2014, [http://www2.oecd.org/ecoinstr/queries/All\\_Information.aspx](http://www2.oecd.org/ecoinstr/queries/All_Information.aspx)

campaigns and environmental education' (Law 8/2008)<sup>618</sup>. Between 85-90% of these funds are therefore redistributed to local municipalities responsible for waste collection, transportation and treatment (based on a per tonne basis, in some cases varying with the level of contamination of the waste) to improve the efficiency of their activities, in particular the collection and treatment of organic waste. Funds from the tax are a powerful incentive for change in management of waste practices, and were recently responsible for an increase in the development of bio-waste recycling in Catalonia<sup>619</sup>. Data from 2010 shows that almost 40% of waste collected was sorted in Catalonia.<sup>620</sup>

➤ **Other regional waste management taxes:**

- Other regional waste management taxes are payable by users of public and private landfills for hazardous waste from industrial, construction and demolition activities, as well as for municipal waste in Cantabria, Castile and Leon and Extremadura. Table 16-9 sets out the various charges in seven autonomous communities.

**Table 16-9: Regional Waste Management Taxes**

Autonomous Community	Introduction Date [Last Revision Date]	Type of Waste Subject to the Tax	Rate (in € per tonne)	Revenues Generated in 2011 (in million €)
Andalusia	2004	Hazardous	From 15 to 35	0.4 (2011) 0.17 (2012)
Cantabria	2010 [2011]	Industrial	7	No data available
Castile and Leon	2012 [2012]	All type of waste (Municipal, industrial, hazardous, construction)	From 3 to 35	No data available
Extremadura	2012	All type of waste (Municipal, industrial, hazardous, construction)	From 3 to 15	No data available

<sup>618</sup> Puig Ventosa, I., Gonzales, A.C., Jofra Sora, M., (2012) Landfill and waste incineration taxes in Catalonia, Spain, in Kreiser, L., Yabar, A., Herrera, P., Milne, J.E., Aishabor, H. (Eds) *Green Taxation and Environmental Sustainability. Critical Issues in Environmental Taxation*, Vol. XII, p. 244-257

<sup>619</sup> Francesc Giro (2011) *Strategies and experiences in Bio-waste management in Catalonia*, Accessed 4<sup>th</sup> September 2014, <http://www.ecotech.cat/grecia/ARC.pdf>

<sup>620</sup> Puig Ventosa, I., et al. (2012) Landfill and Waste Incineration Taxes in Catalonia (Spain), in *Critical Issues in Environmental Taxation*, Volume XI

Autonomous Community	Introduction Date [Last Revision Date]	Type of Waste Subject to the Tax	Rate (in € per tonne)	Revenues Generated in 2011 (in million €)
La Rioja	2013	Industrial and hazardous	From 4 to 21	No data available
Madrid	2003 [2012]	Industrial, hazardous and construction	From 5 to 8, 1 per m <sup>3</sup> for construction and demolition waste	3.0
Murcia	2006 [2006]	Industrial, hazardous and construction	From 3 to 15	1.5
Valencian Community	2013	Industrial, hazardous and construction	From 0.5 to 10	No data available

Source: OECD and EEA (2014) *Database on instruments used for environmental policy*, Accessed 12<sup>th</sup> August 2014, [http://www2.oecd.org/ecoinst/queries/All\\_Information.aspx](http://www2.oecd.org/ecoinst/queries/All_Information.aspx)

- Rates vary according to whether the waste is recoverable or not and hazardous or not, while in Castille and León a further distinction is made - whether the landfills are managed locally or not. In Andalusia, tax revenues served environmental policies in those regions. In Extremadura, revenues are also used for environmental actions, while in La Rioja, Cantabria and Castile and Leon, revenues are dedicated to finance programmes for the protection of the environment. Revenues generated in Madrid (€3 million in 2011) were not used for specific policies.<sup>621</sup> In the Valencian Community, revenues are used for regional government expenditures in planning, monitoring, management and disposal of waste.
- Radioactive waste is subject to a special tax in Andalusia since 2004, of €2,000 to €10,000 per m<sup>3</sup>, which accounted to €5 million in revenue in 2011.<sup>622</sup>

---

<sup>621</sup> Ignasi Puig Ventosa, I. (2011) *Landfill and Waste incinerated taxes – the Spanish case*, Accessed 4<sup>th</sup> September 2014, [http://ec.europa.eu/environment/waste/pdf/strategy/5.%20Landfill%20and%20incineration%20taxes%20in%20Spain%20Ignasi%20Puig%20\(2\).pdf](http://ec.europa.eu/environment/waste/pdf/strategy/5.%20Landfill%20and%20incineration%20taxes%20in%20Spain%20Ignasi%20Puig%20(2).pdf)

<sup>622</sup> OECD and EEA (2014) *Database on instruments used for environmental policy*, Accessed 12<sup>th</sup> August 2014, [http://www2.oecd.org/ecoinst/queries/All\\_Information.aspx](http://www2.oecd.org/ecoinst/queries/All_Information.aspx)

## ➤ Air Pollution Tax:

- No tax is collected at federal or state level, but several regional or autonomous community taxes are in place. For SO<sub>2</sub> emissions, rates range from €33 to €94 per tonne, while for NO<sub>2</sub>, rates vary from €50 to €140 per tonne emitted. The rates are however low compared to Nordic countries such as Denmark and Sweden. Moreover, revenues from these taxes have dropped from €28 million in 2005 to €7 million in 2010; while in Denmark, sulphur and nitrogen taxes raised €10 million in 2010<sup>623</sup>.
- In Andalusia, a tax on air pollution was introduced in 2004 to finance environmental expenditure programmes and relief operations in case of environmental disasters. Exemptions are in place for landfills receiving more than 10 tonnes daily, the intensive breeding of poultry and pigs, as well as from combustions of biofuels, while deductions apply for investments in infrastructure and other equipment for tackling pollution.<sup>624</sup> Article 31 of the Ley 18/2003 (*Ley 18/2003 de 29 de diciembre, por la que se aprueban medidas fiscales y administrativas*) also fixes a minimum exempt limit of 3 polluting units that a taxpayer can reduce from the tax base. In 2012, revenues from the tax amounted to €5.1 million.
- The Murcia region introduced the same type of scheme in 2006, for financing the following environmental programmes: waste management, repairing environmental damages, rising environmental awareness, monitoring emission level, water sanitation and improving costal water quality. The same minimum exempt limit of 3 polluting units that a taxpayer can reduce from the tax base also applies (as laid down by article 47 of Ley 9/2005, de 29 de diciembre, de *Medidas Tributarias en materia de Tributos Cedidos y Tributos Propios año 2006*).<sup>625</sup> In 2011, revenues from the tax amounted to €0.4 million. The tax base and rate in both communities is set out in Table 16-10.

---

<sup>623</sup> European Environment Agency (2012), *Environmental Fiscal Reform – Illustrative Potential in Spain*, EEA Staff Position Note, Accessed 4<sup>th</sup> September 2014, [http://www.eea.europa.eu/highlights/fiscal-reform-can-create-jobs/EEABriefingNoteforETRWorkshop\\_Madrid.pdf](http://www.eea.europa.eu/highlights/fiscal-reform-can-create-jobs/EEABriefingNoteforETRWorkshop_Madrid.pdf)

<sup>624</sup> Junta de Andalucía (2003), LEY 18/2003, de 29 de diciembre, por la que se aprueban medidas fiscales y administrativas, Accessed 24<sup>th</sup> September 2014, <http://www.juntadeandalucia.es/boja/2003/251/6>

<sup>625</sup> Presidencia de la region de Murcia (2006), Ley 9/2005, de 29 de diciembre, de Medidas Tributarias en materia de Tributos Cedidos y Tributos Propios año 200, Accessed 24<sup>th</sup> September 2014, [http://noticias.juridicas.com/base\\_datos/CCAA/mu-l9-2005.html](http://noticias.juridicas.com/base_datos/CCAA/mu-l9-2005.html)

Table 16-10: Air Pollution Taxes in Andalusia and Murcia

Tax base	Rate in €
Variable rate per emissions (emissions below 10 pollution units per year). 1 pollution unit = SO <sub>x</sub> emissions / 150 = NO <sub>x</sub> emissions / 100 = VOC emissions / 100 = NH <sub>3</sub> emissions / 10. (All emissions in t)	5,000
Variable rate per emissions (emissions between 10 and 20 pollution units per year)	8,000
Variable rate per emissions (emissions between 20 and 30 pollution units per year)	10,000
Variable rate per emissions (emissions between 30 and 50 pollution units per year)	12,000
Variable rate per emissions (emissions above 50 pollution units per year)	14,000

Source: OECD and EEA (2014) Database on Instruments Used for Environmental Policy, Accessed 12<sup>th</sup> August 2014, [www2.oecd.org/eoicst/queries/All\\_Information.aspx](http://www2.oecd.org/eoicst/queries/All_Information.aspx)

- In Aragon an air pollution tax was introduced in 2006 to finance restoration activities in environmental areas degraded by hazardous activities such as natural resource depletion, landscape and territorial degradation. Deductions and exemptions for this tax apply (for the same activities as in Andalusia). Additionally, CO<sub>2</sub> emissions from installations covered by the Emissions Trading System (article 23.b of Ley 13/2005 de 30 de diciembre, de Medidas Fiscales y Administrativa en materia de Tributos Cedidos y Tributos Propios de la Comunidad Autónoma de Aragón), and emission quantities below certain thresholds (according to Article 26 of Ley 13/2005) are exempt from the payment of the tax.<sup>626</sup> The reduction to the pollution units is of 150 tons per annum for SO<sub>x</sub> emissions, 100 tons per annum for NO<sub>x</sub> emissions and 100 kilotons per annum for CO<sub>2</sub> emissions. In 2012, tax revenues were equivalent to €5.4 million, and different tax rates were set according to the quantity of nitrogen oxide, carbon dioxide and sulphur dioxide emitted - as shown in Table 16-11.

Table 16-11: Air Pollution Taxes in Aragon

Tax Base	Rate in €
CO <sub>2</sub> emissions	0.2000 per tonne
NO <sub>x</sub> emissions	50 per tonne

<sup>626</sup> Parlamento Andalucía (2003), *Ley de Medidas para la Vivienda Protegida y el Suelo*, Accessed 24<sup>th</sup> September 2014, <http://www.parlamentodeandalucia.es/webdinamica/portal-web-parlamento/pdf.do?tipodoc=coleccion&id=14455&cley=13>

Tax Base	Rate in €
SO <sub>2</sub> emissions	50 per tonne

Source: OECD and EEA (2014) Database on instruments used for environmental policy, Accessed 12<sup>th</sup> August 2014, [http://www2.oecd.org/ecoinst/queries/All\\_Information.aspx](http://www2.oecd.org/ecoinst/queries/All_Information.aspx)

- In Galicia, a similar tax was introduced since 1996, but there are no exemptions or deductions in place. Tax revenues are used to finance extraordinary damages and emergency situations following environmental disasters. Revenues from this tax represented around €3 million in 2011. The different tax rates are shown in Table 16-12.

**Table 16-12: Air Pollution Taxes in Galicia**

Tax Base	Rate in €
Variable rate for NO <sub>x</sub> and SO <sub>x</sub> emissions (emissions below 101 tonnes per year)	0
Variable rate for NO <sub>x</sub> and SO <sub>x</sub> emissions (emissions between 101 and 1000 tonnes per year)	36
Variable rate for NO <sub>x</sub> and SO <sub>x</sub> emissions (emissions between 1001 and 3000 tonnes per year)	50
Variable rate for NO <sub>x</sub> and SO <sub>x</sub> emissions (emissions between 3001 and 7000 tonnes per year)	70
Variable rate for NO <sub>x</sub> and SO <sub>x</sub> emissions (emissions between 7001 and 15000 tonnes per year)	95
Variable rate for NO <sub>x</sub> and SO <sub>x</sub> emissions (emissions between 15001 and 40000 tonnes per year)	120
Variable rate for NO <sub>x</sub> and SO <sub>x</sub> emissions (emissions between 40001 and 80000 tonnes per year)	150
Variable rate for NO <sub>x</sub> and SO <sub>x</sub> emissions (emissions above 80000 tonnes per year)	200

Source: OECD and EEA (2014) Database on instruments used for environmental policy, Accessed 12<sup>th</sup> August 2014, [http://www2.oecd.org/ecoinst/queries/All\\_Information.aspx](http://www2.oecd.org/ecoinst/queries/All_Information.aspx)

- In Valencia, since 2003, harmful air emissions are integrated into a broader tax system on activities that cause environmental harm, along with electricity production. Exemptions to the payment of the tax are allowed for emissions below certain thresholds: up to 150 tons of NO<sub>x</sub> and up to 150 tons of SO<sub>2</sub> emissions (article 154.7.1 of the Ley 10/2012 de

21 de diciembre, de Medidas Fiscales, de Gestión Administrativa y Financiera, y de Organización de la Generalitat).<sup>627</sup> Collected revenues serve a more general purpose of conservation and improvement of the environment. Tax rates on air pollution increase accordingly to the amount of SO<sub>x</sub> and NO<sub>x</sub> emitted into the atmosphere annually and are shown in Table 16-13.

**Table 16-13: Air Pollution Taxes in Valencia**

Tax base	Rate in €
Variable rate for NO <sub>x</sub> and SO <sub>2</sub> emissions (the rates refer to emissions below 1000 tonnes per year)	9
Variable rate for NO <sub>x</sub> and SO <sub>2</sub> emissions (the rates refer to emissions between 1000 and 3000 tonnes per year)	12
Variable rate for NO <sub>x</sub> and SO <sub>2</sub> emissions (the rates refer to emissions between 3000 and 7000 tonnes per year)	18
Variable rate for NO <sub>x</sub> and SO <sub>2</sub> emissions (the rates refer to emissions between 7000 and 15000 tonnes per year)	24
Variable rate for NO <sub>x</sub> and SO <sub>2</sub> emissions (the rates refer to emissions between 15000 and 40000 tonnes per year)	30
Variable rate for NO <sub>x</sub> and SO <sub>2</sub> emissions (the rates refer to emissions between 40000 and 80000 tonnes per year)	38
Variable rate for NO <sub>x</sub> and SO <sub>2</sub> emissions (the rates refer to emissions above 80000 tonnes per year)	50

Source: OECD and EEA (2014) Database on instruments used for environmental policy, Accessed 12<sup>th</sup> August 2014, [http://www2.oecd.org/eoicinst/queries/All\\_Information.aspx](http://www2.oecd.org/eoicinst/queries/All_Information.aspx)

### ➤ Pesticides Tax

- No pesticides tax exists in Spain. However, Spanish pesticides' consumption is one of the highest among the EU-28 Member States.<sup>628</sup> Data released in 2010 by FAO, demonstrated that total pesticides

---

<sup>627</sup>

Diari Oficial de la Comunitat Valenciana (2012), Ley 10/2012, de 21 de diciembre, de Medidas Fiscales, de Gestión Administrativa y Financiera, y de Organización de la Generalitat, Accessed 24th September 2014, [http://www.docv.gva.es/portal/ficha\\_disposicion.jsp?id=26&sig=011715/2012&L=1&url\\_lista=](http://www.docv.gva.es/portal/ficha_disposicion.jsp?id=26&sig=011715/2012&L=1&url_lista=)

<sup>628</sup> Eurostat (2014) Agri-environmental indicator - consumption of pesticides, Accessed 19<sup>th</sup> August 2014, [http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/Agri-environmental\\_indicator\\_-\\_consumption\\_of\\_pesticides](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Agri-environmental_indicator_-_consumption_of_pesticides)



consumption in Spain equals 39,043 tonnes.<sup>629</sup> These values are changed little over the years since 2001, when 35,700 tonnes were sold.

➤ **Tax on fluorinated greenhouse gases**

- The tax was introduced in Law 16/2013 of 29 October 2013 and is being phased in gradually from 2014. It will not be fully applicable until 2016.<sup>630</sup>
- The tax applies to the consumption of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF<sub>6</sub>) and preparations containing such substances (including regenerated and recycled). The taxable base is structured according to the weight (in kg), impact in terms of global-warming potential and type of gas, while gases with a global warming potential of less than or equal to 150 are exempted. The gases could be taxed up to a maximum value of €100 per kg according to the Law 16/2013, as described in Table 16-14.

Table 16-14: Tax on Fluorinated Greenhouse Gases

Tax Base	Rate in €
Sulphur hexafluoride	100 per kg
HFC-23	100 per kg
HFC-32	11 per kg
HFC-43-10mee	30 per kg
HFC-125	68 per kg
HFC-134	22 per kg
HFC-134a	26 per kg
HFC-143	6.6 per kg
HFC-143a	86 per kg
HFC-227ea	70 per kg
HFC-236cb	26 per kg
HFC-236ea	24 per kg

<sup>629</sup> FAO (2014), *Statistics Database*, Accessed 19<sup>th</sup> August 2014, <http://faostat3.fao.org/faostat-gateway/go/to/home/E>

<sup>630</sup> Government of Spain (2013), *Ley 16/2013, de 29 de octubre, por la que se establecen determinadas medidas en materia de fiscalidad medioambiental y se adoptan otras medidas tributarias y financieras*, Accessed 5<sup>th</sup> September 2014, <http://www.boe.es/boe/dias/2013/10/30/pdfs/BOE-A-2013-11331.pdf>



Tax Base	Rate in €
HFC-236fa	100 per kg
HFC-245ca	12.8 per kg
HFC-245fa	19 per kg
HFC-365mfc	17.8 per kg
Perfluoromethane	100 per kg
Perfluoroethane	100 per kg
Perfluoropropane	100 per kg
Perfluorobutane	100 per kg
Perfluoropentane	100 per kg
Perfluorohexane	100 per kg
Perfluorocyclobutane	100 per kg
Preparations	0.020 x global warming potential
Gases regenerated and recycled	0.85 x Tax rate of the gas in question
Ready regenerated and recycled	0.85 x Tax rate preparation

Source: Government of Spain (2013) *Ley 16/2013, de 29 de octubre, por la que se establecen determinadas medidas en materia de fiscalidad medioambiental y se adoptan otras medidas tributarias y financieras*, Accessed 5<sup>th</sup> September 2014, <http://www.boe.es/boe/dias/2013/10/30/pdfs/BOE-A-2013-11331.pdf>

- No data is available on the revenue from this tax, as it was recently introduced. Data provided by the Spanish authorities estimate that the tax could yield €400 million in 2014 (equivalent to 0.039% of Spanish GDP),<sup>631</sup> while amendments to the final bill could make revenues drop to €113 million.<sup>632</sup>

➤ **Aggregates tax:**

<sup>631</sup> European Commission (2014), Assessment of the 2014 national reform programme and stability programme for SPAIN Accompanying the document Recommendation for a COUNCIL RECOMMENDATION on Spain's 2014 national reform programme and delivering a Council opinion on Spain's 2014 stability programme, June 2014, <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014SC0410&from=fr>

<sup>632</sup> Economics for Energy (2013) *Impuestos energetico-ambientales en Espana*, [http://eforenergy.org/docpublicaciones/informes/Informe\\_Completo\\_EfE\\_2013.pdf](http://eforenergy.org/docpublicaciones/informes/Informe_Completo_EfE_2013.pdf)

- No tax on extracted materials currently exists at national or regional level in Spain.<sup>633</sup> According to the European Aggregates Association<sup>634</sup> however, approximately 175 million tonnes of aggregates were produced in Spain in 2011, and the vast majority was composed of crushed rocks, sand and gravel. Recycled aggregates represented less than 1% of the total output produced.

➤ **Other pollution taxes:**

- Other environmental taxes have been introduced in *Aragon, Andalusia, Asturias, La Rioja, Extremadura, Castile and Leon, Valencia, Castile La Mancha, Galicia and the Canary Islands*:
- A disposable *plastic bag tax* has been in place in *Andalusia* since 2011. It has generated revenues of around €0.7 million which are not earmarked for any particular use. From 2014 onwards, the tax rate is fixed at €0.10 per unit of plastic bag.
- In *Aragon* soil pollution taxes have been applied since 2006 on the construction of large department stores. The tax is used for preventive, corrective and restoration activities caused by construction and installation activities. In 2012 tax revenues amounted to €7.2 million. Tax rates vary according to the area covered by the department store and ranges from €12 per m<sup>2</sup> (for stores between 2000 and 3000 m<sup>2</sup>) to €19 per m<sup>2</sup> for stores larger than 10000 m<sup>2</sup>. Surfaces under 2000 m<sup>2</sup> are exempted from the tax.
- Activities causing environmental harm are taxed in the autonomous regions of *Asturias, Canary Islands, La Rioja, Extremadura and Castile and Leon*. These activities concern communication networks and electricity supply networks, as well as underground or submarine electricity supply networks for the *Canary Islands* – see table below:

**Table 16-15: Taxes on Activities Causing Environmental Harm in Asturias, Canary Islands and La Rioja**

Tax base	Rate in € (Asturias)	Rate in € (Canary Islands)	Rate in € (La Rioja)
Communication networks	700 per post or antenna or heritage element or facility	500 per post or antenna	175 per post or antenna
Electricity supply	700 per km of	600-750 per km of	175 per km of

<sup>633</sup> Withana, S., ten Brink, P., Illes, A., Nanni, S., Watkins, E. (2014) *Environmental tax reform in Europe: Opportunities for the future*, Final Report for the Netherlands Ministry of Infrastructure and the Environment, May 2014, [http://www.ieep.eu/assets/1397/ETR\\_in\\_Europe\\_-\\_Final\\_report\\_of\\_IEEP\\_study\\_-\\_30\\_May\\_2014.pdf](http://www.ieep.eu/assets/1397/ETR_in_Europe_-_Final_report_of_IEEP_study_-_30_May_2014.pdf)

<sup>634</sup> European Aggregates Association (2013) *Annual Review 2012-2013*, [http://www.uepg.eu/uploads/Modules/Publications/uepg-ar2012-2013\\_en\\_inter\\_v14\\_pbp\\_small.pdf](http://www.uepg.eu/uploads/Modules/Publications/uepg-ar2012-2013_en_inter_v14_pbp_small.pdf)

Tax base	Rate in € (Asturias)	Rate in € (Canary Islands)	Rate in € (La Rioja)
network	transmission line	transmission line, depending on the voltage	transmission line
Underground or submarine electricity supply networks	-	0	-

Source: OECD and EEA (2014) Database on instruments used for environmental policy, Accessed 12<sup>th</sup> August 2014, [http://www2.oecd.org/ecoinst/queries/All\\_Information.aspx](http://www2.oecd.org/ecoinst/queries/All_Information.aspx)

- In the Valencian Community, the tax on activities causing environmental harms applies to the production of electricity by hydroelectric power plants (€0.0004 per kWh), by thermonuclear plants (€0.0018 per kWh) and all other sources of energy (€0.0008 per kWh).
- In Aragón a tax on the environmental damage caused by the installation of cable transport (e.g. skiing facilities);
- In Castile and Leon a tax on environmental damage caused by some uses of water from reservoirs (refers to production of electricity in hydropower plants and depends on the capacity of the reservoir and the height of the dam) and by high voltage transportation of electricity (€ 700 per km of line);
- In Castile La Mancha a tax on certain activities that cause environmental harm (including a tax on production of electricity from nuclear plants of €2.1 per MWh and radioactive waste disposal of €7 per kg), in Extremadura a tax on production and distribution of electricity (ranging from €0.0010 per KWh to €661.1100 per km of line)
- In Extremadura a tax on production and distribution of electricity (ranging from €0.0010 per KWh to €661.1100 per km of line)
- In Galicia a tax on environmental damage caused by some uses of water from reservoirs (€800 per hm<sup>3</sup> and depending on the jump of the reservoir and the raw power).

➤ **Water abstraction, wastewater and water pollution taxes:**

- At national level, a *fee on wastewater discharges* has been applied to tackle water pollution since 1986 (*Ley 29/1985, de 2 de Agosto, de Aguas*,<sup>635</sup> modified by *Ley 46/1999, de 13 de Diciembre*<sup>636</sup>). Latest

---

<sup>635</sup> Government of Spain (1985), *Ley 29/1985, de 2 de agosto, de Aguas*, Accessed 24th September 2014, [http://noticias.juridicas.com/base\\_datos/Derogadas/r2-l29-1985.html](http://noticias.juridicas.com/base_datos/Derogadas/r2-l29-1985.html)

estimates from the OECD date back to 2001 and account for €32.6 million of tax revenues.<sup>637</sup> This fee is composed of a fixed rate of €0.0120 per m<sup>3</sup> for municipal wastewater discharges and a fixed rate of €0.03 per m<sup>3</sup> for industrial wastewater discharges. These rates increase progressively depending on the level of pollution.

- Regional taxes on wastewater and discharges were also introduced in several autonomous communities – see Table 16-16 and details below:<sup>638</sup>

**Table 16-16: Taxes on Wastewater and Discharges by Industrial Users in the Autonomous Communities**

Autonomous Community	Date Approved [reformed]	Tax Rate (in €)
Andalusia	2010 [2011]	Fixed: 1/month per taxpayer Variable: 0.25 per m <sup>3</sup> per month
Aragon	1997 [2014]	Fixed: 19.162 per month per taxpayer for industrial use Variable: depending on the type of pollution load
Asturias	1993 [1994]	Fixed: 5-1280 per month per taxpayer Variable: 0.599 per m <sup>3</sup>
Balearic Islands <sup>639</sup>	1991 [2014]	Fixed: 7.5-899.8 depending on metre calibre Variable: 0.2947 per m <sup>3</sup>
Cantabria	2002 [2013]	Fixed: 14.88 per year per taxpayer Variable: 0.3638 per m <sup>3</sup> or depending on the pollution load
Catalonia	1981 [2003]	Variable: 0.0927 per m <sup>3</sup> + 0.3633 per m <sup>3</sup> until September (0.1454 per m <sup>3</sup> + 0.5702 per m <sup>3</sup> from October) and depending on the pollution

<sup>636</sup> Government of Spain (2014), Ley 46/1999 de 13 de diciembre, de modificación de la Ley 29/1985, de 2 de agosto, de Aguas, Accessed 24th September 2014, [http://noticias.juridicas.com/base\\_datos/Admin/L46-1999.html](http://noticias.juridicas.com/base_datos/Admin/L46-1999.html)

<sup>637</sup> OECD and EEA (2014) Database on instruments used for environmental policy, Accessed 5<sup>th</sup> September 2014, <http://www2.oecd.org/ecoinstr/queries/>

<sup>638</sup> Vales-Gimenez, J., Zarate-Marco, A. (2013) Environmental taxation and industrial water use in Spain, in *Investigaciones Regionales*, No. 25, pp.133-62.

<sup>639</sup> Agencia Tributaria Illes Balears (2014) *Canon de Saneamiento de Aguas*, Accessed 23rd September 2014, <http://www.atib.es/TA/contenido.aspx?Id=9858&lang=es>

Autonomous Community	Date Approved [reformed]	Tax Rate (in €)
Canary Islands	1990 [1994]	Variable: Depends on pollution load and volume of wastewater
Castile-La Mancha	2002	Variable: 0.42 per m <sup>3</sup> x factor depending on pollution load
Galicia	1993 [2011]	Fixed: 2.5 per month per taxpayer Variable: 0.421 per m <sup>3</sup> or depending on the pollution load
La Rioja	1994 [2000]	Variable: 0.34 per m <sup>3</sup> x factor depending on the pollution load (Ley 6/2009 de 15 de Diciembre de Medidas Fiscales y Administrativas para el año 2010)
Madrid	1984 [2003]	Fixed: 0.0209 twice-monthly x factor depending on meter calibre Variable: €0.2927-€0.5104 twice-monthly depending on both consumption and the pollution load
Murcia	2000 [2002]	Fixed: 35 per year per source of supply Variable: 0.37 per m <sup>3</sup> x factor depending on pollution load
Valencia	1992 [1993]	Fixed: 84.54-2,957.1 per year depending on meter calibre. Dependant on pollution load Variable: 0.414 per m <sup>3</sup> , dependant on pollution load
Navarre	1988	Variable: 0.619 per m <sup>3</sup> x factor depending on the pollution load
Basque Country	2008	Variable: 0.06 per m <sup>3</sup>

- In Andalusia, a tax on coastal wastewater discharge has been in place since 2004. It now funds environmental expenditure programmes and environmental catastrophes relief programmes. In 2012, €3.5 million was collected through a flat rate of €10 per pollution unit was applied to the amount of pollution discharged to coastal waters.
- In Murcia, a tax on coastal wastewater discharge has been in place since 2006. Revenues are used to finance regional environmental protection programmes and actions. Revenues totalling €0.4 million were collected in 2011, mainly based on the quantity of polluting units (i.e. suspended material plus oxidizable matter).

- In Catalonia, the tax on water and water pollution was introduced in 2000 –although this was based on already existing taxes– through water regulation (Ley 6/1999, modified by *Decreto Legislativo 3/2003, de 4 de noviembre, por el que se aprueba el Texto refundido de la legislación en materia de aguas de Cataluña*)<sup>640</sup>. In 2011, the charge generated revenues of €356.7 million. Revenues are earmarked for pollution prevention at source, recovery and maintenance of ecological flows in rivers, financing investments and exploitation costs of water works, and to finance other costs of the Catalan Water Agency. The charge is a hybrid between a water consumption and water pollution tax
- In Aragon, water pollution is linked to water extraction in a broader ecological tax created by Law 6/2001 and updated by Ley 1/2014, *Ley de presupuestos de la comunidad autónoma de Aragón para el ejercicio 2014*.<sup>641</sup> The tax introduced in 2002 and which accounted for €33.7 million of tax revenues in 2011, is used, according to Ley 6/2001 (Law 6/2001), to finance installations' maintenance and water purification carried out by the Region.
- Combined water pollution and water abstraction taxes are also found in *Cantabria*, where a tax on water and water pollution provides tax rates for the management of water resources. The tax, first introduced in 2006 and revised in 2013, is used to finance investments and expenses in the construction, management and maintenance of local wastewater treatment facilities. In 2009, (the latest available information from the OECD<sup>642</sup>), the tax generated €11.3 million in revenue.
- In Galicia, a water tax was introduced in 2011. Revenues from the tax are used to reduce pollution at source, restore ecological flows in rivers, finance investments, exploitation and management costs of water works of the Community. In 2011, €35.1 million were raised through the tax. Tax rates of the hybrid water pollution and water abstraction in Aragon, Cantabria, Catalonia and Galicia are listed in Table 16-17.

**Table 16-17: Taxes on Water Pollution and Extraction in Aragon, Cantabria, Catalonia and Galicia**

Tax Base	Rate in € (Aragon)	Rate in € (Cantabria)	Rate in € (Catalonia)	Rate in € (Galicia)
Pollution charge on	0.6510 per kg	0.5032 per kg	0.8812 per kg	0.4930 per kg

<sup>640</sup> Presidencia de la generalidad de Catalonia (2003), *Decreto Legislativo 3/2003, de 4 de noviembre, por el que se aprueba el Texto refundido de la legislación en materia de aguas de Cataluña*, Accessed 24<sup>th</sup> September 2014, [http://noticias.juridicas.com/base\\_datos/CCAA/ca-dleg3-2003.html](http://noticias.juridicas.com/base_datos/CCAA/ca-dleg3-2003.html)

<sup>641</sup> Presidencia del Gobierno de Aragon (2014), *Ley 1/2014, de 23 de enero, de Presupuestos de la Comunidad Autónoma de Aragón para el ejercicio 2014*, Accessed 24<sup>th</sup> September 2014, <http://www.boa.aragon.es/cgi-bin/EBOA/BRSCGI?CMD=VEROBJ&MLKOB=772781623030>

<sup>642</sup> OECD and EEA (2014) Database on instruments used for environmental policy, Accessed 12<sup>th</sup> August 2014, <http://www2.oecd.org/ecoinstd/queries/>

Tax Base	Rate in € (Aragon)	Rate in € (Cantabria)	Rate in € (Catalonia)	Rate in € (Galicia)
chemical oxygen demand				
Pollution charge on heavy metals	6.3870 per equimetal	-	-	11.1130 per kg of equimetal
Pollution charge on inhibiting matters	15.1820 per kiloequitox	8.6237 per kiloequitox	10.4515 per equitox	0.0520 per equitox
Pollution charge on organic and ammoniac nitrogen	1.2770 per kg	0.5494 per kg (any type of nitrogen)	0.6690 per kg	0.3690 per kg
Pollution charge on soluble salts	5.2580 per Siemens per cm and m <sup>3</sup>	6.8851 per Siemens per cm and m <sup>3</sup>	7.0502 per Siemens per cm and m <sup>3</sup>	3.9550 per Siemens per cm and m <sup>3</sup>
Pollution charge on suspended matters	0.4680 per kg	0.4345 per kg	0.4405 per kg	-
Pollution charge on phosphorus	-	1.0997 per kg	1.3382 per kg	0.7400 per kg
Pollution charge on increase of water temperature by more than 3 °C	-	0.0001 per °C	-	-
Domestic water consumption - fixed rate	5.02 per month per household	25.8800 per annum	-	1.5 per person and per month
Industrial water consumption - fixed rate	18.8790 per month per activity	25.8800 per annum	-	2.5 per person and per month
Volume of domestic water consumption	0.6050 per m <sup>3</sup>	0.4874 per m <sup>3</sup>	0.4469, 1.0294, 2.5735 or 4.1176 per m <sup>3</sup> depending on the consumption	0, 0.2800, 0.3600 or 0.4100 per m <sup>3</sup> depending on the consumption
Volume of Industrial water consumption	-	0.6332 per m <sup>3</sup>	0.5702 per m <sup>3</sup>	0.4210 per m <sup>3</sup>
Real or estimated water consumption - industrial use	-	-	0.0927 per m <sup>3</sup>	-
Social tax rate	-	-	0.3990 per m <sup>3</sup>	-



Tax Base	Rate in € (Aragon)	Rate in € (Cantabria)	Rate in € (Catalonia)	Rate in € (Galicia)
Other specific uses	-	-	-	Fixed rate of 2.5 per month and activity plus a variable rate depending on the use

Sources: OECD and EEA (2014) Database on instruments used for environmental policy, Accessed 12<sup>th</sup> August 2014, [http://www2.oecd.org/ecoinst/queries/All\\_Information.aspx](http://www2.oecd.org/ecoinst/queries/All_Information.aspx); and Government of Spain (2014), Ley 1/2014. Ley de presupuestos de la comunidad autonoma de Aragon para el ejercicio 2014, Accessed 23rd September 2014, <http://www.boa.aragon.es/cgi-bin/EBOA/BRSCGI?CMD=VEROBJ&MLKOB=772781623030>

- In Castile-La Mancha, a tax on water treatment has been in place since 2003. Revenues are used to finance management costs and investments in infrastructure for the *Master Plan for Water Supply* which aims to provide high-quality water resources under any circumstances. The fixed rate is €0.42 per m<sup>3</sup>, a pollution coefficient is applied if the pollution level is higher than the domestic standard established by Law 12/2002 (30 grams of suspended matter, 60 grams of oxidizable materials, 9 grams of nitrogen, 2 grams of phosphorus).
- In Madrid, water pollution taxes have been in place since 1985 for financing water quality related works. In 2010, €1.8 million in revenue was collected from the tax. See Table 16-18 below for calculation of tax rates.

Table 16-18: Water Pollution Taxes in Madrid

Tax base	Rate in €
Adduction service fee for all users and an adduction variable rate	Dependant on the diameter and the number of dwellings or commercial activities, type of user, water consumption, seasonality etc.
Distribution service fee for all users and a distribution variable fees	Dependant on the diameter and the number of dwellings or commercial activity, on the type of user and on water consumption
Sewage system fee and a sewage system variable rate	Dependant on the number of dwellings or activities, and on the type of user and volume of water consumption
Wastewater treatment service fee and a waste water treatment variable rate	Dependant on the number of dwelling or commercial activities, the volume of consumer water, etc.

Source: OECD and EEA (2014) Database on instruments used for environmental policy, Accessed 12<sup>th</sup> August 2014, [http://www2.oecd.org/ecoinst/queries/All\\_Information.aspx](http://www2.oecd.org/ecoinst/queries/All_Information.aspx)



- In Navarra, a general charge on water (pollution and consumption) has been in place since 2001. Revenues are used to finance the construction of wastewater treatment plants in the region, collection and management operations of treatment and purification services. Tax bases and rates for water pollution are listed in Table 16-19.

**Table 16-19: Water Taxes in Navarra**

Tax Base	Rate in €
Fixed rate for mud coming from private wastewater treatment installations (volume inferior to 5 m <sup>3</sup> )	40
Fixed rate for mud coming from private wastewater treatment installations (volume between 5 m <sup>3</sup> and 10 m <sup>3</sup> )	80
Variable rate for mud coming from private wastewater treatment installations (volume above 10 m <sup>3</sup> )	8 per m <sup>3</sup>

Source: OECD and EEA (2014) Database on instruments used for environmental policy, Accessed 12<sup>th</sup> August 2014, [http://www2.oecd.org/ecoinst/queries/All\\_Information.aspx](http://www2.oecd.org/ecoinst/queries/All_Information.aspx)

➤ **Water abstraction charges:**

- There are no water abstraction charges at national level.<sup>643</sup> Instead, many autonomous communities have *regional taxes for water extraction* (which in some cases combine water pollution charges and therefore these are presented in the wastewater and water pollution taxes section). Overall, these regional taxes are considered inefficient, as noted by the EEA,<sup>644</sup> with Spanish water tariffs amongst the lowest in OECD/EU countries<sup>645</sup>. Large differences in design and tariff rates between regions suggest significant revenue raising potential from the introduction of a general tax for all utilities abstracting water as well as gains from further efforts to tackle losses in non-domestic uses of water.<sup>646</sup>

<sup>643</sup> IEEP (2013), Steps to Greening Country Report: Spain, Final report for the European Commission, p. 7.

<sup>644</sup> European Environment Agency (2012), *Environmental Fiscal Reform – Illustrative Potential in Spain*, EEA Staff Position Note, Accessed 2<sup>nd</sup> September 2014, [http://www.eea.europa.eu/highlights/fiscal-reform-can-create-jobs/EEABriefingNoteforETRWorkshop\\_Madrid.pdf](http://www.eea.europa.eu/highlights/fiscal-reform-can-create-jobs/EEABriefingNoteforETRWorkshop_Madrid.pdf)

<sup>645</sup> See EC study, [http://ec.europa.eu/europe2020/pdf/nd/swd2012\\_spain\\_en.pdf](http://ec.europa.eu/europe2020/pdf/nd/swd2012_spain_en.pdf)

<sup>646</sup> European Environment Agency (2012), *Environmental Fiscal Reform – Illustrative Potential in Spain*, EEA Staff Position Note, Accessed 2<sup>nd</sup> September 2014, [http://www.eea.europa.eu/highlights/fiscal-reform-can-create-jobs/EEABriefingNoteforETRWorkshop\\_Madrid.pdf](http://www.eea.europa.eu/highlights/fiscal-reform-can-create-jobs/EEABriefingNoteforETRWorkshop_Madrid.pdf)

- According to *Ley 20/1991* (Law 20/1991)<sup>647</sup> and Article 98 of the Directive 2006/112/EC the production and distribution of water in the *Canary Islands* is subject to a reduced VAT rate of 0%.<sup>648</sup>
- In Andalusia, the *water extraction tax* is used to finance the maintenance of water treatment infrastructures. Introduced in 2011 by the *Ley 9/2010* (Law 9/2010), the tax generated €55 million in revenue in 2012.<sup>649</sup> Tax rates are set according to the consumption of water – see Table 16-20.

**Table 16-20: Water Extraction Tax in Andalusia**

Tax Base	Rate in €
Flat rate for domestic use	1 per household per month
Rate for losses in the non-domestic water supply network	0.25 per m <sup>3</sup>
Rate for non-domestic uses	0.25 per m <sup>3</sup>
Domestic water consumption between 10 and 18 m <sup>3</sup> per household per month	0.2 per m <sup>3</sup>
Domestic water consumption between 2 and 10 m <sup>3</sup> per household per month	0.1 per m <sup>3</sup>
Domestic water consumption higher than 18 m <sup>3</sup> per household per month	0.6 per m <sup>3</sup>

Source: OECD and EEA (2014) *Database on instruments used for environmental policy*, Accessed 12<sup>th</sup> August 2014,

[http://www2.oecd.org/ecoinst/queries/All\\_Information.aspx](http://www2.oecd.org/ecoinst/queries/All_Information.aspx)

- Following the approval of *Ley 1/1994* (Law 1/1994), *Asturias* introduced a *tax on water consumption* in 2000. The tax is used to finance investments and expenses for the construction, management, maintenance and operation of the necessary works and facilities for waste water treatment. In 2011, revenues from the tax were €35 million. Tax rates are calculated according to different formula – see Table 16-21.

<sup>647</sup> Government of Spain (2014), *Ley 20/1991, de 7 de junio, de modificación de los aspectos fiscales del Régimen Económico Fiscal de Canarias* (Law 20/1991), Accessed 2<sup>nd</sup> September 2014, <https://www.boe.es/buscar/act.php?id=BOE-A-1991-14463>

<sup>648</sup> European Commission (2014), *Taxes in Europe Database*, Accessed 2<sup>nd</sup> September 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetails.html](http://ec.europa.eu/taxation_customs/tedb/taxDetails.html)

<sup>649</sup> OECD and EEA (2014) *Database on instruments used for environmental policy*, Accessed 12<sup>th</sup> August 2014, <http://www2.oecd.org/ecoinst/queries/>

Table 16-21: Taxes on Water Consumption in Asturias

Tax Base	Rate in €
Domestic water consumption – fixed rate	3 per month
Industrial water consumption per company (the fixed rates refer to a consumption below 200 m <sup>3</sup> , between 200 m <sup>3</sup> and 500 m <sup>3</sup> , 500 m <sup>3</sup> and 1000 m <sup>3</sup> , 1000 m <sup>3</sup> and 5000 m <sup>3</sup> , 5000 m <sup>3</sup> and 22000 m <sup>3</sup> , 22000 m <sup>3</sup> and 100000 m <sup>3</sup> , 100000 m <sup>3</sup> and 500000 m <sup>3</sup> , 500000 m <sup>3</sup> and 1000000 m <sup>3</sup> and up to 1000000 m <sup>3</sup> per year)	5, 10, 20, 40, 80, 160, 320, 640 and 1280 per month depending on the consumption
Volume and characteristics of industrial wastewater	Determined by a formula in the annex of the law
Volume of domestic water consumption (rates for below 15 m <sup>3</sup> , between 15 m <sup>3</sup> and 25 m <sup>3</sup> , and over 25 m <sup>3</sup> per month)	0.3993, 0.4754, 0.5590 per m <sup>3</sup> depending on the consumption
Volume of industrial water consumption	0.5990 per m <sup>3</sup>
Volume of industrial water consumption in special cases	0.0001 per m <sup>3</sup>

Source: OECD and EEA (2014) *Database on instruments used for environmental policy*, Accessed 12<sup>th</sup> August 2014, [http://www2.oecd.org/ecoinst/queries/All\\_Information.aspx](http://www2.oecd.org/ecoinst/queries/All_Information.aspx)

- The tax on water, introduced in 1992 in the *Balearic Islands* through the *Ley 9/1991* (Law 9/1991), finances works within the hydraulic and water-related policy. It aims to reduce water consumption, improve efficiency and avoid deterioration in the quality of water resources.<sup>650</sup> In 2011, the tax generated revenue of €52.6 million in 2011. The tax is composed of variable and fixed rates as shown in Table 16-22.

