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## Environmental Tax Reform in Europe: Opportunities for the future

### *Final report*

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## Executive Summary

There is **growing use of environmental taxes in Europe** and a **new momentum behind the environmental tax reform (ETR)** agenda. What began as an exercise among a small vanguard of European countries two decades ago has gradually expanded to encompass an increasing number of countries and regions across the globe. Plans and initiatives are currently underway in several countries to introduce new environmental taxes or amend existing systems, either as part of a broader package of fiscal reform or as individual proposals.

**Environmental taxes are increasingly considered a useful and important part of the policy mix.** When carefully designed such instruments can provide economic incentives which can encourage dynamic innovation, change the business case for investment, and inform consumer choice; thus helping to deliver economic (e.g. government revenues, innovation, employment), social (e.g. health, income distribution) and environmental (e.g. efficient resource use, energy security) benefits. Despite efforts to date, the ETR tool arguably remains far from achieving its full potential. How environmental taxes have been designed has influenced their effectiveness and overall impact, which to date has been relatively small, leading to marginal changes in the tax system and incentives in the economy as a whole. There remains scope for the wider application and more effective use of such instruments, however progress is often held back by various obstacles including concerns over competitiveness impacts, public resistance to new taxes and the political costs of action.

**In some cases, a country's efforts on environmental taxation have been hindered or complicated by a lack of action in others.** For example in the Netherlands, which can be considered a frontrunner in this area, recent efforts have encountered problems in light of cross-border issues which have led to competitiveness concerns and undermined political and public support for such measures. This was the case with the introduction of an air passenger duty in 2008 which was abolished after one year due to concerns about passengers diverting to airports in neighbouring Germany and Belgium. Similarly, recent fuel tax increases have led to cases of fuel tourism, particularly in border areas, and have sparked much political and media attention. Such examples highlight some of the limitations to individual action on environmental taxes and how in certain cases some form of cooperation and coordination between countries could be helpful to ensure more effective instruments, build political and public support, and overcome obstacles to progress.

Against this backdrop, the Ministry of Infrastructure and the Environment of the Netherlands (IenM), contracted the Institute for European Environmental Policy (IEEP) to carry out a study to assess the current state of play with environmental taxes in Europe, explore where **further greening taxation could be appropriate and how to drive this agenda forward**. This study is based on a review of relevant literature on ETR and benefitted from insights from targeted expert interviews, a steering group which included representatives from the Ministries of Environment, Finance and Economy in the Netherlands as well as from discussions at an international experts' workshop held in Brussels in April 2014.

### Motivating progress on ETR in Europe - current drivers and windows of opportunity

To date, **countries have largely taken forward the ETR agenda unilaterally** according to their own needs, opportunities and political expediencies. With certain exceptions such as the EU Energy Tax Directive, efforts have not been harmonised or synchronised. In some cases, these unilateral actions have been inspired by efforts in other countries while sometimes they have been held back or limited by a lack of action in others. In certain cases progress has been driven by EU legislation, either explicitly (e.g. Energy Tax Directive, targets on packaging, batteries etc.) or implicitly (e.g.

requirements for cost recovery under the Water Framework Directive); and encouraged through processes such as the European Semester. This has led to a **significant diversity in practices** among European countries, which to some extent may be inevitable and appropriate given different national and local interests and circumstances. However, this diversity can also have implications for a level playing field in Europe and could lead to competitiveness problems or less effective results in certain areas.

As we look to the future, different approaches to ETR can be considered which may have implications for the level of harmonisation and collaboration between countries. One possible approach is of multi-country cooperation and coordination through **‘coalitions of like-minded countries’** which would bring together groups of countries (and relevant actors) with similar interests in a particular area. Such an approach would be voluntary and would complement existing unilateral and EU-wide approaches. It could help ensure more effective and efficient environmental taxes, in some cases potentially leading to more harmonised or synchronised approaches (e.g. an agreed minimum level or threshold) between countries, while in others supporting greater sharing of information on experiences and plans to ensure an improved design of instruments.

Such an approach of ‘coalitions of like-minded countries’ could help to **avoid certain sub-optimal situations** that have occurred in the past (e.g. with the introduction of air passenger duties in the Netherlands and Germany, incineration taxes in Sweden and Norway, Fuel Duty Escalator in the UK), and **overcome certain obstacles to progress** (e.g. competitiveness concerns and institutional barriers such as the fiscal unanimity rule in the EU on tax issues). This scoping study indicates that there is **appetite among certain European countries for some form of voluntary cooperation and coordination on ETR**, which at the moment seems to be preferred to mandatory approaches.

**Such cooperation could have several potential benefits**, for example:

- Facilitating **political and public support** for, or reducing opposition to, ETR on the grounds that other countries are also taking action, thereby overcoming reluctance to be the ‘first mover’ in a particular area.
- Contributing to **a level playing field** which could facilitate business practice, support growth and jobs and help avoid some **competitiveness risks and/or concerns** related to ETR.
- Supporting more **efficient** (e.g. compatible road pricing) and **effective** (e.g. avoid leakage) environmental taxes.
- **Allowing for more ambitious environmental taxes** which could lead to additional revenues for fiscal consolidation, innovation, supporting growth and employment objectives through tax shifts etc.
- Enabling **informal exchanges of national experiences and plans** between countries.
- **Facilitating the achievement of targets and objectives** including broad aims (e.g. on circular economy, energy security, implementing the waste hierarchy, halting biodiversity loss) and more specific objectives (e.g. reduce greenhouse gas (GHG) emissions, reduce marine litter).

**Such cooperation is likely to be more useful in certain circumstances**, in particular depending on the ease with which a given tax or charge could be avoided, e.g. through trade (e.g. waste exports) or movement of consumers (e.g. airline tax, fuel tax). In some cases it is more difficult to avoid a given tax or charge, for example when resources, materials or products are consumed locally (e.g. plastic bags). In such situations cooperation is less necessary, although there could still be benefits from informal information exchanges between countries on lessons learnt.

**Different forms of cooperation are likely to be needed for different resources, materials and pollutants**, and the most appropriate type of cooperation will depend on the issue at hand. Some issues are more amenable to collaboration between neighbouring countries (e.g. to reduce the risk

of fuel tourism across borders, the leakage of products or activities), while some may be more suitable to a multi-country or regional approach (e.g. marine litter in the Baltic Sea, North Sea or Mediterranean). Others could focus on common challenges independent of geography (e.g. fiscal consolidation) or on general pan-European concerns (e.g. climate change, energy security, biodiversity).

### Catalysing change - next steps for ETR in Europe

**‘Coalitions of like-minded countries’ could be developed for different themes** (see Box E1 for potential horizontal and specific themes identified in the study).

#### Box E1: Potential themes to catalyse change and motivate progress on ETR

##### Horizontal themes

**Fiscal consolidation as a new window of opportunity for ETR:** Given the scale of the fiscal consolidation challenge in many European countries, it is likely that revenue raising needs will remain a political necessity for the foreseeable future. ETR and wider environmental fiscal reform (EFR) can raise revenues to support fiscal consolidation. Countries could exchange information to learn from each other’s experiences in using ETR for fiscal consolidation and point at others’ practice to facilitate domestic support. This theme could bring together different countries facing fiscal consolidation challenges and can make use of key windows of opportunity such as discussions on national budgets and the European Semester process.

**Cooperating to avoid competitiveness concerns:** Competitiveness concerns are common among countries. While there has been little evidence of negative impacts from past ETR (partly reflecting how these reforms have been designed), further evidence on the competitiveness and growth impacts of ETR is needed. Cooperation between countries with common competitiveness interests could help address such concerns and avoid potential negative impacts. It could also lead to more ambitious efforts (as it may be easier to garner support if potential competitors work together to design and launch measures) and engage a wider group of actors (including ministries of economy and finance). Within this theme, targeted working groups could focus on **areas where competitiveness concerns (and opportunities) may merit cooperation**, e.g. between neighbouring countries on air passenger duties and fuel taxes.

**Jobs, equity, social costs and benefits:** Social impacts including on jobs, equity and income distribution are sometimes presented as barriers to ETR. While carefully designed ETR can be used to support social objectives, such as employment with gains dependent on the relative labour intensity of affected sectors, further evidence on employment and wider social impacts of ETR is needed. Given current high unemployment levels and social concerns in many European countries, arguments on the potential of ETR to support such objectives provide a powerful political message that can facilitate support for action. Within this theme, targeted working groups could focus on **areas with greater potential to address social concerns**, e.g. landfill taxes that encourage recycling and composting can lead to increased employment in these sectors.

##### Specific themes

**Resource efficiency and the circular economy:** These are increasingly important priorities for policy-makers and businesses and it is likely that taxes and charges on abiotic and biological resources and the circular economy will become increasingly relevant as part of the wider policy mix. This attention provides a new window of opportunity for action and potential cooperation constellations between countries and relevant stakeholders. Within this theme, targeted working groups could focus on: **plastic bags; waste and water pricing**.

**Climate change and energy:** These issues will remain a common challenge for countries in Europe and beyond. There is an added sense of urgency for cooperation in light of energy security concerns and national choices to phase out nuclear (e.g. Germany, Switzerland). Carbon pricing is a key element in the transition and thus ETR will continue to play a role in the wider policy mix. Within this theme, a targeted working group could focus on

**next steps with carbon and energy taxes**, e.g. how to improve the effectiveness and efficiency of existing taxes, how to address interactions between such taxes and the EU ETS.

**Transport and mobility:** Addressing emissions from transport and improving the mobility of citizens remains a challenge for several countries. Within this theme, targeted working groups could focus on **fuel taxation** (e.g. differentiation between petrol and diesel taxes, the level of tax rates applied); **vehicle taxes** (e.g. vehicle registration taxes, circulation taxes); **infrastructure charging** (e.g. road pricing); **air passenger taxes** (e.g. between neighbouring countries); and reducing or phasing out **kerosene tax exemptions** (e.g. in aviation, shipping/fishing).

**Pollution and pressures on the environment, biodiversity and health:** Given multiple pollution sources and pressures, legislative requirements and commitments, sustainable fisheries, forestry, agriculture and other natural resources will remain important issues in the years ahead. Within this theme, targeted working groups could focus on **marine litter** and **pesticides**.