Table 16-22: Tax on Water in the Balearic Islands

Tax Base	Rate in €
Variable rate for domestic and industrial water consumption (the rates refer to a consumption below 6 m <sup>3</sup> , between 6 m <sup>3</sup> and 10 m <sup>3</sup> , 10 m <sup>3</sup> and 20 m <sup>3</sup> , 20 m <sup>3</sup> and 40 m <sup>3</sup> , and more than 40 m <sup>3</sup> per month)	0.2779, 0.4167, 0.5557, 1.1115 and 1.6662 per m <sup>3</sup> per month depending on the consumption

<sup>650</sup> MEDIS (2005) *Institutional analysis of water management practices*, Majorca Case Study, Delivery for Project No EVK1-CT-2001-0009, March 2005, [http://www.uni-muenster.de/Umweltforschung/medis/restricted/d12\\_complete.pdf](http://www.uni-muenster.de/Umweltforschung/medis/restricted/d12_complete.pdf)

Domestic water consumption – fixed rate	3.8861 per month
Industrial water consumption – fixed rate	Varies according to the type of the company, per month
Volume of domestic and industrial water consumption – variable rate	0.2865 per m <sup>3</sup>

Source: OECD and EEA (2014) Database on instruments used for environmental policy, Accessed 12<sup>th</sup> August 2014, [http://www2.oecd.org/ecoinst/queries/All\\_Information.aspx](http://www2.oecd.org/ecoinst/queries/All_Information.aspx)

- In Castile-La Mancha, the tax on water purification was first introduced in 2003 through 12/2002 Law. It finances the construction of infrastructure projects (as established in the *Master Plan for Water Supply* as laid down in Article 13 of Law 12/2002). Tax rates vary according to the local municipality – see Table 16-23.

**Table 16-23: Tax on Water Purification in Castile-La Mancha**

Tax Base	Rate in €
Volume of provision of water services in the municipalities of the Supply System of Picadas	0.2805 per m <sup>3</sup>
Volume of provision of water services in the municipalities of the Supply System of the Mancomunidad de Aguas del Alto Bornova	0.2941 per m <sup>3</sup>
Volume of provision of water services in the municipalities of the Supply System of the Mancomunidad de Almoguera-Mondejar	0.3415 per m <sup>3</sup>
Volume of provision of water services in the municipalities of the Supply System of the Mancomunidad de Girasol and Mancomunidad of Rio Algodor	0.4883 per m <sup>3</sup>
Volume of provision of water services in the municipalities of the Supply System of the Mancomunidad de la Campina Baja and the Muela	0.4552 per m <sup>3</sup>
Volume of provision of water services in the municipalities of the Supply System of the Rio Gevalo	0.4389 per m <sup>3</sup>
Volume of provision of water services in the other municipalities of Castile-La Mancha	0.4200 per m <sup>3</sup>

Source: OECD and EEA (2014) Database on instruments used for environmental policy, Accessed 12<sup>th</sup> August 2014, [http://www2.oecd.org/ecoinst/queries/All\\_Information.aspx](http://www2.oecd.org/ecoinst/queries/All_Information.aspx)

- In the autonomous community of *Extremadura*, the charge on water was

introduced in 2012. It has been used to finance regional spending programmes on the maintenance of the local infrastructure network. The rates are shown in Table 16-24.

**Table 16-24: Water Charges in Extremadura**

Tax Base	Rate in €
Flat rate for domestic uses	2 per user per month
Flat rate for domestic uses located in secondary neighbourhood areas	4 per household per month
Tax rate for losses in the non-domestic water supply network	0.2500 per m <sup>3</sup>
Variable tax rate for non-domestic uses	0.2500 per m <sup>3</sup>
Variable rate for domestic water consumption (the rates refer to a household's consumption lower than 10 m <sup>3</sup> , between 10 m <sup>3</sup> and 18 m <sup>3</sup> , and above 18 m <sup>3</sup> per month)	0.1000, 0.2000 and 0.6000 per m <sup>3</sup> depending on the consumption

Source: OECD and EEA (2014) *Database on instruments used for environmental policy*, Accessed 12<sup>th</sup> August 2014, [http://www2.oecd.org/ecoinst/queries/All\\_Information.aspx](http://www2.oecd.org/ecoinst/queries/All_Information.aspx)

- In *La Rioja*, a water abstraction tax was introduced by *Ley 5/2000* (Law 5/2000) in 2001. Revenues are used to finance operations of “general interest” such as water collection and treatment, sanitation and maintenance of wastewater treatment plants. Tax revenues amounted to €7.7 million in 2011. The tax rates vary according to the type of consumption (industrial or domestic consumption) – see Table 16-25.

**Table 16-25: Water Taxes in La Rioja**

Tax Base	Rate in €
Variable rate for domestic water consumption	0.4800 per m <sup>3</sup>
Variable rate for industrial water consumption	0.4800 per m <sup>3</sup> and per pollution unit (formula determined through the Law 5/2000 <sup>651</sup> )

Source: OECD and EEA (2014) *Database on instruments used for environmental policy*, Accessed 12<sup>th</sup> August 2014, [http://www2.oecd.org/ecoinst/queries/All\\_Information.aspx](http://www2.oecd.org/ecoinst/queries/All_Information.aspx)

- In *Murcia*, a water abstraction tax was introduced in 2001 and revised in 2011 by *Ley 3/2010* (Law 3/2010 of 27 December). Revenues are used

---

<sup>651</sup> Article 40 of *Ley 5/2000*, de saneamiento y depuración de aguas residuales de *La Rioja*, of 25 October, [http://noticias.juridicas.com/base\\_datos/CCAA/Lr-I5-2000.html](http://noticias.juridicas.com/base_datos/CCAA/Lr-I5-2000.html)

to finance the management and conservation of public drainage, purification installations and in some cases investments related to their construction. In 2011, revenues raised from the tax amounted to €0.3 million. The tax rates are listed in Table 16-26.

**Table 16-26: Water Taxes in Murcia**

Tax Base	Rate in €
Fixed domestic water consumption rate	30 per year and per household
Variable domestic water consumption rate	0.2500 per m <sup>3</sup>
Fixed non-domestic water consumption rate	30 per year and activity
Variable non-domestic water consumption rate	0.3400 per m <sup>3</sup>

Source: OECD and EEA (2014) Database on instruments used for environmental policy, Accessed 12<sup>th</sup> August 2014, [http://www2.oecd.org/ecoinst/queries/All\\_Information.aspx](http://www2.oecd.org/ecoinst/queries/All_Information.aspx)

- The region of *Navarra* introduced the tax on water extraction in 2001, through the *Ley Foral* 10/1988. Its revenues are used to finance the construction of wastewater treatment plants and general collectors and the management and operation of treatment and purification services. In 2008, the revenues amounted to €24.8 according to the OECD/EEA environmental taxes database. The various rates applied are presented in Table 16-27.

**Table 16-27: Water Extraction Taxes in Navarra**

Tax Base	Rate in €
Variable domestic water consumption rate	0.5200 per m <sup>3</sup>
Variable non-domestic water consumption rate	0.6500 per m <sup>3</sup> if connected to public drainage system, and 0.0800 per m <sup>3</sup> otherwise

Source: OECD and EEA (2014) Database on instruments used for environmental policy, Accessed 12<sup>th</sup> August 2014, [http://www2.oecd.org/ecoinst/queries/All\\_Information.aspx](http://www2.oecd.org/ecoinst/queries/All_Information.aspx)

- Finally, in *Valencia*, a regional tax on water was introduced in 1993 with a regional law (*Ley Valenciana* 2/1992). Revenues are used to finance the construction, management and operation of wastewater facilities for disposal, treatment and purification of water. According to data provided by the OECD, revenues amounted to €210.3 million in 2011. The various rates are outlined in Table 16-28.

Table 16-28: Water Taxes in Valencia

Tax Base	Rate in €
Fixed rate for domestic and industrial water consumption for municipalities with a consumption inferior to 3000 m <sup>3</sup> (the rates vary for municipalities with less than 3000, between 3001 and 10000, 10001 and 100000 and more than 100.000 inhabitants)	28.6300, 35.0800, 38.6600, 39.5600 per year per household or activity according to the size of the municipality
Variable rate for domestic and industrial water consumption for municipalities with a consumption inferior to 3000 m <sup>3</sup> (the rates vary for municipalities with less than 3000, between 3001 and 10000, 10001 and 100000 and more than 100.000 inhabitants)	0.2840, 0.3320, 0.3640 and 0.3890 per m <sup>3</sup> respectively according to the size of the municipality
Fixed rate for industrial water consumption exceeding 3000 m <sup>3</sup>	102.73 – 3593.55 per year per activity depending on the calibre of the water meter
Variable rate for industrial water consumption exceeding 3000 m <sup>3</sup>	0.5030 per m <sup>3</sup>

Source: OECD and EEA (2014) Database on instruments used for environmental policy, Accessed 12<sup>th</sup> August 2014, [http://www2.oecd.org/ecoinst/queries/All\\_Information.aspx](http://www2.oecd.org/ecoinst/queries/All_Information.aspx)

## 16.4 Modelled Changes in Tax Base

The modelled change in the tax base for each of the suggested reforms to the tax system are shown in the table and figures below.

Table 16-29: Change in Energy Tax Base

Fuel Type	Units	Baseline	After Tax Increase	Change
Gas Oil	million litres	24,271	23,638	-633
Petrol	million litres	4,849	4,849	0
Kerosene	million litres	5,112	5,112	0
LPG	thousand tonnes	1,267	1,224	-43
Heavy Fuel Oil	thousand tonnes	522	507	-15
Natural Gas	TJ (GCV)	489,602	479,337	-10,265
Coal	thousand tonnes	1,095	1,091	-4
Electricity	GWh	191,981	191,756	-225

Figure 16-1: Change in Internal Passenger Flights, flights per year

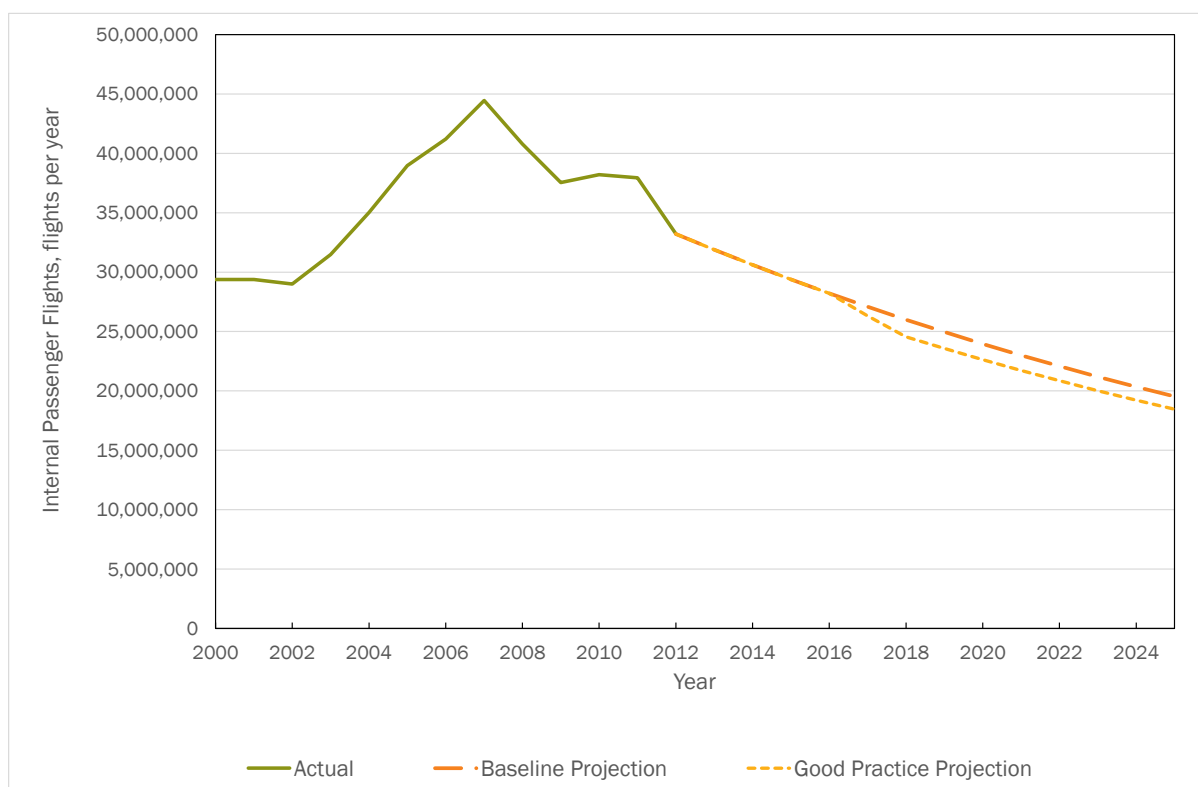


Figure 16-2: Change in Intra-EU Passenger Flights, flights per year

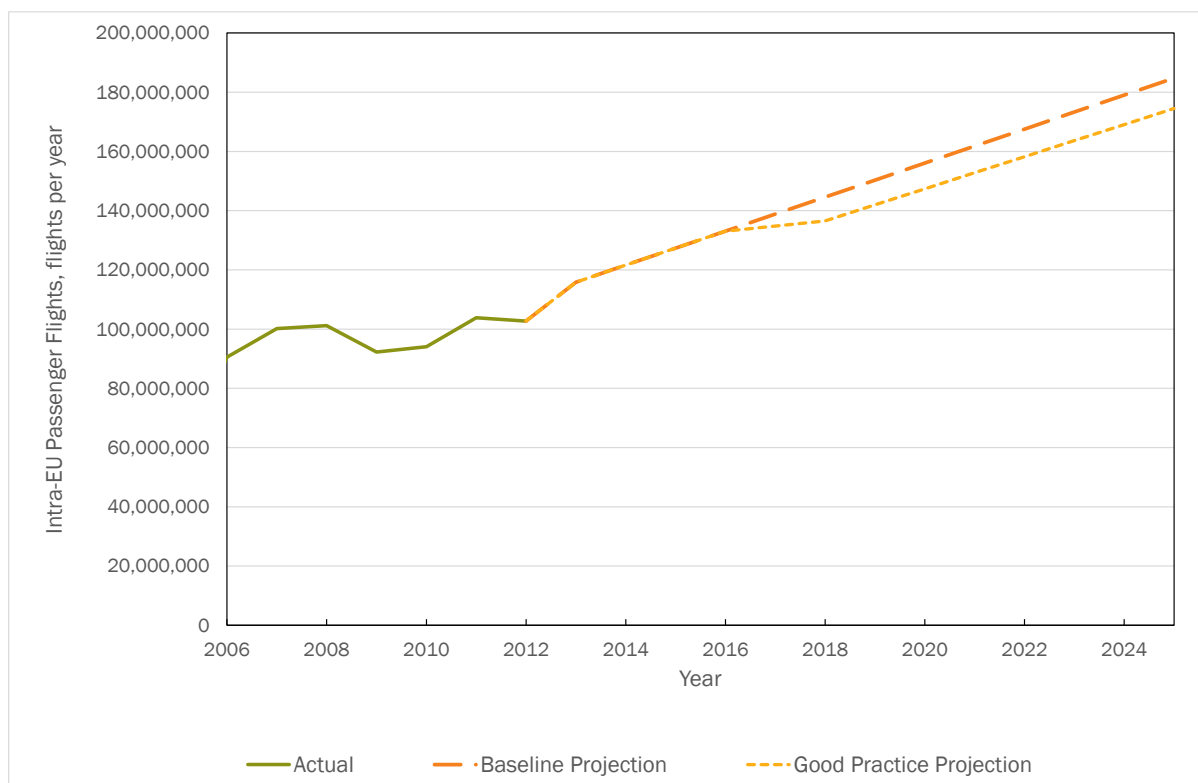




Figure 16-3: Change in Extra-EU Passenger Flights, flights per year

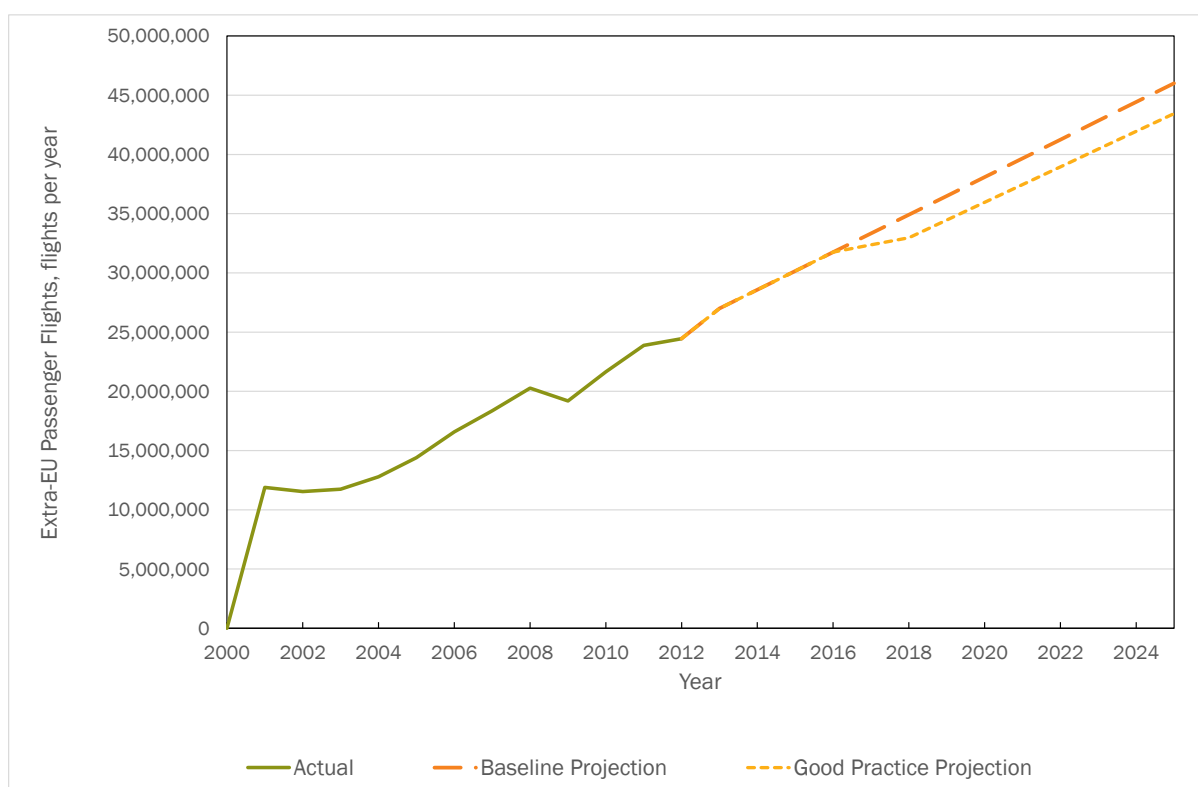


Figure 16-4: Change in Internal Air-freight, tonnes



Figure 16-5: Change in Intra-EU Air-freight, tonnes

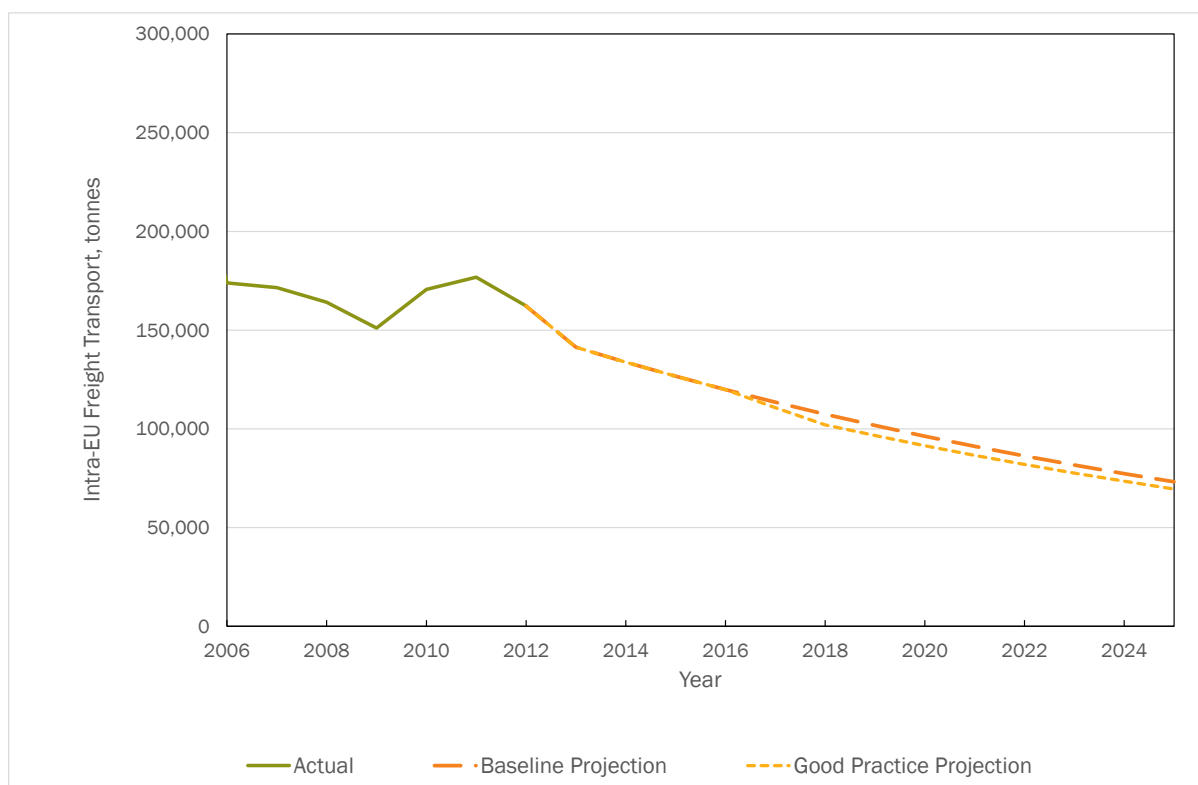


Figure 16-6: Change in Extra-EU Air-freight, tonnes

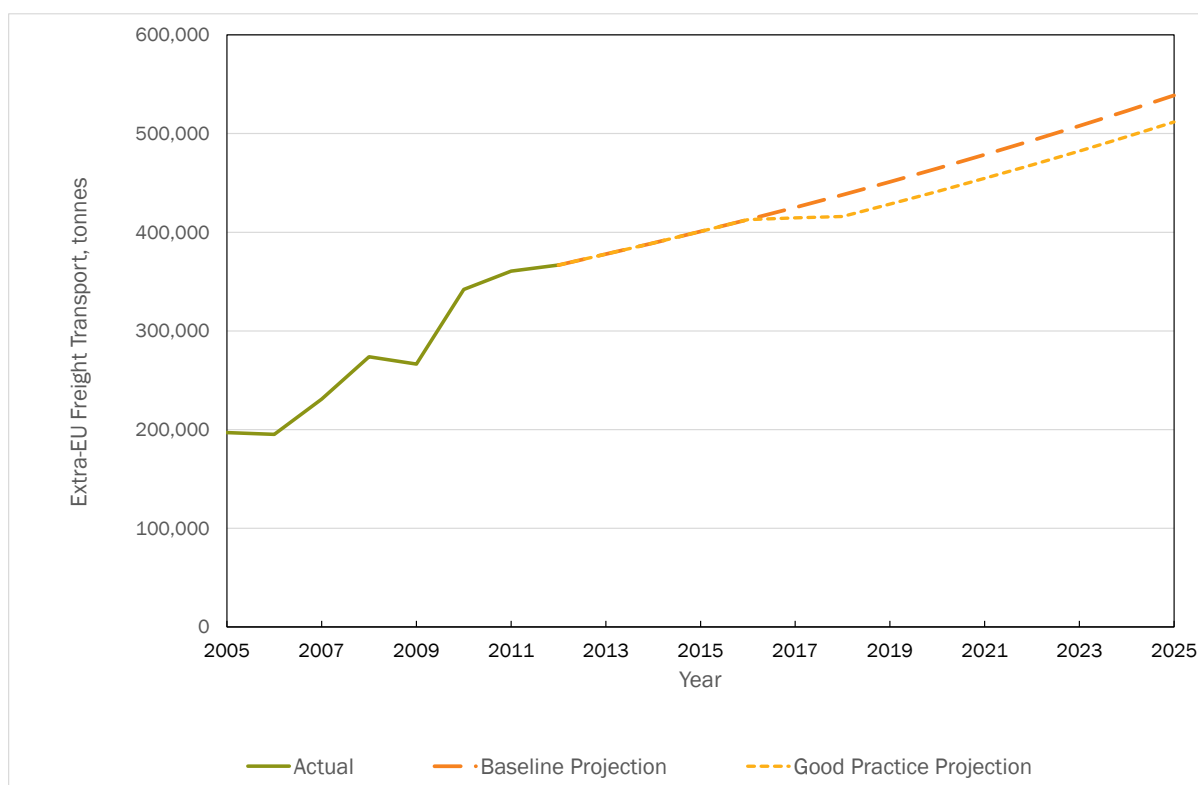


Figure 16-7: Change in Non-Hazardous Waste Landfilled, thousand tonnes

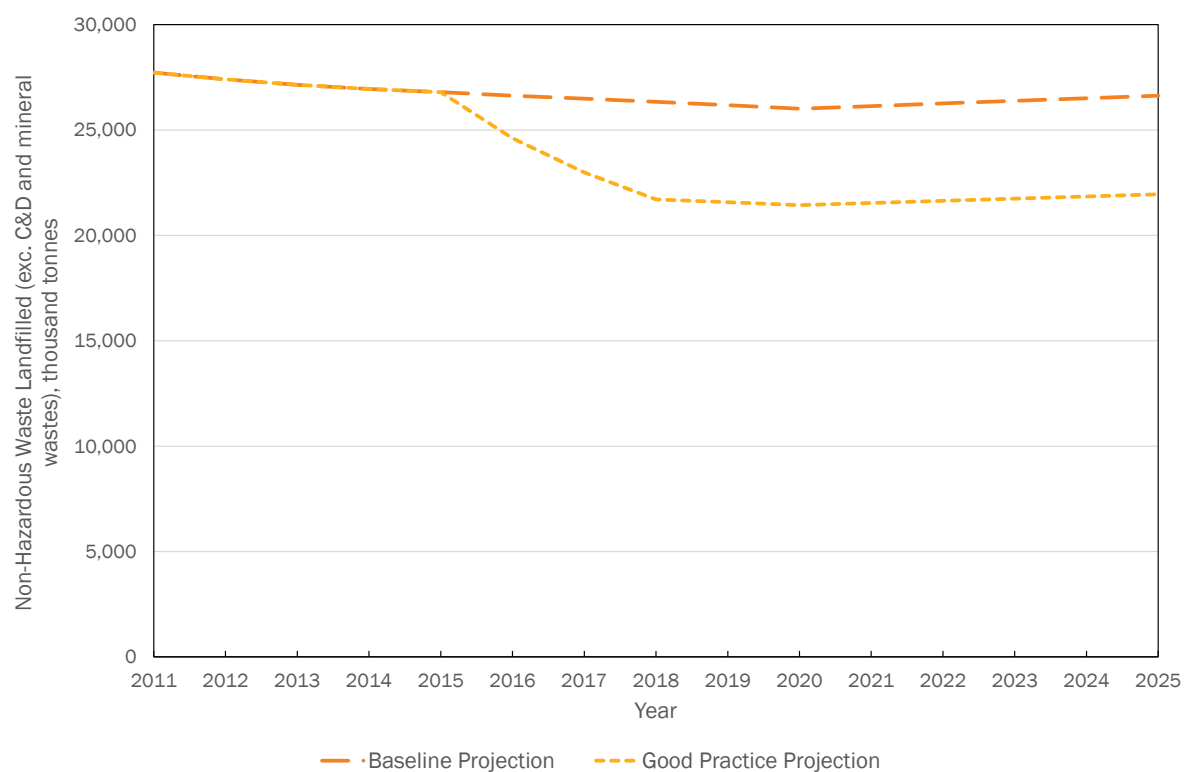


Figure 16-8: Change in MBT/ Incineration, thousand tonnes

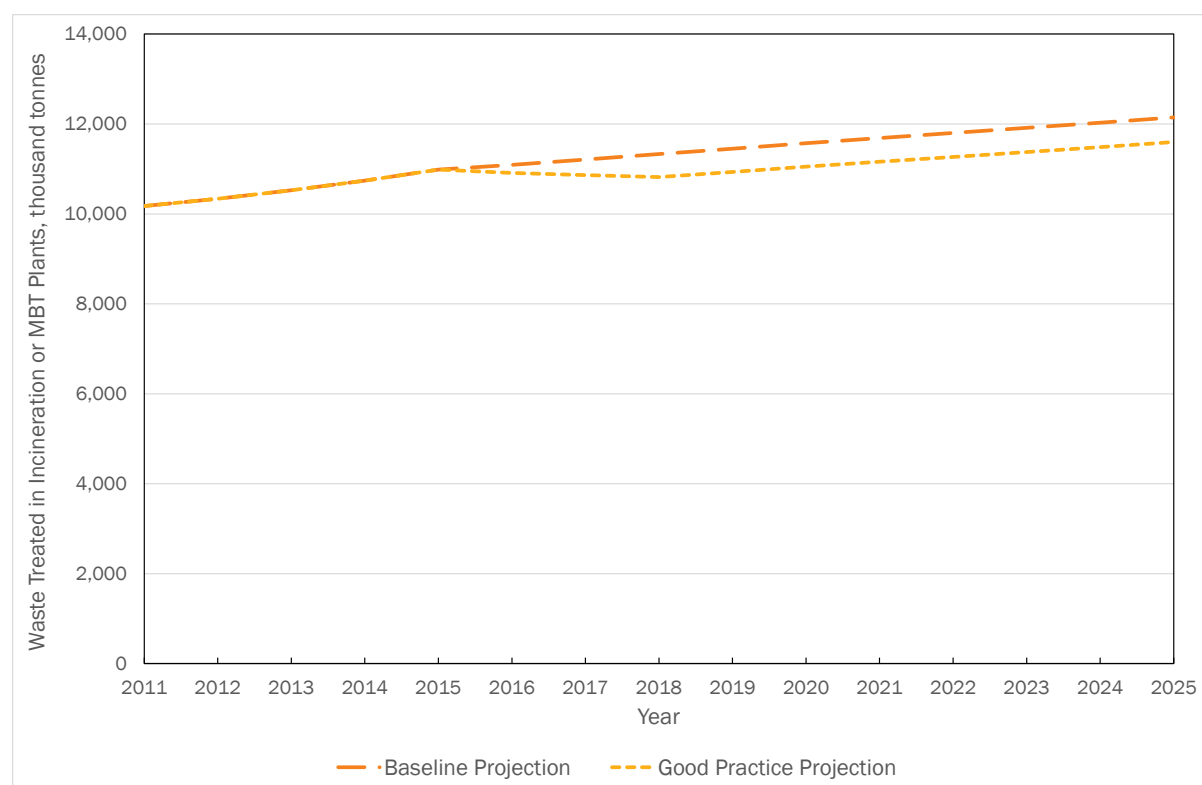


Figure 16-9: Change in SOx Emissions, tonnes

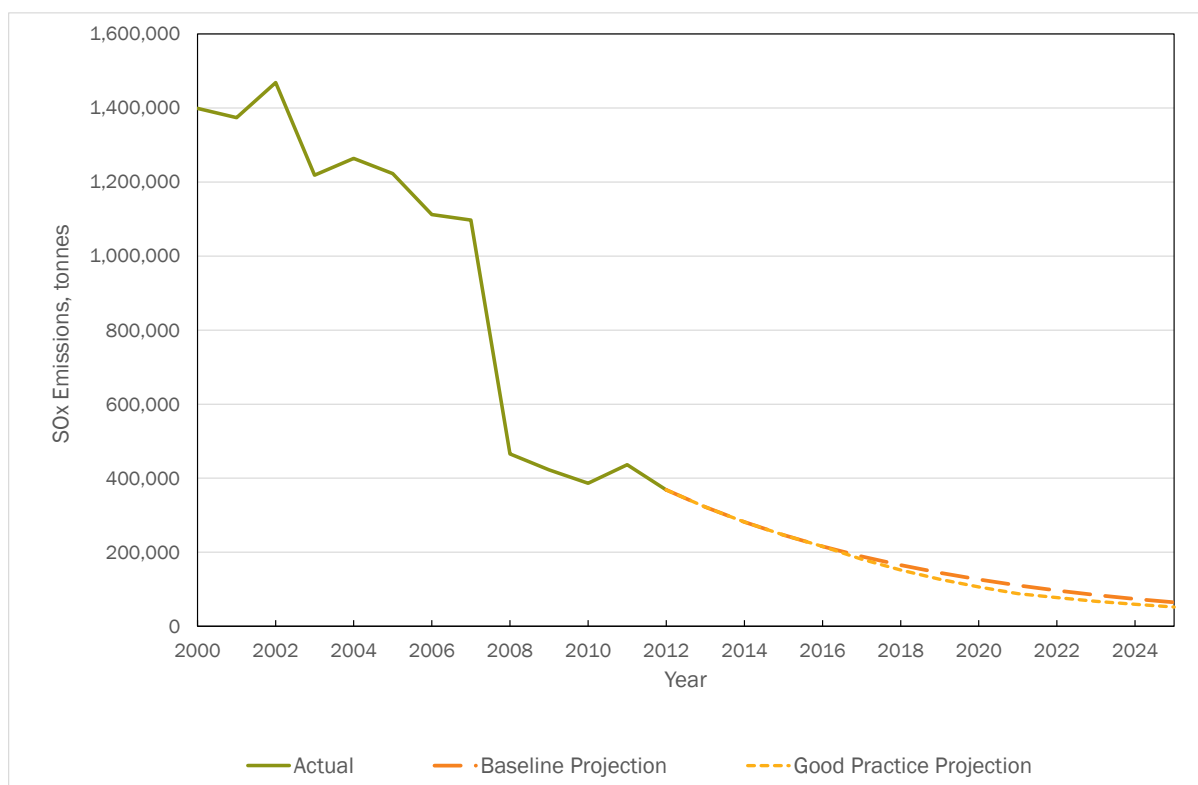


Figure 16-10: Change in NOx Emissions, tonnes

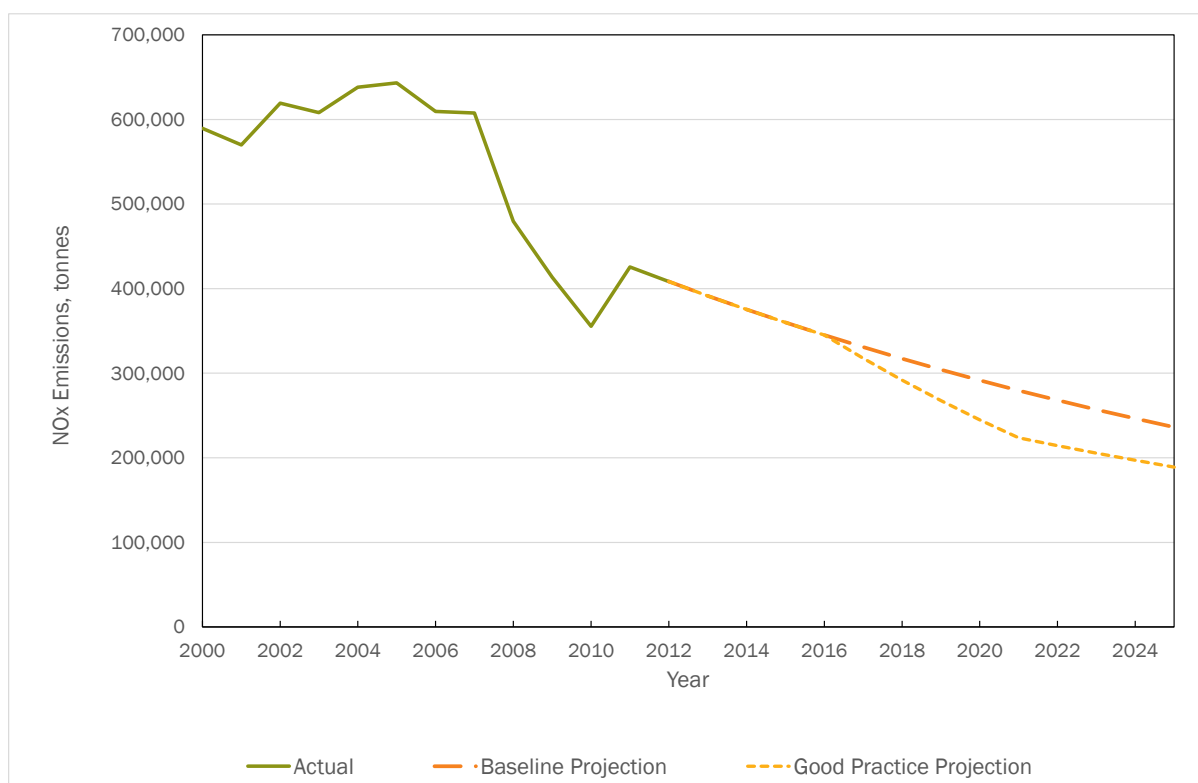


Figure 16-11: Change in PM<sub>10</sub> Emissions, tonnes

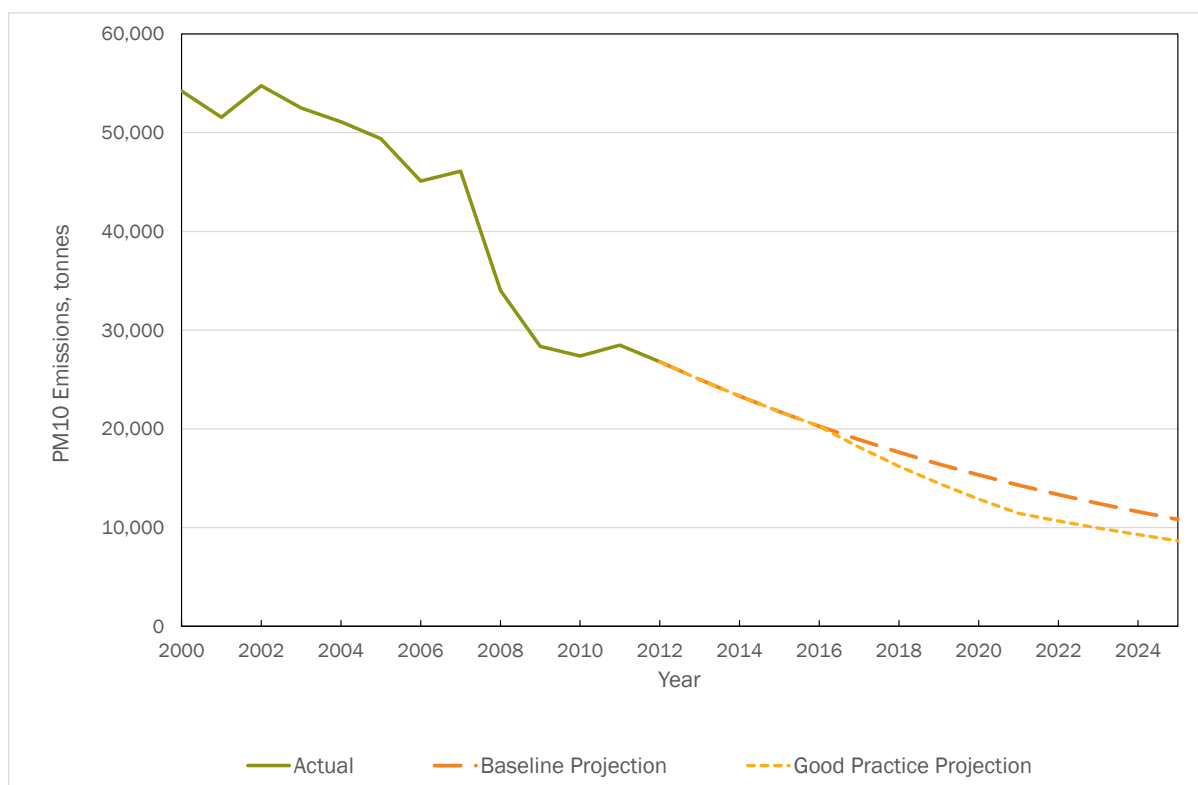


Figure 16-12: Change in Groundwater Abstraction – Public Supply, million cubic metres



Figure 16-13: Change in Groundwater Abstraction – Manufacturing, million cubic metres