Further analysis is needed to **identify particular issues to focus on** as well as which **specific countries and actors to engage**. This will include identification of possible drivers of different coalitions which could be individual countries and/or other actors that support or contribute to leadership, such as the European Commission, OECD, EEA etc. It is important that these coalitions **engage policy-makers and stakeholders from different areas**, including finance, economics and tax departments to secure buy-in for the process and ensure real progress. The coalitions could be structured around a number of **specific thematic working groups** which engage a core group of interested actors with the capacity to support change, develop operational roadmaps, identify focus areas and windows of opportunity within different policy processes.

This process could be launched with a high-level conference and complemented by a targeted series of events around different thematic working groups and focus areas. It should make use of wider policy processes and **windows of opportunity** at the **national level** (e.g. budget announcements, legislative proposals), at **European level** (e.g. European Semester, EU legislative processes such as the Energy Tax Directive, Eurovignette Directive, Regulation on accounts, environmentally harmful subsidies (EHS) reform initiatives), and at **international level** (e.g. relevant COPs to the CBD and UNFCCC, G-20 meetings, events organised by NGOs, academics and other actors). Successive **EU Presidencies** can also be engaged to develop momentum, continuity and buy-in to the process and help ensure further progress with greening taxation in Europe in the years to come.

## List of abbreviations

CAP	Common Agricultural Policy
CBD	Convention of Biological Diversity
CFCs	Chlorofluorocarbons
CFP	Common Fisheries Policy
CO	Carbon monoxide
CO <sub>2</sub>	Carbon dioxide
COMETR	Competiveness Effects of Environmental Tax Reforms project
COP	Conference of the Parties (to the CBD and UNFCCC)
DG	Directorate General (of the European Commission)
EEA	European Environment Agency
EFR	Environmental fiscal reform
EHS	Environmentally harmful subsidies
ELV	End-of-life vehicles
EREP	European Resource Efficiency Platform
ETR	Environmental tax reform
EU	European Union
EU ETS	European Union Emissions Trading System
FP7	EU Seventh Framework Programme for Research and Technological Development
G-20	Group of Twenty Finance Ministers and Central Bank Governors
GDP	Gross domestic product
GHG	Greenhouse gases
H <sub>2</sub> S	Hydrogen sulphide
ITQ	Individual transferable quota(s)
LPG	Liquid petroleum gas
MSW	Municipal solid waste
NGO	Non-governmental organisation
NH <sub>2</sub>	Amidogen (a compound of nitrogen and hydrogen)
NH <sub>3</sub>	Ammonia
NO <sub>2</sub>	Nitrogen dioxide
NO <sub>x</sub>	Generic term for NO and NO <sub>2</sub> (nitric oxide and nitrogen dioxide)
OECD	Organisation for Economic Co-operation and Development
OMC	Open Method of Coordination
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
PAYT	Pay-as-you-throw
PM	Particulate matter
PM <sub>10</sub>	Particulate Matter up to 10 micrometres in size
R&D	Research & development
RDF	Refuse-derived fuel
SO <sub>2</sub>	Sulphur dioxide
TAXUD	European Commission DG for Taxation and Customs Union
UNFCCC	United Nations Framework Convention on Climate Change
VAT	Value-added tax
VOC	Volatile organic compound(s)
WEEE	Waste electrical and electronic equipment

# 1 Introduction

**Environmental tax reform (ETR)** refers to ‘changes in the national tax system where the burden of taxes shifts from economic functions, sometimes called ‘goods’, such as labour (personal income tax), capital (corporate income tax) and consumption (VAT and other indirect taxes), to activities that lead to environmental pressures and natural resource use, sometimes called ‘bads’’.<sup>1</sup> Several recent reports underline the benefits of ETR in spurring innovation, improving competitiveness and income distribution, contributing to environmental objectives, and as a potential source of government revenue.<sup>2</sup> At the same time, such reforms can lead to negative impacts, particularly when introduced unilaterally<sup>3</sup>, thus careful design and implementation of the process is warranted to facilitate associated benefits and avoid potential negative impacts.

**The momentum behind ETR has continued to grow over the past two decades.** What began as an exercise among a small vanguard of European countries has gradually expanded to encompass a number of countries and regions across the globe. Plans and initiatives are underway in several countries to introduce new environmental taxes, charges or levies or to amend existing systems, either as part of a broader package of fiscal reform or as individual proposals reflecting different interests and circumstances. Recent initiatives in some countries have been in response to fiscal necessities while others seek to support wider environmental, economic and social objectives. The ETR agenda has also attracted attention at EU level, for example appearing in several country-specific recommendations under the European Semester<sup>4</sup> and in policy discussions on climate change, resource efficiency and the circular economy<sup>5</sup>.

Despite these positive trends, **such instruments are not widely used.** For example, among EU Member States revenues from environmental taxes as a share of GDP were on average between 2-3 per cent in 2011, with significant diversity in national experiences ranging from frontrunners such as Denmark (4.1 per cent), the Netherlands (3.9 per cent) and Slovenia (3.4 per cent) to others such as Spain, France, Lithuania, Romania and Slovakia (below 2 per cent)<sup>6</sup>. Moreover, the ETR tool itself arguably **remains far from achieving its potential** and has only led to relatively marginal changes to the tax system and incentives in the economy as a whole (partly due to how such taxes have been designed and implemented to date). Thus, there remains scope for the wider application and more effective use of such instruments in the future where appropriate. For example, a recent study for the European Commission estimated that shifting taxes from labour to pollution in 12 EU Member States could generate up to EUR 101 billion of additional revenue by 2025<sup>7</sup>.

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<sup>1</sup> EEA, (2005) Market-Based Instruments for Environmental Policy in Europe, Technical report No 8/2005, European Environment Agency, Copenhagen

<sup>2</sup> See for example: OECD (2010) *Taxation, innovation and the environment*, Organisation for Economic Co-operation and Development, Paris; IMF (2012) *Fiscal Policy to Mitigate Climate Change A Guide for Policymakers*. Mooij, R. Keen, M., Parry, I., (eds.), International Monetary Fund, Washington

<sup>3</sup> Speck S., and J. Jilkova, (2009), *Design of Environmental tax reforms in Europe*, in Anderson and Ekins (2010) *Carbon-Energy Taxation: Lessons from Europe*

<sup>4</sup> See website on country-specific recommendations under the European Semester process: [http://ec.europa.eu/europe2020/making-it-happen/country-specific-recommendations/index\\_en.htm](http://ec.europa.eu/europe2020/making-it-happen/country-specific-recommendations/index_en.htm)

<sup>5</sup> For example, the Resource Efficiency Roadmap calls on Member States to shift taxation away from labour to environmental impacts, EC (2011) *Roadmap to a resource efficient Europe*, COM(2011)571, [http://ec.europa.eu/environment/resource\\_efficiency/pdf/com2011\\_571.pdf](http://ec.europa.eu/environment/resource_efficiency/pdf/com2011_571.pdf)

<sup>6</sup> Eurostat (2013) *Taxation trends in the European Union – Data for the EU Member States, Iceland and Norway, 2013 edition, Taxation and customs union*, [http://epp.eurostat.ec.europa.eu/cache/ITY\\_OFFPUB/KS-DU-13-001/EN/KS-DU-13-001-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-DU-13-001/EN/KS-DU-13-001-EN.PDF)

<sup>7</sup> Eunomia and Aarhus University (2014) ‘Study on Environmental Fiscal Reform Potential in 12 EU Member States - Final Report to DG Environment of the European Commission’, 28/02/2014, [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)

## 1.1 Aims and objectives of the study

Against this backdrop, the Ministry of Infrastructure and the Environment of the Netherlands (IenM) contracted the Institute for European Environmental Policy (IEEP) to carry out a study to assess the current state of play with environmental taxes in Europe, explore where **further greening taxation in Europe could be appropriate and what could drive this forward**. This study aims to provide an overview of existing experiences on ETR among 32 European countries and insights from international experiences, assess future prospects for ETR in Europe and explore the potential for cooperation on ETR in relevant areas. The main focus is to build a case for pushing the ETR agenda forward in Europe, drawing on interesting insights from experiences with ETR to date and gathering visions and perspectives on potential ways forward.

This study is based on a review of literature, complemented by targeted interviews and informed by discussions at an experts' workshop organised in the context of the study in Brussels on 10 April 2014. It also benefitted from insights from a steering group which included representatives from the Ministries of Environment, Finance and Economy in the Netherlands. The study was carried out between December 2013 and May 2014. It has been structured around a number of tasks as set out below:

- *Task 1: Overview of experiences with environmental taxes in European countries*
- *Task 2: Assessing the impacts and effectiveness of selected ETRs*
- *Task 3: Future plans and visions for ETR in European countries*
- *Task 4: Expert workshop*
- *Task 5: Conclusions and recommendations on next steps for ETR in Europe*

## 1.2 Outline of report

This is the final report of the study and is structured as follows:

- **Chapter 2** provides a synthesis of the state of play and experiences with environmental taxes, charges and levies in Europe. It sets out the main results of the overview inventory (see Annex 1) developed by the study team, some of the key insights and lessons from experience based on an analysis of selected case studies (see Annex 2), as well as insights on future plans and visions for ETR in Europe based on an analysis of selected case studies (see Annex 3).
- **Chapter 3** sets out some key cross-cutting issues and current windows of opportunity for taking forward the ETR agenda in Europe and discusses a number of themes and related focus areas that could be used to potentially motivate progress among a group of 'like-minded countries'.
- **Chapter 4** provides a synthesis of the analysis in the report, setting out the main conclusions and recommendations on the way forward on ETR in Europe.

**Annexes** to the report contain the detailed analysis underpinning this report including: an overview inventory of environmental taxes, charges and levies in 32 European countries; 12 case studies of experiences with different types of environmental taxes, charges and levies in selected European countries; eight case studies on plans and perspectives on ETR in selected European countries; and a summary of discussions at the international experts' workshop held in Brussels on 10 April 2014.