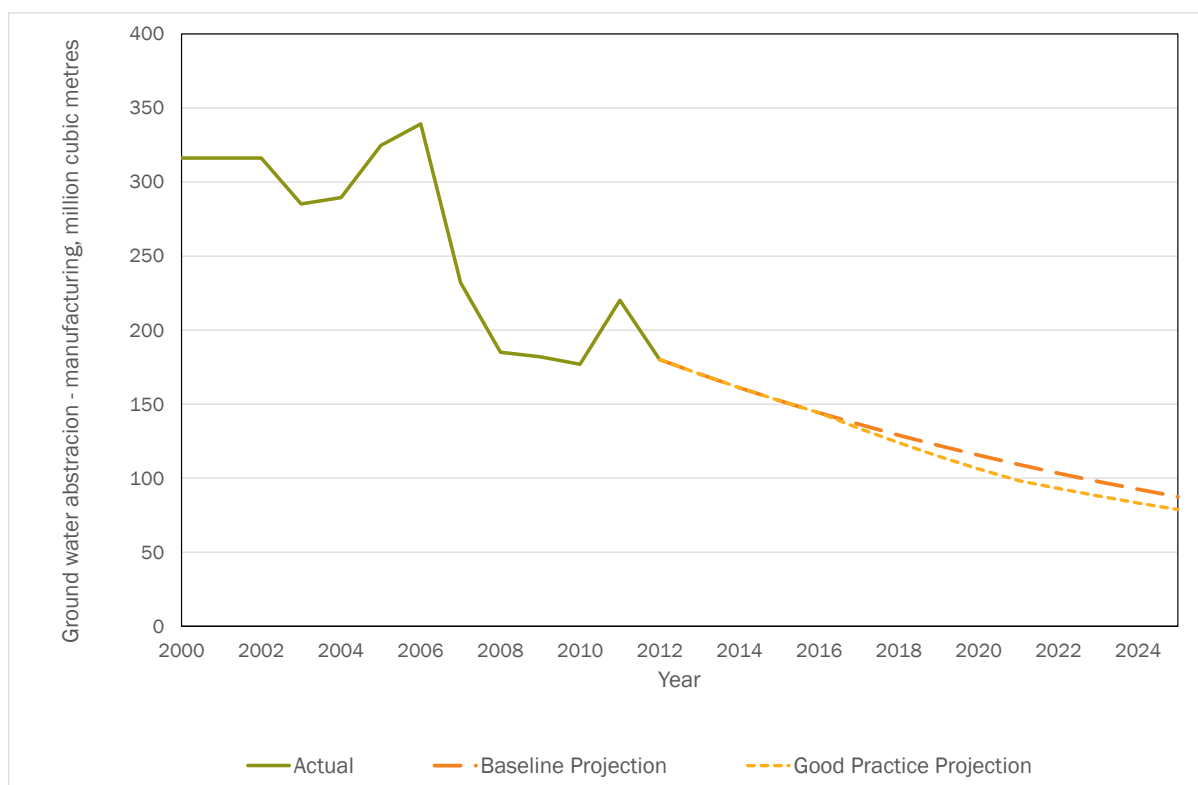


Figure 16-14: Change in Groundwater Abstraction – Agriculture, million cubic metres

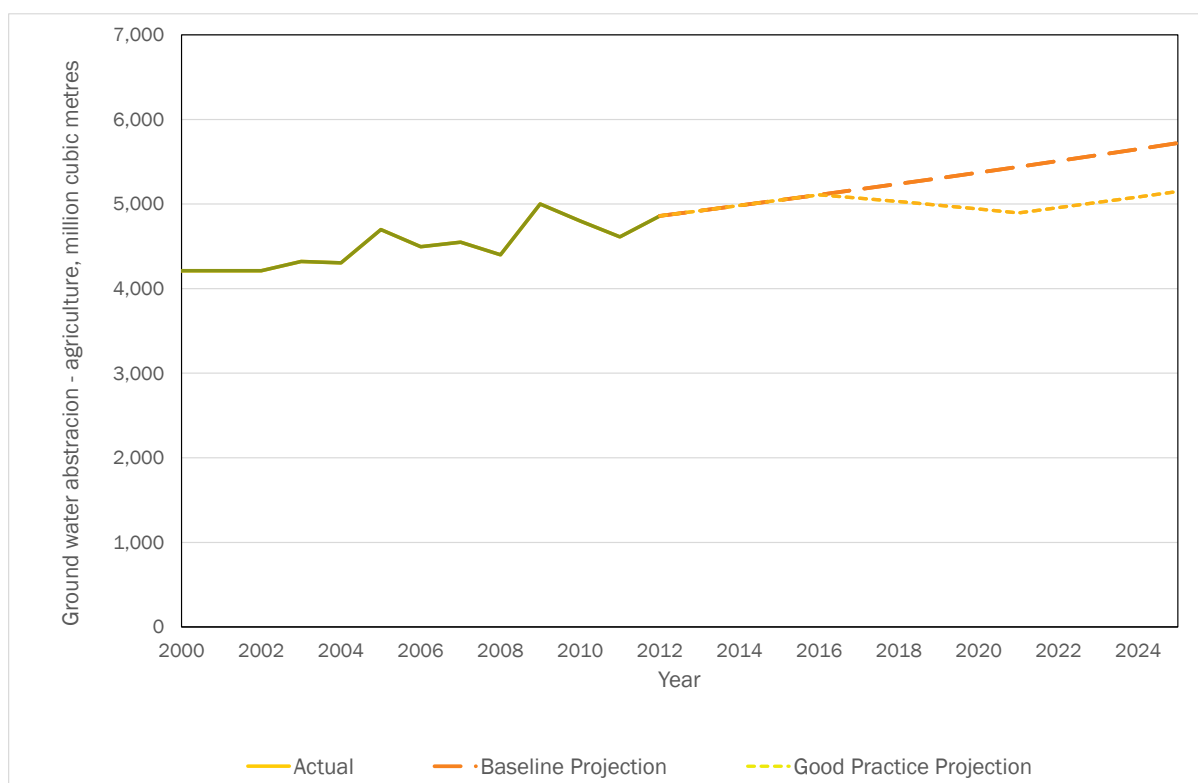


Figure 16-15: Change in Surface Water Abstraction – Public Supply, million cubic metres

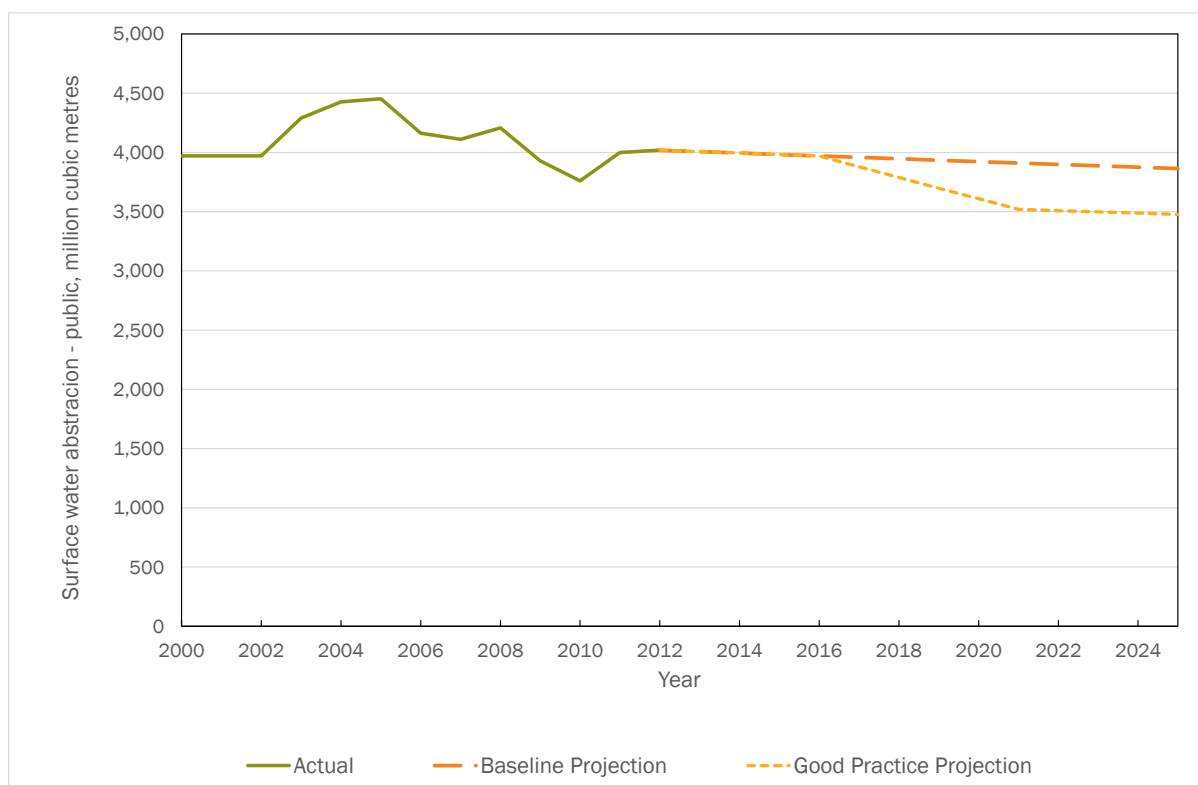


Figure16-16: Change in Surface Water Abstraction – Manufacturing, million cubic metres

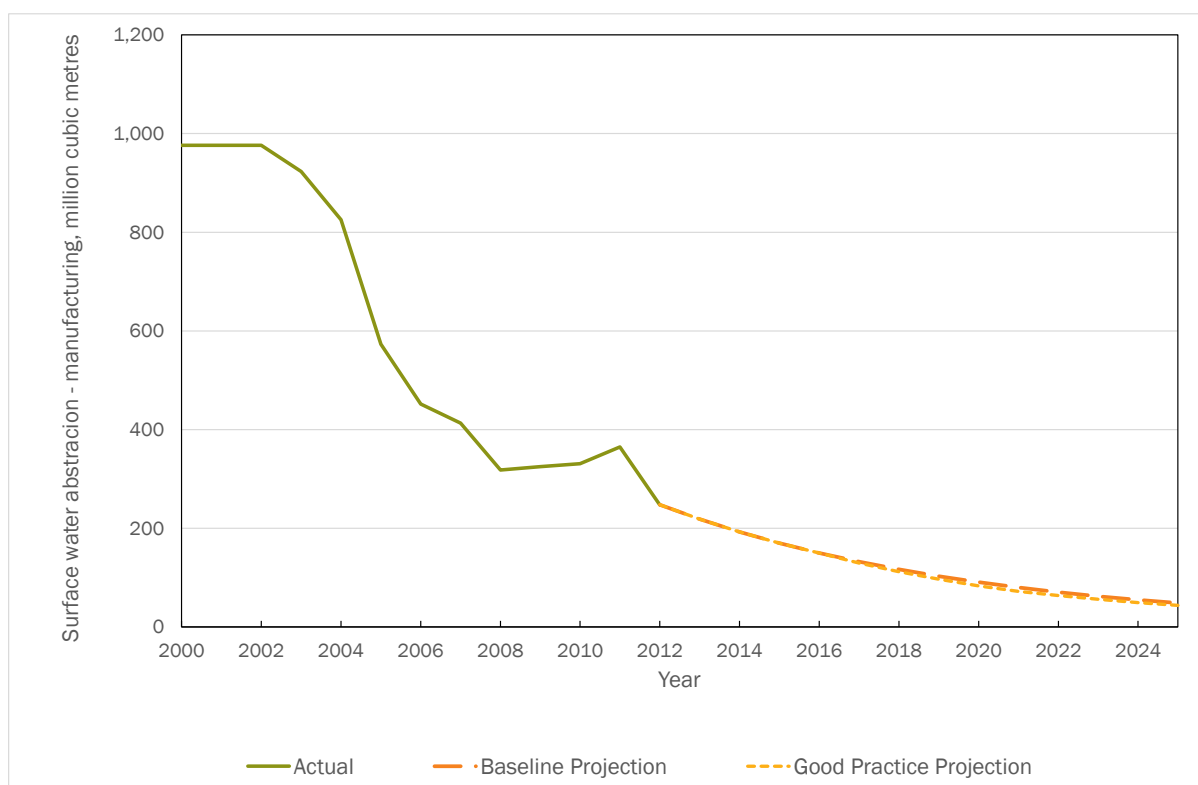


Figure 16-17: Change in Surface Water Abstraction – Agriculture, million cubic metres

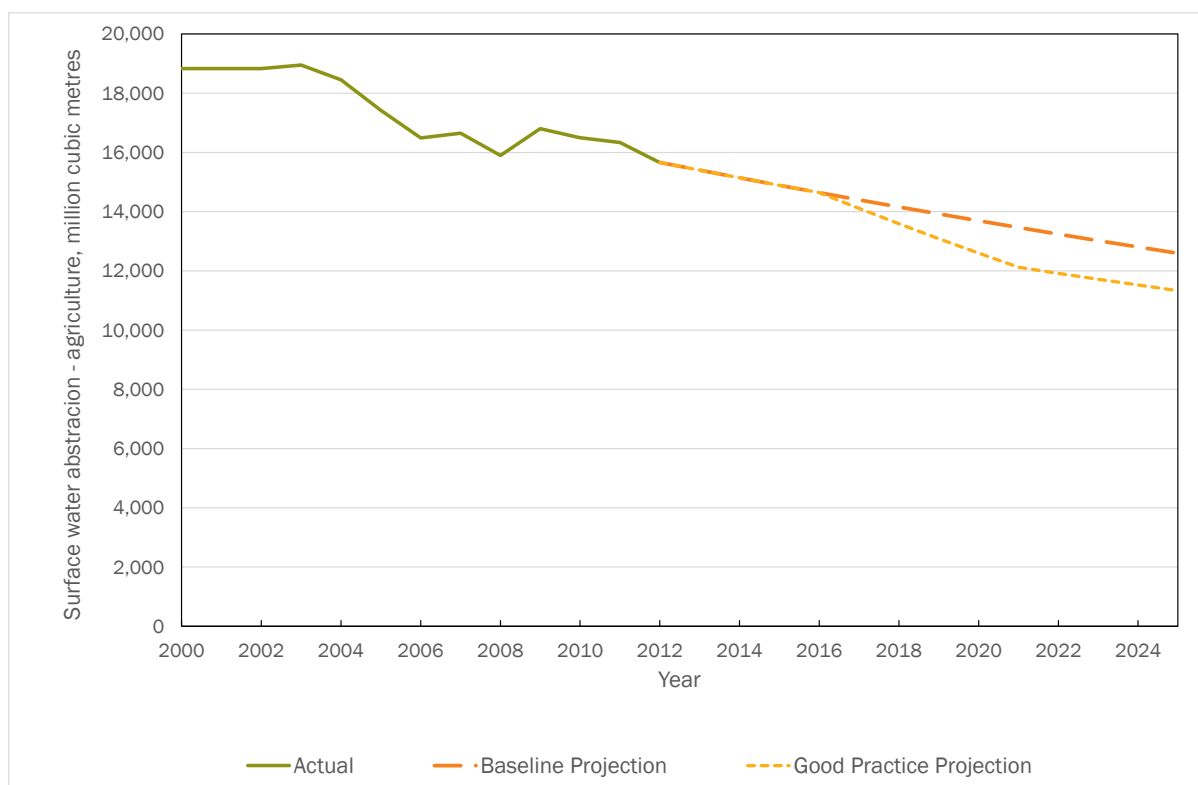


Figure 16-18: Change in Active Ingredients in Pesticides, tonnes

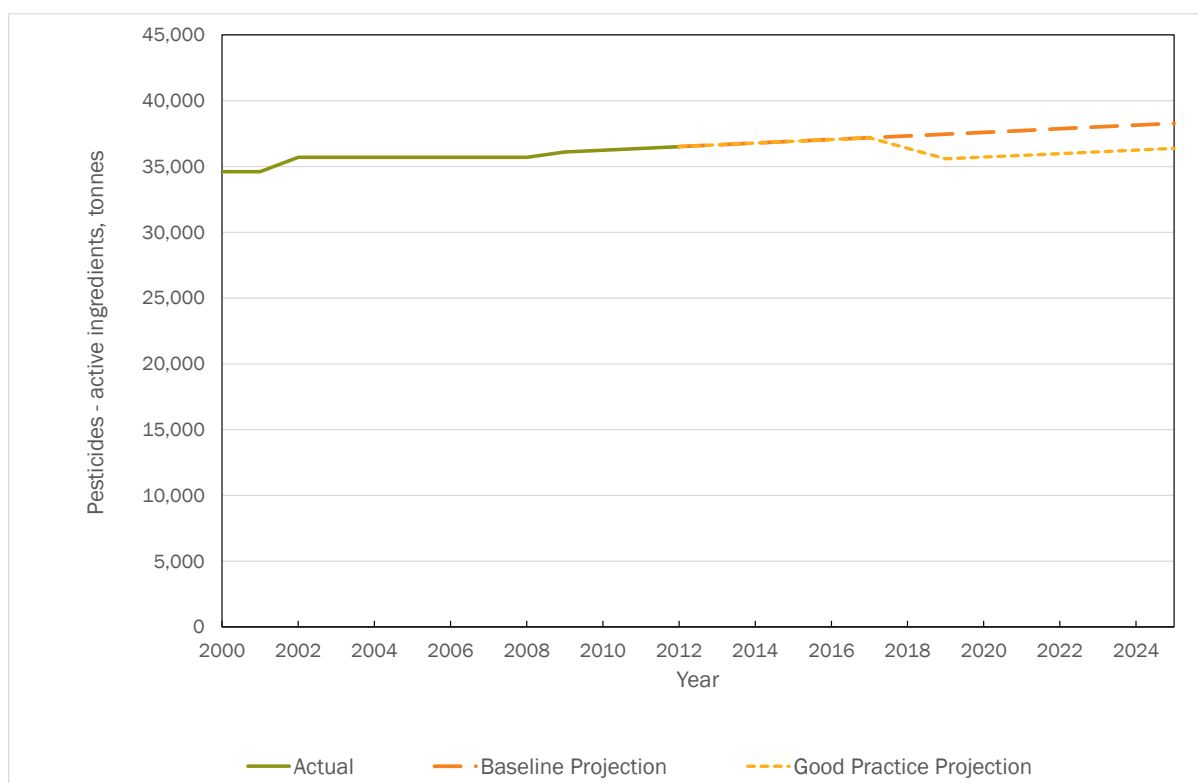




Figure 16-19: Change in Non-organic Nitrogen Sales of Fertilisers, tonnes



Figure 16-20: Change in Aggregates Extraction, thousand tonnes

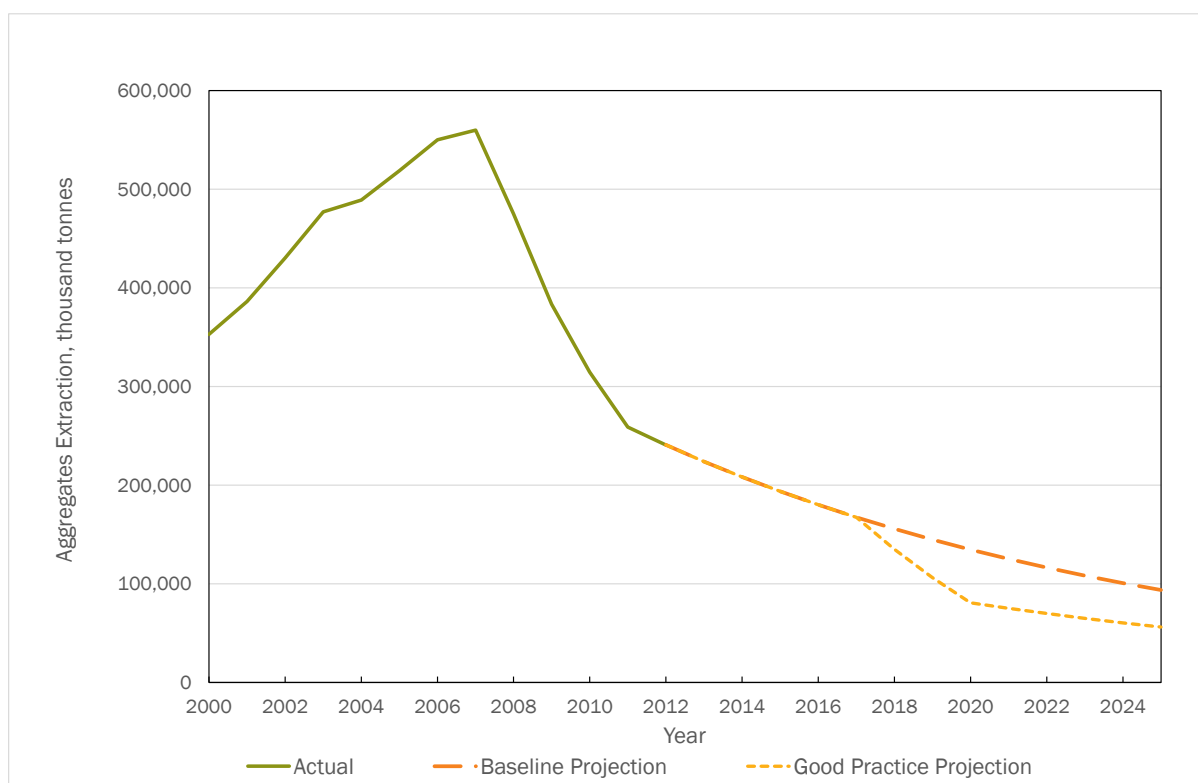


Figure 16-21: Change in Paper & Card Packaging Generation, thousand tonnes

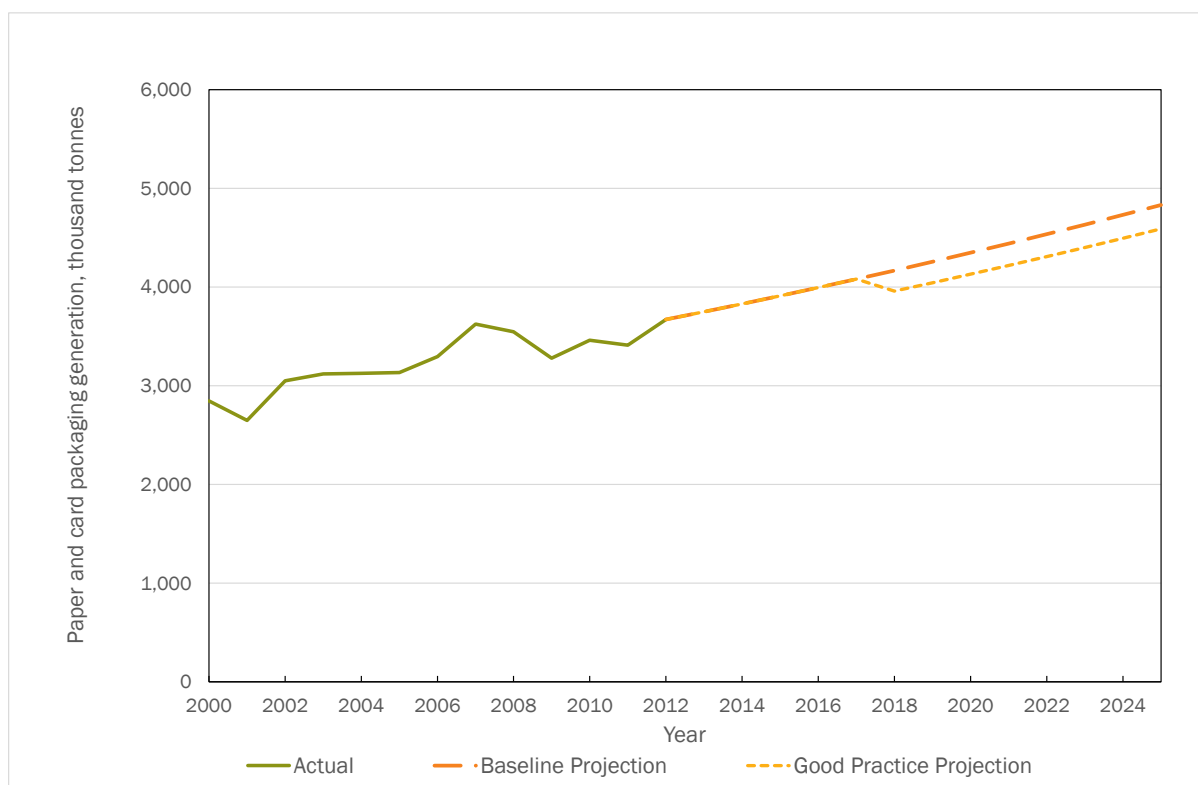


Figure 16-22: Change in Plastic Packaging Generation, thousand tonnes

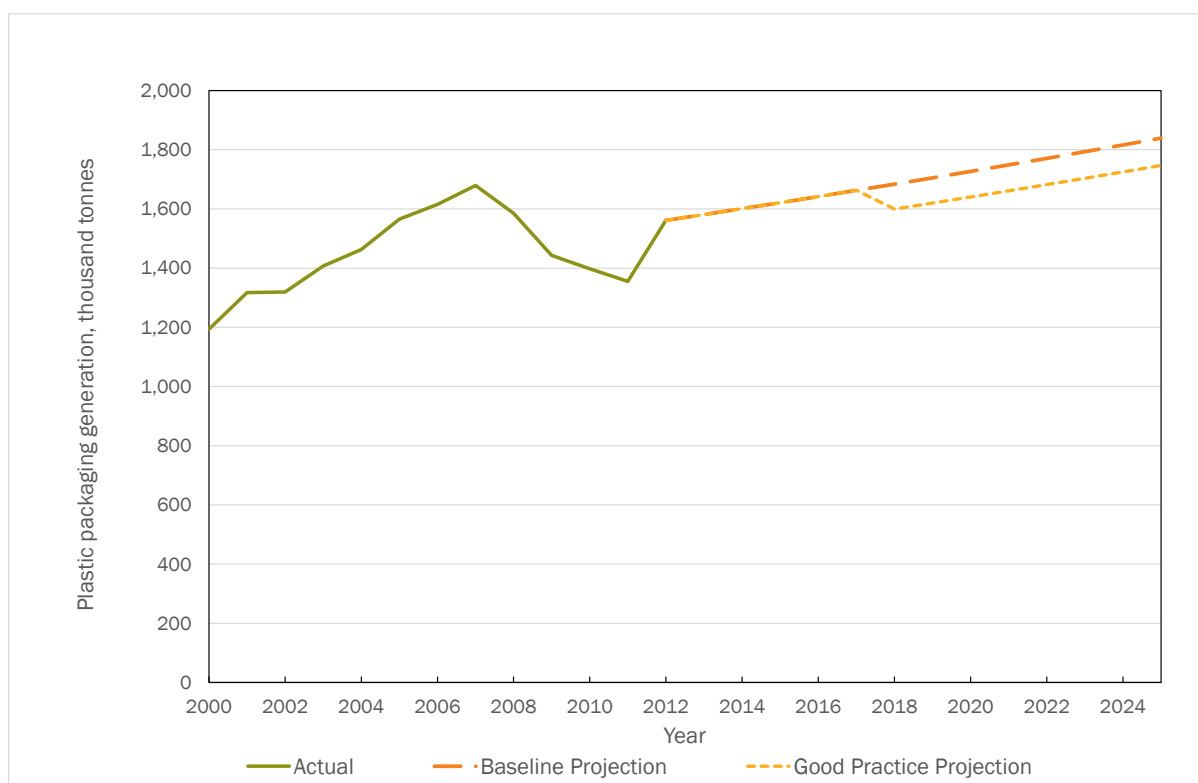


Figure 16-23: Change in Wood Packaging Generation, thousand tonnes



Figure 16-24: Change in Metal Packaging Generation, thousand tonnes

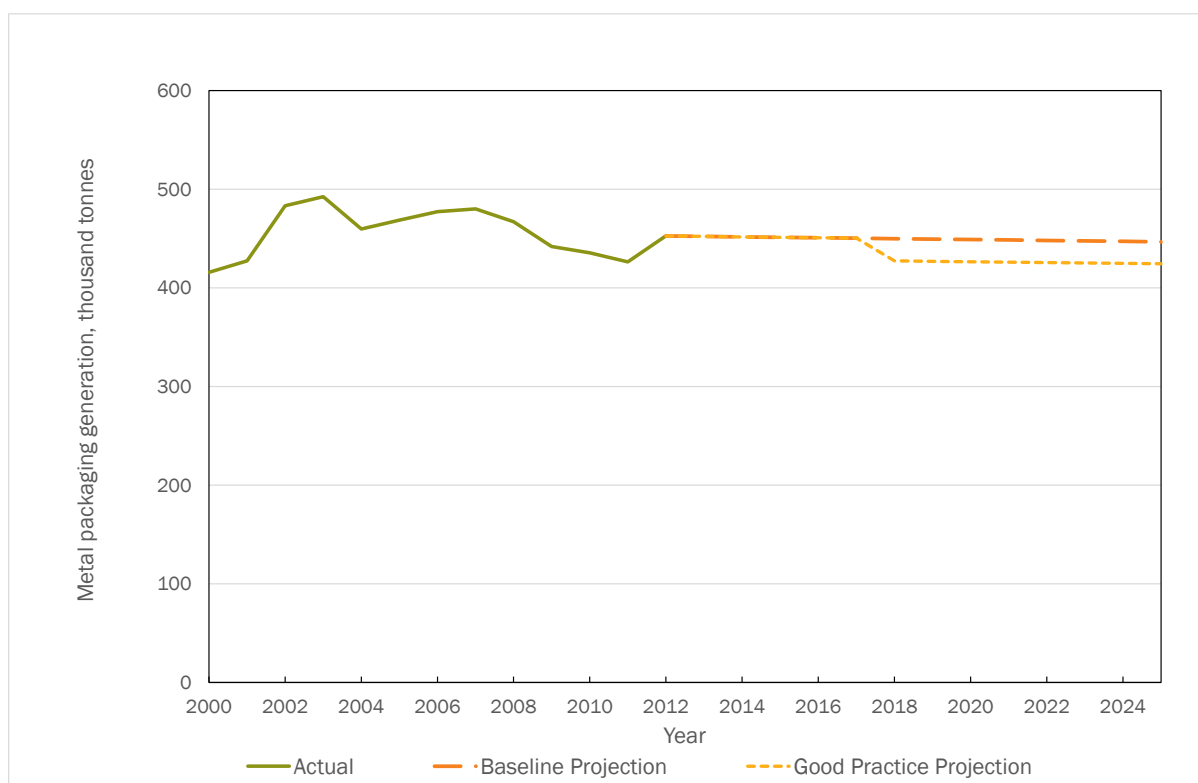


Figure 16-25: Change in Glass Packaging Generation, thousand tonnes

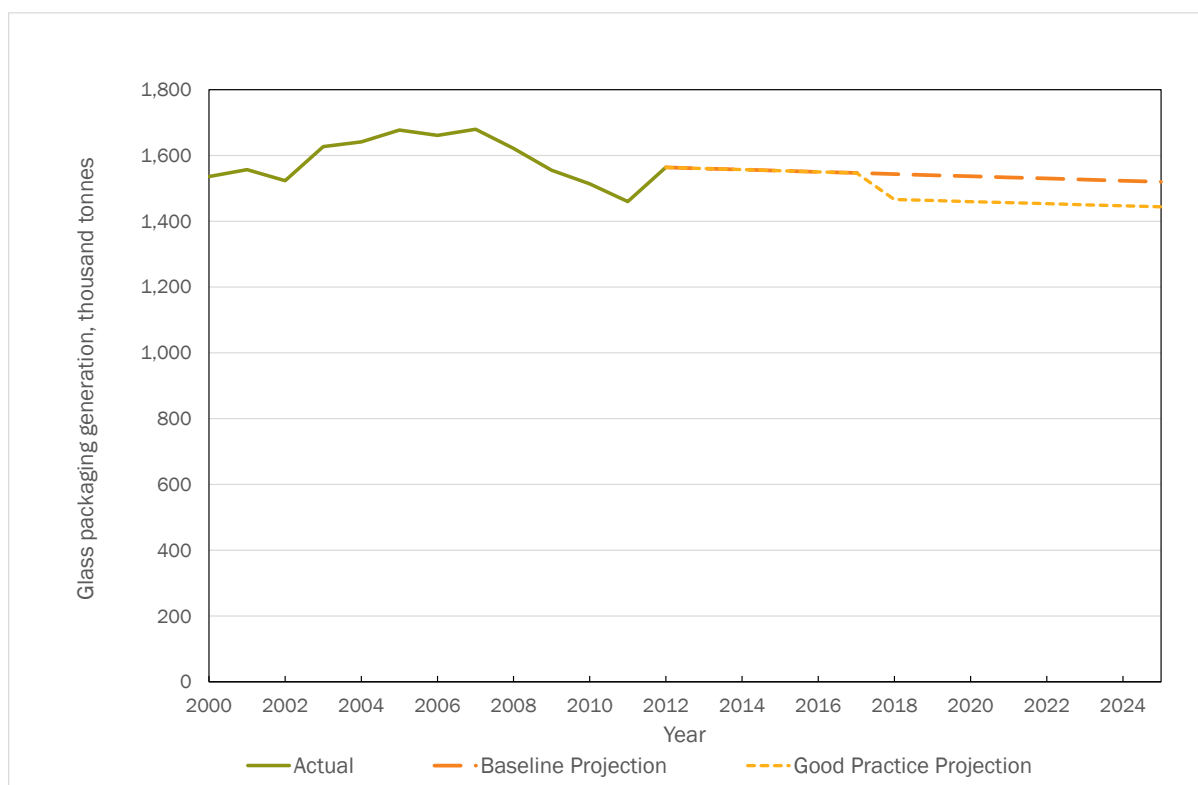
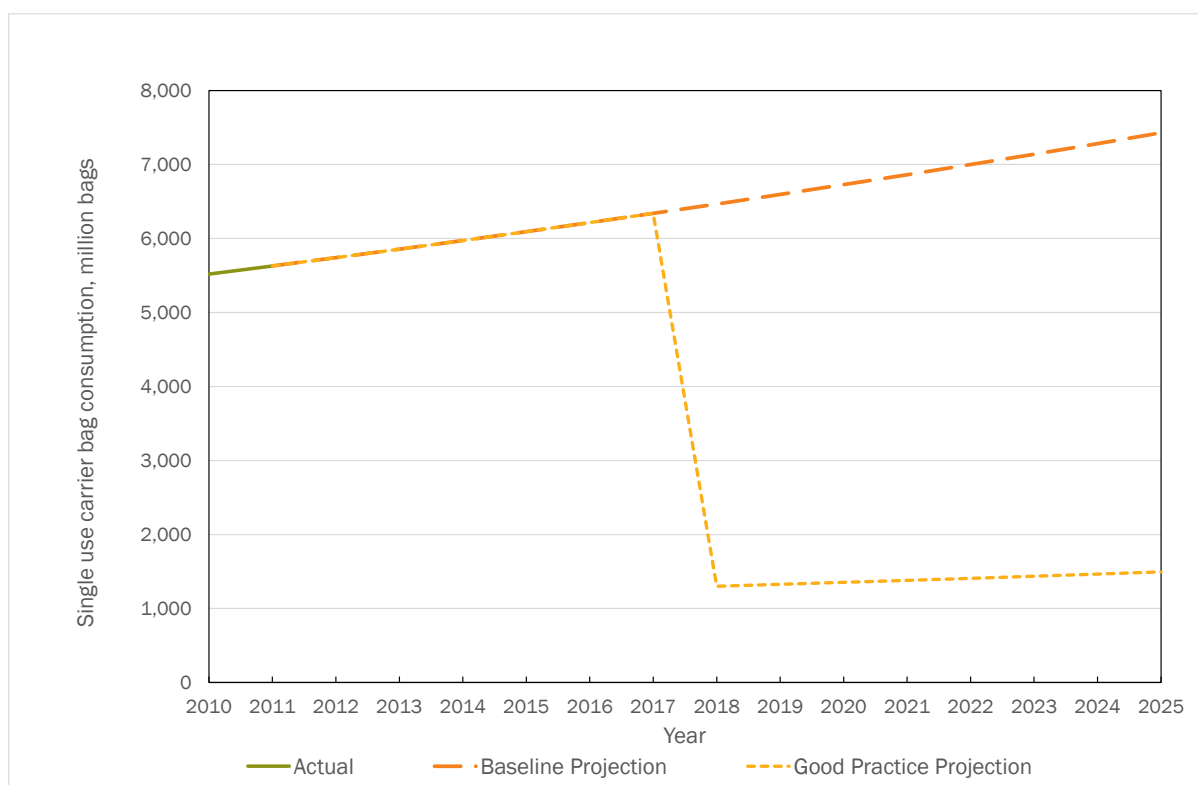


Figure 16-26: Change in Consumption of Single Use Carrier Bags, million bags



## 16.5 Full Revenue Outputs

A summary of the full revenue outputs for each of the suggested reforms to the tax system are presented in the table below.

Table 16-30: Revenue Outturns from Model, million EUR (real 2014 terms)

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Energy Taxes	Transport fuels	0	0	379	755	1,130	1,502	1,872	2,241	2,607	2,972	2,972
	C&I / Heating	0	0	166	329	489	513	536	558	580	602	602
	Electricity	0	66	66	66	66	66	66	66	66	66	66
	<i>Sub-total Energy, million EUR</i>	0	66	610	1,150	1,684	2,080	2,474	2,865	3,253	3,639	3,639
	<i>Sub-total Energy, % GDP</i>	0.0%	0.0%	0.1%	0.1%	0.2%	0.2%	0.2%	0.3%	0.3%	0.3%	0.3%
Transport Taxes (excluding transport fuels)	Vehicle Taxes	0	0	2,458	4,917	7,376	9,836	12,300	12,302	12,304	12,306	12,308
	Passenger Aviation Tax	0	0	2,692	5,431	5,626	5,823	6,019	6,217	6,415	6,613	6,812
	Freight Aviation Tax	0	0	0	1	1	1	1	1	1	1	1
	<i>Sub-total Transport, million EUR</i>	0	0	5,151	10,348	13,003	15,659	18,320	18,519	18,719	18,920	19,121
	<i>Sub-total Transport, % GDP</i>	0.0%	0.0%	0.5%	1.0%	1.2%	1.5%	1.7%	1.8%	1.8%	1.8%	1.8%
Pollution and Resource Taxes	Landfill Tax - Non-haz (excl. C&D)	0	301	565	804	799	794	798	802	805	809	813
	Landfill Tax - Inerts (C&D)	0	2	4	4	3	2	2	2	2	2	2
	Incineration /MBT Tax	0	41	83	123	125	126	127	128	130	131	132

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Air Pollution Tax	0	119	212	283	335	372	331	309	289	271	255
	Water Abstraction Tax	0	729	1,427	2,095	2,734	3,345	3,272	3,274	3,276	3,279	3,283
	Waste Water Tax	0	122	237	343	330	330	330	330	330	330	330
	Pesticides Tax	0	0	139	273	267	268	269	270	271	272	273
	Aggregates Tax	0	0	402	324	255	194	180	168	156	145	135
	Packaging Tax	0	0	262	251	254	257	260	263	266	269	272
	Single Use Bag Tax	0	565	576	117	120	122	125	127	130	132	135
	Fertiliser Tax	0	0	0	0	0	0	0	0	0	0	0
	<b>Sub-total Pollution &amp; Resource, million EUR</b>	0	1,879	3,906	4,618	5,222	5,810	5,694	5,673	5,655	5,641	5,630
	<b>Sub-total Pollution &amp; Resource, % GDP</b>	0.0%	0.2%	0.4%	0.4%	0.5%	0.6%	0.5%	0.5%	0.5%	0.5%	0.5%
Total Revenue Stream	<b>Total, million EUR</b>	0	1,945	9,667	16,116	19,910	23,550	26,488	27,057	27,628	28,200	28,390
	<b>Total, % GDP</b>	0.0%	0.2%	0.9%	1.5%	1.9%	2.2%	2.5%	2.6%	2.6%	2.7%	2.7%

## 17.0 Sweden

During the course of the study the latest data available from official sources was sought, namely the TAXUD Taxes in Europe database, energy excise duty tables and the OECD database on environmental taxes and charges. This was supplemented by national data sources where possible. Due to the number of taxes and countries involved, the central case for energy excise duties has been the rates published by TAXUD giving the position as of 1<sup>st</sup> July 2014. Planned future increases may not be fully captured in this analysis and therefore, the projected increase in revenues would effectively incorporate any revenue from increased rates in early 2015 or shortly thereafter.

### 17.1 Energy Taxes

#### ➤ Energy Taxes:

- The Sweden excise duties on fuels and electricity are shown in Table 17-1 alongside minimum rates in the existing ETD and the EU-28 average and median rates.

Table 17-1: Standard Rates of Excise Duties on Fuels and Electricity in Sweden

Excise Duty	Unit	Rate Applied in Sweden <sup>652 653</sup> (1€=9.0914SEK <sup>654</sup> )	Existing ETD Minimum	EU-28 Average	EU-28 Median
<b>Motor Fuels – propellant</b>					
Unleaded Petrol	€ per 1000 litres	SEK 5,658 (€622.31) <sup>1</sup>	€359	€519	€509
Gas Oil (Diesel)	€ per 1000 litres	SEK 4,847 (€533.14) <sup>2</sup>	€330	€427	€405
Kerosene	€ per 1000 litres	SEK 4,847 (€533.13)	€330	€440	€405
Liquid Petroleum Gas	€ per 1000 kg	SEK 3,249 (€357.35)	€125	€209	€180
Natural Gas	€ per GJ	SEK 58 (€6.36)	€2.60	€3.03	€2.66
<b>Motor Fuels – Industry / Commercial Use – Manufacturing business</b>					
Gas Oil (Diesel)	€ per 1000 litres	SEK 1,971 (€228.37) <sup>3</sup>	€21	€221	€163

<sup>652</sup> These tax rates exclude the sulphur tax and the nitrogen charge; see separate sections for these.

<sup>653</sup> Rate increases, many of which are significant, will take effect from 2015 for propellants LPG and gas; and for all industry/business fuels, except coal and heavy fuel.

<sup>654</sup> Note as the proposed rates for 2015 are used they are converted to EUR using the estimated exchange rate published by Eurostat for 2015.



Excise Duty	Unit	Rate Applied in Sweden <sup>652 653</sup> (1€=9.0914SEK <sup>654</sup> )	Existing ETD Minimum	EU-28 Average	EU-28 Median
		SEK 245 (€26.93) <sup>3</sup>			
Kerosene	€ per 1000 litres	SEK 1,971 (€228.37) <sup>3</sup> SEK 245 (€26.93) <sup>3</sup>	€21	€283	€330
Liquid Petroleum Gas	€ per 1000 kg	SEK 1,611 (€177.24) <sup>3</sup> SEK 314 (€34.58) <sup>3</sup>	€41	€126	€125
Natural Gas	€ per GJ	SEK 30 (€3.31)	€0.30	€1.76	€1.50
<b>Heating – Manufacturing Business Use –</b>					
Gas Oil (Diesel)	€ per 1000 litres	SEK 1,971 (€228.37) <sup>3</sup> SEK 245 (€26.93) <sup>3</sup>	€21	€221	€163
Kerosene	€ per 1000 litres	SEK 1,971 (€228.37) <sup>3</sup> SEK 245 (€26.93) <sup>3</sup>	€0.00	€270	€330
Heavy Fuel Oil	€ per 1000 kg	SEK 4,110 (€452.02) <sup>3</sup> SEK 258 (€28.34) <sup>3</sup>	€15	€70	€25
Liquid Petroleum Gas	€ per 1000 kg	SEK 1,611 (€177.24) <sup>3</sup> SEK 314 (€34.58) <sup>3</sup>	€0.00	€82	€40
Natural Gas	€ per GJ	SEK 30 (€3.31) <sup>3</sup> SEK 6.7 (€0.74) <sup>3</sup>	€0.15	€1.36	€0.46
Coal and Coke	€ per GJ	SEK 35 (€3.85) <sup>3</sup> SEK 6.6 (€0.72) <sup>3</sup>	€0.15	€1.27	€0.31
<b>Heating<sup>4</sup> – Non-Business Use (incl. non-manufacturing business use)</b>					
Gas Oil (Diesel)	€ per 1000 litres	SEK 3,904 (€429.41)	€21	€179	€125
Kerosene	€ per 1000 litres	SEK 3,904 (€429.41)	€0.00	€279	€330
Heavy Fuel Oil	€ per 1000 kg	SEK 4,110 (€452.02)	€15	€85	€26
Liquid Petroleum Gas	€ per 1000 kg	SEK 4,297 (€472.65)	€0	€111	€42

Excise Duty	Unit	Rate Applied in Sweden <sup>652 653</sup> (1€=9.0914SEK <sup>654</sup> )	Existing ETD Minimum	EU-28 Average	EU-28 Median
Natural Gas	€ per GJ	SEK 80 (€8.84)	€0.3	€2.04	€0.94
Coal and Coke	€ per GJ	SEK 116 (€12.81)	€0.3	€1.77	€0.32
<b>Electricity</b>					
Business Use - manufacturing	€ per MWh	SEK 5 (€0.55)	€0.5	€8.42	€1.03
Non-Business Use – and non-manufacturing business	€ per MWh	SEK 293 (€32.23)	€1.0	€14.53	€2.06
<p>Notes:</p> <p>1. This rate is for Class 2 petrol. Class 1b has a rate of €619.27.</p> <p>2. This rate is for Class 1 diesel. Class 2 has a rate of 562.73 and Class 3 a rate of €578.24. Reduced rate for agricultural motor fuel is €346.16</p> <p>3. Different rates for non-ETS and ETS installations (the latter are exempt from the CO<sub>2</sub>-tax).</p> <p>4. For CHP within ETS the CO<sub>2</sub>-tax is reduced with 93 per cent; other heating has a reduction of 6 per cent.</p>					

Source: DG TAXUD (2013) Excise Duty Tables (Part II – Energy products and Electricity), Situation as at 1 July 2013, [http://ec.europa.eu/taxation\\_customs/index\\_en.htm#](http://ec.europa.eu/taxation_customs/index_en.htm#)

- Overall most of the carbon and energy tax burden falls on the residential, commercial and public service sectors, while energy-intensive industries under ETS accounting for 1/3 of Sweden's carbon emissions are taxed at rates close to the obligatory minimum rates.
- With the large share of hydropower and nuclear power the treatment of biofuels implies that almost of half of Sweden's energy use is not subject to any energy tax.
- There is an exemption from energy tax and CO<sub>2</sub> tax for FAME, ethanol and biofuels when these are based on biomass of sustainable origin.
- FAME (fatty acid methyl esters) is produced from vegetable or animal oils, such as rape-seed oil, for admixture into vehicle fuels.
- Ethanol used as low admixture in petrol is exempt from tax up to admixture for 6.5 per cent by volume.
- Biofuels used as low admixture in diesel oil is exempt from tax up to admixture for 5 per cent by volume.

- The exemptions in most cases seem to be 100%, with some exceptions: For ethanol etc. the energy tax reduction is 89% and for FAME it is 84%.<sup>655</sup>
- The carbon tax is not applied to peat, a highly carbon-intensive fuel, used mainly in ETS-covered installations, notably heat and power plants. The foregone revenues amount to annually about €220 million.<sup>656</sup>
- The carbon and energy taxes are not applied to domestic aviation. The foregone revenues amount to annually about €220 million.<sup>657</sup>
- The carbon and energy taxes are not applied to domestic shipping. The foregone revenues amount to annually about €130 million.<sup>658</sup>
- There is a reduced carbon tax rate for use of diesel in agriculture and forestry. The foregone revenues amount to annually about €150 million.<sup>659</sup>

## 17.2 Transport Taxes (Excluding Transport Fuels)

### ➤ Circulation Tax:

- Green vehicles (classified Euro 5, Euro 6, Electric and hybrid) are since 2010 fully exempted from the circulation tax during the first 5 years after registration.
- There is a tax reduction for cars registered in certain communities in the countryside (glesbygd<sup>660</sup>) by SEK 384 per vehicle and year.
- Since 2010 the CO<sub>2</sub>-based circulation tax applies also to light-duty vehicles.<sup>661</sup> Light duty vehicles registered for the first time before 2010 are subject to a weight-based tax scale (see Table 17-2 for the tax rates).
- The circulation tax on heavy goods vehicles is relatively lower than the tax on passenger cars, and it depends on various factors, including type of fuel used, axes, weight and EU environmental classification.
- The following vehicles are exempt from circulation tax<sup>662</sup>: vintage vehicles older than 30 years, trailers less than 750 kg, emergency vehicles, certain

---

<sup>655</sup>

<https://www.skatteverket.se/foretagorganisationer/skatter/punktskatter/energiskatter/energiskatterpabranslen/skattebefrielsefordrivmedel.4.2b543913a42158acf800021393.html>

<sup>656</sup> OECD; in press.

<sup>657</sup> OECD; 2013, Inventory of estimate budgetary support and tax expenditures for fossil fuels 2013.

<sup>658</sup> OECD; 2013, Inventory of estimate budgetary support and tax expenditures for fossil fuels 2013.

<sup>659</sup> OECD; 2013, Inventory of estimate budgetary support and tax expenditures for fossil fuels 2013.

<sup>660</sup> <http://www4.skatteverket.se/rattsligvagledning/edition/2014.1/1848.html#h-Glesbygdsavdrag>

<sup>661</sup> <http://www4.skatteverket.se/rattsligvagledning/edition/2014.1/1848.html#h-Berakning-enligt-det-koldioxidbaserade-skattesystemet>

<sup>662</sup>

<http://www.skatteverket.se/privat/skatter/biltrafik/fordonsskatt.4.18e1b10334ebe8bc80003864.html>

tractors, heavy terrain vehicles not used on the entire road network, motorised equipment less than 2 tonnes, trailers > 3 tonnes when hauled by diesel fuelled vehicles.

Table 17-2: Circulation Tax for Light-Duty Vehicles < 2010 (Source: Swedish Tax Authority,2014)<sup>663</sup>

Weight	Light Trucks, Buses and Class-II Passenger Vehicles Non-diesel (SEK)	Light Trucks, Buses and Class-II Passenger Vehicles Diesel (SEK)
0 – 1300	780	2247
1301-1400	963	2399
1401-1500	1127	2458
1501-1600	1291	2517
1601-1700	1456	2577
1701-1800	1585	2755
1801-1900	1714	2933
1901-2000	1843	3111
2001-2100	1972	3289
2101-2200	2101	3467
2201-2300	2230	3645
2301-2400	2359	3823
2401-2500	2488	4001
2501-2600	2617	4179
2601-2700	2746	4357
2701-2800	2875	4535
2801-2900	3004	4713
2901-3000	3133	4891
3001-	3257	5078

- Since 1998 heavy-goods vehicles above 12 tonnes, both Swedish and foreign, are levied a road user charge in accordance with the Eurovignette directive. Charges depend on the exhaust class of the vehicle and the number of axles.<sup>664</sup> Charges for 2013 are summarised in Table 17-3.
- There are exemptions for 'vintage' vehicles older than 30 years, vehicles of the armed forces, the police, the state, the municipality, or if used for emergency services. Road maintenance vehicles are also exempt.

<sup>663</sup>

<http://www.skatteverket.se/download/18.2b543913a42158acf800024151/1363260045853/Fordonsskattetabeller+20130101.pdf>

<sup>664</sup> <http://www4.skatteverket.se/rattsligvagledning/edition/2014.1/1848.html#h-Tung-lastbil-och-tung-buss>

Table 17-3: Road Charge for Heavy-duty Vehicles (Source: NMR, 2014)<sup>665</sup>

Number of Axels	Exhaust Class	Annual Road Charge (2013) SEK
Two or three	Euro 0	8,134
Two or three	Euro 1	7,202
Two or three	Euro 2 or cleaner	6,354
Four or more	Euro 0	13,133
Four or more	Euro 1	11,862
Four or more	Euro 2 or cleaner	10,591

## 17.3 Pollution and Resource Taxes

### ➤ Sulphur Tax:<sup>666</sup>

- The sulphur tax is due on the input side, not on actual emissions, but there is a deduction available for the effects of desulphurisation with flue gas equipment or where sulphur is embedded in a resulting product. Although it applies to the same fuels as the energy and CO<sub>2</sub> taxes, the same reductions or refunds do not apply. Sulphur tax also applies to peat, but not crude oil.
- The rate of the sulphur tax is 30 SEK per kg. sulphur in solid fuels and gas. For fluids the tax rate is for each decedentile weight per cent at SEK 27 per m<sup>3</sup> of sulphur.
- For low-sulphur gasoil with 0.10% sulphur the tax amounts to SEK 0.027 per litre or about 0.3 eurocent.
- The sulphur tax does not apply where the contents of sulphur are below 0.05% of the fuel weight, which implies that no motor fuels are subject to sulphur tax in Sweden.
- Certain industrial processes, such as in non-metal mineral industries (cement, tile, ceramics, mineral insulation etc.) are exempt from sulphur tax. A deduction is possible where fuels have been used to produce taxable electricity or in CHP, as well as for purposes related to aviation, shipping and railways. Agriculture and forestry may deduct the sulphur tax for non-motor fuels.

### ➤ Waste Tax:

<sup>665</sup> Nordic Council of Ministers, 2014, The use of economic instruments in Nordic environmental policy, Copenhagen.

<sup>666</sup> Swedish Tax Authority, 2013, Handledning för punktskatter, Stockholm.

- Landfills and other sites where waste (>50 tonnes per year) is deposited for more than 3 years are liable. Deductions can be made for waste that is removed again from the site, e.g. for reuse.
- The waste tax does not apply for sites that only store soil, gravel, clay, stones or mine residuals etc. including certain residuals from cement production. Tile and concrete is not subject to exemption. Waste from metallurgical processes is exempt as well as several other wastes with toxic or hazardous components.
- Where waste material is applied as an alternative material for construction of harbours, for skiing hills or for noise walls etc. it is regarded as reuse and the site is not tax liable.
- The tax is weightbased, while there is also a detailed table for converting volumes of certain materials into weight.
- The tax on waste for incineration was abolished in 2010, but the tax applies to any residuals from incineration (slags and cinders etc).

## 17.4 Modelled Changes in Tax Base

The modelled change in the tax base for each of the suggested reforms to the tax system are shown in the table and figures below.

Table 17-4: Change in Energy Tax Base

Fuel Type	Units	Baseline	After Tax Increase	Change
Gas Oil	million litres	402	392	-10
Petrol	million litres	264	265	1
Kerosene	million litres	77	77	0
LPG	thousand tonnes	22	19	-3
Heavy Fuel Oil	thousand tonnes	37	34	-3
Natural Gas	TJ (GCV)	1,862	1,648	-213
Coal	thousand tonnes	15	15	0
Electricity	GWh	9,523	8,683	-840

Figure 17-1: Change in Internal Passenger Flights, flights per year

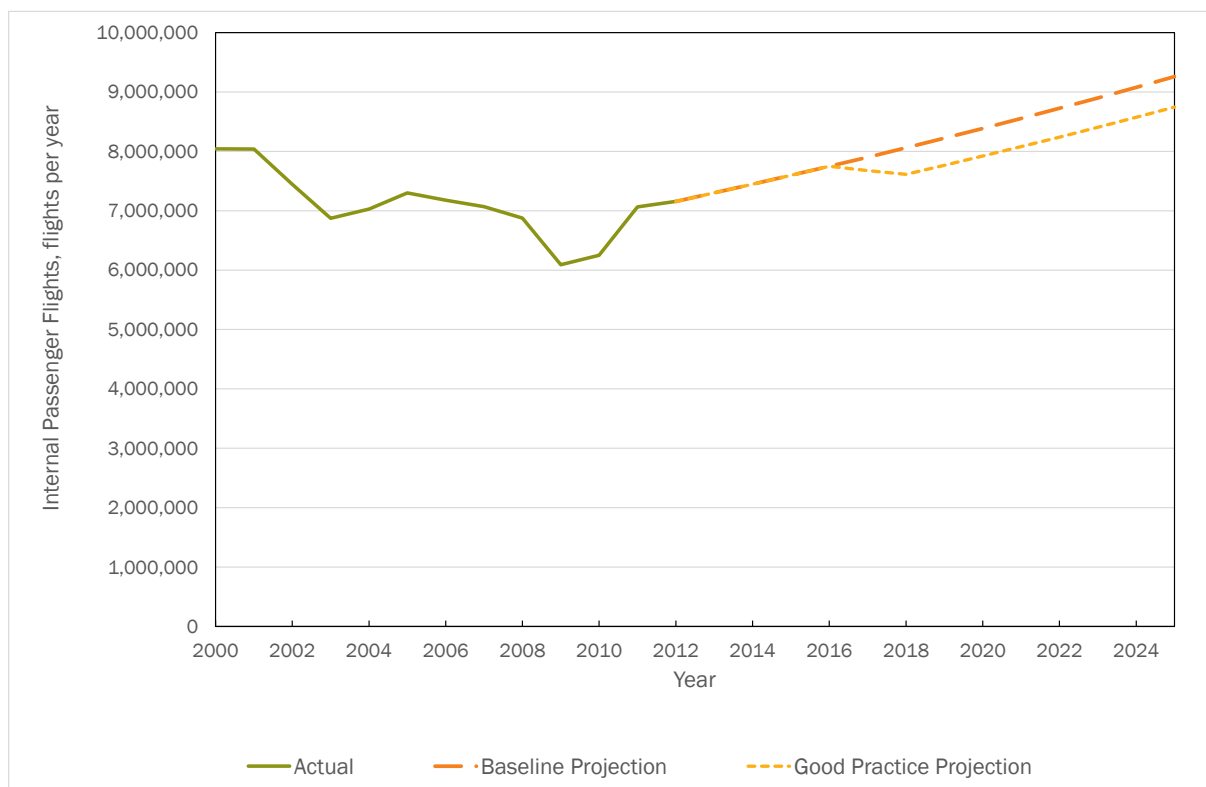


Figure 17-2: Change in Intra-EU Passenger Flights, flights per year

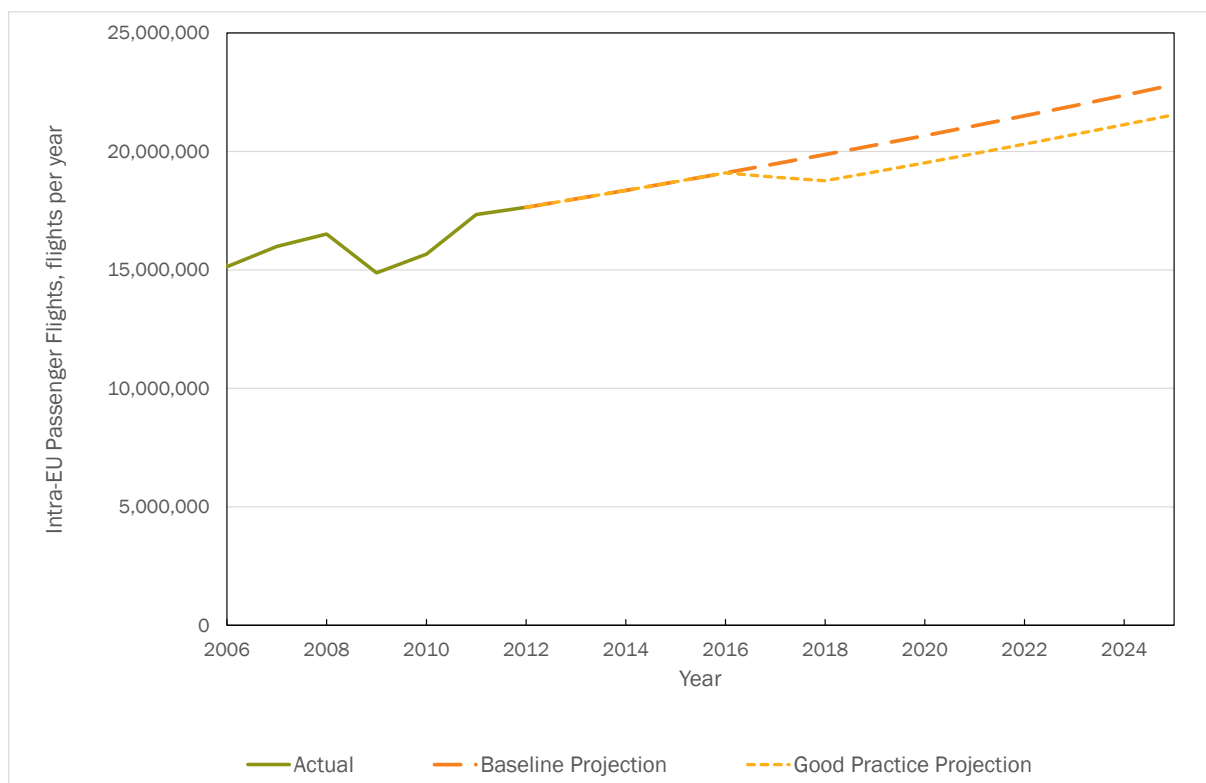


Figure 17-3: Change in Extra-EU Passenger Flights, flights per year

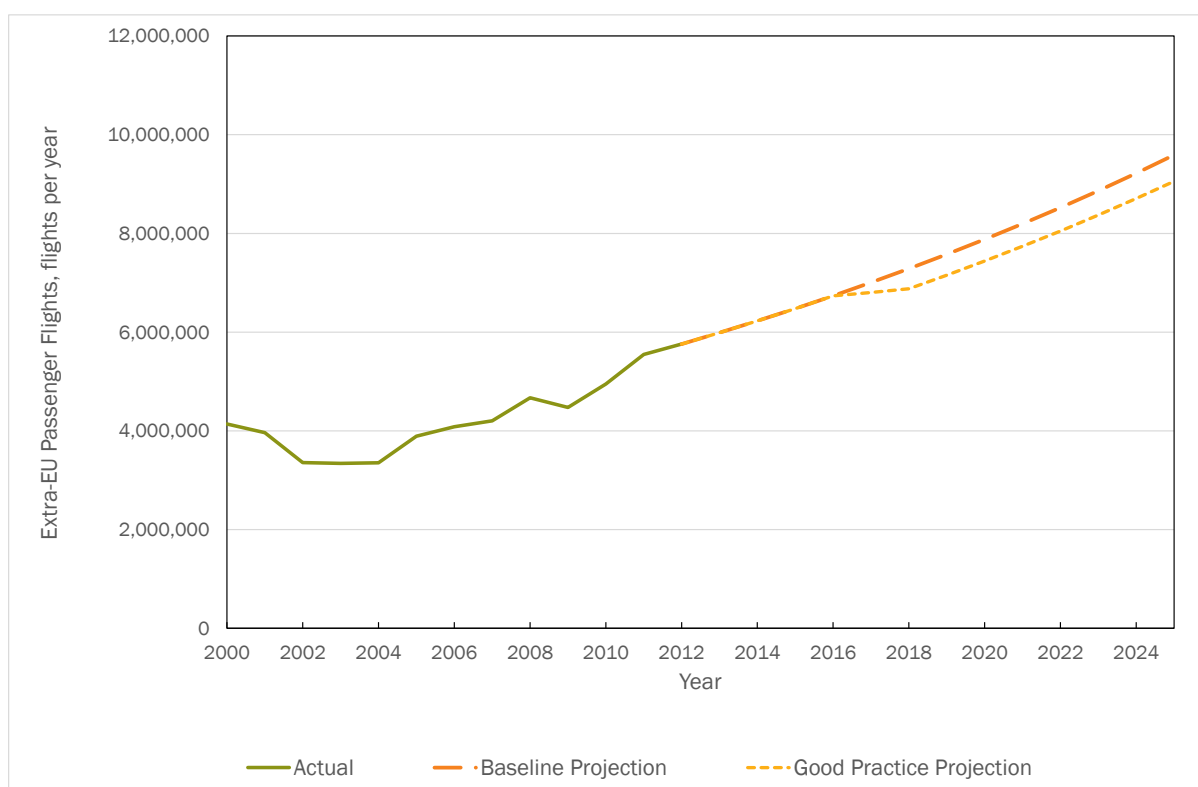


Figure 17-4: Change in Internal Air-freight, tonnes





Figure 17-5: Change in Intra-EU Air-freight, tonnes

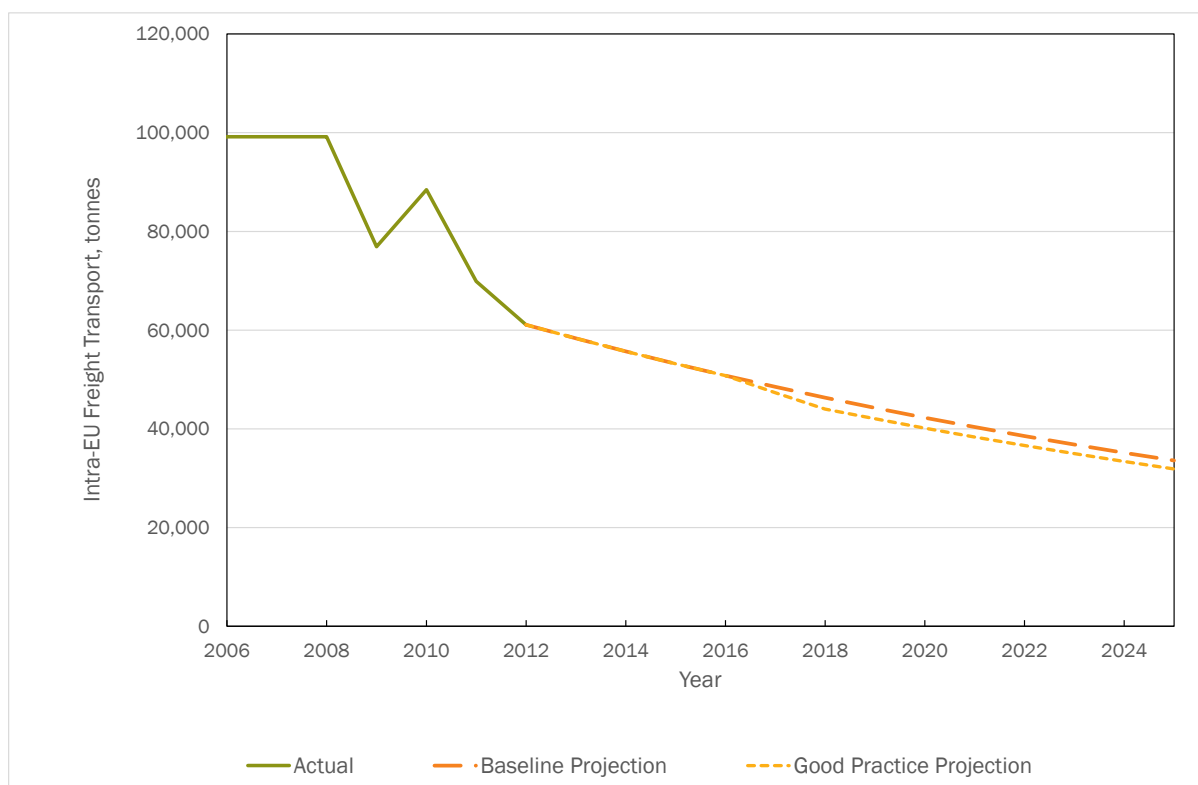


Figure 17-6: Change in Extra-EU Air-freight, tonnes

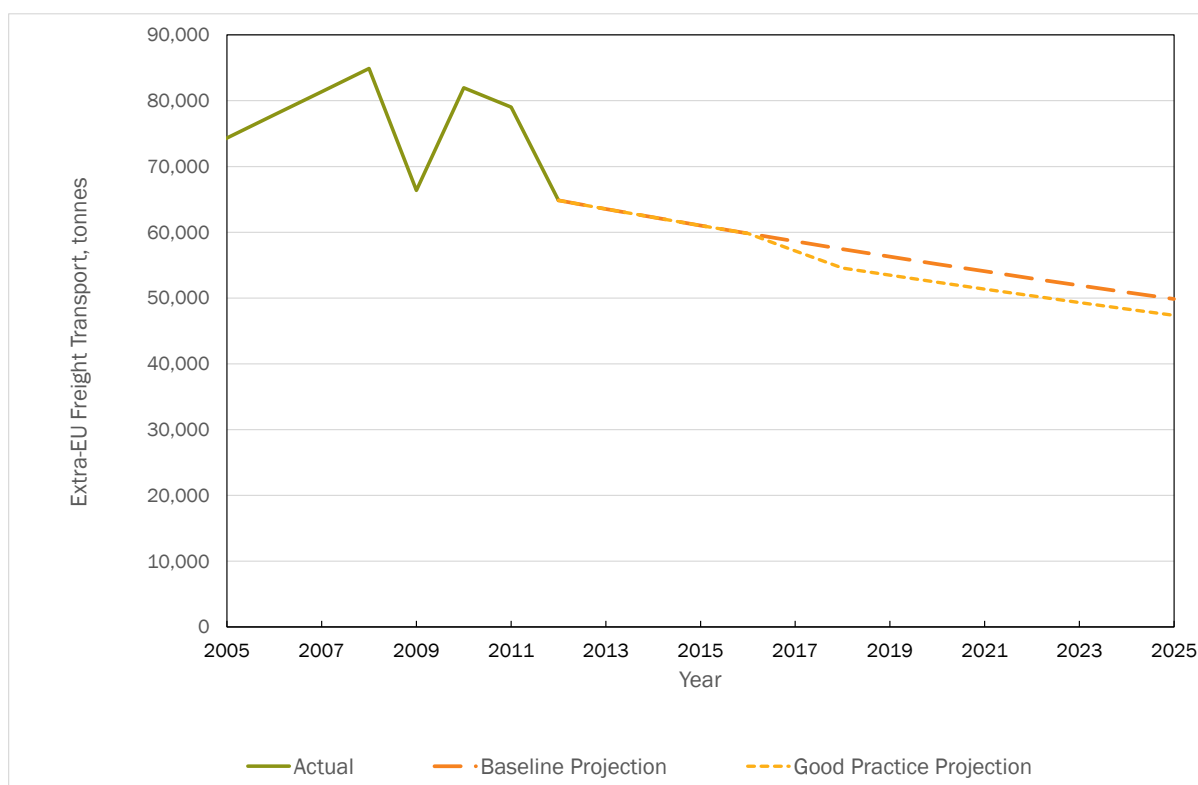


Figure 17-7: Change in Non-Hazardous Waste Landfilled, thousand tonnes

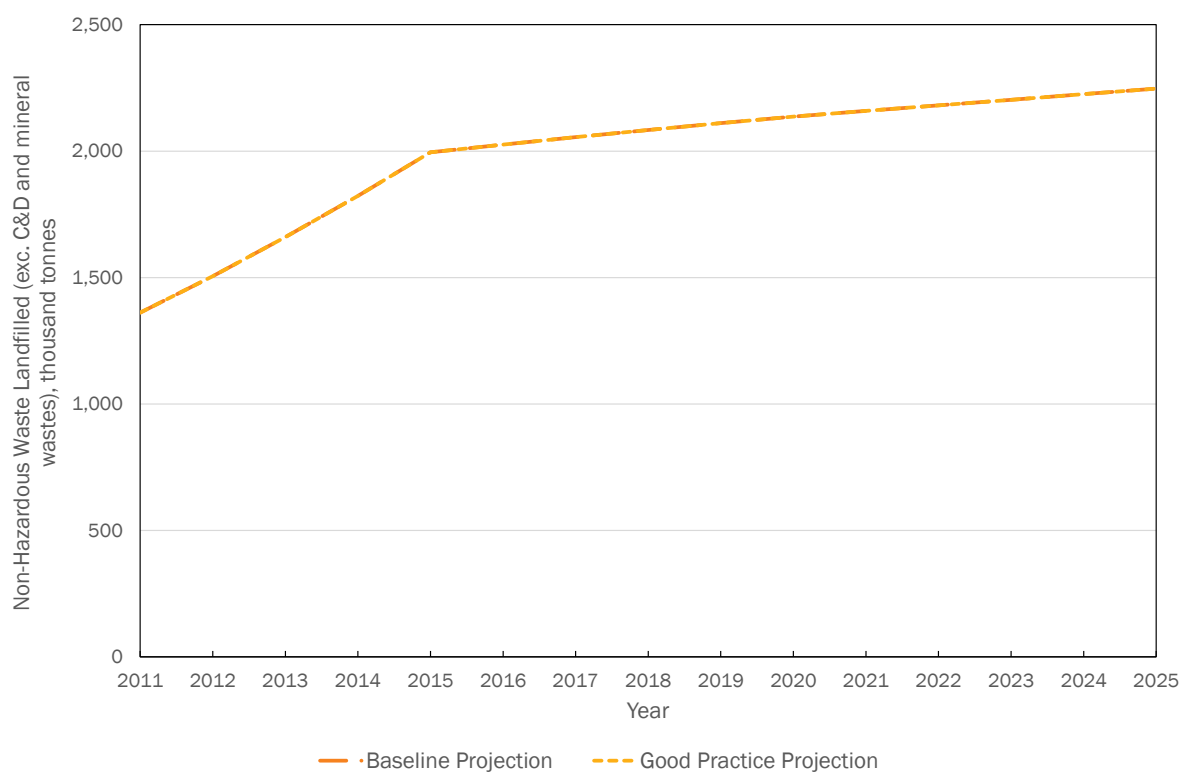


Figure 17-8: Change in MBT/ Incineration, thousand tonnes

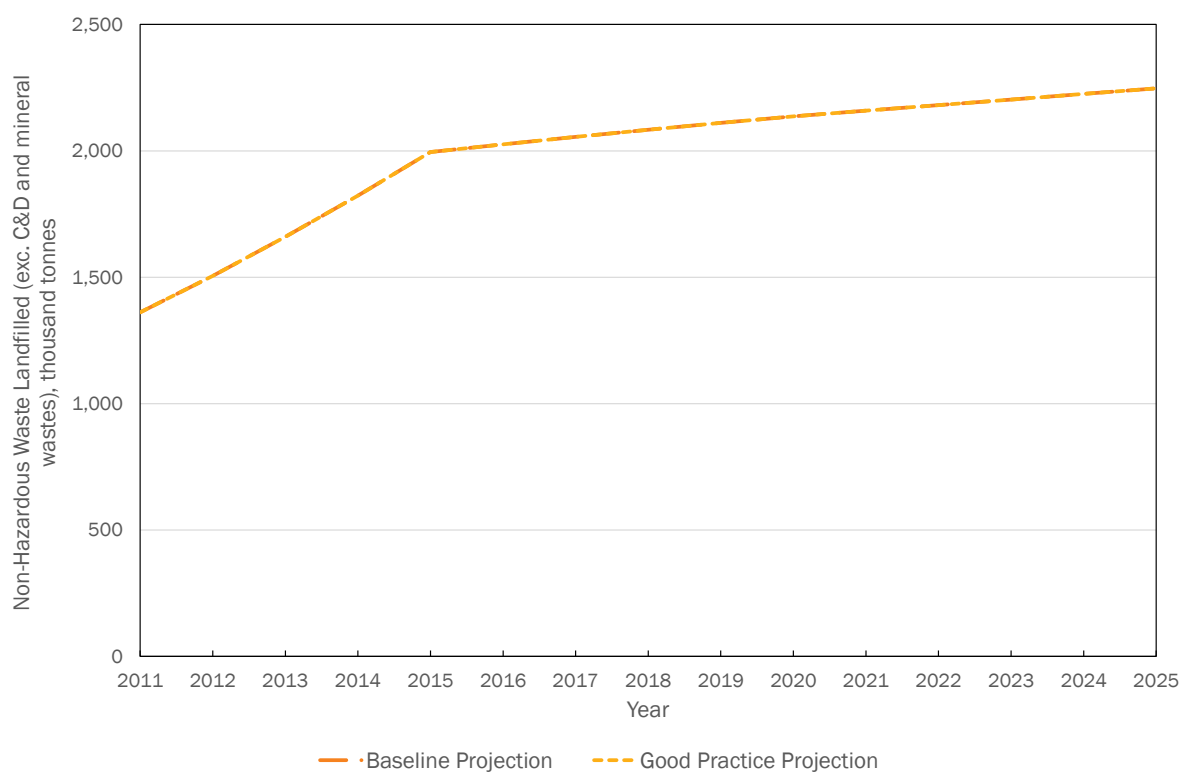


Figure 17-9: Change in SOx Emissions, tonnes

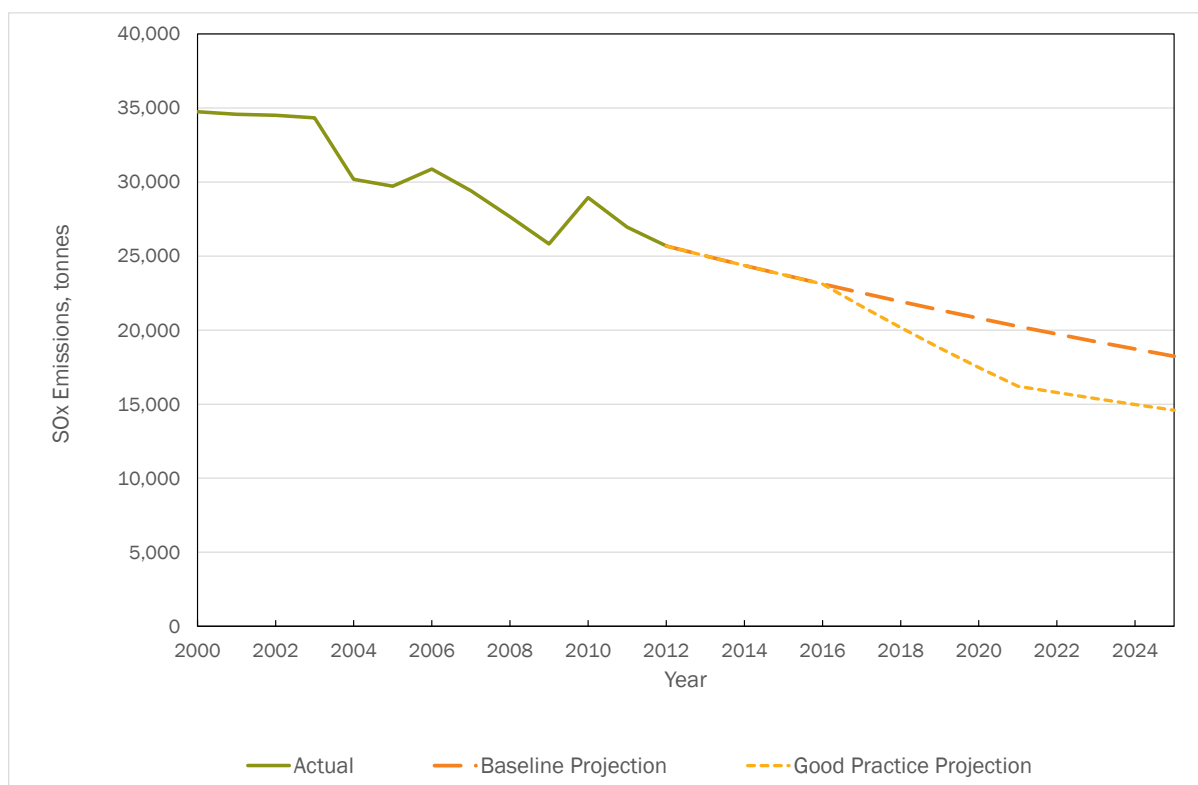


Figure 17-10: Change in NOx Emissions, tonnes

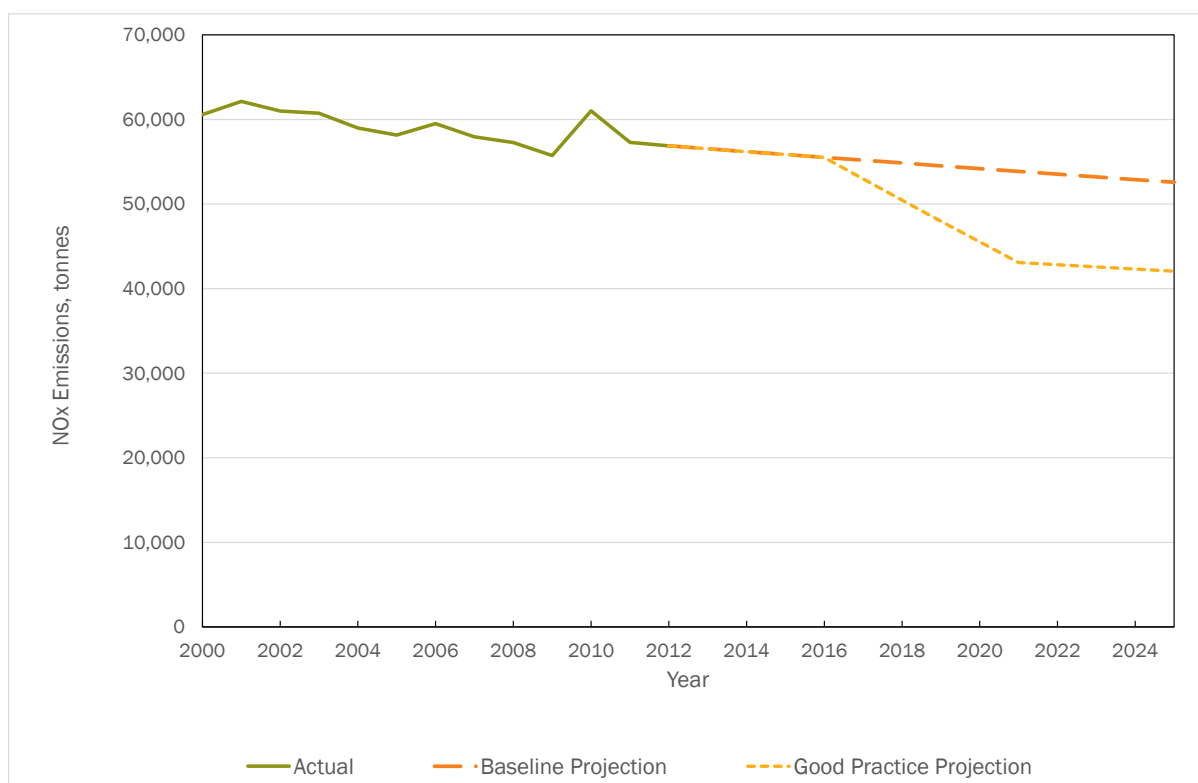


Figure 17-11: Change in PM<sub>10</sub> Emissions, tonnes

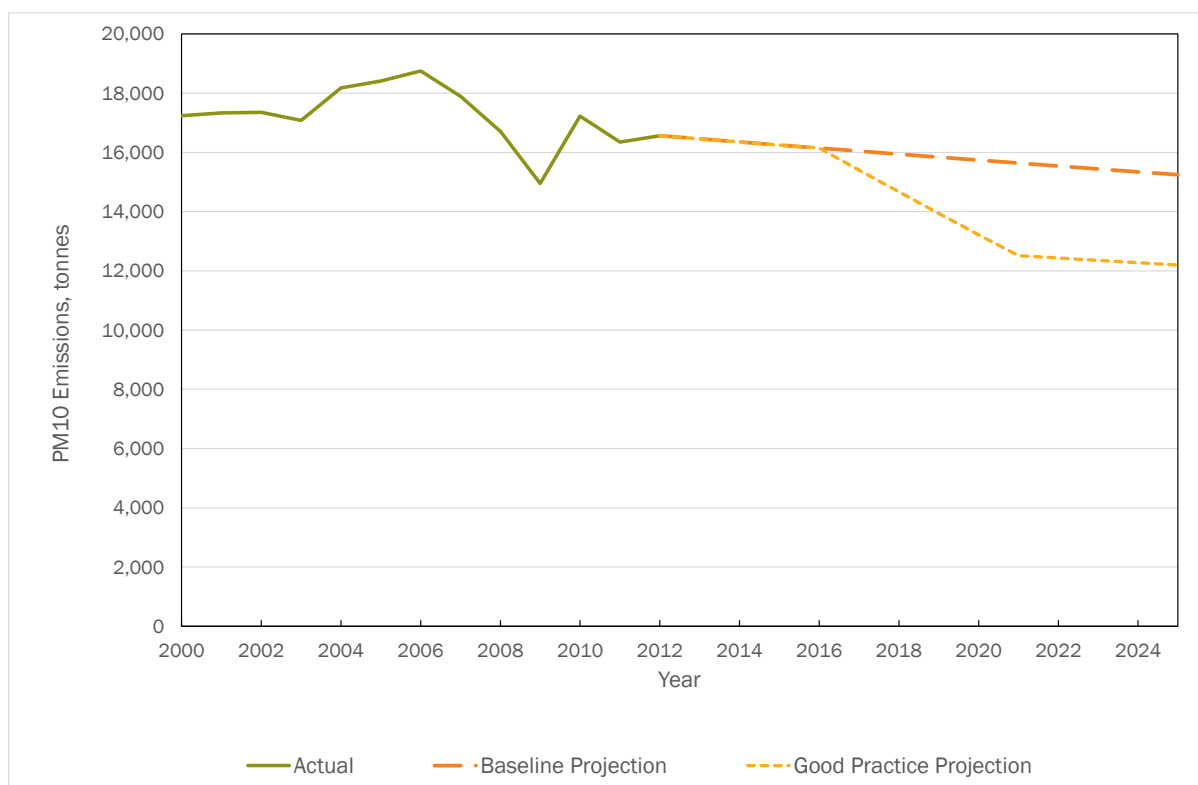


Figure 17-12: Change in Groundwater Abstraction – Public Supply, million cubic metres



Figure 17-13: Change in Groundwater Abstraction – Manufacturing, million cubic metres