## 2 State of play with environmental taxes, charges and levies in Europe

### 2.1 Focus of efforts to date

To complement and support existing data on environmental taxes and charges, the study team has developed an **overview inventory of key environmental taxes, charges and levies in 32 European countries** (the 28 EU Member States, Iceland, Norway, Switzerland and Turkey). This overview is not meant to be exhaustive, but rather aims to provide an evidence base of current experiences structured around key thematic areas where there is particular potential for further ETR. As such, the inventory **focuses on interesting practices that can inform the way forward, rather than attempting to be fully comprehensive**. It thus has more modest ambitions than other inventories such as the OECD/EEA database on instruments used for environmental policy and natural resources management<sup>8</sup>.

The overview inventory covers 11 different environmental areas: transport, energy, carbon, air, waste, materials, products, water, agriculture, terrestrial biodiversity, and fisheries and marine biodiversity. The inventory includes **environmental taxes, charges and levies** (see Box 1 for definitions used in the study). The EU Emissions Trading System (ETS) and wider subsidy reform are outside the scope of this study. The inventory is based on relevant studies, documentation and databases (including the OECD/EEA database<sup>9</sup> and DG TAXUD database<sup>10</sup>), and on EU Member State country reports prepared in a 2013 study for DG Environment<sup>11</sup>.

#### Box 1: Definitions used in the study

**Taxes:** A 'tax' is 'any compulsory, unrequited payment to general government levied on tax-bases deemed to be of particular relevance. They are unrequited in the sense that benefits provided by government to taxpayers are not normally in proportion to their payments' (OECD, 2001).

**Environmental tax:** A tax 'whose tax base is a physical unit (or a proxy of it) of something that has a proven, specific negative impact on the environment'... (Eurostat, 2013).

**Environmental 'charges and fees'** are typically payments in return for an identified service or cost. They are compulsory and requited payments to general government or to bodies outside general government, such as environmental funds or water management boards (EEA, 2005). They are 'requited' in the sense that they are meant to cover, in part or in full, the cost of a specific service/good, for instance the cost of supplying drinking water, providing waste disposal services or access to a resource (e.g. fisheries). This links to the cost recovery principle for the provision of goods and services (e.g. water) as well as resource pricing (linked to the opportunity cost or shadow price of goods (i.e. value of the water resource to society).

**Environmental levy:** This is another term that is sometimes used to refer to both environmental taxes and charges as defined above. Examples of environmental levies are the climate change levy and the aggregates levy in the UK and the plastic bag levy in Ireland.

**Fines:** Where there is non-compliance or clear liability for damage, fines are sometimes applied, creating both

<sup>8</sup> OECD/EEA database on instruments used for environmental policy and natural resources management, <http://www2.oecd.org/ecoinst/queries/>

<sup>9</sup> OECD/EEA database on instruments used for environmental policy and natural resources management, <http://www2.oecd.org/ecoinst/queries/>

<sup>10</sup> DG TAXUD Taxes in Europe database: [http://ec.europa.eu/taxation\\_customs/taxation/gen\\_info/info\\_docs/tax\\_inventory/](http://ec.europa.eu/taxation_customs/taxation/gen_info/info_docs/tax_inventory/)

<sup>11</sup> Fedrigo-Fazio, D., Withana, S., Hirschnitz-Garbers, M., and Gradmann, A. (2013). Steps towards greening in the EU, Monitoring Member States achievements in selected environmental policy areas - EU summary report, prepared for DG Environment. Brussels. 2013.

incentives to comply with legislation and raising revenue.

It should be noted that the distinction between taxes, charges and levies is not always well established. For example, this distinction is somewhat blurred for pollution, as a tax based on measured emissions is often described as a charge (Barde and Owens, 1993). **Different countries sometimes use different terms to describe similar instruments, or even use them interchangeably.**

One can also **distinguish between explicit and implicit environmental taxes**. For example, a carbon tax is an explicit tax that puts a price on the carbon or CO<sub>2</sub> content of energy products, whereas energy taxes are based on the volume or the energy content of fuels (OECD 2013). An energy or excise tax on fuels can be converted to a carbon tax equivalent and referred to as an **implicit (or effective) tax** on carbon. This can be useful when discussing overall incentives on energy demand, fuel use, and fuel switching in an economy. However, energy taxes should not be seen as carbon taxes if there is no direct and common carbon link. Given different carbon and energy contents of fuels, a common carbon tax across fuels will lead to different energy tax equivalents, while a common energy tax across fuels will lead to different carbon tax equivalents.

Furthermore, one can **distinguish between input and output taxes**. For example input taxes are taxes on fuels for electricity generation and output taxes are taxes on the electricity itself. Examples of output taxes are the energy tax in the Netherlands and the CO<sub>2</sub> tax in Sweden, whereas an example of an input tax is the Climate Change Levy in the UK. Taxing carbon inputs may not end up being equivalent to taxing CO<sub>2</sub> emissions despite the close linkage between the carbon content of energy products and CO<sub>2</sub> emissions (Okken et al. 1992). More broadly one can also distinguish between **upstream taxes**, e.g. taxes on resource extraction upstream and **downstream taxes**, e.g. on products or waste downstream.

**Sources:**

Barde, J.P. and Owens, J. (1993) The greening of Taxation. OECD Observer, Vol. a, 1993

European Environment Agency (2005) Market Based Instruments in Environmental Policy in Europe. EEA Technical Report No 8/2005. ISBN 92-9167-782-5

Eurostat (2013) Environmental tax statistics,

[http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/Environmental\\_tax\\_statistics](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Environmental_tax_statistics) [accessed 12/3/2014]

Expert input, May 2014

OECD (2001) Environmentally Related Taxes in OECD Countries: Issues and Strategies. Paris  
OECD (2013) Climate and carbon – Aligning prices and policies, Environment Policy Paper, October 2013, No.1, <http://www.oecd-ilibrary.org/docserver/download/5k3z11hig6r7.pdf?expires=1400775606&id=id&accname=guest&checksum=DE75F73C541A7C2833BF91064B683C47> [accessed 22/5/2014]

Okken et al. 1992 cited in Smulders, S., and Vollebergh, H., (1999), Green Taxes and Administrative Costs: The Case of Carbon Taxation, <http://www.nber.org/chapters/c10606.pdf> [accessed 22/5/2014]

A synthesis of the overview inventory is provided in Table 1; the full inventory is provided in Annex 1 of this report. The inventory does not reflect the effectiveness of the taxes, charges or levies in place nor does it reflect the scope or depth of coverage, rather it indicates where efforts are currently focused or planned, and the different types of instruments in place. For more detail on the specific measures covered in the inventory, please see Annex 1.

**Table 1: Overview inventory of environmental taxes, charges and levies in place in European countries**

	Transport	Energy	Carbon	Air	Waste	Materials	Products	Water	Agriculture	Terrestrial biodiversity	Fisheries & Marine
AU											
BE											
BG											
HR											
CY											
CZ			*								
DK											
EE											
FI											
FR											
DE											
EL											
HU											
IS											
IE											
IT			*								
LV											
LI											
LU											
MT											
NL											
NO											
PO											
PT			*								
RO											
SK											
SL											
ES											
SE											
CH											
TR											
UK										*	

**Key:** ■ Environmental tax, charge or levy in place; \* Tax/charge/levy planned

**Note:** The overview inventory does not reflect the effectiveness of environmental taxes, charges or levies in place, nor does it reflect their scope or the depth of coverage. See Annex 1 for detailed inventory.

From the overview inventory (Annex 1) and synthesis (Table 1), it is evident that environmental taxes, charges and levies are in place in European countries across a number of environmental areas:

- The **main focus of efforts to date has been in the areas of energy, transport and water** where all countries covered in the inventory have some form of environmental taxes, charges or levies in place.
- There has also been **significant attention in the areas of products and waste** (nearly all countries covered in the inventory) and **some focus in relation to air** (more than two thirds of the countries covered in the inventory).
- There has been **less focus to date in relation to materials and carbon** (less than half of the countries covered in the inventory); although there is growing interest in these areas, particularly in the latter where plans to introduce carbon/CO<sub>2</sub> taxes are currently under discussion in a number of European countries.
- There also appears<sup>12</sup> to have been **less direct focus on terrestrial and marine biodiversity and agriculture**, although instruments in other sectors (e.g. air, water, waste) have an important impact in these areas.

In the area of **energy**, taxes and charges are applied on energy products used for transport (mainly petrol and diesel) and for stationary purposes including fuel oils, natural gas, coal and electricity. The rate of taxation applied varies significantly across different energy products, sectors and countries. For example, excise duties applied on unleaded petrol are generally higher than those applied on diesel and LPG in all European countries, with some exceptions such as the UK where the same rate applies to both<sup>13</sup>. Among EU countries, the Energy Taxation Directive 2003/96/EC sets minimum tax rates for all energy products as a means to *inter alia* reduce distortions in the single market and increase incentives for more efficient energy use. A proposal to revise the Directive to better reflect CO<sub>2</sub> emissions and energy content and remove imbalances has been under discussion since 2011<sup>14</sup>.

In the area of **transport**, environmental taxes and charges primarily relate to **road transport**. In a number of countries vehicle registration taxes have been designed to promote the purchase of low-carbon vehicles, e.g. Ireland<sup>15</sup>, the Netherlands<sup>16</sup>, Portugal and Spain<sup>17</sup>. In some countries annual circulation taxes are based on engine size or fuel consumption (e.g. Denmark). Infrastructure-related charges including toll charges and vignettes on private and/or heavy goods vehicles are in place in several European countries, while congestion charges are applied in some cities (e.g. London, Milan and Stockholm). Some countries also apply air passenger duties and charges (e.g. Germany, Austria, UK and France).

**Water-related** taxes and charges are in place in almost all countries in the inventory and are applied on drinking water supply and consumption, wastewater discharges and effluents, as well as on water abstraction. However, the coverage and nature of the instrument in place varies significantly across countries. Although there is cost recovery of water services in many countries (covering operating costs), the environmental costs of water supply are rarely integrated in water pricing systems. An exception is Denmark where both economic and environmental costs are covered and as a

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<sup>12</sup> Our assessment of environmental taxes, charges and levies in relation to agriculture, terrestrial and marine biodiversity has been limited by significant data gaps in these areas.