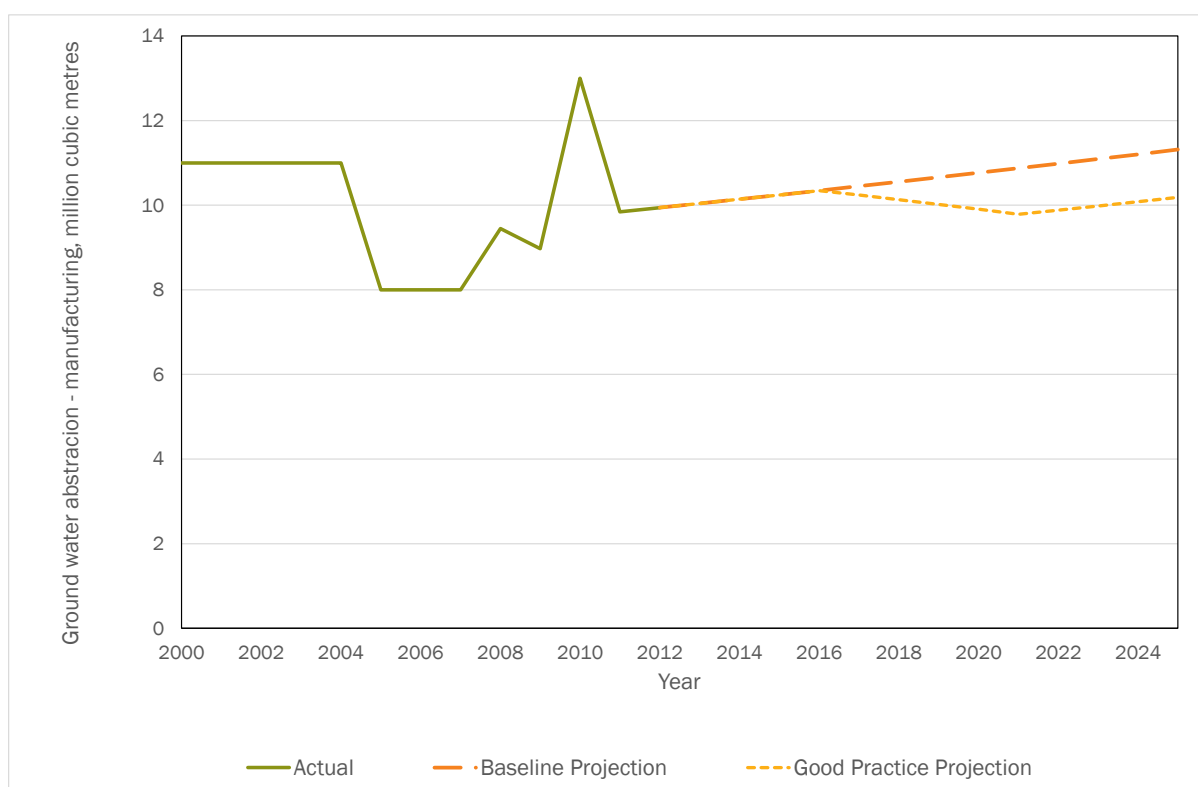


Figure 17-14: Change in Groundwater Abstraction – Agriculture, million cubic metres

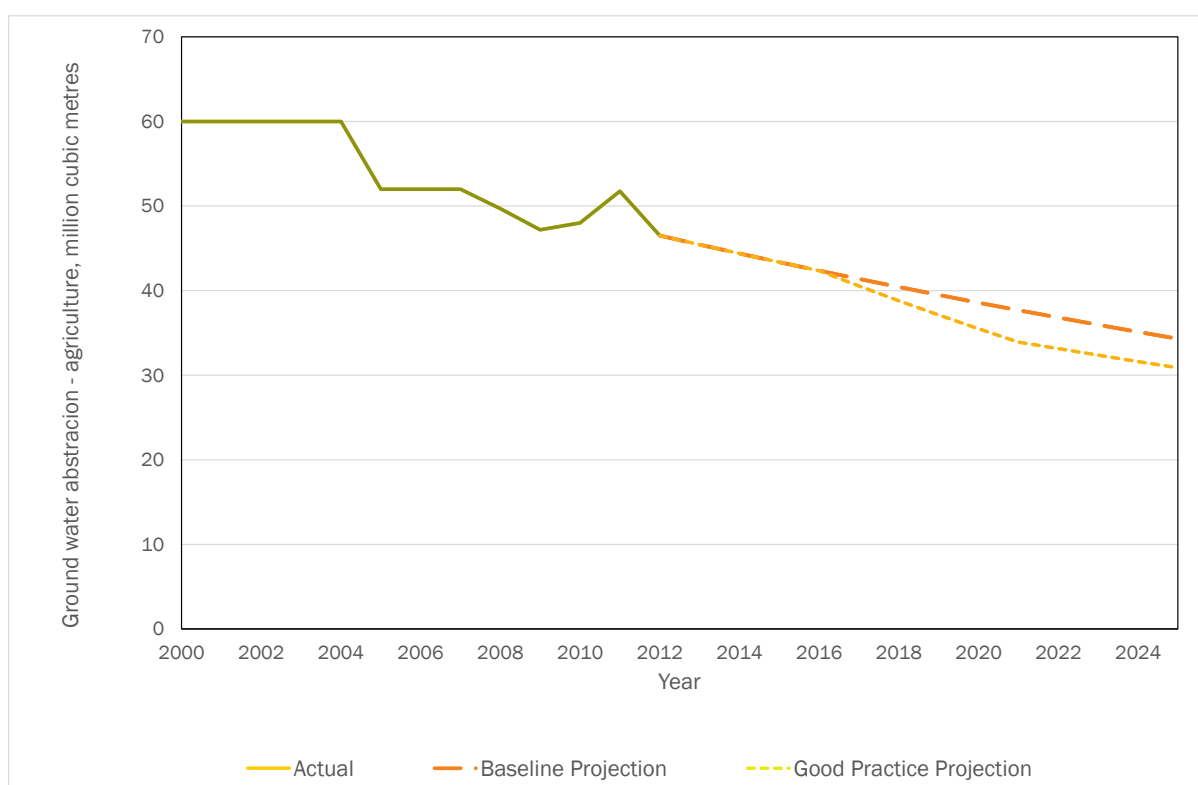


Figure 17-15: Change in Surface Water Abstraction – Public Supply, million cubic metres

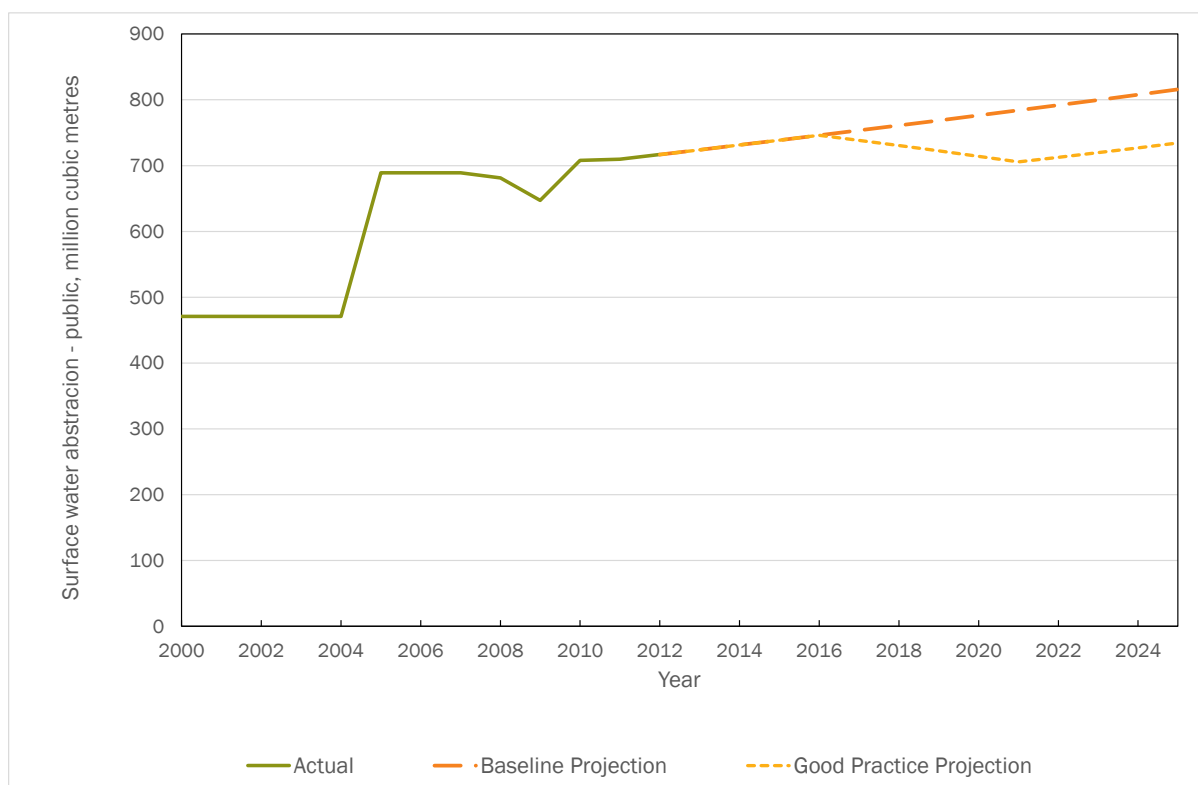


Figure 17-16: Change in Surface Water Abstraction – Manufacturing, million cubic metres



Figure 17-17: Change in Surface Water Abstraction – Agriculture, million cubic metres

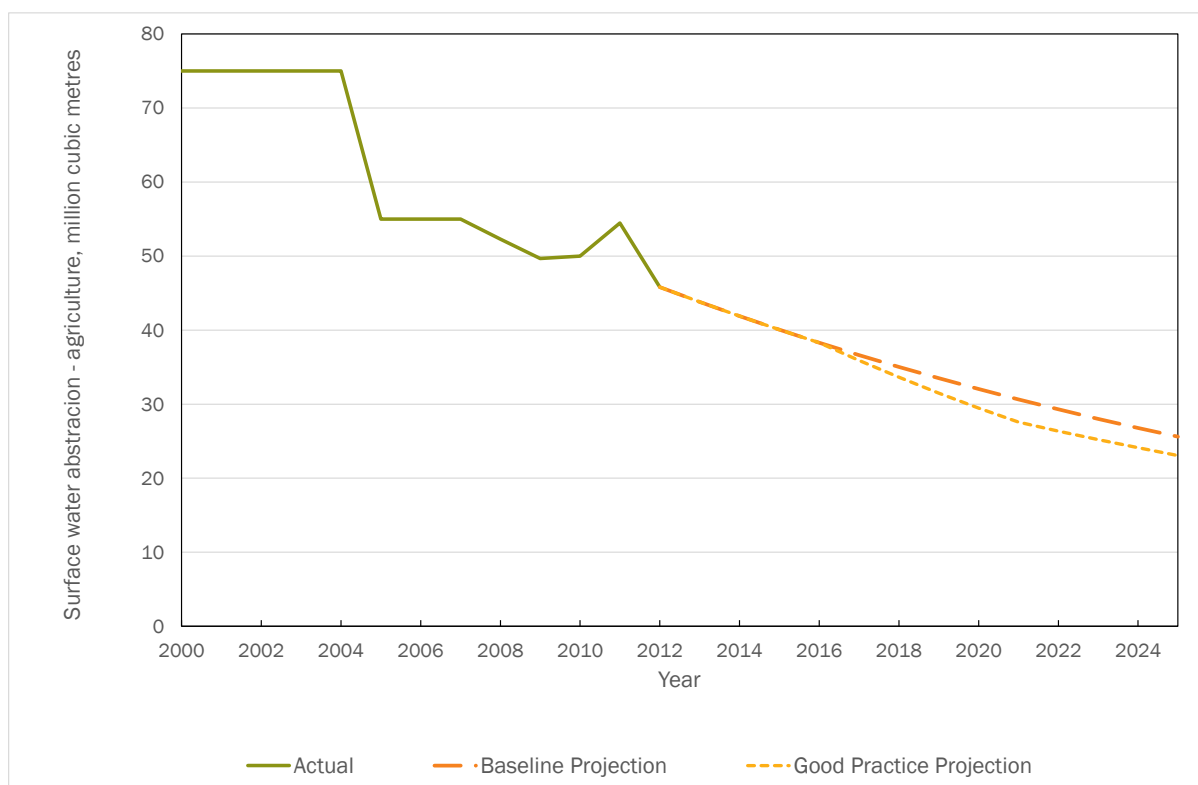


Figure 17-18: Change in Active Ingredients in Pesticides, tonnes

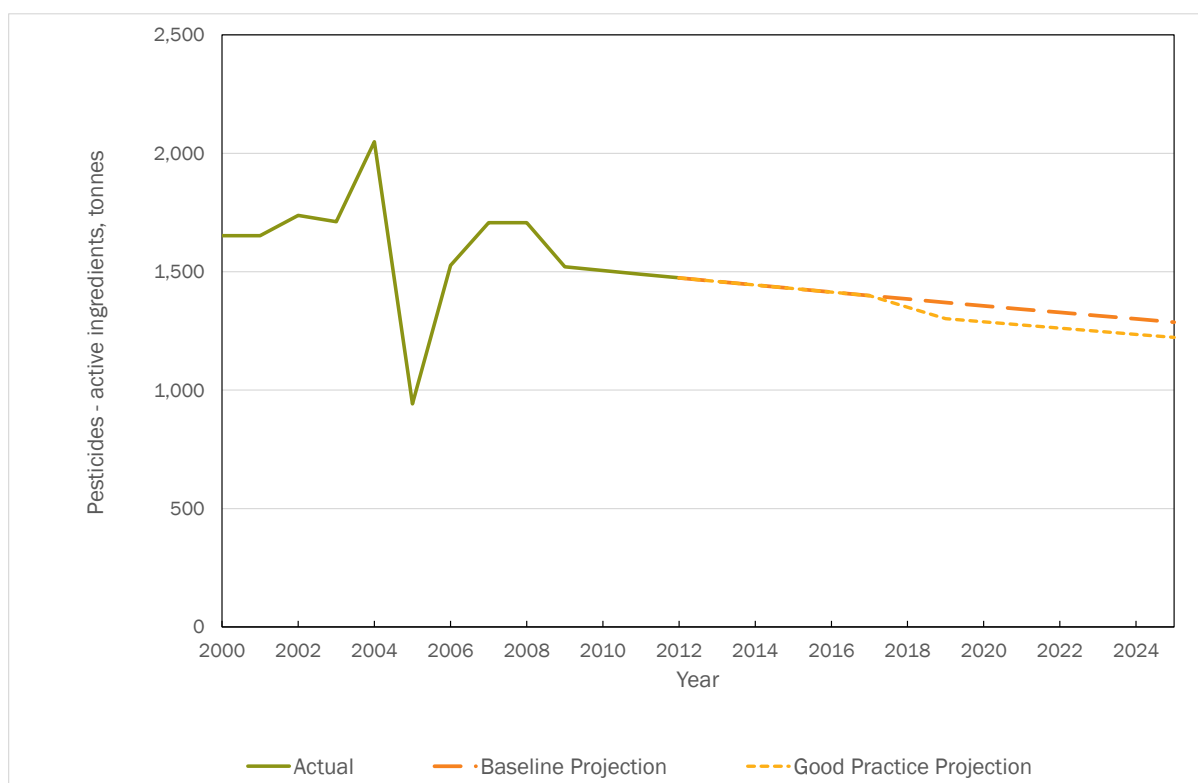


Figure 17-19: Change in Non-organic Nitrogen Sales of Fertilisers, tonnes



Figure 17-20: Change in Aggregates Extraction, thousand tonnes

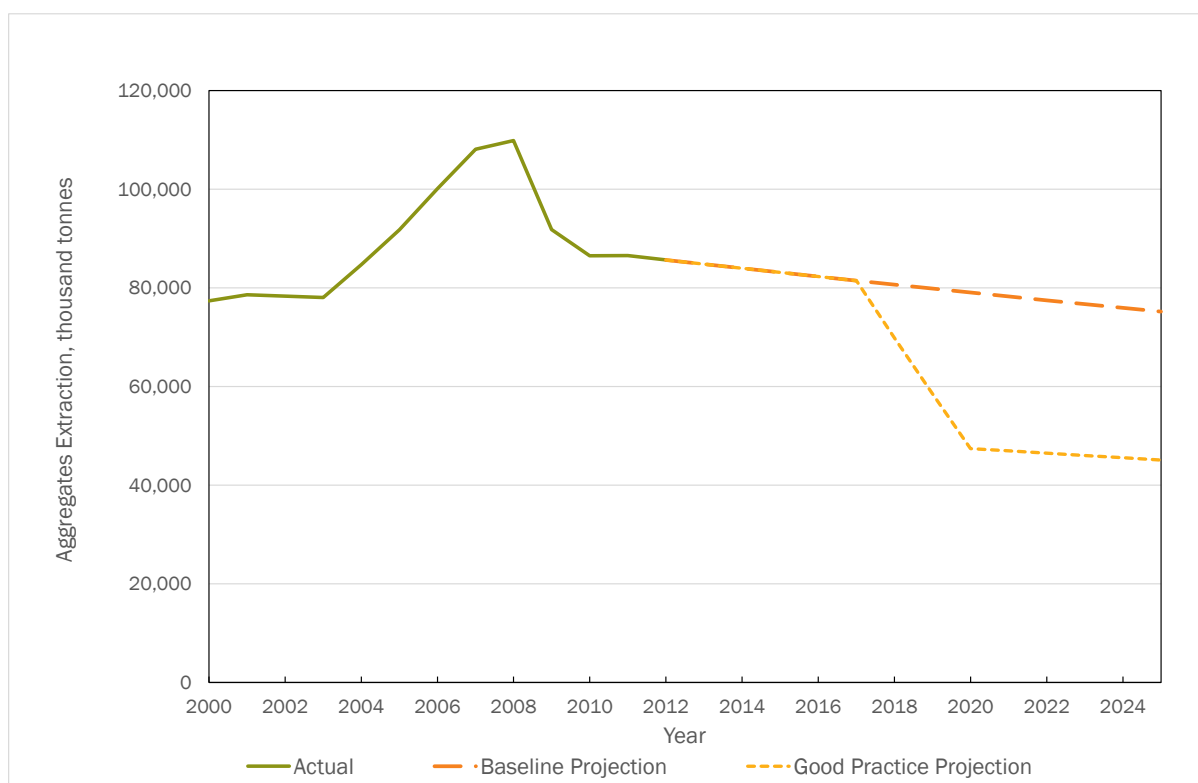




Figure 17-21: Change in Paper & Card Packaging Generation, thousand tonnes

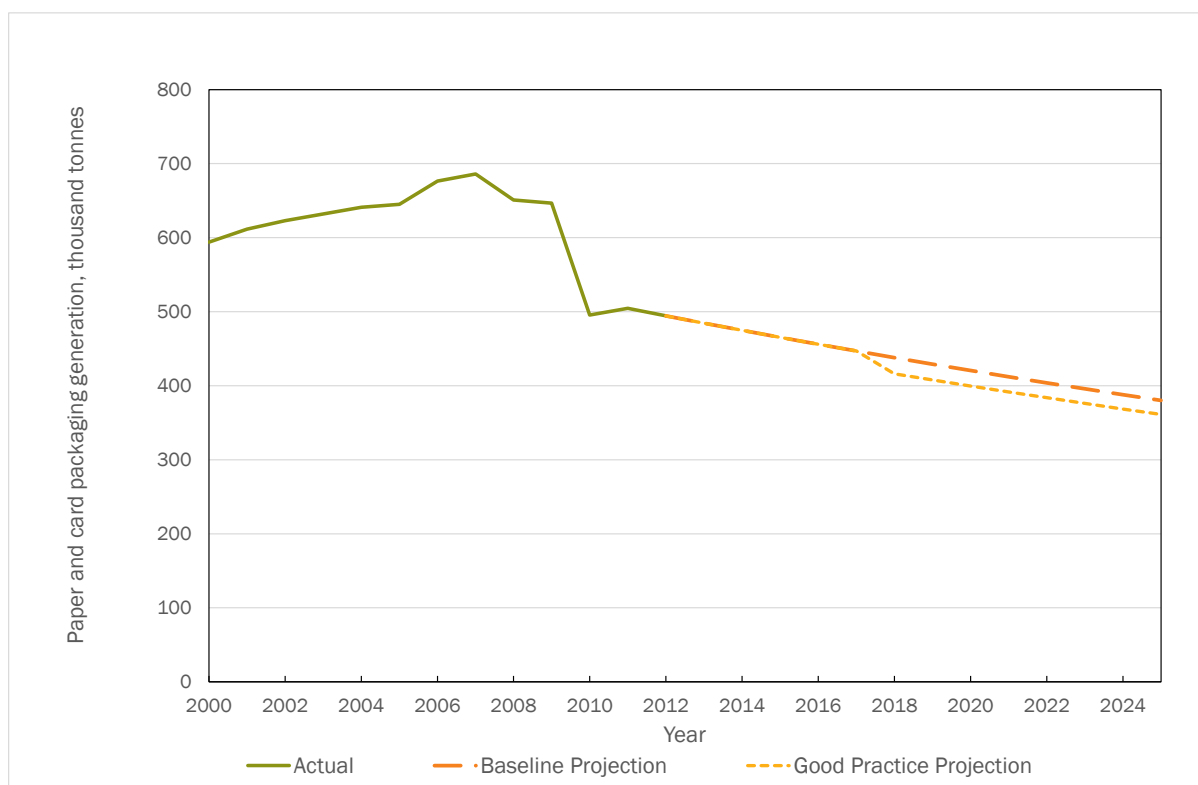


Figure 17-22: Change in Plastic Packaging Generation, thousand tonnes

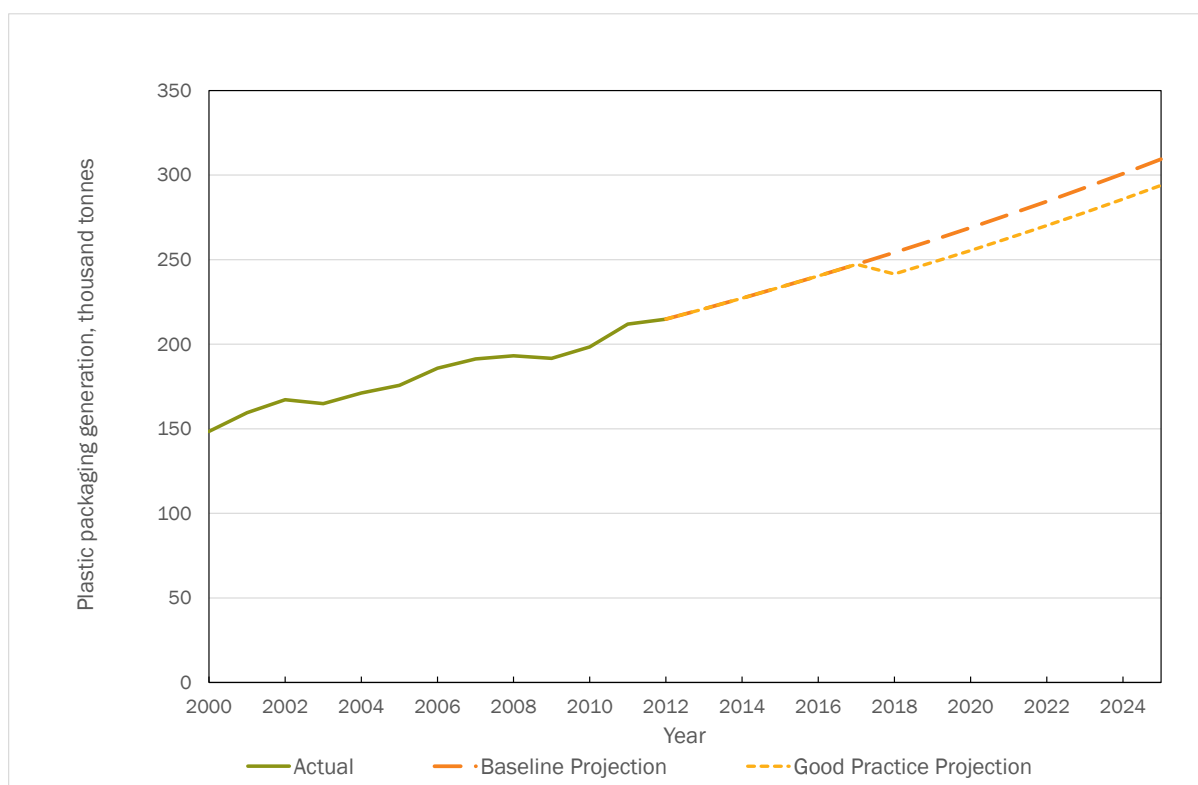


Figure 17-23: Change in Wood Packaging Generation, thousand tonnes

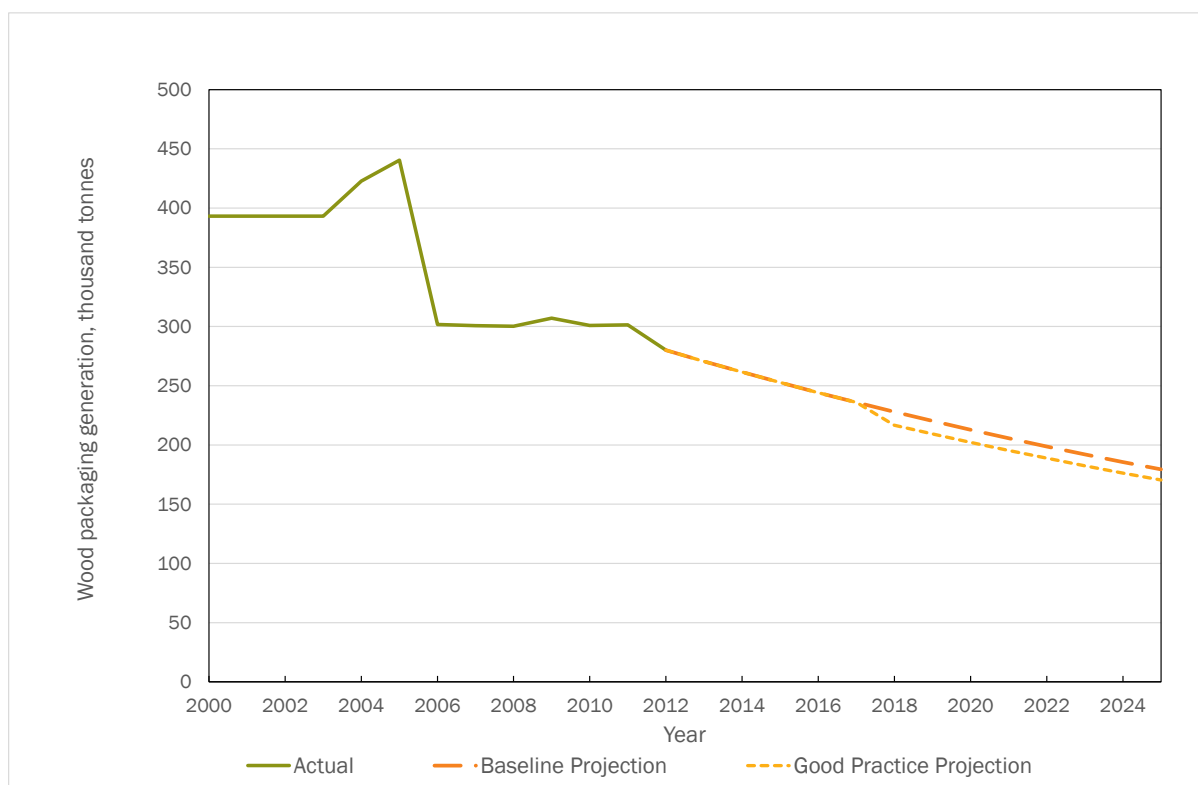


Figure 17-24: Change in Metal Packaging Generation, thousand tonnes

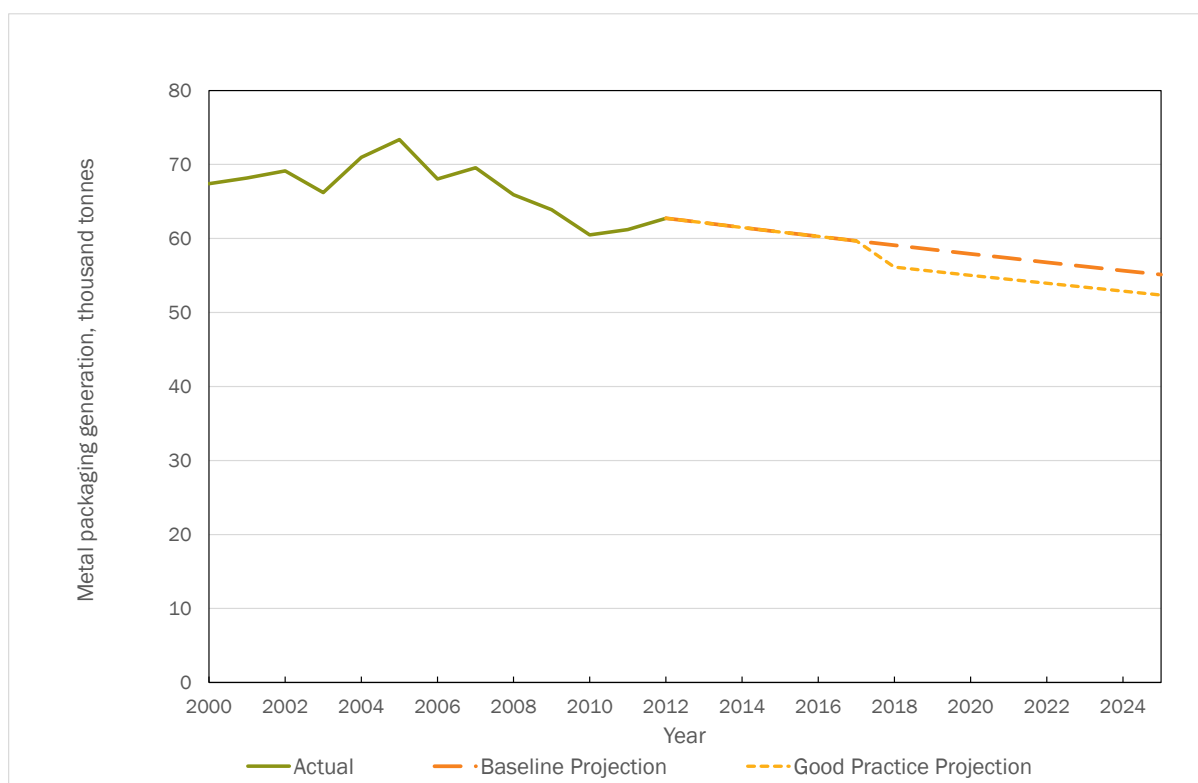


Figure 17-25: Change in Glass Packaging Generation, thousand tonnes

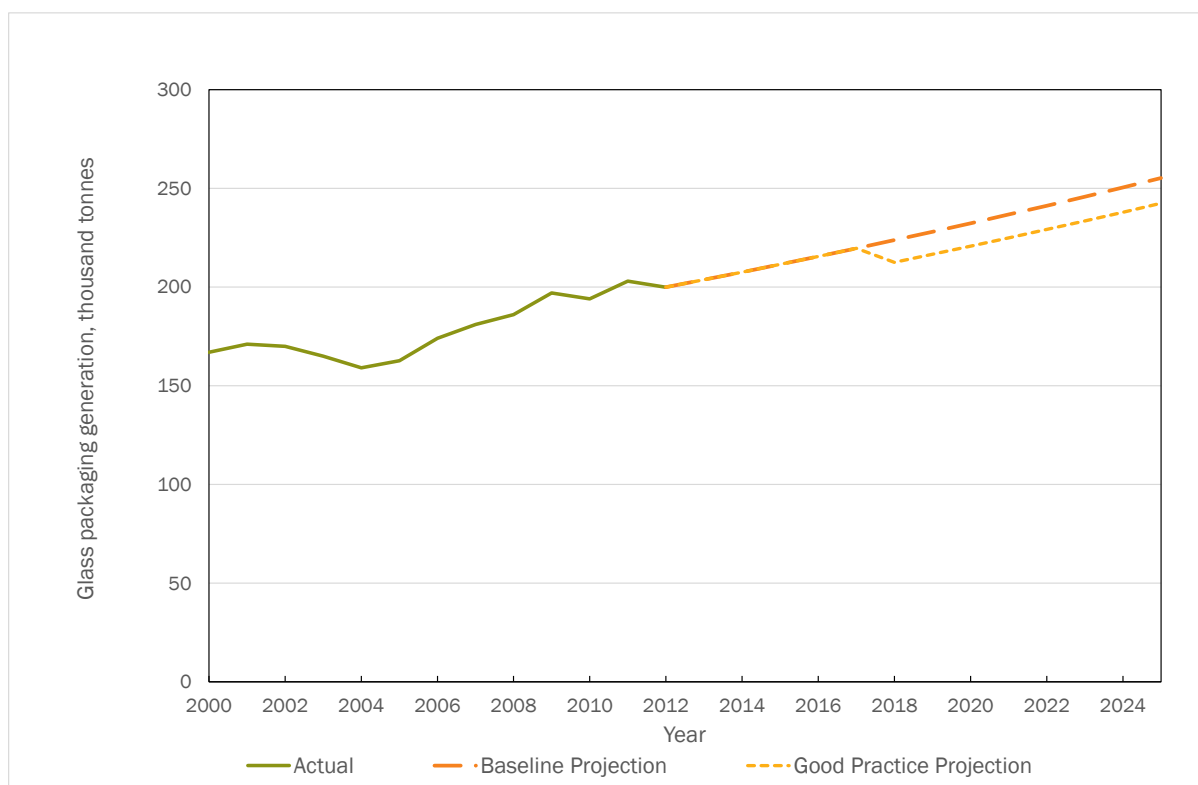
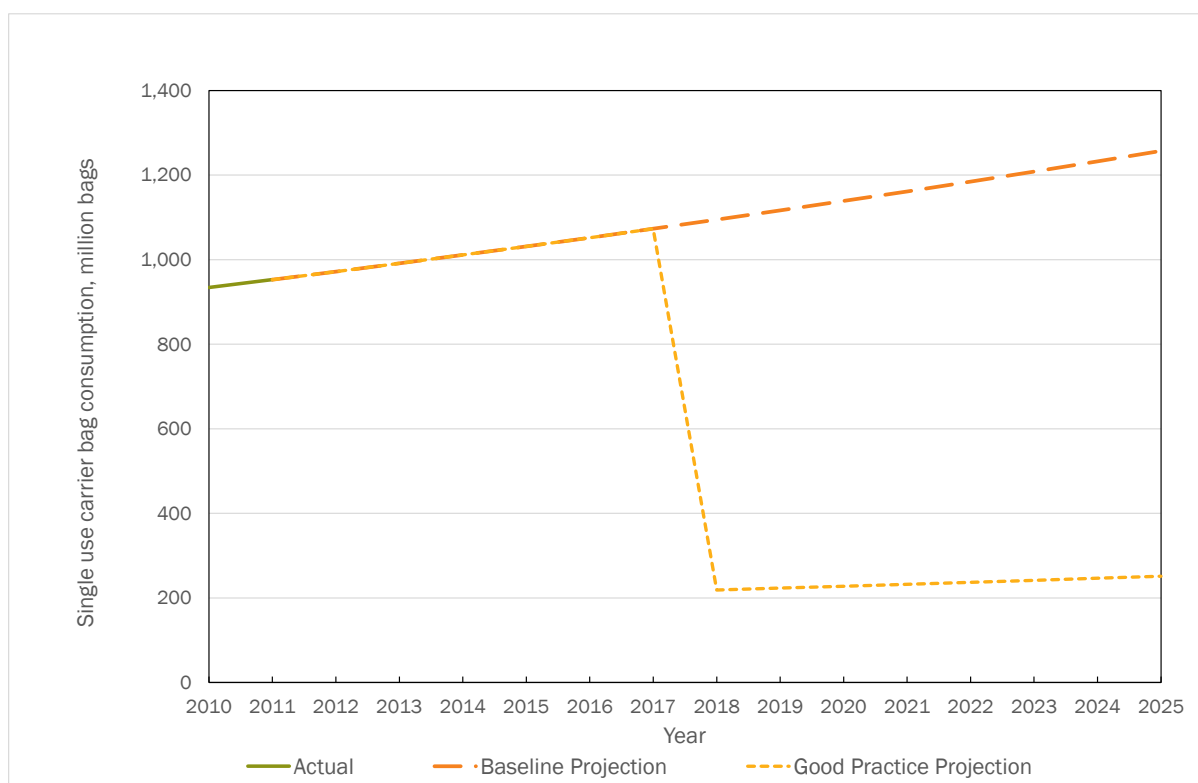


Figure 17-26: Change in Consumption of Single Use Carrier Bags, million bags



## 17.5 Full Revenue Outputs

A summary of the full revenue outputs for each of the suggested reforms to the tax system are presented in the table below.

Table 17-5: Revenue Outturns from Model, million SEK (real 2014 terms)

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Energy Taxes	Transport fuels	0	0	52	103	154	205	255	305	355	355	355
	C&I / Heating	0	0	54	106	157	207	255	302	349	349	349
	Electricity	1,548	1,548	1,548	1,548	1,548	1,548	1,548	1,548	1,548	1,548	1,548
	<i>Sub-total Energy, million SEK</i>	1,548	1,548	1,653	1,757	1,859	1,959	2,058	2,155	2,251	2,251	2,251
	<i>Sub-total Energy, % GDP</i>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%
Transport Taxes (excluding transport fuels)	Vehicle Taxes	0	0	8,618	17,239	25,864	34,491	43,152	43,167	43,182	43,197	43,212
	Passenger Aviation Tax	0	0	4,219	8,430	8,661	8,900	9,145	9,399	9,660	9,929	10,207
	Freight Aviation Tax	0	0	1	1	1	1	1	1	1	1	1
	<i>Sub-total Transport, million SEK</i>	0	0	12,838	25,671	34,526	43,392	52,298	52,567	52,843	53,127	53,420
	<i>Sub-total Transport, % GDP</i>	0.0%	0.0%	0.3%	0.6%	0.9%	1.1%	1.3%	1.3%	1.3%	1.3%	1.3%
Pollution and Resource Taxes	Landfill Tax - Non-haz (excl. C&D)	0	0	0	0	0	0	0	0	0	0	0
	Landfill Tax - Inerts (C&D)	0	1	3	3	3	2	2	2	2	2	2
	Incineration /MBT Tax	0	61	99	128	123	117	119	120	121	122	124

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Air Pollution Tax	0	101	191	270	339	399	375	370	364	359	354
	Water Abstraction Tax	0	561	1,099	1,614	2,108	2,580	2,527	2,531	2,536	2,541	2,548
	Waste Water Tax	0	167	322	467	450	450	450	450	450	450	450
	Pesticides Tax	0	0	43	81	77	76	76	75	74	73	73
	Aggregates Tax	0	0	0	0	0	0	0	0	0	0	0
	Packaging Tax	0	0	335	320	321	323	325	328	330	333	336
	Single Use Bag Tax	0	1,283	1,309	267	272	278	283	289	295	301	307
	Fertiliser Tax	0	0	0	0	0	0	0	0	0	0	0
	<b>Sub-total Pollution &amp; Resource, million SEK</b>	0	2,175	3,400	3,150	3,694	4,228	4,158	4,165	4,174	4,183	4,194
	<b>Sub-total Pollution &amp; Resource, % GDP</b>	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Total Revenue Stream	<b>Total, million SEK</b>	<b>1,548</b>	<b>3,723</b>	<b>17,891</b>	<b>30,578</b>	<b>40,080</b>	<b>49,579</b>	<b>58,514</b>	<b>58,887</b>	<b>59,268</b>	<b>59,562</b>	<b>59,865</b>
	<b>Total, % GDP</b>	<b>0.0%</b>	<b>0.1%</b>	<b>0.4%</b>	<b>0.8%</b>	<b>1.0%</b>	<b>1.2%</b>	<b>1.5%</b>	<b>1.5%</b>	<b>1.5%</b>	<b>1.5%</b>	<b>1.5%</b>

## 18.0 United Kingdom

During the course of the study the latest data available from official sources was sought, namely the TAXUD Taxes in Europe database, energy excise duty tables and the OECD database on environmental taxes and charges. This was supplemented by national data sources where possible. Due to the number of taxes and countries involved, the central case for energy excise duties has been the rates published by TAXUD giving the position as of 1st July 2014. Planned future increases may not be fully captured in this analysis and therefore, the projected increase in revenues would effectively incorporate any revenue from increased rates in early 2015 or shortly thereafter.

### 18.1 Energy Taxes

#### ➤ Hydrocarbon Oil Duty:

- Duties on hydrocarbons are payable at varying rates depending on the type of fuel and its use. Most rates of duty are calculated per thousand litres of fuel, with some exceptions that are calculated per thousand kilograms or per gigajoule.
- Rates: see Table 18-1 for details of rates.
- The main exemptions to the duty include: <sup>667</sup>
  - Oil used in marine craft (except private pleasure craft);
  - Oil used as refinery fuel;
  - Oil used in blast furnaces;
  - Heavy oil used for such horticultural purposes as heating greenhouses; and
  - Heavy oil used in electricity generation.
- Other exemptions include: <sup>668</sup>
  - The industrial and commercial use of tied oils;
  - LPG and natural gas used for off-road vehicles;
  - LPG when used as in agriculture, horticulture, pisciculture and forestry;
  - Reduced rates are applied for kerosene when used as motor fuel for agricultural purposes and for marked gas oil; and
  - A £0.05 (€0.06) reduction in duty applies on some more remote islands, a measure for which the United Kingdom obtained approval

---

<sup>667</sup> European Commission (2013) *Taxes in Europe Database*, Accessed 19<sup>th</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=895/1388754990&taxType=Energy+products+and+electricity](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=895/1388754990&taxType=Energy+products+and+electricity)

<sup>668</sup> European Commission (2013) *Excise Duty Tables*, Accessed 19<sup>th</sup> August 2014, pp. 8-73, [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/excise\\_duties/energy\\_products/rares/excise\\_duties-part\\_ii\\_energy\\_products\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/excise_duties/energy_products/rares/excise_duties-part_ii_energy_products_en.pdf)

from the European Commission. The United Kingdom Government has applied to extend this to 17 of the most rural parts of the mainland.