<sup>13</sup> Milne E J, Andersen M S (2012) Handbook of Research on Environmental Taxation, Chapter 16, p 291.

<sup>14</sup> European Commission (DG TAXUD), EU legislation - European Commission proposes to overhaul energy taxation rules, [http://ec.europa.eu/taxation\\_customs/taxation/excise\\_duties/energy\\_products/legislation/index\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/excise_duties/energy_products/legislation/index_en.htm) [22/5/2014]

<sup>15</sup> Country Report on Ireland for study on 'Steps towards greening in the EU. Monitoring Member States' achievements in selected policy areas' IEEP, Ecologic, IVM, BIO IS (2013)

<sup>16</sup> Green Fiscal Commission (2010), 'Reducing Carbon Emissions Through Transport Taxation', Briefing Paper Six, March 2010, p 4.

<sup>17</sup> Country Report on Spain for study on 'Steps towards greening in the EU. Monitoring Member States' achievements in selected policy areas' IEEP, Ecologic, IVM, BIO IS (2013)

consequence prices are considered as providing incentives for users to use water efficiently<sup>18</sup>. Some countries also earmark revenues from water-related taxes to support improved water management or increase water efficiency (e.g. Latvia and Portugal).

**Product** taxes and charges are in place in nearly all the countries in the inventory, though generally only for a select group of products representing only a small fraction of products on the market. These typically aim at covering the waste management of specific product streams, often those which are deemed to be of particular environmental concern when they reach the end of their life, by imposing a fee on producers in line with the extended producer responsibility principle<sup>19</sup>. There is significant variation in the specific products covered by such measures across European countries. WEEE (waste electronic and electrical equipment), ELV (end-of-life vehicles), batteries and accumulators, packaging, used tyres, light bulbs and plastic bags are among the most common products covered by such instruments. Denmark is a front-runner in this area with several instruments in place including taxes on chlorinated solvents, phthalates and PVC, an excise duty on antibiotics and growth promoters, and duties on electric bulbs and electric fuses.

**Waste-related** taxes and charges, in particular landfill taxes, incineration taxes and pay-as-you-throw (PAYT) schemes (often at municipal level) are in place in nearly all the countries covered in the inventory. The inventory identified landfill taxes in place in 20 European countries while incineration taxes were identified in six countries and in the region of Catalonia (Spain). In some countries landfill taxes are complemented by bans on the landfill of specific substances (e.g. combustible waste, certain products), notably in Austria, Belgium (Flanders and Wallonia), Denmark, Finland, France, Hungary, Italy, Netherlands, Norway, Sweden, and Switzerland<sup>20</sup>. **PAYT schemes** are relatively common in Europe and are often established at municipal level; only eight countries identified in the inventory have PAYT schemes at national level.

**Air pollution charges** are in place in two thirds of the countries covered in the inventory and cover a range of air pollutant substances, e.g. VOC, NO<sub>x</sub>, SO<sub>2</sub>, PM, NH<sub>3</sub>, heavy metals, CO, NH<sub>3</sub>, hydrocarbons, dust, cadmium, mercury, asbestos; and ozone depleting substances. The most common taxes or charges relate to Sulphur or SO<sub>2</sub>. Such measures are in place in several central and eastern European countries where they are often complemented by air pollution non-compliance fees (e.g. Bulgaria, Estonia, Latvia, Lithuania, and Romania). Rates applied vary according to substance covered and country. For example, the tax rate on sulphur emissions in Sweden, Norway and Denmark is between EUR 1,300/tonne and EUR 1,600/tonne; while rates in Italy, France and Spain are lower than EUR 50/tonne<sup>21</sup>.

**Materials-related** taxes and charges were identified in less than half of the countries in the inventory. These are typically charged per volume (m<sup>3</sup>) or weight (kg or tonnes) of materials extracted and cover the extraction of various natural resources, for example on gravel and sand (e.g. Bulgaria, Croatia, Estonia, Latvia, Lithuania, UK, and a proposal in France), coal, lignite or peat extraction (e.g. Belgium, Czech Republic, Denmark, France, Latvia, Lithuania, Sweden and Estonia).

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<sup>18</sup> Country Report on Denmark (2013) for study on Steps towards greening in the EU. Monitoring Member States' achievements in selected policy areas' IEEP, Ecologic, IVM, BIO IS (2013)

<sup>19</sup> Extended Producer Responsibility is an environmental policy approach in which the producer's responsibility for reducing the environmental impact of a product and managing the product is extended across the whole product lifecycle, and especially for their take-back, recycling and disposal. It aims to ensure the integration of environmental costs, improved waste management, reduction of disposal, reduction of the burden (especially financial) on municipalities, and the design of environmentally sound products.

<sup>20</sup> CEWEP (2012) 'Information note of landfill taxes and bans', April 2012. URL [http://www.cewep.eu/media/www.cewep.eu/org/med\\_557/955\\_2012-04-27\\_cewep\\_-\\_landfill\\_taxes\\_bans\\_website.pdf](http://www.cewep.eu/media/www.cewep.eu/org/med_557/955_2012-04-27_cewep_-_landfill_taxes_bans_website.pdf)

<sup>21</sup> Millock, K., Nauges, C. and Sterner, T. (2004), *Environmental Taxes: A Comparison of French and Swedish Experience from Taxes on Industrial Air Pollution*. CESifo DICE Report, Spring 2004

Again, the rates applied vary according to the material covered and country in which they occur and experience to date suggest some positive effects of such taxes. For example in Denmark from 1985 to 2004 recycled construction and demolition waste increased from 12 per cent to 94 per cent while in the UK, the aggregates tax (together with the landfill tax) seems to have driven a reduction in aggregates consumption between 1995-2010<sup>22</sup>. In contrast, the environmental benefits of the Finnish ground/soil abstraction tax are difficult to prove and 70 per cent of the tax burden is likely to be on the public sector<sup>23</sup>.

A growing minority of countries have introduced (or are planning to introduce) **carbon taxes or levies** related to the carbon or CO<sub>2</sub> content of fuels, or CO<sub>2</sub> emissions. This practice was initiated among the Nordic countries (Finland, Sweden, Norway and Denmark) in the early 1990s and gradually extended to a number of other European countries. An assessment of carbon taxes in isolation of energy taxes is distorting in particular when one examines the total tax burden on different energy products<sup>24</sup>. Carbon taxes focus on the carbon or CO<sub>2</sub> related content of energy products, whereas energy taxes are levied on energy content. However some countries use these terms differently, e.g. the energy tax in the Netherlands was initially based on energy content and CO<sub>2</sub> emissions, it is an output tax and is similar in effect to the CO<sub>2</sub> tax in Sweden<sup>25</sup>.

In the area of **biodiversity**, some countries apply forest and tree related charges, nature protection fees (e.g. natural park entrance fees, nature protection non-compliance fees) and hunting fees. In some cases, revenues from such instruments are used for biodiversity protection, conservation and sustainable management. A limited number of countries also apply charges on land use changes (e.g. Croatia, Czech Republic, Poland, and some parts of the US) and land value taxes which could in principle help to protect natural spaces and reduce urban sprawl<sup>26</sup> (e.g. Denmark, Estonia, Australia, New Zealand and some parts of the US).

Some countries have also introduced taxes, charges and levies which directly impact on **fisheries and marine biodiversity** including recreational and commercial fishing charges/permits, fishery management fees, and nature protection non-compliance fees. In some countries, revenues from these charges are used for marine protection, conservation or sustainable management of fisheries. Furthermore, taxes in other areas such as waste fee systems in ports, NOx emission and oil release charges on ships, plastic bag charges, fees for dumping at sea and levies on marine aggregates have an important impact on the marine environment<sup>27</sup>.

In the area of **agriculture**, a handful of countries have implemented pesticide and fertiliser taxes. However a number of these measures, in particular fertiliser taxes, were abolished in several EU Member States after the adoption of the Nitrates Directive. For instance, Austria abolished its fertiliser tax following its accession to the EU, while the mineral accounting system (MINAS) in the Netherlands was ruled not to be in accordance with the Nitrates Directive and subsequently abolished<sup>28</sup>.

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<sup>22</sup> Bicket, M. and Salmons, R. (2013) 'Case study: More efficient use of aggregates in the UK. URL [http://dynamix-project.eu/sites/default/files/Aggregates\\_UK.pdf](http://dynamix-project.eu/sites/default/files/Aggregates_UK.pdf) [17/02/2014]

<sup>23</sup> Country Report on Finland for study on Steps towards greening in the EU, IEEP, Ecologic, IVM, BIO IS (2013)

<sup>24</sup> Speck, S., (2013) 'Carbon taxation – two decades of experience and future prospects', *Carbon Management*, April 2013

<sup>25</sup> Expert input, May 2014

<sup>26</sup> Raslanas, S., Zavadskas, E. K., Kaklauskas, A. (2010) LAND VALUE TAX IN THE CONTEXT OF SUSTAINABLE URBAN DEVELOPMENT AND ASSESSMENT. PART I – POLICY ANALYSIS AND CONCEPTUAL MODEL FOR THE TAXATION SYSTEM ON REAL PROPERTY, *International Journal of Strategic Property Management* (2010) 14, 73–86

<sup>27</sup> ARCADIS et al. (2012) Economic assessment of policy measures for the implementation of the Marine Strategy Framework, Final report February 2012, <http://ec.europa.eu/environment/enveco/water/pdf/report.pdf>

<sup>28</sup> EEA (2005) Market-based instruments for environmental policy in Europe

The use of environmental taxes and charges and wider environmental fiscal reform efforts are also underway in countries across the globe<sup>29</sup>. Some of these experiences are set out in Box 2 below.

**Box 2: Some experiences with environmental taxes and charges from across the globe**

**Carbon tax in British Columbia (BC) (Canada):** A carbon tax was introduced in 2008 which covers GHG emissions from the combustion of all fossil fuels in BC (plus peat and used tyres when used to produce heat or energy). When it was introduced, it applied to 77 per cent of BC's GHG emissions, but that fell to 70 per cent in 2012 with the increase in non-combustion emissions from growing natural gas production. The tax rate applied was CAD 10 (EUR 8) per ton of CO<sub>2</sub> equivalent on 1 July 2008, with a schedule of four annual increases of CAD 5 (EUR 4) to reach CAD 30 (EUR 24.2) per ton of CO<sub>2</sub> on 1 July 2012.

**Source:** Withana et. al. (2013) Evaluation of environmental tax reforms: International experiences. A report by IEEP for the State Secretariat for Economic Affairs (SECO) and the Federal Finance Administration (FFA) of Switzerland. Brussels. 2013.

**Carbon tax in India:** Introduced in July 2010, the tax of INR 50 (EUR 0.82) is applied per tonne of coal produced or imported into India. Revenue is earmarked for the National Clean Energy Fund which supports research and innovation in clean energy technologies and environmental remedial programs.

**Source:** KPMG (2013) The KPMG Green Tax Index 2013

**Water pricing in Israel:** Differentiated rates are applied for industry, domestic users, agriculture and tourists. Indirect subsidies have also been reduced in the agriculture sector leading to an increase in agricultural water prices and reductions in water quotas. This has contributed to greater use of recycled and saline water for irrigation and a reduction in industrial water use alongside the economic slowdown. The system has also had a positive impact on innovation.

**Source:** OECD (2010) Taxation, innovation and the environment, pp. 167-174

**SO<sub>x</sub> levy in Japan:** In 1973 a Compensation Law for Pollution-Related Health damage was introduced which introduced a levy to be paid, in proportion to the emission volume, by companies across Japan with facilities that produce soot and smoke with SO<sub>x</sub>. A compensation fund was established which is financed by the levy (80 per cent) and automobile weight tax (20 per cent). The levy has led to a reduction in SO<sub>x</sub> emissions.

**Source:** OECD (2010) Taxation, innovation and the environment, pp. 239-249).

**Water conservation tax in Singapore:** Introduced in 1991, the Water Conservation Tax is designed to encourage the efficient use of water. For non-industrial businesses, the rate of the tax is 30 per cent but industrial usage is exempt. In 2010 Singapore introduced a Land Intensification Allowance (LIA) which aims to promote more efficient use of industrial land by encouraging brownfield rather than greenfield development.

**Source:** KPMG (2013) The KPMG Green Tax Index 2013

**Environmental fiscal reform in South Africa:** In 2006, the government published a policy paper on 'A Framework for Considering Market-Based Instruments to Support Environmental Fiscal Reform in South Africa' which amongst others proposed a water effluent levy. A number of environmental initiatives were proposed under the heading of environmental fiscal reform in the 2009/2010 Budget. South Africa is also planning to implement a carbon tax from 2015, which will initially be levied at ZAR 120 (approx. EUR 8) per ton of CO<sub>2</sub> and increase by 10 per cent per annum in 2015–2020.

**Sources:** Soges Consortium (2010) Fiscal reform in EC Development Cooperation, Report for EC; KPMG (2013) The KPMG Green Tax Index 2013

<sup>29</sup> Some cases are simply a use of a tax without being part of a wider programme of ETR or wider mix of fiscal instruments that can be seen as ETR. It is sometimes difficult when looking at an individual instrument to identify whether it is part of a wider commitment to ETR.

**Land use change tax in New Hampshire, US:** In 1973, a ‘Current Use Programme’ was established which provides a tax incentive to certain land owners who keep agriculture and forestry land areas from being converted into developments. The system keeps property taxation at a low level as open spaces are taxed on their income-producing capability rather than their real estate market value. Farms, forest and wetland areas can be enrolled. Owners who apply good forest management practices and meet criteria for responsible land stewardship get higher incentives. When land is no longer enrolled in the system, i.e. it is being developed, a Land Use Change Tax is charged. 58 per cent of revenues collected are allocated to conservation funds.

**Source:** SPACE (2007) A Layperson’s Guide to New Hampshire Current Use, State-wide Program of Action to Conserve our Environment (SPACE)

## 2.2 Some key lessons from experience

**The impacts and effectiveness** of environmental taxes, charges and levies varies across countries and are determined by a number of factors including **design** (i.e. point of application, breadth of coverage), **level** of taxes and charges (i.e. rate applied), **implementation** (i.e. evolution over time, exemptions granted and associated conditionalities), and **use of revenues raised** (including recycling mechanisms employed). Furthermore, the impact of these instruments needs to be seen in the **wider context of related taxes and other policy instruments** which are in place as well as **external factors** that drive change.

To explore these issues further, 12 cases of environmental taxes and charges were examined in the study (see Table 2 for overview of selected cases and Annex 2 for detailed case studies). The cases have been developed to highlight interesting insights from experiences to support the narrative on the benefits of greening taxation and potential contributions to different policy processes.

**Table 2: Selected cases examined in the study**

Case study	Brief description
<b>Air pollution charges in the Czech Republic</b>	Current air pollution charges have been in force since 1992, with the objective to reduce emissions of major pollutants that affect air quality, especially VOCs, and increase efficiency by inducing fuel switching at pollution sources. Revisions in 2013 focused the charges on a more limited number of pollutants (PM, SO <sub>2</sub> , NO <sub>x</sub> and VOC, excluding methane) and introduced higher tax rates.
<b>Water pricing in Denmark</b>	Denmark has the highest water supply and sanitation prices amongst OECD countries and is at the forefront in Europe in attempting to cover full economic and environmental costs through water prices. Several instruments are in place including charges on water consumption, sewage discharges and a water supply tax.
<b>Tax on polluting activities in France</b>	The Taxe générale sur les activités polluantes (TGAP) was introduced in 1999. It aims to implement the polluter-pays principle and provide a price signal to discourage polluting activities. When introduced the tax covered the disposal of waste, atmospheric industrial pollution and air traffic noise. It has subsequently been extended to cover washing products, insecticide products, waste storage, incineration and single use plastic bags.
<b>Vehicle acquisition fee in France</b>	A bonus-malus system was introduced in 2007 with the aim of stimulating purchases of low-emission vehicles. While encouraging more fuel efficient vehicles, the system has also led to increased purchase of vehicles and more drivers on roads who are encouraged to travel more.

Case study	Brief description
<b>Air passenger tax in Germany</b>	An air passenger duty came into force in January 2011. The duty is levied on airlines for all passengers departing from German airports. Rates vary depending on which zone the final destination falls within. The main purpose can be considered to be revenue raising, given its adoption as part of a wider package for fiscal consolidation; other objectives include incentivising environmentally-friendly behaviour.
<b>Fisheries resource tax &amp; ITQ system in Iceland</b>	A resource tax or fishing fee applies to fisheries operations and is part of a broader fisheries management system characterised by individual transferable quotas (ITQs). The tax was introduced in 2002 to allay criticisms that the public was not accruing any benefits from the privatisation of the resource. The tax was reformed 2012 to place a significantly higher levy on fishing companies.
<b>Plastic bag levy in Ireland</b>	A plastic bag levy was introduced in 2002 with the aim of reducing consumption of disposable plastic bags, reducing plastic bags in the landscape and increasing public awareness of littering. Revenues are earmarked to an environment fund which is used to cover administrative costs and to support waste management, recycling centres, litter clean-up and other environmental initiatives.
<b>Natural Resources Tax in Latvia</b>	A comprehensive tax covering extraction of natural resources (curative mud, dolomite, lime, cement, stone, soil, sand, gravel, etc.), waste disposal (e.g. household, hazardous, industrial, construction & demolition (C&D)), products (e.g. oils, batteries, WEEE, ELV), air pollutants (CO <sub>2</sub> , PM10, CO, NH <sub>3</sub> , H <sub>2</sub> S, SO <sub>2</sub> , NO <sub>x</sub> , NO <sub>2</sub> , etc.), single-use dinnerware, radioactive substances, coal, coke, lignite and water. The tax aims to promote resource efficiency, reduce negative impacts, promote environmentally-friendly technologies and raise revenues.
<b>Energy tax in the Netherlands</b>	The energy tax, previously known as the 'regulatory energy tax', was introduced in 1996. When introduced, the tax aimed to reduce energy consumption with revenues recycled back to the economy. The main purpose of the tax today is to raise revenues; the secondary purpose is to reduce energy consumption.
<b>Pesticide tax in Norway</b>	In 1999, a new pesticide tax system was introduced which is area-based and consists of seven tax bands based on the environmental and health related risks linked to the pesticides. The tax was initially introduced in 1988 as a revenue raising tool; the revision in 1999 reflected a stronger objective of reducing the use of pesticides.
<b>CO<sub>2</sub> tax in Sweden</b>	Sweden was one of the first countries to introduce a CO <sub>2</sub> tax in 1991. The tax was introduced as part of a wider fiscal reform package which included reductions to personal income taxes and environmental taxes including on SO <sub>2</sub> and NO <sub>x</sub> emissions. Since its introduction the overall objective of the tax has changed, from its initial tax-shifting focus towards more environmental protection.
<b>Landfill tax in the UK</b>	The landfill tax was introduced in 1996. At its inception the tax aimed to internalise externalities associated with landfill. Following a review in 2002, it was acknowledged that the tax rate was too low to change behaviour and thus it was decided to make the primary goal to 'change behaviour', i.e. to incentivise waste producers to produce less waste, and to recover more value from waste by shifting waste away from landfill towards recycling, recovery and reuse.

Drawing on the analysis in the case studies, additional insights from the wider literature and discussions at the experts' workshop and targeted expert interviews, some key lessons arising from experiences with the use of environmental taxes, charges and levies are synthesised below. For more detail, please see the case studies in Annex 2.

In assessing these results, one should keep in mind that environmental taxes, charges and levies are often only one part of a **policy mix** and it is difficult to distinguish the specific effects of these instruments from the effects of the wider policy package as a whole. Moreover, there are often various **external factors and conditions** which drive change such as the state of the economy, energy prices, technological developments etc. Thus, exact **causality** can be difficult to determine

given that any effect or impact (on the economy, environment or society) is often due to a number of different (and interacting) factors of which the environmental tax, charge or levy is one element – see Box 3.