- Coal, coke, electricity and non-propellant uses of natural gas all fall outside of the remit of the Hydrocarbon Oil Duty. Business use of these products is charged under the Climate Change Levy.
- Note that from April 2015, the government will apply a reduced rate of fuel duty to methanol. The rate will be set at £0.0932 (€0.1097) per litre. The size of the duty differential between the main rate and methanol will be maintained until March 2024. The government will review the impact of this incentive alongside the duty incentives for road fuel gases at Budget 2018. (Finance Bill 2015).<sup>669</sup>
- Tax revenue (2013): £26.7 (€31.4) billion, equivalent to 1.65% of GDP.<sup>670</sup>

Table 18-1: Details of Hydrocarbon Oil Duty (United Kingdom, 2014)<sup>671</sup>

General Tax Base	Specific Tax Base	Tax Rate	
		GBP	€
Petrol (per 1,000 litres)	Leaded	676.70	796.81
	Unleaded	579.50	682.36
	Aviation gasoline	377.00	443.92
Gas oil (per 1,000 litres)	Propellant use	579.50	682.36
	Industrial/Commercial use	111.40	131.17
	Heating - Business use	111.40	131.17
	Heating - Non-business use	111.40	131.17
Kerosene (per 1,000 litres)	Propellant use	579.50	682.36
	Industrial/Commercial use	111.40	131.17
Heavy fuel oil (per 1,000 kg)	Heating - Business use	107.00	125.99
	Heating - Non-business use	107.00	125.99

<sup>669</sup> United Kingdom Government Website (2014) *Guidance: HMRC overview*, Paragraph 5.4, Accessed 24<sup>th</sup> September 2014 <https://www.gov.uk/government/publications/budget-2014-hm-revenue-customs-overview/hmrc-overview>

<sup>670</sup> Table 2 in HMRC (2014) *Hydrocarbon Oils Bulletin June 2014*, 22 July 2014, Accessed 19<sup>th</sup> August 2014, <https://www.uktradeinfo.com/Statistics/Pages/TaxAndDutyBulletins.aspx>

<sup>671</sup> European Commission (2013) *Excise Duty Tables*, Accessed 19<sup>th</sup> August 2014, pp. 8-73, [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/excise\\_duties/energy\\_products/rares/excise\\_duties-part\\_ii\\_energy\\_products\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/excise_duties/energy_products/rares/excise_duties-part_ii_energy_products_en.pdf)



General Tax Base	Specific Tax Base	Tax Rate	
		GBP	€
Liquid Petroleum Gas (LPG) (per 1,000 kg)	Propellant use	316.10	372.21
Natural Gas (per gigajoule)	Propellant use	5.67	6.68

Source: European Commission (2013) *Excise Duty Tables*, Accessed 19<sup>th</sup> August, [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/excise\\_duties/energy\\_products/rates/excise\\_duties-part\\_ii\\_energy\\_products\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/excise_duties/energy_products/rates/excise_duties-part_ii_energy_products_en.pdf)

➤ **United Kingdom Climate Change Levy:**

- The Climate Change Levy (CCL) is chargeable on the industrial and commercial supply of certain fuels. It is made up of 2 rates: the main rates and the carbon price support (CPS) rates (see below for more detail on the CPS).
- Fuels liable to the main rates of CCL are:
  - Electricity;
  - Natural gas;
  - LPG; and
  - Solid fuels – such as coal, lignite and coke.
- The main rates are presented in Table 18-2.

Table 18-2: Main Rates of CCL (United Kingdom, 2014)<sup>672</sup>

Commodity	Main Rate	
	GBP	EUR
Electricity (per kWh)	0.00541	0.006370
Natural gas (per kWh)	0.00188	0.002214
LPG (per kg)	0.01210	0.014248
Solid fuel (per kg)	0.01476	0.017380

Source: European Commission (2013) *Excise Duty Tables*, Accessed 19<sup>th</sup> August, [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/excise\\_duties/energy\\_products/rates/excise\\_duties-part\\_ii\\_energy\\_products\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/excise_duties/energy_products/rates/excise_duties-part_ii_energy_products_en.pdf)

---

<sup>672</sup>European Commission (2013) *Excise Duty Tables*, Accessed 19<sup>th</sup> August 2014, pp. 8-73, [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/excise\\_duties/energy\\_products/rates/excise\\_duties-part\\_ii\\_energy\\_products\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/excise_duties/energy_products/rates/excise_duties-part_ii_energy_products_en.pdf)

- Electricity, gas and solid fuel are normally exempt from the main rates of CCL if:
  - They are not being used in the United Kingdom;
  - They are supplied to or from certain combined heat and power (CHP) schemes registered under the CHP quality assurance (CHPQA) programme;
  - The electricity is generated from renewable sources;
  - They are used to produce electricity in a generating station which has a capacity of 2MW or greater;
  - They will not be used as fuel; or
  - They are used in particular types of transport. <sup>673</sup>
- Businesses can get a reduction on the main rates of CCL if they are an energy intensive business and have entered into a climate change agreement (CCA) with the Environment Agency. Energy intensive businesses can get a 90% reduction for electricity and a 65% reduction for gas, LPG, coal and other solid fuel. <sup>674</sup>
- The CPS rates are applied to businesses and organisations using fossil fuels to generate electricity, to encourage the use of low carbon technology. This is known as the Carbon Price Floor (CPF). These are paid by owners of electricity generating stations and operators of combined heat and power (CHP) stations.
- Fuels liable to the CPS rates of CCL are:
  - Natural gas;
  - LPG; and
  - Solid fuels – such as coal, lignite and coke. <sup>675</sup>
- The CPS rates are presented in Table 18-3.
- The CCL and CPS generated revenue of £1.06 billion (€1.25 billion) in 2013, equivalent to 0.07% of GDP. <sup>676</sup>

---

<sup>673</sup> United Kingdom Government (2014) *Green Taxes, Reliefs and Schemes for Businesses*, Accessed 19<sup>th</sup> August 2014, <https://www.gov.uk/green-taxes-and-reliefs/climate-change-levy>

<sup>674</sup> United Kingdom Government (2014) *Green Taxes, Reliefs and Schemes for Businesses*, Accessed 19<sup>th</sup> August 2014, <https://www.gov.uk/green-taxes-and-reliefs/climate-change-levy>

<sup>675</sup> United Kingdom Government (2014) *Green Taxes, Reliefs and Schemes for Businesses*, Accessed 19<sup>th</sup> August 2014, <https://www.gov.uk/green-taxes-and-reliefs/climate-change-levy>

<sup>676</sup> Table 2 in HMRC (2014) *Climate Change Levy and Carbon Price Floor Bulletin April 2014*, 28<sup>th</sup> May 2014, Accessed 19 August 2014, <https://www.uktradeinfo.com/Statistics/Pages/TaxAndDutyBulletins.aspx>

Table 18-3: Carbon Price Support Rates of CCL (United Kingdom, 2014) <sup>677</sup>

Commodity	Main Rate	
	GBP	EUR
Natural gas (per kWh)	0.00175	0.002061
LPG (per kg)	0.02822	0.033229
Solid fuels (per GJ on gross calorific value)	0.81906	0.964440

Source: HMRC (2014) *Climate Change Levy Rates*, Accessed 19<sup>th</sup> August 2014, [http://customs.hmrc.gov.uk/channelsPortalWebApp/channelsPortalWebApp.portal?\\_nfpb=true&\\_pageLabel=pageExcise\\_ShowContent&id=HMCE\\_PROD1\\_031183&propertyType=document](http://customs.hmrc.gov.uk/channelsPortalWebApp/channelsPortalWebApp.portal?_nfpb=true&_pageLabel=pageExcise_ShowContent&id=HMCE_PROD1_031183&propertyType=document)

➤ **CRC Energy Efficiency scheme:**

- A mandatory carbon reporting and pricing scheme operating in the United Kingdom. The scheme is currently in phase 2, which runs from 2014 to 2019.<sup>678</sup>
- All organisations consuming over 6,000 MWh of qualifying electricity through settled half-hourly meters during the qualification year (2012/13) must comply with the scheme.
- Participants are required to monitor their energy use, and report their electricity and natural gas supplies annually. Participants must buy and surrender allowances for each tonne of CO<sub>2</sub> emitted from these energy sources. These can be bought either at the beginning of the reporting year (forecast sale), or after reporting (buy to comply).
- The cost of CRC allowances for 2014/15 are as follows:
  - Forecast sale: £15.60(€18.37) per tCO<sub>2</sub>
  - Buy to comply sale: £16.40(€19.31) per tCO<sub>2</sub>

## 18.2 Transport Taxes (Excluding Transport Fuels)

➤ **Registration Taxes:**

- Vehicles registered for the first time on the Driver and Vehicle Licensing Agency (DVLA) records are required to pay a fee of £55 (€64.76).<sup>679</sup>

---

<sup>677</sup> HMRC (2014) *Climate Change Levy Rates*, Accessed 19<sup>th</sup> August 2014, [http://customs.hmrc.gov.uk/channelsPortalWebApp/channelsPortalWebApp.portal?\\_nfpb=true&\\_pageLabel=pageExcise\\_ShowContent&id=HMCE\\_PROD1\\_031183&propertyType=document](http://customs.hmrc.gov.uk/channelsPortalWebApp/channelsPortalWebApp.portal?_nfpb=true&_pageLabel=pageExcise_ShowContent&id=HMCE_PROD1_031183&propertyType=document)

<sup>678</sup> United Kingdom Government (2014) *CRC Energy Efficiency Scheme*, 29 July 2014, <https://www.gov.uk/government/policies/reducing-demand-for-energy-from-industry-businesses-and-the-public-sector-2/supporting-pages/crc-energy-efficiency-scheme>

<sup>679</sup> United Kingdom Government Website: *Vehicle Registration*, Accessed 15<sup>th</sup> August, <https://www.gov.uk/vehicle-registration/new-registrations-fee>

- The fee is designed to cover the administrative costs associated with the registration of the vehicle throughout its life and thus, strictly speaking, is not an environmental tax.
- Exemptions include: <sup>680</sup>
  - Those first registered and licensed in the disabled exempt taxation class;
  - Historic vehicles previously registered with the old local authorities (late conversions);
  - Vehicles previously registered in Northern Ireland;
  - Imported vehicles previously registered under the personal export scheme and new means of transport scheme;
  - Visiting forces vehicles;
  - Vehicles registered under the direct export scheme;
  - Vehicles registered for off-road use only; and
  - Crown exempt vehicles.

➤ **Circulation Taxes:**

- Vehicle Excise Duty (VED), also referred to as vehicle tax, is levied on most vehicle types used on public roads in the United Kingdom.
- The rate of vehicle tax for cars is based on engine size or on fuel type and CO<sub>2</sub> emissions, depending on when the car was registered.
- The rate of vehicle tax for cars and light goods vehicles registered before 1<sup>st</sup> March 2001 is based on engine size. This is shown in Table 18-4.

**Table 18-4: VED for Private/Light Goods Cars (TC11) Registered before 1<sup>st</sup> March 2001 (United Kingdom, 2014)**<sup>681,682</sup>

Engine Size (cc)	12 Months Rate		6 Months Rate	
	GBP	EUR	GBP	EUR
Not over 1549	145.00	170.74	79.75	93.91
Over 1549	230.00	270.82	126.50	148.95

Source: DVLA (2014) *Rates of Vehicle Tax*, Accessed 20<sup>th</sup> August 2014, pp.1-4, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/299797/V149\\_2014-15.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/299797/V149_2014-15.pdf)

<sup>680</sup> United Kingdom Government Website: *Vehicle Registration*, Accessed 15<sup>th</sup> August, <https://www.gov.uk/vehicle-registration/new-registrations-fee>

<sup>681</sup> DVLA (2014) *Rates of Vehicle Tax*, Accessed 20<sup>th</sup> August 2014, pp.1-4, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/299797/V149\\_2014-15.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/299797/V149_2014-15.pdf)

<sup>682</sup> United Kingdom Government (2014) *Vehicle Tax Rate Tables*, Accessed 20<sup>th</sup> August 2014, <https://www.gov.uk/vehicle-tax-rate-tables>

[15.pdf](#) and United Kingdom Government (2014) Vehicle Tax Rate Tables, Accessed 20<sup>th</sup> August 2014, <https://www.gov.uk/vehicle-tax-rate-tables>

- The rate of vehicle tax for cars registered on or after 1<sup>st</sup> March 2001 is based on fuel type and CO<sub>2</sub> emissions. The rates are split into bands depending on CO<sub>2</sub> emissions - the lower the emissions, the lower the vehicle tax. These standard rates are shown in Table 18-5 and Table 18-6.

**Table 18-5: Standard VED for Petrol (TC48) and Diesel (TC49) Cars Registered on or after 1<sup>st</sup> March 2001 (United Kingdom, 2014)**<sup>683,684</sup>

Band	CO <sub>2</sub> Emission (g/km)	12 Months Rate		6 Months Rate	
		GBP	EUR	GBP	EUR
A	Up to 100	0.00	0.00	Not available	Not available
B	101-110	20.00	23.55	Not available	Not available
C	111-120	30.00	35.32	Not available	Not available
D	121-130	110.00	129.52	60.50	71.24
E	131-140	130.00	153.07	71.50	84.19
F	141-150	145.00	170.74	79.75	93.91
G	151-165	180.00	211.95	99.00	116.57
H	166-175	205.00	241.39	112.75	132.76
I	176-185	225.00	264.94	123.75	145.72
J	186-200	265.00	312.04	145.75	171.62
K*	201-225	285.00	335.59	156.75	184.57
L	226-255	485.00	571.09	266.75	314.10
M	Over 255	500.00	588.75	275.00	323.81
Notes: *Includes cars with a CO <sub>2</sub> figure over 225g per km but were registered before 23 March 2006.					

Source: DVLA (2014) Rates of Vehicle Tax, Accessed 20<sup>th</sup> August 2014, pp.1-4, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/299797/V149\\_2014-15.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/299797/V149_2014-15.pdf) and United Kingdom Government (2014) Vehicle Tax Rate Tables, Accessed 20<sup>th</sup> August 2014,

<sup>683</sup> DVLA (2014) Rates of Vehicle Tax, Accessed 20<sup>th</sup> August 2014, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/299797/V149\\_2014-15.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/299797/V149_2014-15.pdf)

<sup>684</sup> United Kingdom Government (2014) Vehicle Tax Rate Tables, Accessed 20<sup>th</sup> August 2014, <https://www.gov.uk/vehicle-tax-rate-tables>

Table 18-6: Standard VED for Alternative Fuel Cars (TC59) Registered on or after 1<sup>st</sup> March 2001 (United Kingdom, 2014) <sup>685</sup> <sup>686</sup>

Band	CO <sub>2</sub> Emission (g per km)	12 Months Rate		6 Months Rate	
		GBP	EUR	GBP	EUR
A	Up to 100	0.00	0.00	Not available	Not available
B	101-110	10.00	11.77	Not available	Not available
C	111-120	20.00	23.55	Not available	Not available
D	121-130	100.00	117.75	55.00	64.76
E	131-140	120.00	141.30	66.00	77.71
F	141-150	135.00	158.96	74.25	87.43
G	151-165	170.00	200.17	93.50	110.10
H	166-175	195.00	229.61	107.25	126.29
I	176-185	215.00	253.16	118.25	139.24
J	186-200	255.00	300.26	140.25	165.14
K*	201-225	275.00	323.81	151.25	178.10
L	226-255	475.00	559.31	261.25	307.62
M	Over 255	490.00	576.97	269.50	317.34
Notes: *Includes cars with a CO <sub>2</sub> figure over 225g per km but were registered before 23 March 2006					

Source: DVLA (2014) Rates of Vehicle Tax, Accessed 20<sup>th</sup> August 2014, pp.1-4, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/299797/V149\\_2014-15.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/299797/V149_2014-15.pdf) and United Kingdom Government (2014) Vehicle Tax Rate Tables, Accessed 20<sup>th</sup> August 2014, <https://www.gov.uk/vehicle-tax-rate-tables>

<sup>685</sup> DVLA (2014) Rates of Vehicle Tax, Accessed 20<sup>th</sup> August 2014, pp.1-4, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/299797/V149\\_2014-15.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/299797/V149_2014-15.pdf)

<sup>686</sup> United Kingdom Government (2014) Vehicle Tax Rate Tables, Accessed 20<sup>th</sup> August 2014, <https://www.gov.uk/vehicle-tax-rate-tables>

- For cars registered on or after 1<sup>st</sup> April 2010, a different set of rates are applicable for a vehicle's first year. After the first year, the rates shown in Table 18-5 and Table 18-6 apply.
- The first year rates for cars registered on or after 1<sup>st</sup> April 2010 are shown in Table 18-7 and
- Table 18-8.

Table 18-7: First Year VED Rates for Petrol (TC48) and Diesel (TC49) Cars Registered on or after 1 April 2010 (United Kingdom, 2014)<sup>687,688</sup>

Band	CO <sub>2</sub> Emission (g/km)	12 Months Rate		6 Months Rate	
		GBP	EUR	GBP	EUR
A	Up to 100	0.00	0.00	Not available	Not available
B	101-110	0.00	0.00	Not available	Not available
C	111-120	0.00	0.00	Not available	Not available
D	121-130	0.00	0.00	Not available	Not available
E	131-140	130.00	153.07	71.50	84.19
F	141-150	145.00	170.74	79.75	93.91
G	151-165	180.00	211.95	99.00	116.57
H	166-175	290.00	341.47	Not available	Not available
I	176-185	345.00	406.24	Not available	Not available
J	186-200	485.00	571.09	Not available	Not available
K	201-225	635.00	747.71	Not available	Not available
L	226-255	860.00	1012.65	Not available	Not available
M	Over 255	1,090.00	1283.47	Not available	Not available

Source: DVLA (2014) *Rates of Vehicle Tax*, Accessed 20<sup>th</sup> August 2014, pp.1-4, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/299797/V149\\_2014-15.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/299797/V149_2014-15.pdf) and United Kingdom Government (2014) *Vehicle Tax Rate Tables*, Accessed 20<sup>th</sup> August 2014, <https://www.gov.uk/vehicle-tax-rate-tables>

<sup>687</sup> DVLA (2014) *Rates of Vehicle Tax*, Accessed 20<sup>th</sup> August 2014, pp.1-4, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/299797/V149\\_2014-15.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/299797/V149_2014-15.pdf)

<sup>688</sup> United Kingdom Government (2014) *Vehicle Tax Rate Tables*, Accessed 20<sup>th</sup> August 2014, <https://www.gov.uk/vehicle-tax-rate-tables>

Table 18-8: First Year VED Rates for Alternative Fuel Cars (TC59) Registered on or after 1 April 2010 (United Kingdom, 2014)<sup>689,690</sup>

Band	CO <sub>2</sub> Emission (g per km)	12 Months Rate		6 Months Rate	
		GBP	EUR	GBP	EUR
A	Up to 100	0.00	0	Not available	Not available
B	101-110	0.00	0	Not available	Not available
C	111-120	0.00	0	Not available	Not available
D	121-130	0.00	0	Not available	Not available
E	131-140	120.00	141.30	66.00	77.71
F	141-150	135.00	158.96	74.25	87.43
G	151-165	170.00	200.17	93.50	110.10
H	166-175	280.00	329.70	Not available	Not available
I	176-185	335.00	394.46	Not available	Not available
J	186-200	475.00	559.31	Not available	Not available
K	201-225	625.00	735.93	Not available	Not available
L	226-255	850.00	1000.87	Not available	Not available
M	Over 255	1,080.00	1271.70	Not available	Not available

Source: DVLA (2014) *Rates of Vehicle Tax*, Accessed 20<sup>th</sup> August 2014, pp.1-4, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/299797/V149\\_2014-15.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/299797/V149_2014-15.pdf) and United Kingdom Government (2014) *Vehicle Tax Rate Tables*, Accessed 20<sup>th</sup> August 2014, <https://www.gov.uk/vehicle-tax-rate-tables>

- Alternate VED rates apply to other types of vehicles. These are given below (2014 rates). Note that 6 monthly rates are also available for these vehicles. <sup>691,692,693</sup>

<sup>689</sup> DVLA (2014) *Rates of Vehicle Tax*, Accessed 20<sup>th</sup> August 2014, pp.1-4, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/299797/V149\\_2014-15.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/299797/V149_2014-15.pdf)

<sup>690</sup> United Kingdom Government (2014) *Vehicle Tax Rate Tables*, Accessed 20<sup>th</sup> August 2014, <https://www.gov.uk/vehicle-tax-rate-tables>

<sup>691</sup> DVLA (2014) *Rates of Vehicle Tax*, Accessed 20<sup>th</sup> August 2014, pp.1-4, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/299797/V149\\_2014-15.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/299797/V149_2014-15.pdf)



- Light goods vehicles (TC39) registered on or after 1<sup>st</sup> March 2001 and not over 500kg revenue weight are subject to a VED of £225 (€264.94) per year.
- Euro 4 light goods vehicles (TC36) registered between 1 March 2003 and 31 December 2006, Euro 4 compliant and not over 3,500kg revenue weight are subject to a VED of £140 (€164.85) per year.
- Euro 5 light goods vehicles (TC36) registered between 1 January 2009 and 31 December 2010, Euro 5 compliant and not over 3,500kg revenue weight are also subject to a VED of £140 (€164.85) per year.
- Motorcycles (with or without sidecar) are subject to a rate of VED based on engine size. The rates are shown in Table 18-9.

Table 18-9: VED Rates for Motorcycles (TC17) (United Kingdom, 2014)<sup>694,695</sup>

Engine size (cc)	12 months rate	
	GBP	EUR
Not over 150	17.00	20.02
Not over 150	17.00	20.02
401-600	58.00	68.29
Over 600	80.00	94.20

Source: DVLA (2014) *Rates of Vehicle Tax*, Accessed 20<sup>th</sup> August 2014, pp.1-4, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/299797/V149\\_2014-15.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/299797/V149_2014-15.pdf) and United Kingdom Government (2014) *Vehicle Tax Rate Tables*, Accessed 20<sup>th</sup> August 2014, <https://www.gov.uk/vehicle-tax-rate-tables>

- Tricycles (not over 450kg unladen) (TC50) are subject to a rate of VED based on engine size. Tricycles not over 150cc are subject to a VED rate of £17.00 (€20.02) per year. All other tricycles are subject to a rate of £80.00 (€94.20).

<sup>692</sup> United Kingdom Government (2014) *Vehicle Tax Rate Tables*, Accessed 20<sup>th</sup> August 2014, <https://www.gov.uk/vehicle-tax-rate-tables>

<sup>693</sup> European Commission (2013) *Taxes in Europe Database*, Accessed 19<sup>th</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=576/1388754985&taxType=Other+indirect+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=576/1388754985&taxType=Other+indirect+tax)

<sup>694</sup> DVLA (2014) *Rates of Vehicle Tax*, Accessed 20<sup>th</sup> August 2014, pp.1-4, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/299797/V149\\_2014-15.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/299797/V149_2014-15.pdf)

<sup>695</sup> United Kingdom Government (2014) *Vehicle Tax Rate Tables*, Accessed 20<sup>th</sup> August 2014, <https://www.gov.uk/vehicle-tax-rate-tables>

- Trade vehicles must also pay for a trade licence. These are charged at a rate of £165 (€194.29) per year for all vehicles except for bicycles and tricycles (not over 450kg), which pay a rate of £80.00 (€94.20).
- Rates of duty on heavy goods vehicles (HGVs) rise from £80 (€94.20) up to £850 (€1000.87) per year, depending on the number of axles and revenue weight of the vehicle.
- Vehicles used for carrying or drawing exceptional loads pay a rate of duty of £1,585 (€1866.33) per year.
- Rates of duty for buses are in four bands according to seating capacity, rising from £165 (€194.29) to £500 (€588.75) per year. For reduced pollution buses there is a flat rate of duty of £165 (€203.02) a year.
- Rates of duty for recovery vehicles range from £165 (€194.29) to £410 (€482.77) per year, according to revenue weight.
- There is a flat rate of duty for haulage vehicles of £350 (€412.12).
- Exemptions to the VED include:<sup>696</sup>
  - Vehicles used by a disabled person;
  - Disabled passenger vehicles;
  - Mobility scooters, historic vehicles;
  - Electric vehicles;
  - Steam vehicles; and
  - Vehicles used just for agriculture, horticulture and forestry.
- Tax revenue (2012): £5.87 (€7.24) billion, equivalent to 0.36% of GDP.<sup>697</sup>

➤ **HGV Road User Levy:**

- A road user levy for HGVs weighing 12 tonnes or more was introduced on 1<sup>st</sup> April 2014 by the HGV Road User Levy Act 2013 (Finance Bill 2014), with payments collected by the DVLA.<sup>698</sup>
- Paid alongside VED, levy amounts range from £85 (€100.09) to £1,000 (€1,177.50) per year according to the vehicle's weight, axle configuration and levy duration.<sup>699</sup>

---

<sup>696</sup> United Kingdom Government (2014) *Vehicle Tax Rate Tables*, Accessed 20<sup>th</sup> August 2014, <https://www.gov.uk/vehicle-tax-rate-tables>

<sup>697</sup> European Commission (2013) *Taxes in Europe Database*, Accessed 19<sup>th</sup> August 2014, [http://ec.europa.eu/taxation\\_customs/tedb/taxDetail.html?id=576/1388754985&taxType=Other+indirect+tax](http://ec.europa.eu/taxation_customs/tedb/taxDetail.html?id=576/1388754985&taxType=Other+indirect+tax)

<sup>698</sup> HGV Road User Levy Act 2013, Accessed 34<sup>th</sup> September 2014, <http://www.legislation.gov.uk/ukpga/2013/7/contents>

<sup>699</sup> United Kingdom Government (2014) *Vehicle Tax Rate Tables*, Accessed 20<sup>th</sup> August 2014, <https://www.gov.uk/vehicle-tax-rate-tables>

- In line with the introduction of the Levy, VED for HGVs has been reduced. Consequentially, over 90% of HGVs will not see costs rise from the previous year.<sup>700</sup>

➤ **Other Vehicle Taxes:**

- The United Kingdom imposes user charges in some parts of the country in the form of road pricing. Examples of this include:
  - London Congestion Charge: <sup>701</sup>
    - Since 2003, Transport for London (TfL) has imposed a charge per weekday on most vehicles being used in Central London.
    - The charge for entering the zone is £11.50 (€13.54) per vehicle per day.
    - Exemptions from the charge include: motorbikes, emergency service and National Health Service vehicles and disabled persons' vehicles.
    - The Charge generated revenue of £235 (€276.71) million in 2013/14, equivalent to 0.01% of GDP. <sup>702</sup>
  - Durham Road User Charge:
    - In place since 2002, the charge operates from Monday to Saturday and is applicable to most vehicles entering the designated zone.
    - The charge for entering the zone is £2.00 (€2.35) per vehicle (2014). <sup>703</sup>
    - Exemptions from the charge include: motorbikes, disabled persons vehicles, any Durham County Council Vehicle and bullion vehicles.
  - M6toll road:
    - A 27 mile stretch of road in the West Midlands region, the M6toll charges users to use the road, bypassing the more congested M6 motorway.

---

<sup>700</sup> United Kingdom Government Website (2014) HGV Road User Levy, Accessed 24<sup>th</sup> September 2014, <https://www.gov.uk/government/collections/hgv-road-user-levy>

<sup>701</sup> TfL (2014) *Congestion Charge*, Accessed 20<sup>th</sup> August 2014, <https://www.tfl.gov.uk/modes/driving/congestion-charge>

<sup>702</sup> TfL (2014) *Annual Report and Statement of Accounts*, Accessed 20<sup>th</sup> August 2014, <http://www.tfl.gov.uk/cdn/static/cms/documents/annual-report-2013-14.pdf>

<sup>703</sup> Durham County Council (2014) *Durham Road User Charge Zone*, Accessed 20<sup>th</sup> August 2014, <http://www.durham.gov.uk/pages/Service.aspx?ServiceId=6370>

- Prices depend on the class of vehicle and time of day. For example, an HGV travelling in the day time will pay more than a motorbike travelling at night.
    - Prices (2014) range from £1.80 (€2.12) to £11.00 (€12.95) per vehicle, per journey.<sup>704</sup>
    - Vehicles exempt from the charge include: disabled persons' vehicles, emergency service vehicles and ministry of defence vehicles.
  - Ultra-Low Emissions Zone:
    - It is also notable that the Mayor of London has proposed an Ultra-Low Emissions Zone (ULEZ) in the capital, on top of the existing scheme, to tackle the problem of air pollution. Under the scheme, which has been proposed to come into force by 2020, almost all the vehicles running during the operating hours would be either zero or low emission. A public consultation on the ULEZ is due to take place in autumn 2014.<sup>705</sup>
- **Air Passenger Duty:**<sup>706</sup>
- Air Passenger Duty (APD) is due on aircrafts that depart from airports in the United Kingdom and carry passengers. The amount is related to the number of chargeable passengers, the classes of travel on offer and the destination.
  - Chargeable aircraft are fixed wing aircraft with an authorised take-off weight of 5.7 tonnes or more, fuelled by Avtur (aviation turbine fuel), with the exception of any that are:
    - Emergency or public service flights;
    - Short pleasure flights that begin and end at the same place and are no longer than 60 minutes;
    - Flights departing specific airports in the Scottish Highlands and Islands subject to circumstances beyond the control of the airline; and
    - NATO flights.

---

<sup>704</sup> M6toll Website (2014) *Pricing Guide*, Accessed 21<sup>st</sup> August 2014, <http://www.m6toll.co.uk/pricing/pricing-guide/>

<sup>705</sup> TfL (2014) Ultra Low Emissions Zone, Accessed 24<sup>th</sup> September 2014, <https://www.tfl.gov.uk/modes/driving/low-emission-zone/ultra-low-emission-zone>

<sup>706</sup> HMRC (2014) *Air Passenger Duty Bulletin June 2014*, Accessed 20<sup>th</sup> August 2014, <https://www.uktradeinfo.com/Statistics/Pages/TaxAndDutyBulletins.aspx>

- The duty rates depend on the final destination of the passenger, and the class of travel (for example, economy or premium). A four-band destination band structure applies based on geographical distance from London to the capital city of the destination country. Each band is 2,000 miles wider than the previous, i.e. 0-2,000 miles, 2,000-4,000 miles, 4,000-6,000 miles and 6,000+ miles. The 2014 Budget announced the intention to simplify the banding system to two bands as of April 2015.<sup>707</sup>
- Rates are presented in Table 18-10 and Table 18-11.
- Tax revenue (2013): £2.96 (€3.49) billion, equivalent to 0.18% of GDP.<sup>708</sup>

Table 18-10: Air Passenger Duty Rates (United Kingdom, 2014)<sup>709</sup>

Destination Bands and Distance from London (miles)	Reduced Rate From (for Travel in the Lowest Class of Travel Available on the Aircraft)		Standard Rate From (for Travel in any Other Class of Travel)		Higher Rate From (for Travel in Aircraft of 20 Tonnes or more Equipped to Carry Fewer than 19 Passengers)	
	GBP	EUR	GBP	EUR	GBP	EUR
Band A (0-2,000)	13	15.31	26	30.61	52	61.23
Band B (2,001-4,000)	69	81.25	138	162.49	276	324.99
Band C (4,001-6,000)	85	100.09	170	200.17	340	400.35
Band D (over 6,000)	97	114.22	194	228.43	388	456.87

Source: HMRC (2014) *Air Passenger Duty*, Accessed 20<sup>th</sup> August 2014, <http://www.hmrc.gov.uk/rates/apd.htm>

Table 18-11: Air Passenger Duty Rates from 1 April 2015 (United Kingdom, 2015)

Bands (Distance in Miles from London)	Reduced Rate (Lowest Class of Travel)		Standard Rate <sup>1</sup> (Other than the Lowest Class of Travel)		Higher Rate <sup>2</sup>	
	GBP	EUR	GBP	EUR	GBP	EUR
Band A (0 – 2000 miles)	13	15.31	26	30.61	78	91.84

<sup>707</sup> Deloitte (2014) *Air Passenger Duty*, Accessed 24<sup>th</sup> September 2014, <http://www.ukbudget.com/2014-measures/air-passenger-duty.aspx>

<sup>708</sup> From Table 2 in HMRC (2014) *Air Passenger Duty Bulletin June 2014*, Accessed 20<sup>th</sup> August 2014, <https://www.uktradeinfo.com/Statistics/Pages/TaxAndDutyBulletins.aspx>

<sup>709</sup> HMRC (2014) *Air Passenger Duty*, Accessed 20<sup>th</sup> August 2014, <http://www.hmrc.gov.uk/rates/apd.htm>

Band B (over 2000 miles)	71	83.60	142	167.20	426	501.61
--------------------------	----	-------	-----	--------	-----	--------

Notes:

1. If any class of travel provides a seat pitch in excess of 1.016 metres (40 inches) the standard rate is the minimum rate that applies.
2. The higher rate applies to flights aboard aircraft of 20 tonnes and above with fewer than 19 seats.

Source: Deloitte (2014) *Air Passenger Duty*, Accessed 24<sup>th</sup> September 2014, <http://www.ukbudget.com/2014-measures/air-passenger-duty.aspx>

## 18.3 Pollution and Resource Taxes

### ➤ Landfill tax:

- Applies to all waste disposed of by way of landfill at a licensed site on or after 1 October 1996.
- The tax is charged by weight and there are two rates (2014): <sup>710</sup>
  - Standard rate: £80 (€94.20) per tonne
  - Lower rate: £2.50 (€2.94) per tonne (levied on inert waste).
- Exemptions exist for: <sup>711</sup>
  - Dredging;
  - Mining and quarrying waste;
  - Pet cemeteries;
  - Material from the reclamation of contaminated land;
  - Filling of quarries; and
  - Waste from visiting forces.
- The standard rate has risen by £8 (€9.42) per year since 2008, whereas the lower rate has been constant over this period. There are no immediate plans to increase either rate.
- Tax revenue (2013): £1.1 (€1.3) billion, equivalent to 0.07% of GDP. <sup>712</sup>

### ➤ Aggregates Tax:

- Levied on the commercial exploitation in the United Kingdom of rock, sand and gravel, due from any business that quarries, dredges or imports these products that has been in place since 1 April 2002.
- Rate (2014): £2 (€2.35) per tonne of aggregate. <sup>713</sup>

<sup>710</sup> HMRC (2014) *Landfill Tax*, Accessed 20<sup>th</sup> August 2014, <http://www.hmrc.gov.uk/rates/landfill-tax.htm>

<sup>711</sup> HMRC (2014) *Landfill Tax Bulletin April 2014*, Accessed 20<sup>th</sup> August 2014, <https://www.uktradeinfo.com/statistics/pages/taxanddutybulletins.aspx>

<sup>712</sup> Table 2 in HMRC (2014) *Landfill Tax Bulletin April 2014*, Accessed 20<sup>th</sup> August 2014, <https://www.uktradeinfo.com/statistics/pages/taxanddutybulletins.aspx>

- Prior to 1<sup>st</sup> April 2014, businesses that exploited the following materials benefitted from an exemption or relief from the tax:
  - Coal, lignite, slate or shale, or the spoil from the separation of these materials from other rock;
  - Clay;
  - Certain industrial minerals, such as ball clay and china clay;
  - The spoil, waste or other by-products from the extraction or separation of the industrial minerals set out in the previous bullet from other rock; and
  - The spoil, waste or by-products from industrial combustion or the smelting or refining of metal.
- Since 1<sup>st</sup> April 2014, these exemptions and reliefs have been suspended as they are the subject of a State aid investigation by the European Commission.<sup>714</sup>
- Material that remains exempt from the tax includes soil and other organic matter.<sup>715</sup>
- In Northern Ireland, the Aggregates Levy Credit Scheme (ALCS), which allowed for an 80 per cent relief from the full rate of the levy for aggregate extracted from 1<sup>st</sup> April 2004 to 30 November 2010, has been suspended until further notice.
- Tax revenue (2013): £275 (€323.81) million, equivalent to 0.02% of GDP.<sup>716</sup>

➤ **Single Use Plastic Bag Tax:**

- From October 2015, a £0.05 (€0.06) charge on all single-use plastic carrier bags will be introduced in England.<sup>717</sup>
  - Small and medium-sized (SME) businesses will be exempt from the plastic bag charge in England.

---

<sup>713</sup> Table 6 in HMRC (2014) *Aggregates Levy Bulletin April 2014*, Accessed 20<sup>th</sup> August 2014, <https://www.uktradeinfo.com/statistics/pages/taxanddutybulletins.aspx>

<sup>714</sup> HMRC *Aggregates Levy: Suspension of Exemptions*, Accessed 20<sup>th</sup> August 2014, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/293915/TIIN\\_6081\\_aggregates\\_levy\\_suspension\\_of\\_exemptions.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/293915/TIIN_6081_aggregates_levy_suspension_of_exemptions.pdf)

<sup>715</sup> HMRC (2014) *Aggregates Levy: Introduction*, Accessed 20<sup>th</sup> August 2014, [http://customs.hmrc.gov.uk/channelsPortalWebApp/channelsPortalWebApp.portal?\\_nfpb=true&\\_pageLabel=pageLibrary&propertyType=document&id=HMCE\\_CL\\_001169](http://customs.hmrc.gov.uk/channelsPortalWebApp/channelsPortalWebApp.portal?_nfpb=true&_pageLabel=pageLibrary&propertyType=document&id=HMCE_CL_001169)

<sup>716</sup> Table 2 in HMRC (2014) *Aggregates Levy Bulletin April 2014*, Accessed 20<sup>th</sup> August 2014, <https://www.uktradeinfo.com/statistics/pages/taxanddutybulletins.aspx>

<sup>717</sup> United Kingdom Government (2014) *Reducing and managing Waste: Charging for single use plastic carrier bags*, Accessed 20 August 2014, <https://www.gov.uk/government/policies/reducing-and-managing-waste/supporting-pages/charging-for-single-use-plastic-carrier-bags>

- There is already a similar £0.05 (€0.06) charge on single-use bags in Wales, Northern Ireland and Scotland will be introducing a charge in October 2014.

➤ **Water Abstraction Charge:**

- In England, individuals or businesses that plan to abstract more than 20 cubic metres of water a day from a surface source (such as river, stream or canal) need an abstraction licence from the Environment Agency.
- Abstractions that don't need a licence include: <sup>718</sup>
  - Abstractions of 20 m<sup>3</sup> or less a day (if the abstraction is part of a single operation);
  - Some land drainage operations (for example, flood protection);
  - Filling ships or boats with drinking or ballast water;
  - Water used for firefighting;
  - Abstractions in relation to dewatering quarries, mines and other building or engineering operations; and
  - Trickle irrigation.
- An annual charge is then determined per licence based on a number of factors including the source of water, season, and standard unit charge. The standard rates of charge for different regions in England are given in Table 18-12.

Table 18-12: Rate of Charge for the Abstraction of Water (United Kingdom, 2014) <sup>719</sup>

Regional Charging Area	Standard Unit charge (per 1,000 m <sup>3</sup> )	
	GBP	EUR
Anglian	27.51	32.39
Midlands	14.95	17.60
Northumbria	29.64	34.90
North West	12.57	14.80
Southern	19.23	22.64
South West (incl. Wessex)	19.71	23.21

<sup>718</sup> United Kingdom Government (2014) *Water management: Abstract or impound water*, Accessed 20 August 2014, <https://www.gov.uk/water-management-abstract-or-impound-water>

<sup>719</sup> Environment Agency (2014) *Abstraction Charges Scheme 2014/15*, Accessed 20 August 2014, p.12, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/304569/Abstraction\\_Charging\\_Scheme\\_2014-15\\_final\\_draft\\_140414\\_unsigned\\_version....pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/304569/Abstraction_Charging_Scheme_2014-15_final_draft_140414_unsigned_version....pdf)



Regional Charging Area	Standard Unit charge (per 1,000 m3)	
	GBP	EUR
Thames	13.84	16.30
Yorkshire	11.63	13.69
Dee	15.16	17.85
Wye	15.16	17.85
<i>Note: The minimum annual charge is £25.00</i>		

Source: Environment Agency (2014) *Abstraction Charges Scheme 2014/15*, Accessed 20 August 2014, p.12,  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/304569/Abstraction\\_Charging\\_Scheme\\_2014-15\\_final\\_draft\\_140414\\_unsigned\\_version....pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/304569/Abstraction_Charging_Scheme_2014-15_final_draft_140414_unsigned_version....pdf)

- Tax revenue (2013): £118.5 (€139.53) million, equivalent to 0.01% of GDP. <sup>720</sup>
- Different pricing mechanisms apply in Wales, Scotland and Northern Ireland:
  - In Wales, Natural Resources Wales is responsible for the abstraction of water. Its charging mechanism is in line with that of the Environment Agency and will be until March 2015 when it is due to be reviewed. <sup>721,722</sup>
  - In Scotland, the Scottish Environment Protection Agency (SEPA) administers the charging scheme. All industry sectors that abstract water (generally above 50m<sup>3</sup> per day) have to pay subsistence charges as well as hold a SEPA licence. Subsistence charges are determined according to a number of factors including volume abstracted and source type. <sup>723</sup>

---

<sup>720</sup> Environment Agency (2014) *Annual Report and Accounts for the Financial Year 2013 and 2014*, Accessed 20<sup>th</sup> August 2014, p.75,  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/326016/41276\\_HC\\_35\\_7\\_Env\\_Agency\\_ARA\\_accessible.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/326016/41276_HC_35_7_Env_Agency_ARA_accessible.pdf)

<sup>721</sup> Natural Resources Wales (2014) *Abstraction Charges Scheme 2014/15*, Accessed 20<sup>th</sup> October 2014,  
<http://naturalresourceswales.gov.uk/content/docs/pdfs/how-we-regulate-you/our-charges/abstraction-charges-scheme-2014-15.pdf?lang=en>

<sup>722</sup> Natural Resources Wales, *Consultation on our Charging Scheme for 2015-16*, Accessed 20<sup>th</sup> October 2014,  
<http://naturalresourceswales.gov.uk/about-us/Consultations/our-own-consultations/consultation-on-our-charging-scheme-for-2015-16/?lang=en>

<sup>723</sup> Scottish Environment Protection Agency (2014) *Water Environment Charging Scheme Guidance*, Accessed 20<sup>th</sup> October 2014, pp.20-26,  
[http://www.sepa.org.uk/about\\_us/charging\\_schemes/current\\_charging\\_schemes.aspx](http://www.sepa.org.uk/about_us/charging_schemes/current_charging_schemes.aspx)

- In Northern Ireland, The Northern Ireland Environment Agency administers water abstraction. A one-off fee is payable for all applications to abstract water of more than 20 m<sup>3</sup> per day. Unlike the schemes elsewhere in the UK, an annual charge only applies to licence holders who abstract more than 100m<sup>3</sup> per day. <sup>724</sup>

➤ **Water Discharge Activities:**<sup>725</sup>

- In England, water discharge activities require a specific permit dependant on the nature of the activity:
  - Standard rules permits for discharge to surface water from cooling water and heat exchangers;
  - Standard rules permits for discharge to surface water of secondary treated domestic sewage with a maximum daily volume between 5 and 20 m<sup>3</sup> per day; or
  - Bespoke permits for any other discharge to surface water or groundwater.
- Applications are made to the Environment Agency.
- These permits are charged using a formulaic method of:
  - Volume factor;
  - Content factor;
  - Receiving water factor; and
  - Charge multiplier.
- Similar schemes operate in Wales, Scotland and Northern Ireland under their respective environmental agencies.