### Box 3: Policy instrument mixes and external factors which drive change

Environmental taxes, charges and levies are often implemented alongside other policy instruments such as voluntary agreements, information tools such as labels, subsidies, R&D, standards, awareness raising campaigns etc. Environmental taxes, charges and levies are one part of the wider policy mix and need to be seen as a complement to other instruments. This wider policy mix thus has an important impact on the effectiveness of a given instrument (Withana et al., 2013). For example, in **Ireland** the introduction of the plastic bag levy was preceded by an extensive national publicity campaign which reiterated the message that revenues from the levy would be used for environmental purposes. This helped overcome resistance to the levy among the public and retailers. In **Iceland**, the effect of the fisheries resource tax on the environment is difficult to assess given that it was introduced into the Fisheries Management Act alongside a suite of other fisheries management measures, most importantly the ITQs. Nevertheless, the tax is considered a popular measure that has enabled the ITQ system, which was controversial since its introduction, to become more politically palatable.

It is also important to keep in mind the wider context of external factors which drive change, e.g. energy prices, state of the economy and the influence this has on disposable income, technological developments, the availability of substitutes (e.g. fuels for fuel switching, techniques and technologies for production, process or product change) etc. For example in **France**, average CO<sub>2</sub> emissions of new registered passenger cars decreased from 149.4g CO<sub>2</sub>/km in 2007 to 130.5g CO<sub>2</sub>/km in 2010. This reflects the effect of the bonus-malus scheme (which was introduced in December 2007), Regulation (EC) No 443/2009 to limit CO<sub>2</sub> emissions from passenger cars, national energy taxes, as well as wider external factors including an increase in the oil price and the effects of the economic crisis which contributed to a reduction in the purchasing power of consumers. In **Germany**, there is some evidence that the air passenger duty along with other cost drivers (such as kerosene price increases) contributed to higher capacity utilisation in the aviation market (i.e. greater number of seats occupied by passengers), with associated benefits of reduced emissions and noise pollution.

These factors make it very difficult to identify the specific contribution of any one instrument to perceived environmental, economic or social changes. The range of different factors affecting change partly explains why there have been fewer ex-post assessments of environmental taxes and wider ETR than one would expect from a policy governance perspective. Many assessments have ex-ante modelling perspectives, which compare two scenarios – one with and one without ETR – to assess the likely impact of the measure. One such study – the COMETR research project - looked at the impacts of ETR, by modelling impacts, partly ex-post (as it covers the period where the taxes were in place) and partly ex-ante (modelling future impacts from actual and planned ETR) (Andersen et al., 2007). While no model can capture all the complexity, the results of such studies are useful indicators of the scale and nature of effects of ETR.

#### Sources:

Withana, S., ten Brink, P., Kretschmer, B., Mazza, L., Hjerp, P., Sauter, R., (2013) *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. Final Report. Brussels. 2013

For case study sources, please see Annex 2

Andersen, M.S., Barker, T., Christie, E., Ekins, P., Gerald, J.F., Jilkova, J., Junankar, S., Landesmann, M., Pollitt, H., Salmons, R., Scott, S. and Speck, S. (eds.), 2007: Competitiveness Effects of Environmental Tax Reforms (COMETR). Final report to the European Commission. National Environmental Research institute, University of Aarhus. 543 pp. - [http://www.dmu.dk/Pub/COMETR\\_Final\\_Report.pdf](http://www.dmu.dk/Pub/COMETR_Final_Report.pdf)

### 2.2.1 Some insights and lessons on design

The design of environmental taxes, charges and levies including their **point of application** (i.e. upstream on resource inputs, outputs such as electricity and products; or downstream on use, pollution and waste disposal), **breadth of coverage**, **tax rate applied** and **evolution over time** are important factors influencing the impacts of effectiveness of these instruments. The 12 cases examined in the study highlight some interesting approaches to the design of environmental taxes. Some are designed to **incentivise or discourage certain types of behaviour**, for example the **Norwegian pesticide tax** was revised in 1999 to an area-based system with seven tax bands based on the environmental and health related risks of the pesticides used, thus helping to link the pesticide tax more directly to pesticide use. This system has been effective in encouraging more conservative use of pesticides and provides an incentive to use less harmful products<sup>30</sup>.

Some environmental taxes are introduced as **part of a wider package of reform**. For example, in **Sweden** a reform in the 1990s saw a reduction in personal income taxation by SEK 71 billion (EUR 9.5 billion) which was partially offset by the introduction of a CO<sub>2</sub> tax, a SO<sub>2</sub> tax (1991), and a NOx charge (1992) which raised a total of SEK 18 billion (EUR 2.4 billion). This was followed by a ten-year green tax shift programme launched in 2001 which saw a lowering of low and medium income taxes and a SEK 10 billion (EUR 1.6 billion) tax shift in the first four years and further reductions on labour taxes between 2005-2010 (a reduction in tax revenues of EUR 1.3 billion) while some environmental taxes were increased (additional revenue of EUR 0.5 billion)<sup>31</sup>.

Some taxes are designed to be very comprehensive, with a **broad coverage**, for example the **Latvian natural resources tax** covers the extraction of various natural resources, waste disposal, environmental hazardous goods, air pollutants, single-use dinnerware, radioactive substances, and coal, coke and lignite, and water, with rates differentiated depending on the natural resource and its environmental impacts. This broad coverage does not however imply a more effective instrument – see discussion below.

The **way a tax is designed can also have important incentive effects**. For example in **Denmark** the tax on water supply provides an incentive to water suppliers to reduce leakages, as water supply companies are liable to pay the water tax if metered water amounts to less than 90 per cent of the abstracted water in a given year (i.e. more than 10 per cent leakage). As a result, water leakages in Denmark have been reduced to the level of 10 per cent, whereas many EU cities have water leakages of between 30-40 per cent<sup>32</sup>. The water supply tax has also influenced **behaviour changes**. For example a survey found that 45 per cent of Danish households have installed water saving taps, 39 per cent have invested in low-flush toilets and 53 per cent have a modern water saving washing machine. Also, 40 per cent of those interviewed state that price is an important factor in their efforts to save water<sup>33</sup>. Such behaviour changes have been enabled by the introduction of many new and simple water saving installations. The water supply tax is also found to have created **employment**, in particular for sanitary engineering companies that were asked to renovate water installations, and

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<sup>30</sup> OECD (2010) 'Taxation, Innovation and the Environment', URL: <http://www.oecd.org/env/tools-evaluation/taxationinnovationandtheenvironment.htm> [Accessed: 05/02/2014]

<sup>31</sup> Speck S. and Jilkova J. (2009) Design of environmental tax reforms in Europe, In: *Carbon-Energy Taxation: Lessons from Europe*. Andersen MS, Ekins P (Eds.). Oxford University Press, Oxford, 24-52.

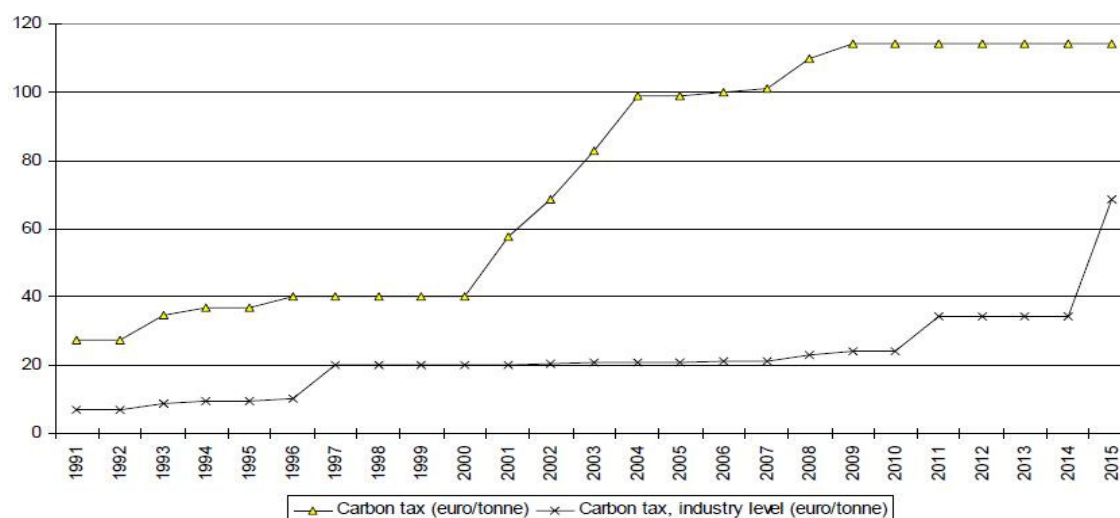
<sup>32</sup> Eunomia and Aarhus University (2014) 'Study on Environmental Fiscal Reform Potential in 12 EU Member States - Final Report to DG Environment of the European Commission', 28/02/2014, [http://ec.europa.eu/environment/integration/green\\_semester/pdf/EFR-Final%20Report.pdf](http://ec.europa.eu/environment/integration/green_semester/pdf/EFR-Final%20Report.pdf)

<sup>33</sup> ECOTEC, CLM, University of Gothenburg, UCD (2001). 'Study on the Economic and Environmental Implications of the Use of Environmental Taxes and Charges in the European Union and its Member States. Final report'. <http://ec.europa.eu/environment/enveco/taxation> [accessed on 10/4/2014].

has also led to the **marketing of new products** such as new types of water saving equipment, in particular low-flush toilets<sup>34</sup>.

The **level of the tax rate set and its evolution over time** is generally a type of negotiated outcome taking into account both technical and political aspects. Tax rates are sometimes set to be relatively low in early years and increased over time to give companies, consumers and the market time to respond to the pricing regime. For example in **Sweden**, the CO<sub>2</sub> tax rate has consistently increased over time from SEK 25/t CO<sub>2</sub> (EUR 27/t CO<sub>2</sub> at the time of its introduction in 1991) to SEK 1,080/t CO<sub>2</sub> (EUR 118/t CO<sub>2</sub>) in 2012 and is the highest CO<sub>2</sub> tax rate currently applied in Europe<sup>35</sup> - see Figure 1.

**Figure 1: Development of Swedish CO<sub>2</sub> tax rate over time**



**Source:** Ministry of Finance, (2011), *20 years of carbon pricing in Sweden 1991 – 2011: History, current policy and the future*, p3. URL <http://www.ceps.eu/files/MinistrySweden.pdf>

Discussions on **how to set the rate of a tax** continue to be contentious in academic circles and some policy circles. Some argue that taxes should focus on addressing the **externalities** or damage caused by the activity or product being taxed. This is however complicated by methodological difficulties<sup>36</sup>. Others prefer a pragmatic political economic route of **setting rates at levels needed to incentivise change** while taking **affordability and political feasibility into account** (i.e. increasing rates over time such as in the case of Sweden described above). In some cases, rates need to be set at a higher level than existing externality assessments in order to incentivise behaviour change. Box 4 below on the **landfill tax in the UK** illustrates how tax rates have increased above initial estimates of environmental externalities to better influence behaviour and meet EU landfilling targets.

<sup>34</sup> ECOTEC, CLM, University of Gothenburg, UCD (2001). 'Study on the Economic and Environmental Implications of the Use of Environmental Taxes and Charges in the European Union and its Member States. Final report'. <http://ec.europa.eu/environment/enveco/taxation> [accessed on 10/4/2014].

<sup>35</sup> Speck, S. (2013) 'Carbon Taxation – two decades of experience and future prospects', *Carbon management*, April 2013, 7

<sup>36</sup> It is difficult to assess all key externalities, there are a range of methods, and the issue is dynamic as externalities depend not only on emissions, but also how this translates into the state of the environment (e.g. air quality) and how many people (or activities) are exposed (which relates to demography), how they react (e.g. illness) and what the 'value' of the impact is (e.g. actual costs such as hospitalisation and lost output, or perceived costs for wellbeing impacts (e.g. for bronchitis) and values of early loss of life). It therefore combines a mix of costs using a range of values and methods. For transport, for example, there are climate change externalities, pollution externalities (which have an impact on health, building infrastructure, nature), congestion, damage to infrastructure, social costs of reduced community interactions (e.g. as traffic reduces communication between the opposite sides of streets), and biodiversity impacts from fragmentation and pollution. Externalities thus vary from the global (climate change) to very local (congestion).

#### Box 4: Environmental externalities and landfill taxes in the UK

In 1993, a report by the Royal Commission on Environmental Pollution advocated steps to shift waste away from landfill towards incineration, to address environmental impacts such as greenhouse gas emissions and leaching from landfill sites, and to ensure that the full economic costs of waste disposal to the wider community was better reflected in the cost to those disposing of waste (i.e. internalise environmental externalities) (Royal Commission on Environmental Pollution, 1993).

The landfill tax introduced in 1996 was explicitly environmental from the outset and sought to ensure that landfill costs reflect the full cost of environmental impacts (Seely, 2009). In 1998, when reviewing the impact of the tax, HM Customs and Excise acknowledged that the tax rate had been “based on an estimation of the environmental cost of landfill as a waste disposal option” but that there was strength of feeling that “the rate would need to be much higher if it were to influence behaviour away from landfill towards re-use, recovery or recycling”. This, together with forthcoming “new, tougher targets for reducing reliance on landfill” therefore led to the first increase in the tax rate in 1999, from GBP 7 (EUR 8.6) to GBP 10 (EUR 12.4) (Seely, 2009). Following a policy review in 2002, it was acknowledged that the tax rate was too low to change behaviour (i.e. to reduce the amount of waste landfilled), and so it was decided to make the primary goal to ‘change behaviour’, i.e. to incentivise waste producers to produce less waste (through increased cost of landfilling), and recover more value from waste e.g. by moving waste away from landfill and towards recycling or composting, and to use more environmentally friendly waste disposal methods (EEA, 2012).

In 1996, the UK Institute for Fiscal Studies cited an estimate of externalities associated with landfill without energy recovery at around GBP 3.50-4 (EUR 4.4-5) per tonne (Hughes and Seely, 1996). In contrast, a report from 2000 estimated that in the EU, the total external costs of landfilling a tonne of waste in a modern landfill site (in compliance with the Landfill Directive and where landfill gas was collected to generate electricity and heat) was in the region of EUR 11-13 (European Commission, 2000) while the 2013 Business and Regulatory Impact Assessment that accompanied the Landfill Tax (Scotland) Bill estimated that the environmental costs of landfill in 2015 would be around GBP 34 (EUR 42.5) per tonne of residual waste (Scottish Government, 2013). These figures demonstrate an increase over time in the estimates of the cost of environmental externalities from landfilling.

#### Sources:

European Commission (2000) ‘A Study on the Economic Valuation of Environmental Externalities from Landfill Disposal and Incineration of Waste: Final Main Report’. URL

[http://ec.europa.eu/environment/waste/studies/pdf/econ\\_eva\\_landfill\\_report.pdf](http://ec.europa.eu/environment/waste/studies/pdf/econ_eva_landfill_report.pdf) [accessed 25/04/14]

EEA (2012) ‘Overview of the use of landfill taxes in Europe’. URL

[http://scp.eionet.europa.eu/publications/WP2012\\_1/wp/WP2012\\_1](http://scp.eionet.europa.eu/publications/WP2012_1/wp/WP2012_1) [accessed 10/03/2014]

Hughes, P. and Seely, A. (1996) Landfill Research Paper 96/103. URL <http://www.parliament.uk/briefing-papers/RP96-103.pdf> [accessed 25/04/2014]

Royal Commission on Environmental Pollution (1993) ‘Seventeenth Report: Incineration of Waste’. URL

<http://webarchive.nationalarchives.gov.uk/20110322143804/http://www.rcep.org.uk/reports/17-waste/1993-17waste.pdf> [accessed 02/05/2014]

Scottish Government (2013) ‘Landfill Tax (Scotland) Bill: Final Business and Regulatory Impact Assessment’. URL

<http://www.scotland.gov.uk/Publications/2013/06/8957/> [accessed 25/04/14]

Seely, A. (2009) ‘Landfill tax: introduction & early history - Commons Library Standard Note’, House of Commons Library.

URL <http://www.parliament.uk/briefing-papers/SN00237.pdf> [accessed 13/03/2014]

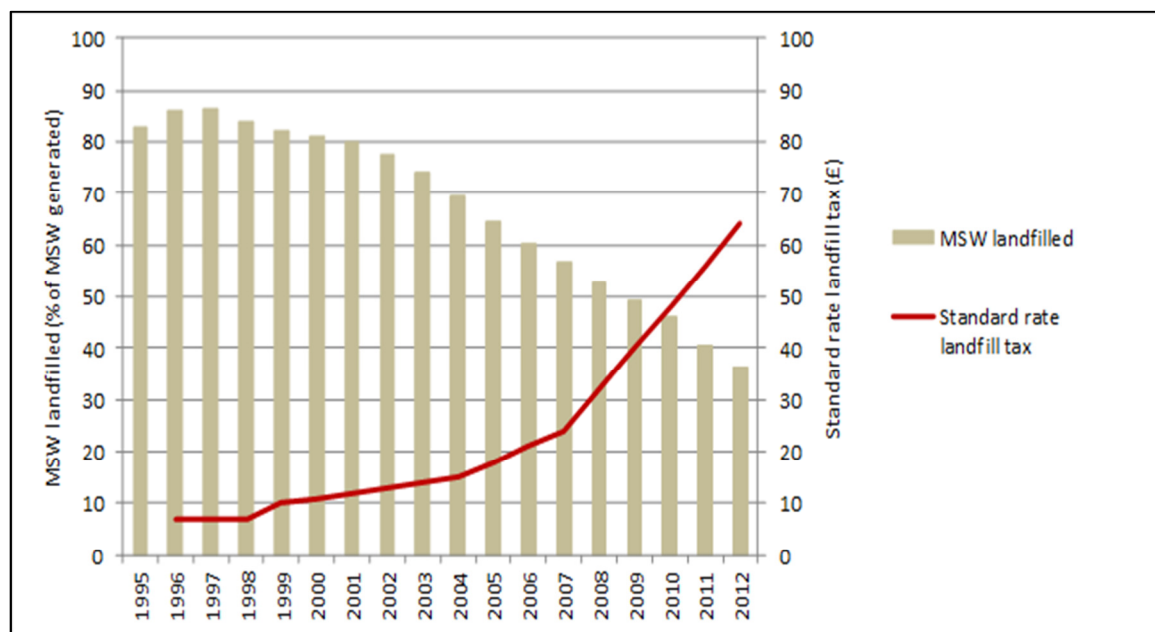
#### **Rates are generally set to incentivise behaviour change rather than to ‘internalise externalities’.**

For example, in **Ireland** the plastic bag levy is relatively high in order to discourage the use of plastic bags altogether. The initial charge (EUR 0.15) was set at more than six times the estimated average maximum willingness to pay (which was about EUR 0.024)<sup>37</sup>. **Higher tax rates are usually associated with a greater effect** in terms of environmental outcome and incentivising behaviour change. For example, countries where landfill tax rates are low such as Bulgaria, France and Portugal have seen

<sup>37</sup> Convery, F., McDonnell, S. and Ferreira, S. (2007) ‘The Most Popular Tax in Europe? Lessons from the Irish Plastic Bags Levy’. In: Environmental and Resource Economics, Vol. 38, No. 1, pp. 1-11

rather modest reductions of waste generation<sup>38</sup>; while countries with higher landfill taxes in place such as the Netherlands and the UK have seen much higher reductions – see Figure 2 which illustrates the effect of increases in the standard rate of landfill tax in UK on waste subject to this tax rate, with a turning point reached around 2001/2002, and a decline in the percentage of generated waste sent to landfill continuing to the present day.