## 18.4 Modelled Changes in Tax Base

The modelled change in the tax base for each of the suggested reforms to the tax system are shown in the table and figures below.

Table 18-13: Change in Energy Tax Base

Fuel Type	Units	Baseline	After Tax Increase	Change
Gas Oil	million litres	29,594	29,167	-427

<sup>724</sup> Department of the Environment (Ireland), Abstraction & Impoundment Licensing: Fees and charges, Accessed 20<sup>th</sup> October, [http://www.doeni.gov.uk/niea/water-home/water\\_resources/abstraction/fees\\_and\\_charges-2.htm](http://www.doeni.gov.uk/niea/water-home/water_resources/abstraction/fees_and_charges-2.htm)

<sup>725</sup> Environment Agency (2014) *Environmental permitting Charging Scheme and Guidance*, Accessed 20<sup>th</sup> August 2014, p.65, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/304565/EP\\_Scheme\\_and\\_Guidance\\_14-15\\_new\\_template\\_v10.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/304565/EP_Scheme_and_Guidance_14-15_new_template_v10.pdf)

Fuel Type	Units	Baseline	After Tax Increase	Change
Petrol	million litres	17,008	16,907	-101
Kerosene	million litres	14,422	14,422	0
LPG	thousand tonnes	88	77	-11
Heavy Fuel Oil	thousand tonnes	189	187	-3
Natural Gas	TJ (GCV)	0	0	0
Coal	thousand tonnes	0	0	0
Electricity	GWh	0	0	0

Figure 18-1: Change in Internal Passenger Flights, flights per year

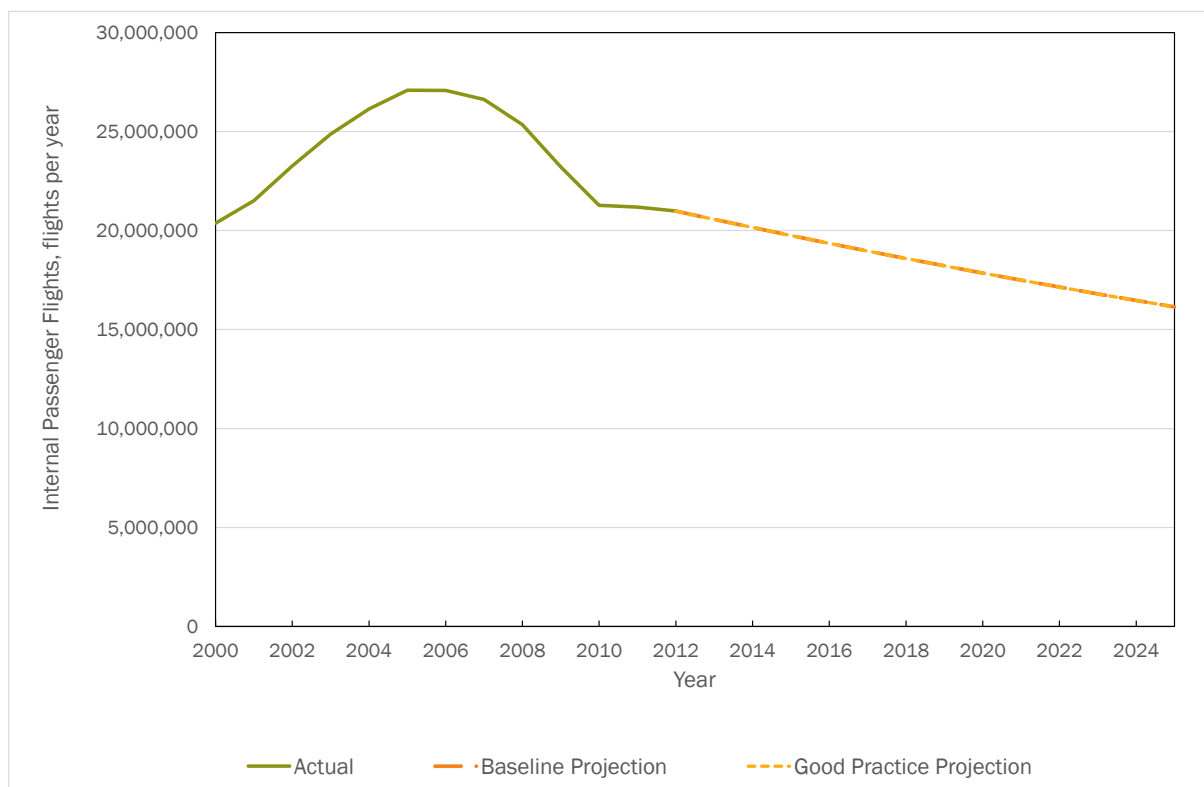


Figure 18-2: Change in Intra-EU Passenger Flights, flights per year

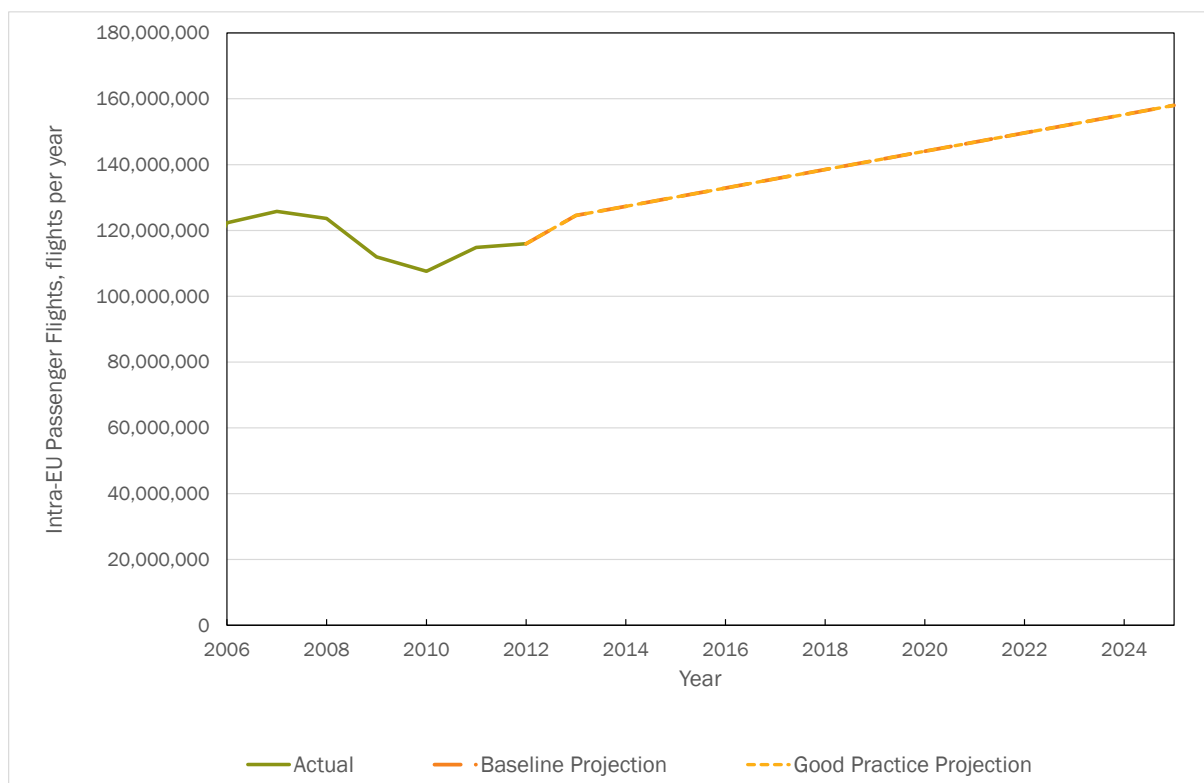


Figure 18-3: Change in Extra-EU Passenger Flights, flights per year

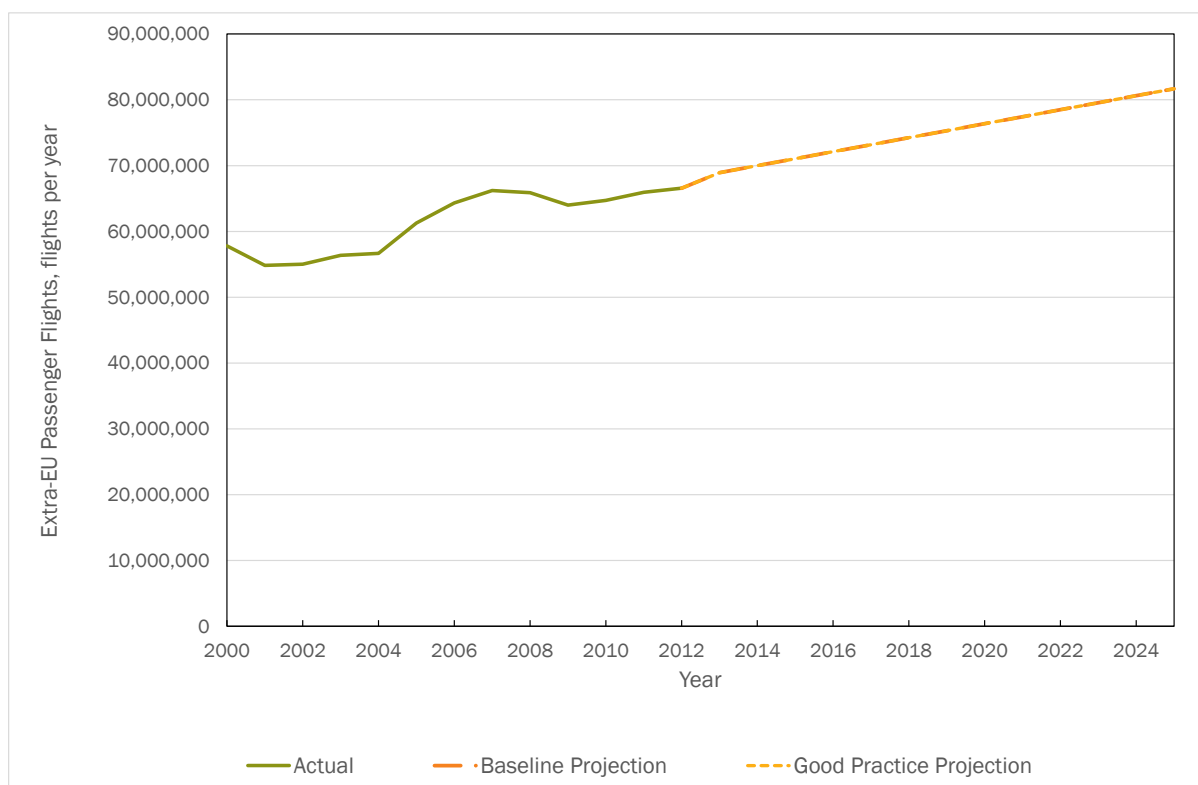


Figure 18-4: Change in Internal Air-freight, tonnes

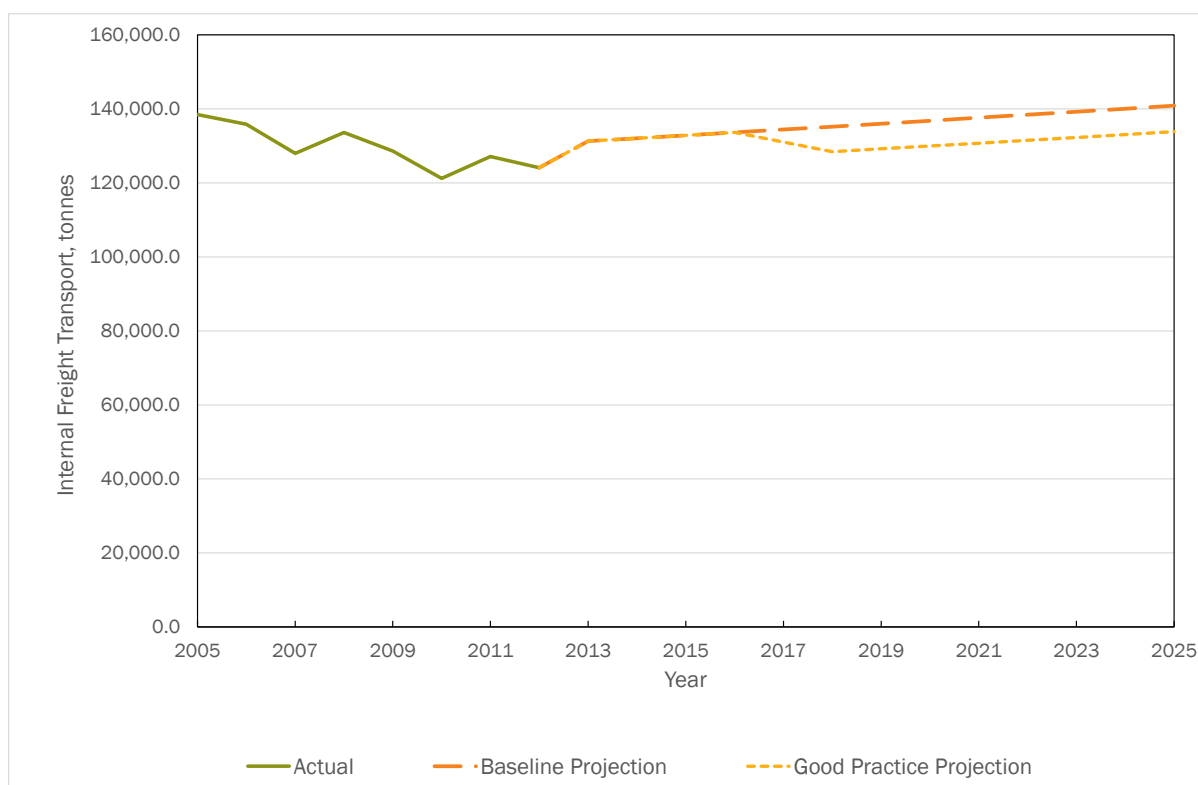


Figure 18-5: Change in Intra-EU Air-freight, tonnes

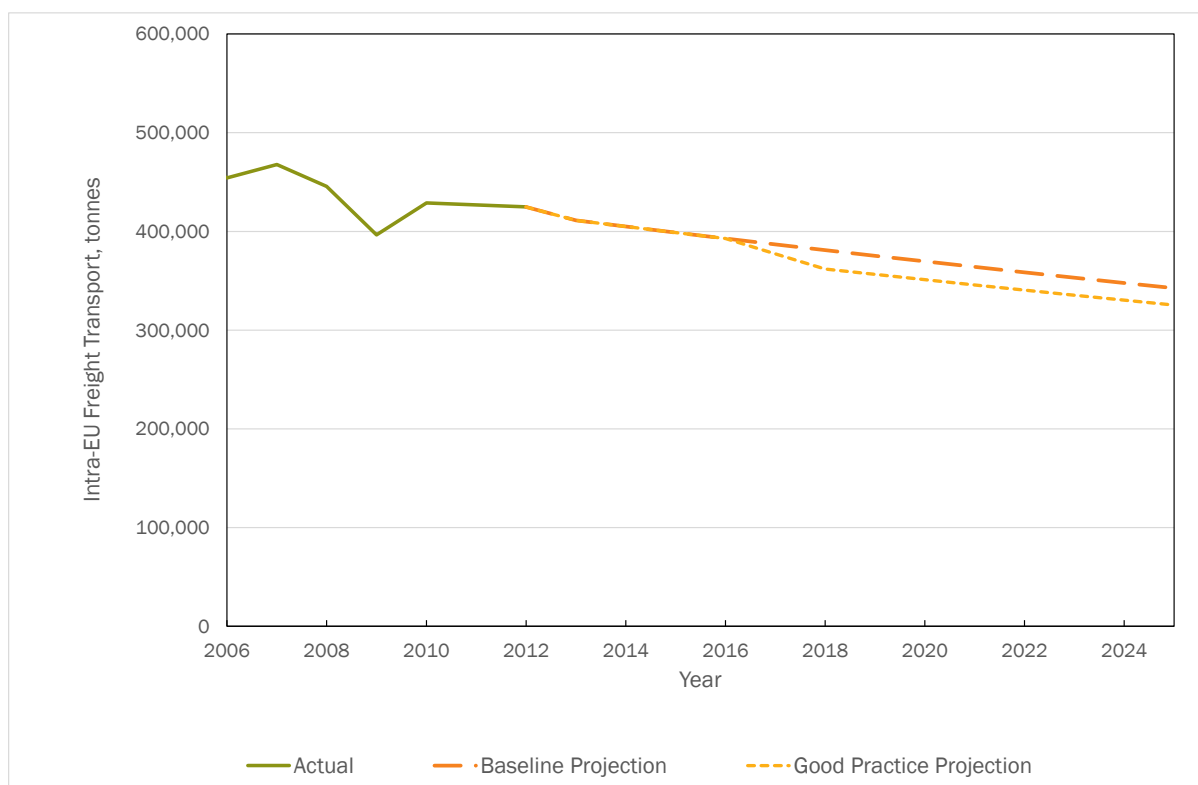


Figure 18-6: Change in Extra-EU Air-freight, tonnes

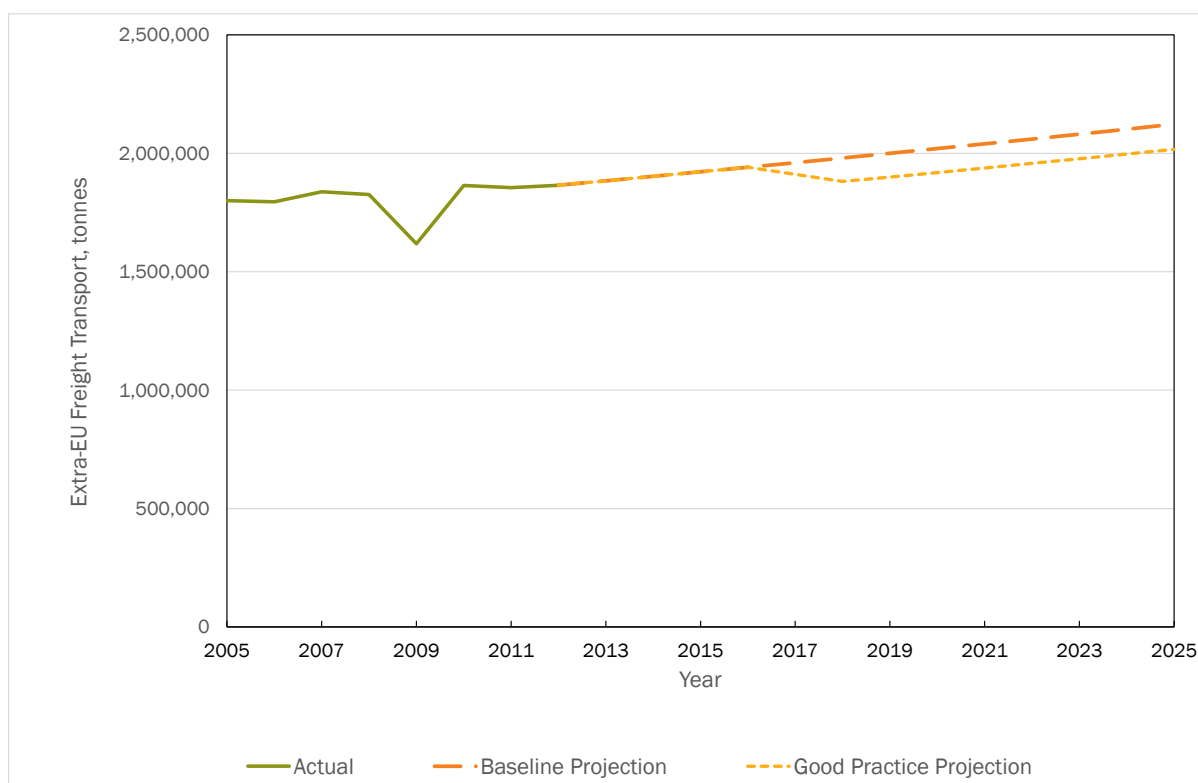


Figure 18-7: Change in Non-Hazardous Waste Landfilled, thousand tonnes

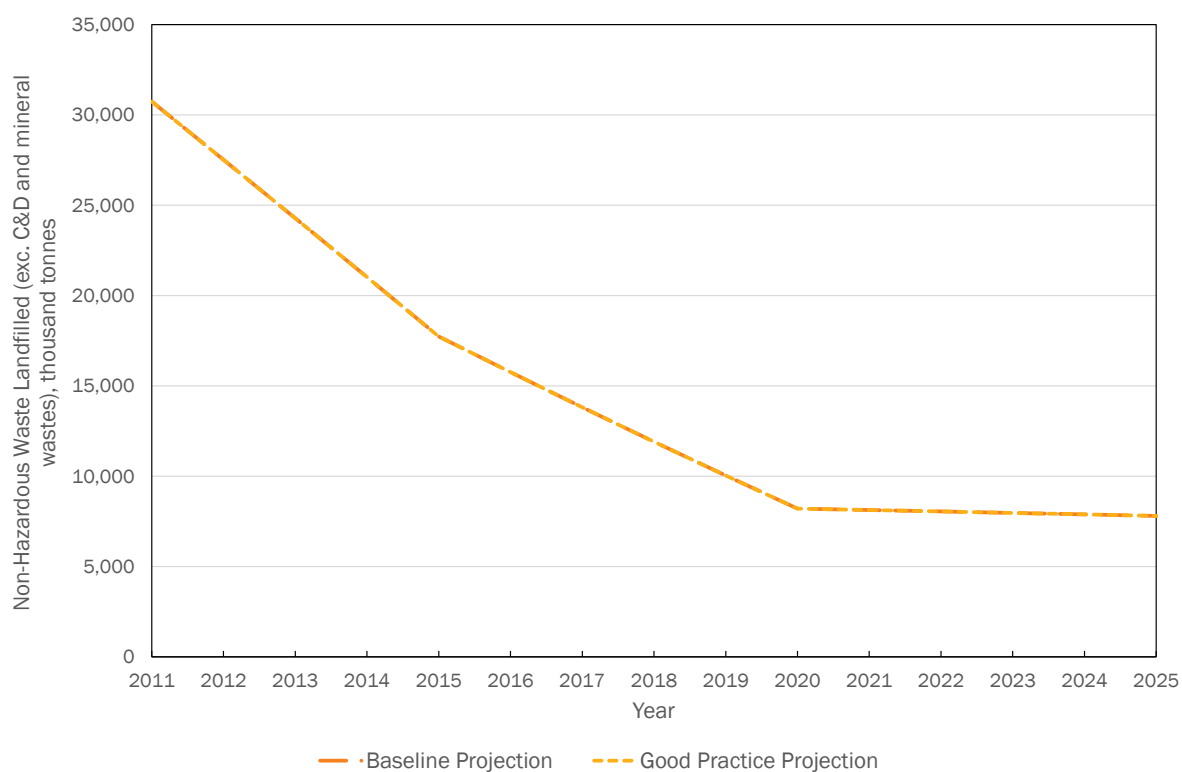


Figure 18-8: Change in MBT/ Incineration, thousand tonnes

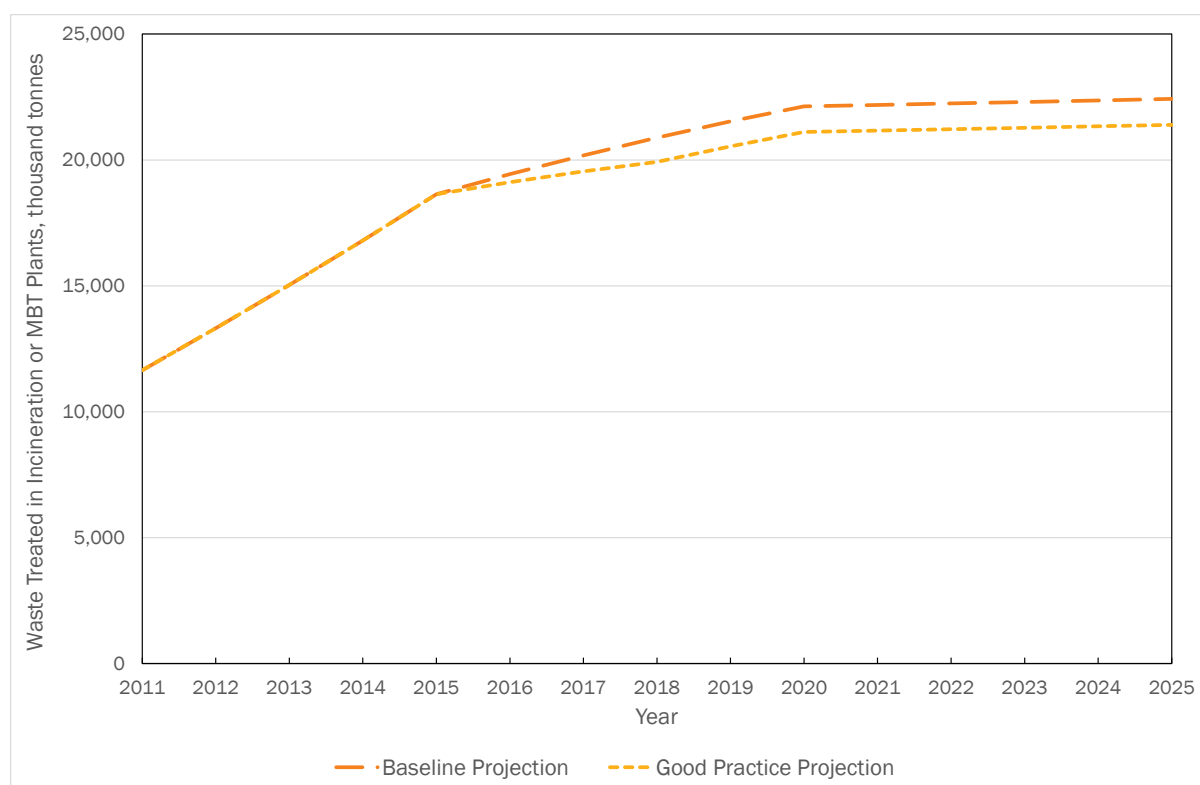


Figure 18-9: Change in SOx Emissions, tonnes

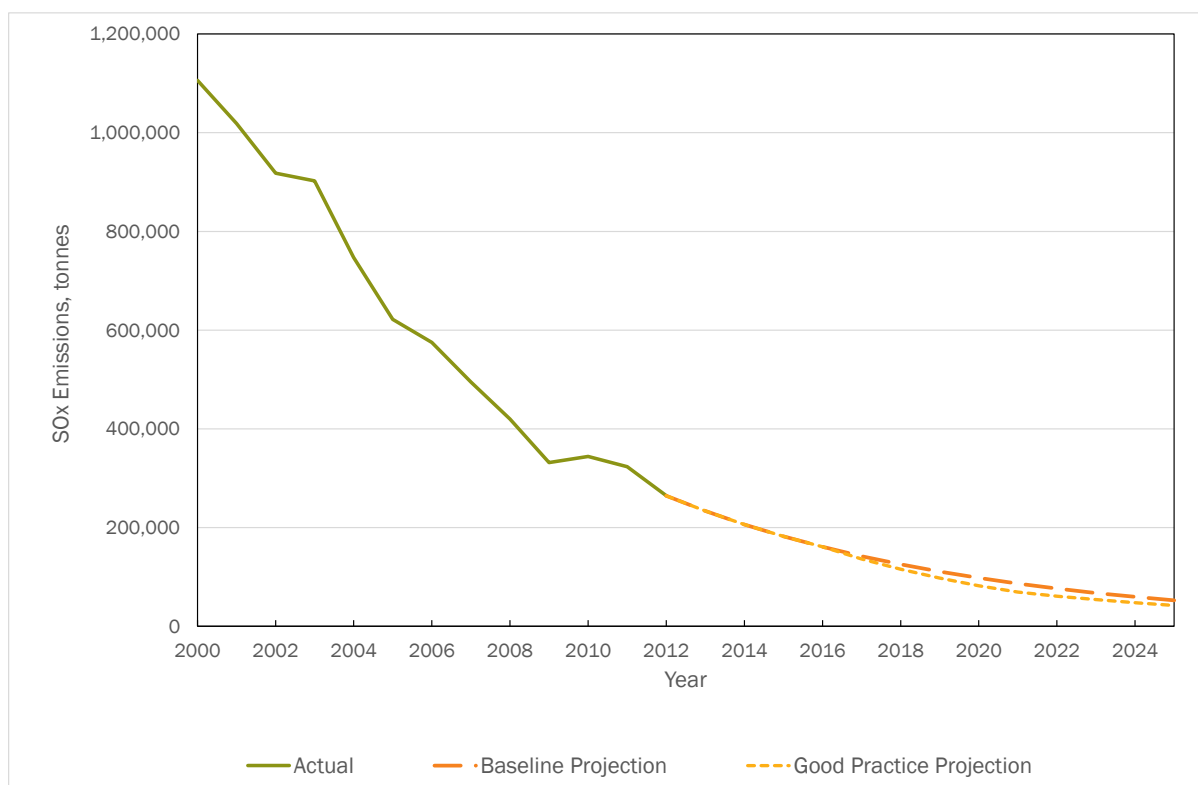


Figure 18-10: Change in NOx Emissions, tonnes

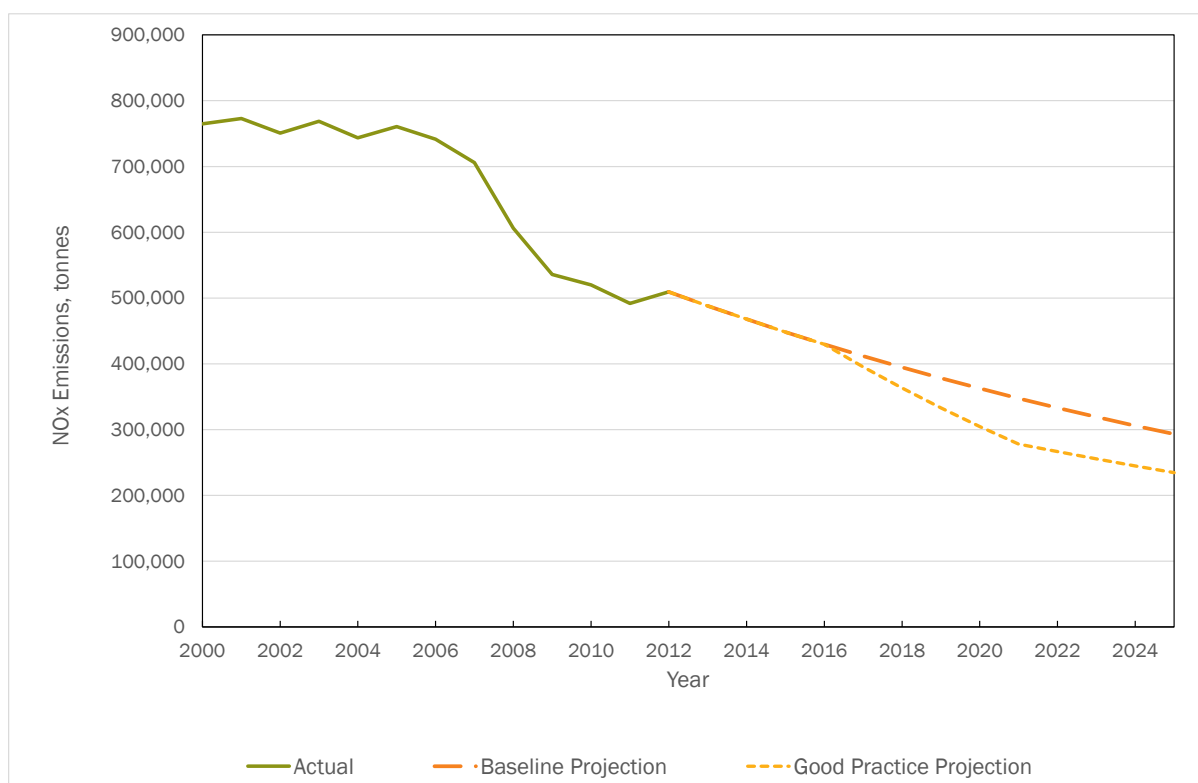




Figure 18-11: Change in PM<sub>10</sub> Emissions, tonnes

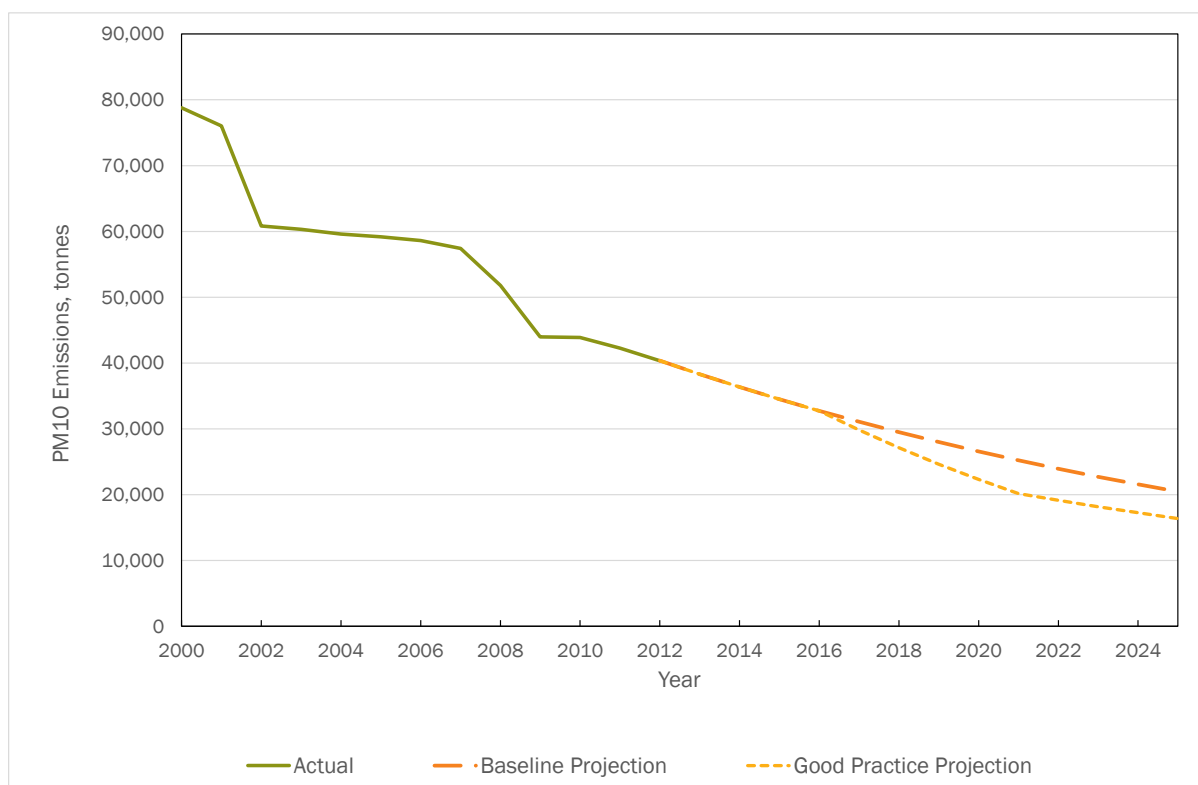


Figure 18-12: Change in Groundwater Abstraction – Public Supply, million cubic metres

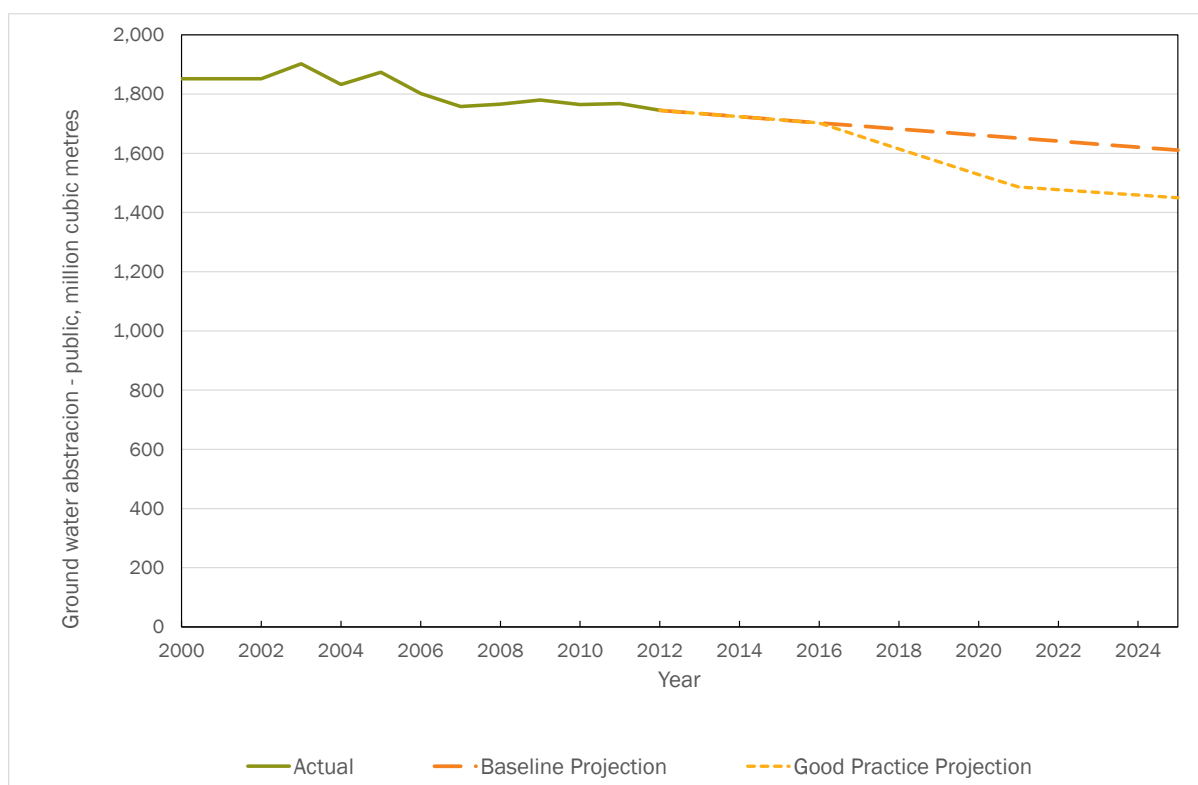


Figure 18-13: Change in Groundwater Abstraction – Manufacturing, million cubic metres

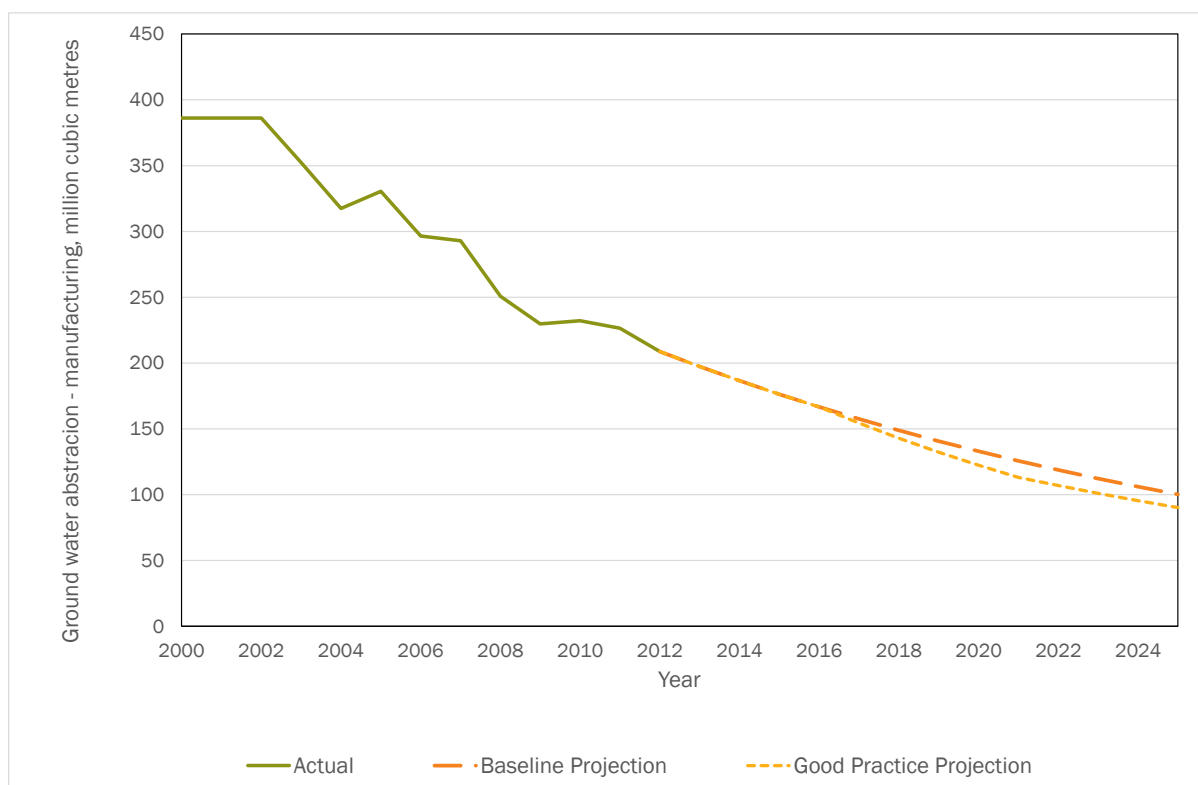


Figure 18-14: Change in Groundwater Abstraction – Agriculture, million cubic metres

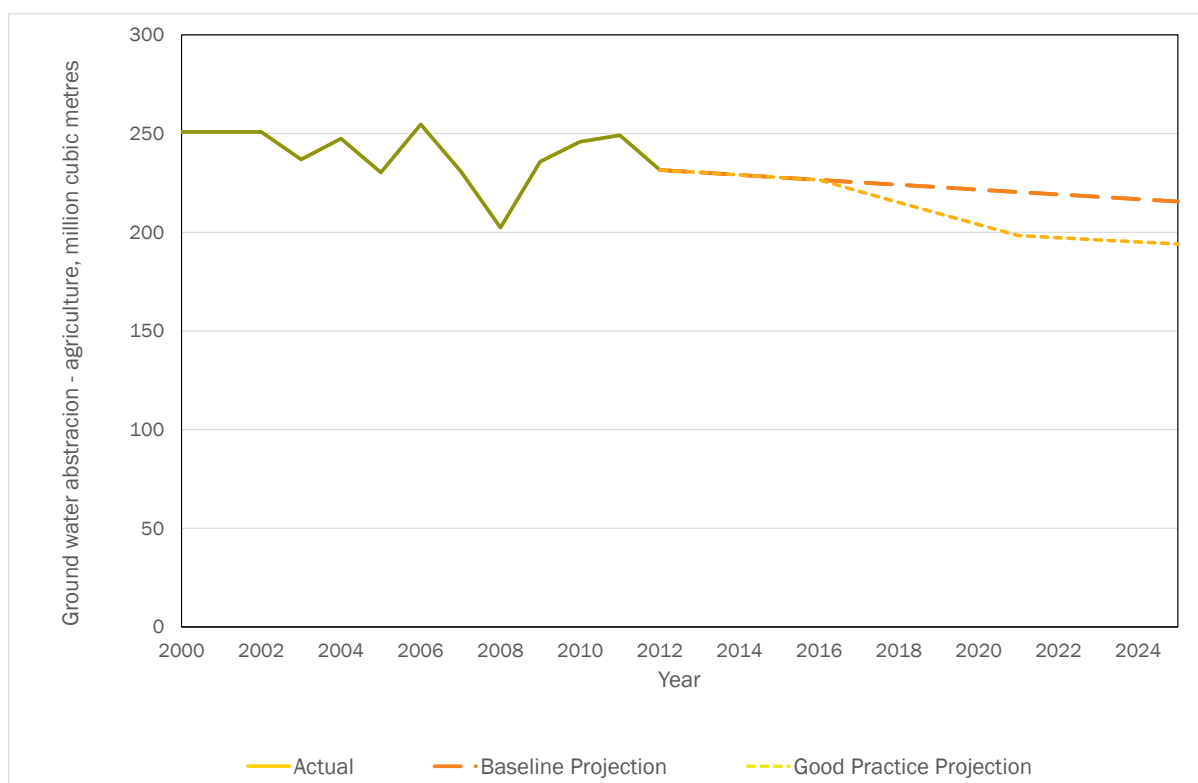


Figure 18-15: Change in Surface Water Abstraction – Public Supply, million cubic metres

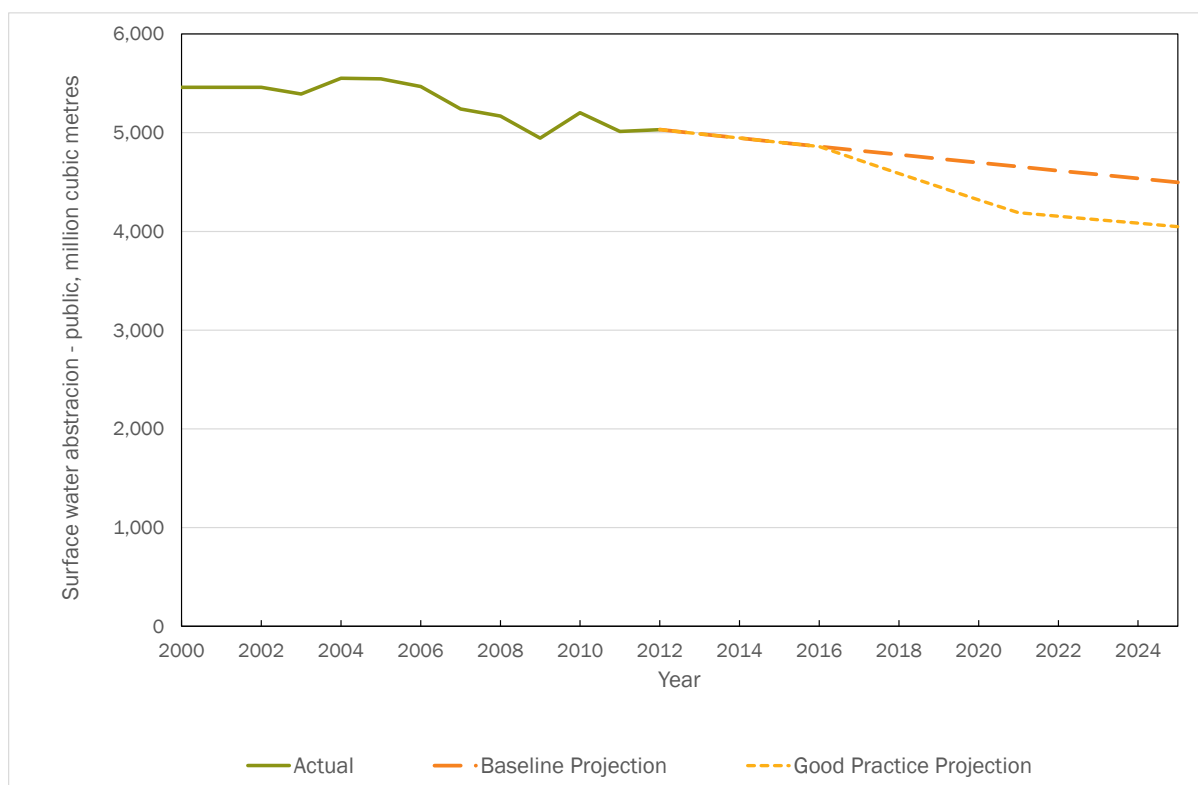


Figure 18-16: Change in Surface Water Abstraction – Manufacturing, million cubic metres

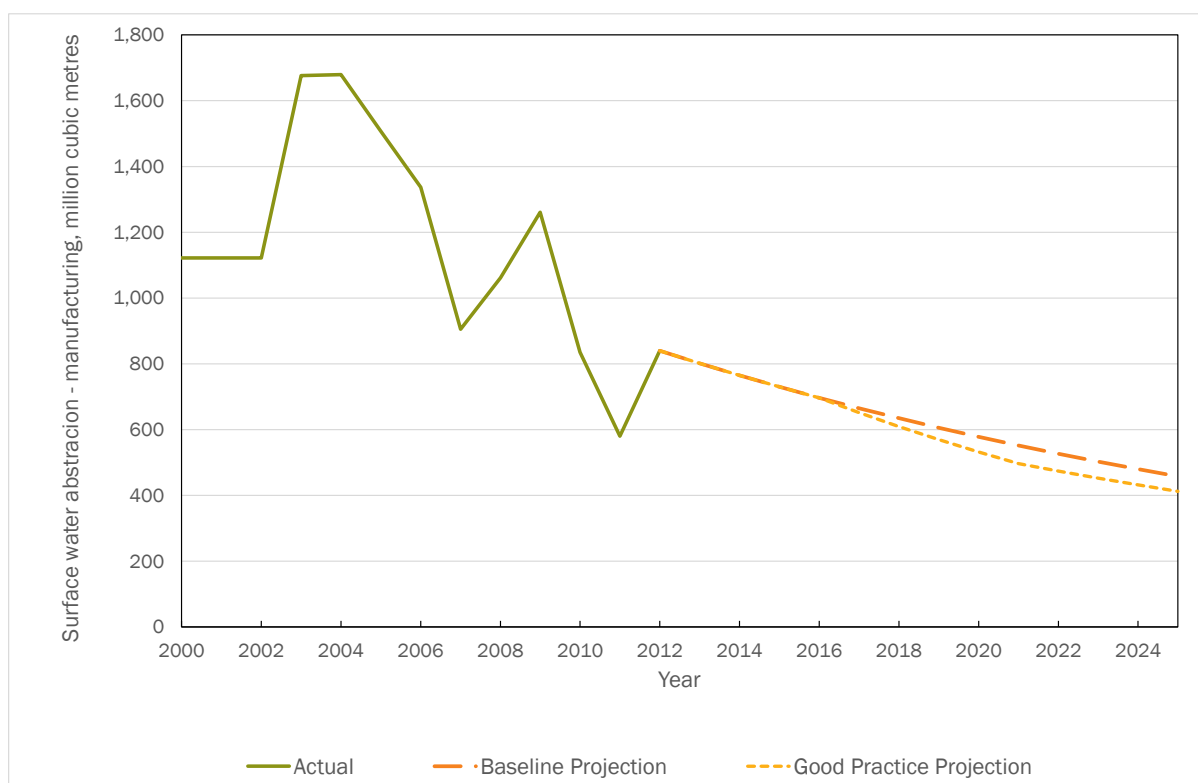


Figure 18-17: Change in Surface Water Abstraction – Agriculture, million cubic metres

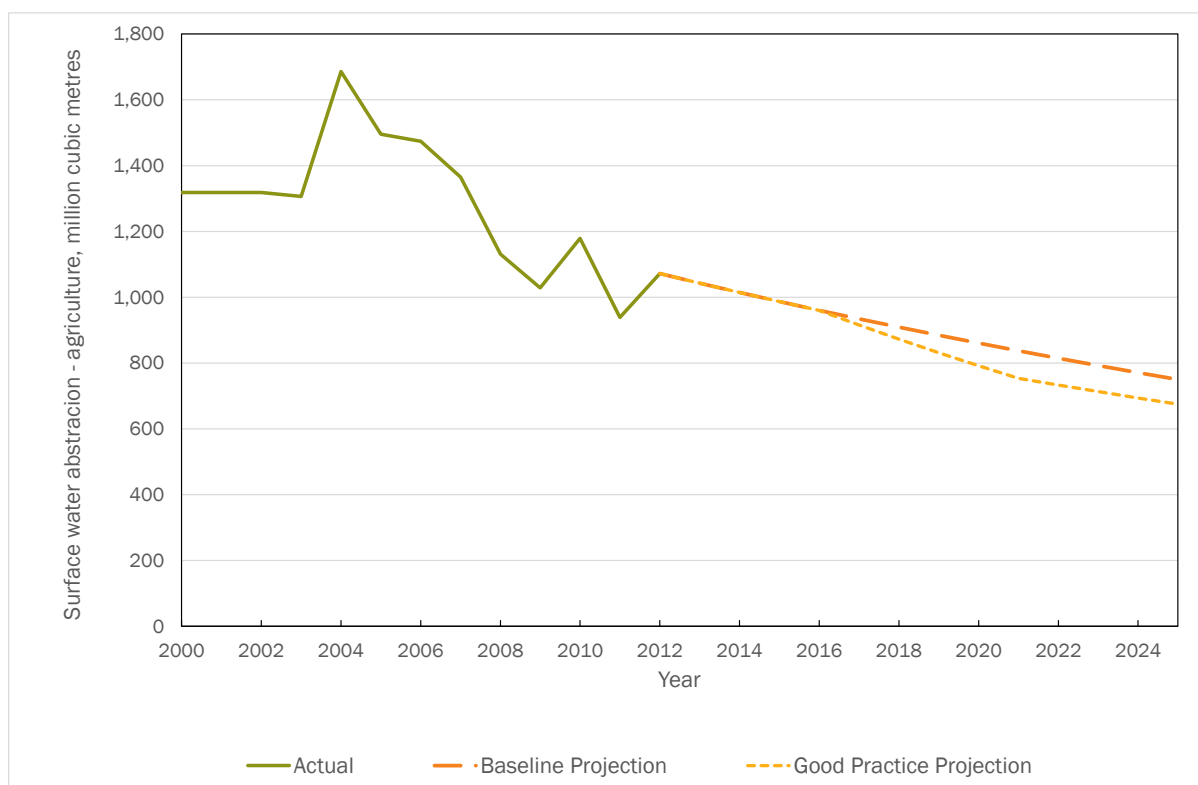


Figure 18-18: Change in Active Ingredients in Pesticides, tonnes

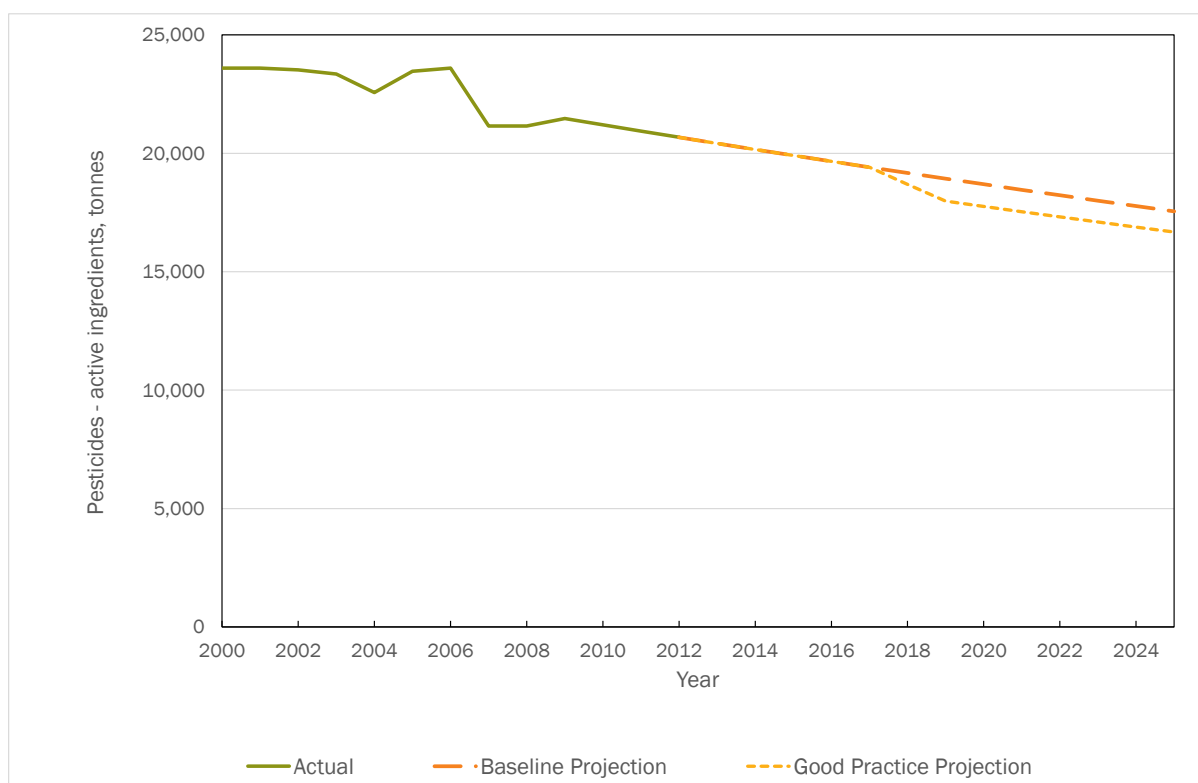


Figure 18-19: Change in Non-organic Nitrogen Sales of Fertilisers, tonnes

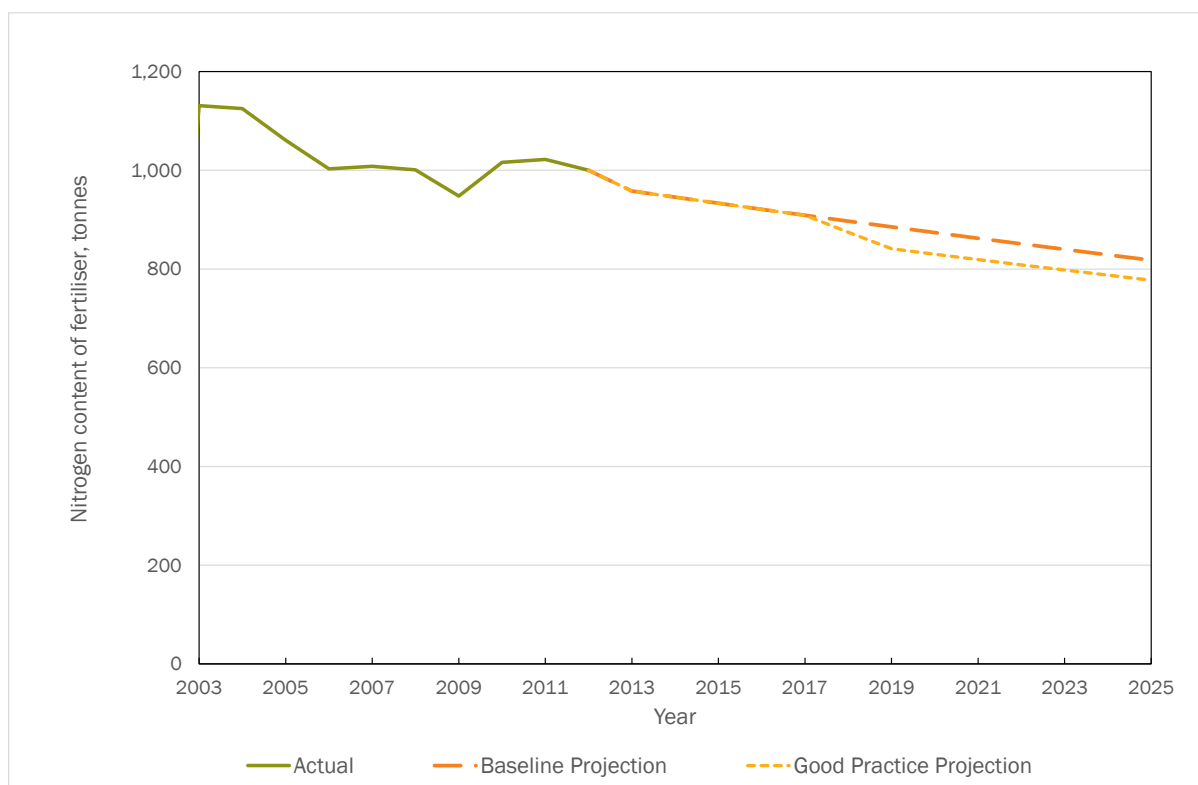


Figure 18-20: Change in Aggregates Extraction, thousand tonnes

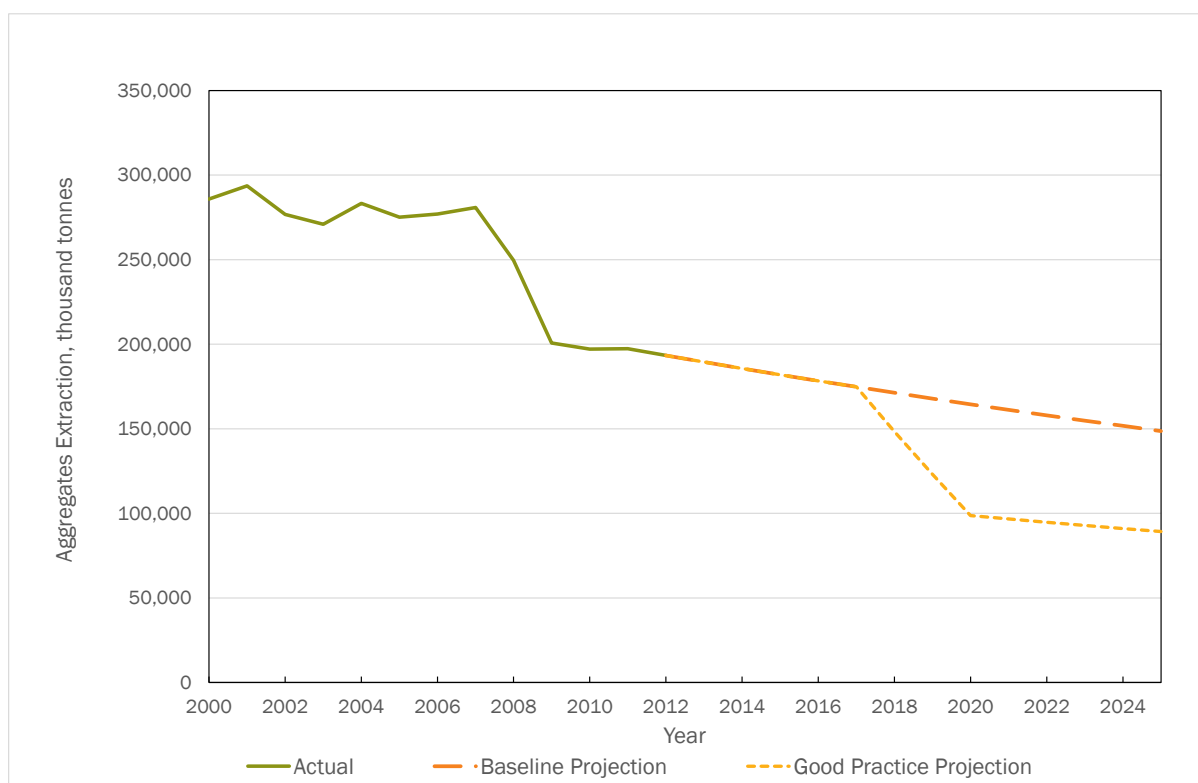


Figure 18-21: Change in Paper & Card Packaging Generation, thousand tonnes

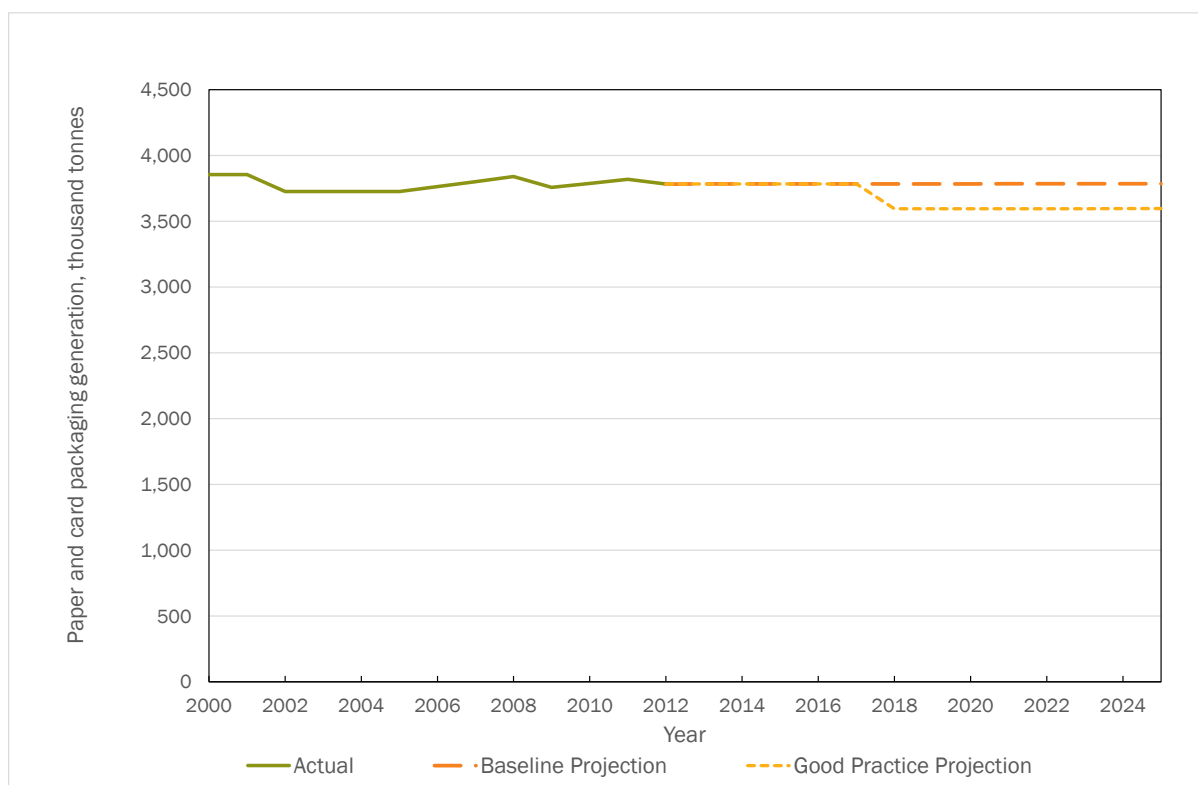


Figure 18-22: Change in Plastic Packaging Generation, thousand tonnes

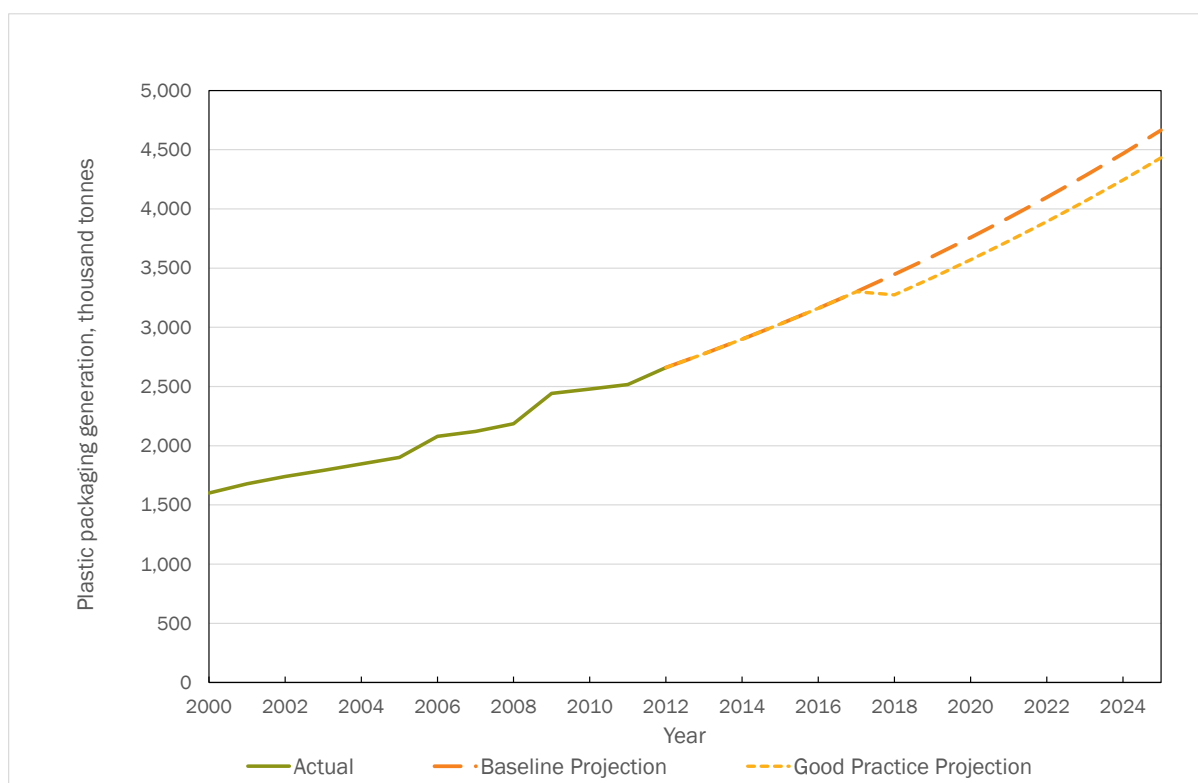


Figure 18-23: Change in Wood Packaging Generation, thousand tonnes

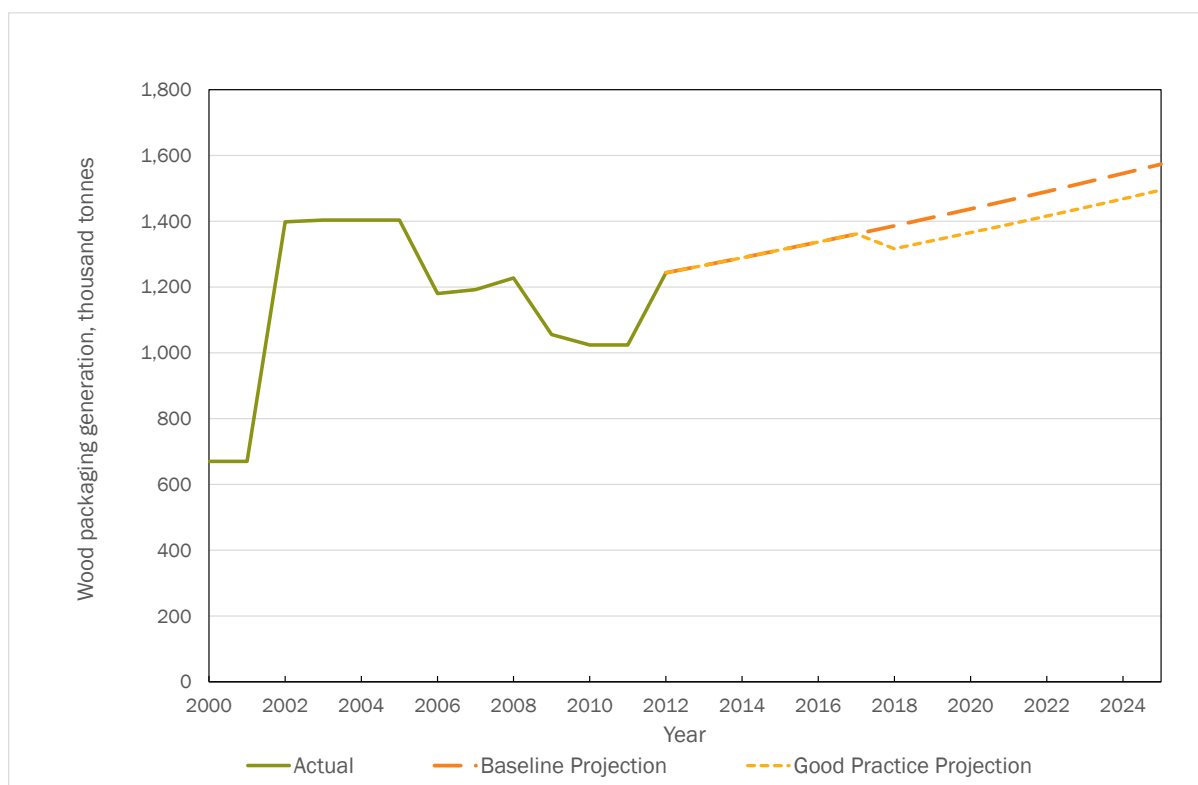


Figure 18-24: Change in Metal Packaging Generation, thousand tonnes

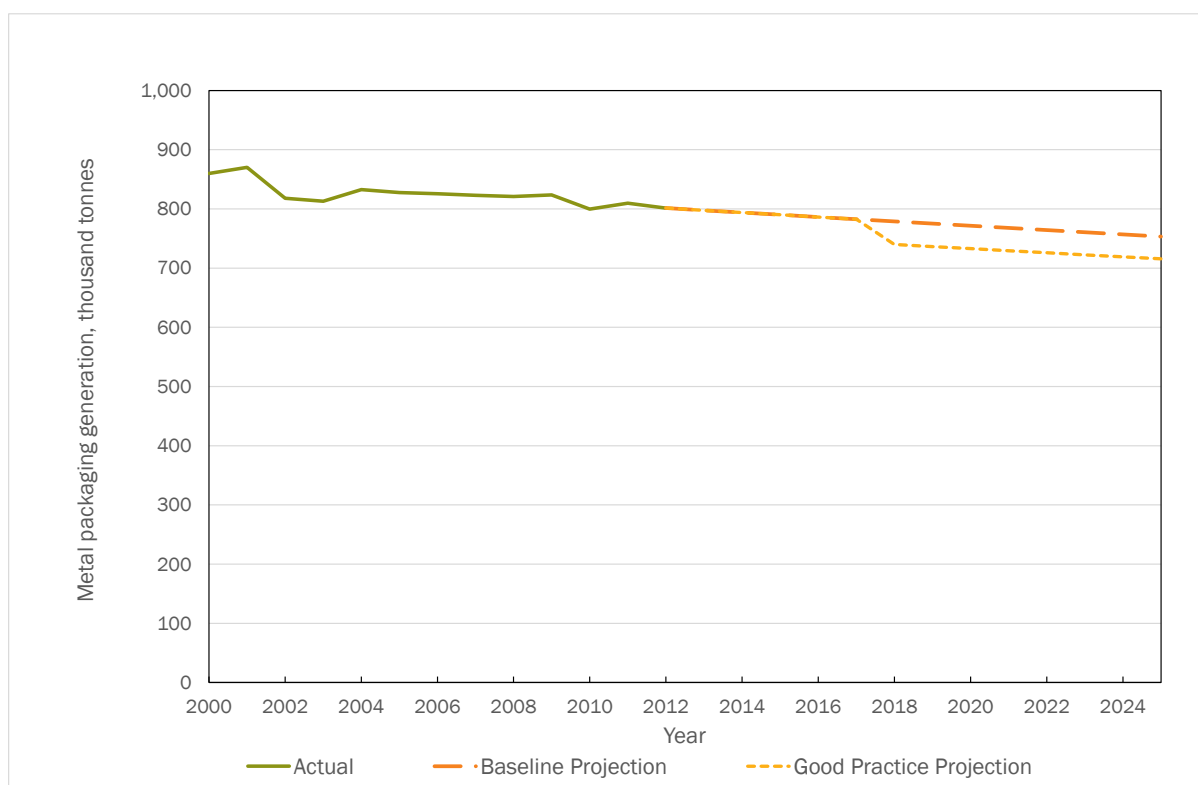


Figure 18-25: Change in Glass Packaging Generation, thousand tonnes

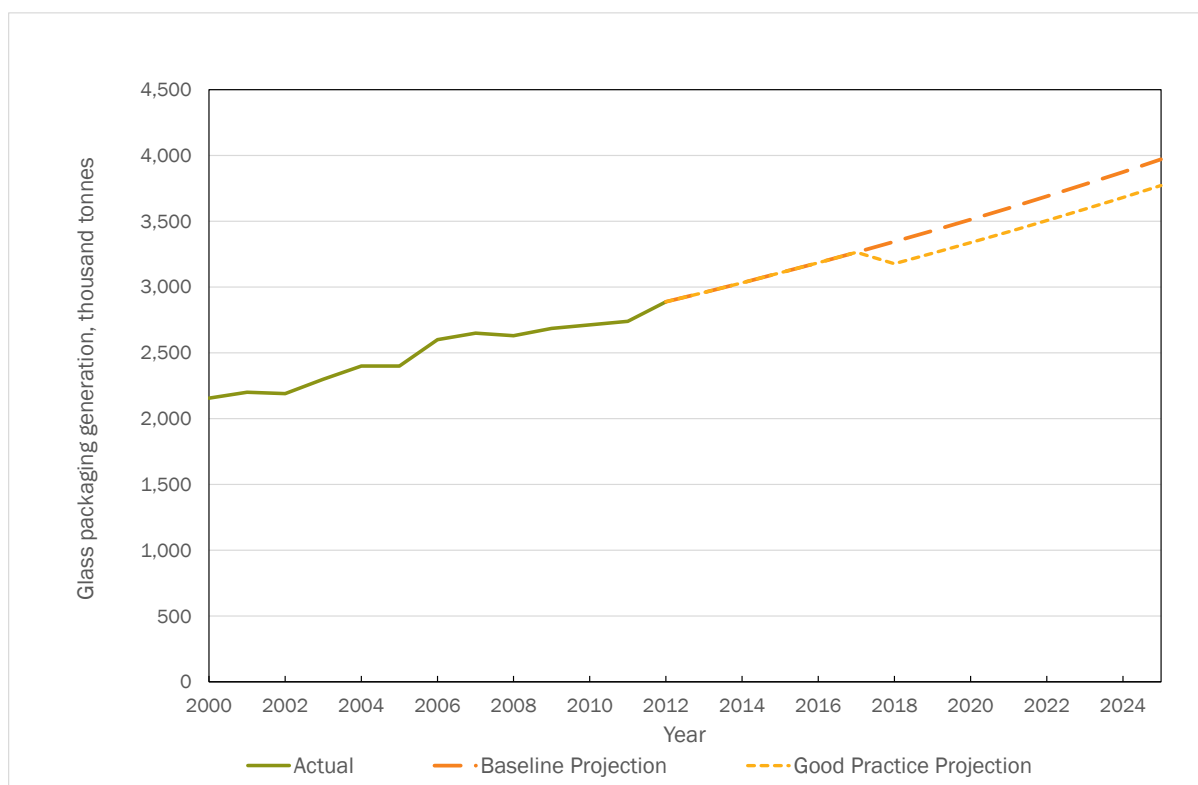
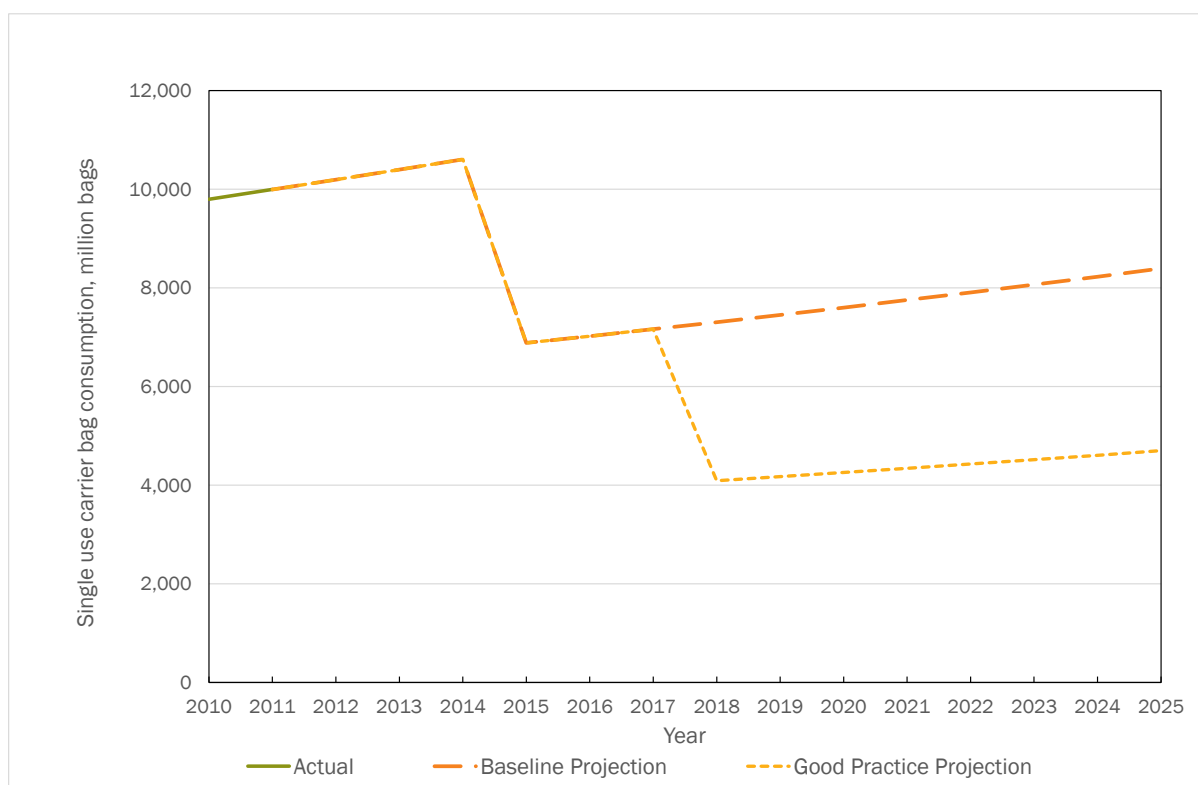


Figure 18-26: Change in Consumption of Single Use Carrier Bags, million bags





## 18.5 Full Revenue Outputs

A summary of the full revenue outputs for each of the suggested reforms to the tax system are presented in the table below.

Table 18-14: Revenue Outturns from Model, million GBP (real 2014 terms)

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Energy Taxes	Transport fuels	0	0	439	876	1,312	1,748	2,182	2,615	3,047	3,047	3,047
	C&I / Heating	0	0	4	9	13	17	22	26	30	30	30
	Electricity	0	0	0	0	0	0	0	0	0	0	0
	<i>Sub-total Energy, million GBP</i>	0	0	443	885	1,325	1,765	2,203	2,641	3,077	3,077	3,077
	<i>Sub-total Energy, % GDP</i>	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%
Transport Taxes (excluding transport fuels)	Vehicle Taxes	0	0	877	1,755	2,632	3,510	4,391	4,392	4,393	4,394	4,395
	Passenger Aviation Tax	0	0	0	0	0	0	0	0	0	0	0
	Freight Aviation Tax	0	0	1	2	2	2	2	2	2	2	2
	<i>Sub-total Transport, million GBP</i>	0	0	878	1,757	2,635	3,513	4,393	4,394	4,395	4,396	4,397
	<i>Sub-total Transport, % GDP</i>	0.0%	0.0%	0.1%	0.1%	0.2%	0.2%	0.3%	0.3%	0.3%	0.3%	0.3%
Pollution and Resource Taxes	Landfill Tax - Non-haz (excl. C&D)	0	0	0	0	0	0	0	0	0	0	0
	Landfill Tax - Inerts (C&D)	0	0	0	0	0	0	0	0	0	0	0
	Incineration /MBT Tax	0	77	157	240	248	255	255	256	257	257	258

Tax Category	Type of Tax	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Air Pollution Tax	0	106	190	257	309	347	312	294	278	263	249
	Water Abstraction Tax	0	336	651	946	1,222	1,479	1,431	1,416	1,401	1,386	1,372
	Waste Water Tax	0	132	256	371	358	358	358	358	358	358	358
	Pesticides Tax	0	0	78	150	145	143	141	139	137	136	134
	Aggregates Tax	0	0	0	0	0	0	0	0	0	0	0
	Packaging Tax	0	0	344	335	344	353	362	372	382	392	403
	Single Use Bag Tax	0	264	270	-7	-7	-7	-7	-7	-7	-8	-8
	Fertiliser Tax	0	0	0	0	0	0	0	0	0	0	0
	<b>Sub-total Pollution &amp; Resource, million GBP</b>	0	915	1,946	2,293	2,617	2,926	2,851	2,827	2,805	2,785	2,766
	<b>Sub-total Pollution &amp; Resource, % GDP</b>	0.0%	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Total Revenue Stream	<b>Total, million GBP</b>	0	915	3,268	4,935	6,578	8,204	9,448	9,862	10,277	10,258	10,240
	<b>Total, % GDP</b>	0.0%	0.1%	0.2%	0.3%	0.4%	0.5%	0.6%	0.6%	0.6%	0.6%	0.6%