**Figure 2: Standard rate of landfill tax compared to percentage of municipal solid waste sent to landfill in the UK**



**Source data:** Eurostat (2014) Municipal waste generation and treatment, by type of treatment method, Code: tsdpc240 [accessed 11/03/2014] and HM Revenue and Customs (2014a) 'Landfill Tax (LFT) Bulletin January 2014'. URL <https://www.uktradeinfo.com/Statistics/Tax%20and%20Duty%20Bulletins/lft0114.xls> [accessed 10/03/2014]

In some cases, the **tax rates have been unchanged for a number of years and/or are too low to influence behaviour changes**. For example in **Latvia**, the natural resource tax rates remained unchanged, between 1995 and 2000 despite rising inflation, and appear to have been too low to have significant environmental impacts<sup>39</sup>. In the **Czech Republic**, air pollution charge rates remained unchanged from their entry into force in 1992 until 2012, and while they did contribute to significant reductions in air pollution emissions (e.g. SO<sub>2</sub> emissions decreased by 68 per cent and NO<sub>x</sub> emissions by 50 per cent between 1987 and 1997), emission levels stagnated around 2000 and remained the same until 2010<sup>40</sup>, and a number of challenges remain. In 2012, the system was revised so that from 2013 the rates will gradually increase four-fold until 2021. These revisions aim to help the achievement of air quality targets<sup>41</sup>. However, the new system only applies to four polluting substances (previously nine main pollutants and two pollutant classes were covered). In **France**,

<sup>38</sup> IEEP, Eunomia, BIO IS, Umweltbundesamt, Ecologic and Arcadis (2012) 'Economic instruments to improve waste management', Final report, Contract ENV.G.4/FRA/2008/0112, European Commission (DG ENV), <http://www.ieep.eu/publications/2012/04/economic-instruments-to-improve-waste-management>

<sup>39</sup> K. Rademaekers, J. van der Laan, M. Smith, C. van Breugel, H. Pollitt (2011). 'The role of market-based instruments in achieving a resource efficient economy', Client: European Commission: DG Environment, Ecorys, Rotterdam. URL [http://ec.europa.eu/environment/enveco/taxation/pdf/role\\_marketbased.pdf](http://ec.europa.eu/environment/enveco/taxation/pdf/role_marketbased.pdf) [24/02/2014]

<sup>40</sup> CENIA (Czech Environmental Information Agency) (2008) 'Air - The Environment of the Czech Republic'. URL [http://www.cenia.cz/web/www/web-pub2.nsf/\\$pid/CENMSFVZ8VR3/\\$FILE/air.pdf](http://www.cenia.cz/web/www/web-pub2.nsf/$pid/CENMSFVZ8VR3/$FILE/air.pdf) [26/02/2014]

<sup>41</sup> Eunomia and Aarhus University (2014) 'Study on Environmental Fiscal Reform Potential in 12 EU Member States - Final Report to DG Environment of the European Commission', 28/02/2014, [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)

rates applied under the 'Tax générale sur les activités polluantes' (TGAP) appear to have been too low to incentivise waste prevention or recycling and have not led to a significant reduction in the flows of waste being landfilled or incinerated<sup>42</sup>.

There are **different approaches to increasing rates over time**. Some countries opt for an approach of **indexation** which links rate increases to inflation. For example, in the **Netherlands**, in order to contribute to a stable tax income over time, tax rates for all energy taxes have been indexed to inflation since 1999<sup>43</sup>, which according to the European Commission is a relatively rare feature of energy tax design in the EU<sup>44</sup>. In some cases, there is a **pre-set schedule of increases**, for example in **France** the thresholds of the bonus-malus system are strengthened by 5g/km every two years<sup>45</sup>. In some cases, the dynamic development of tax rates can be seen as negative as it can potentially lead to less predictability and may lead to increased administrative burden depending on national laws, e.g. if it requires changes to the tax law every year. An innovative approach is to use a **performance indicator**, as for example is the case with the **CO<sub>2</sub> tax in Switzerland** whereby a higher rate is applied if CO<sub>2</sub> targets are not met in a given year (until a maximum rate of CHF 120/t CO<sub>2</sub> is reached). The tax rate has increased from CHF 12/t CO<sub>2</sub> in 2008 to CHF 36/t CO<sub>2</sub> in 2010<sup>46</sup>.

Another option is to **increase rates in light of regular reviews of the instrument**. For example, in Ireland following the introduction of the plastic bag levy, plastic bag use fell from an estimated 328 bags per capita before the introduction of the levy in 2002 to 21 bags per capita at the end of 2002. Following this reduction, however, there was a slight increase in plastic bag usage to 33 bags in 2007. This was countered by an increase in the levy in July 2007 which led to a reduction in usage to 26 bags per capita, and eventually to 14 bags per capita in 2012<sup>47</sup> - see Figure 3 below. In 2011 a provision was made in national legislation that sets a ceiling for the tax at EUR 0.70 and enables the levy to be amended once in any financial year<sup>48</sup>.

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<sup>42</sup> CGDD (2013) Gestion des déchets : bilans 2009-2012 de la TGAP et des soutiens de l'ADEME, URL : [http://www.developpement-durable.gouv.fr/IMG/pdf/Rapport\\_TGAP.pdf](http://www.developpement-durable.gouv.fr/IMG/pdf/Rapport_TGAP.pdf)

<sup>43</sup> Speck S. and Jilkova J. (2009) Design of environmental tax reforms in Europe, In: *Carbon-Energy Taxation: Lessons from Europe*. Andersen MS, Ekins P (Eds.). Oxford University Press, Oxford, 24-52.

<sup>44</sup> European Commission [EC] (2013) 'Taxation Trends in the European Union: Data for the EU Member States, Iceland and Norway'. Eurostat Statistical Books, Luxembourg, [http://epp.eurostat.ec.europa.eu/cache/ITY\\_OFFPUB/KS-DU-13-001/EN/KS-DU-13-001-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-DU-13-001/EN/KS-DU-13-001-EN.PDF) [accessed 6/3/2014].

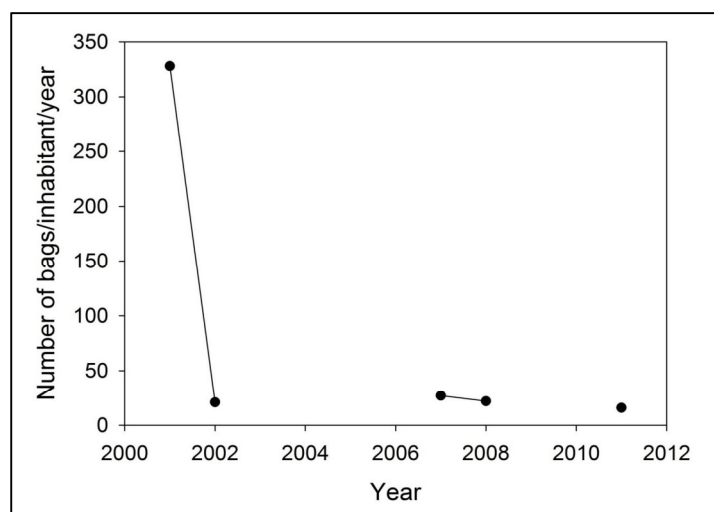
<sup>45</sup> Ministère de l'écologie, du développement durable et de l'énergie, (2014) 'Énergie, Air et Climat'. URL <http://www.developpement-durable.gouv.fr/Bonus-Malus-2014.html> [accessed 03/03/2014]

<sup>46</sup> Speck, S., (2013) 'Carbon taxation – two decades of experience and future prospects', *Carbon Management*, April 2013

<sup>47</sup> O'Connell, H. (2013) The plastic bag levy has raised over EUR 200 million since 2002. URL <http://www.thejournal.ie/plastic-bag-levy-revenue-1040128-Aug2013> [14-04-2014]

<sup>48</sup> Lyons, L. (2013) DYNAMIX policy mix evaluation - Reducing plastic bag use in the UK and Ireland. URL [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) [accessed 14/04/2014]

**Figure 3: Plastic bag usage per capita in Ireland**



**Source:** Doyle, T. K. and O'Hagan A-M (2013) The Irish 'Plastic Bag Levy': A mechanism to reduce marine litter? Presentation at the Marine Litter Conference in Berlin April 10-12 2013. URL [http://www.marine-litter-conference-berlin.info/userfiles/file/online/Plastic%20Bag%20Levy\\_Doyle.pdf](http://www.marine-litter-conference-berlin.info/userfiles/file/online/Plastic%20Bag%20Levy_Doyle.pdf) [14-04-2014]

Such **scheduled increases in the tax rate can help to minimise potential adjustment costs** and overcome resistance to the introduction of the tax and subsequent revisions. However, such an approach **can also lead to adverse effects**, particularly in the short-term. For example in Norway, the announcement of the new banded pesticides tax system in 1998 and a subsequent increase in the tax in 1999 led to farmers and importers hoarding large amounts of pesticides,<sup>49</sup> and these stockpiles led to lower sales in 2000-2001.

### **2.2.2 Some insights and lessons on implementation**

The level of the tax rate alone does not determine the impacts of the tax. The **evolution of the tax over time, exemptions granted and associated conditionalities**, as well as the use of revenues raised are equally important factors influencing its effectiveness.

Some form of **exemptions** and/or tax reductions are often a necessary component of ETR and are relied on as a politically expedient measure. However, such practices tend to impair the effectiveness of the instrument. For example in the case of **Germany**, derogations granted to manufacturing and energy-intensive industries from the energy tax have limited positive environmental impacts as the rather high energy efficiency potential in the sector remains largely untapped due to insufficient price signals<sup>50</sup>. Given the current difference between the ETS and non-ETS carbon price, exemptions granted to sectors covered by the EU ETS have also led to inefficiencies.

Moreover such practices may **imply advantages for certain companies and sectors, but disadvantages to others and in some cases can be over-estimated**. For example, the introduction of an air passenger duty in **Germany** was accompanied with significant concerns by the aviation sector, in particular about reducing air passenger numbers as well as potential adverse effects in regional

<sup>49</sup> Spikkerud, E. (2006) 'Taxes as a Tool to Reduce Health and Environmental Risk from Pesticide Use in Norway', in OECD, Evaluating Agri-environmental Policies: Design, Practice and Results, OECD Publishing. URL: <http://dx.doi.org/10.1787/9789264010116-21-en> [Accessed: 03/03/2014]

<sup>50</sup> Speck S. and Jilkova J. (2009) Design of environmental tax reforms in Europe, In: *Carbon-Energy Taxation: Lessons from Europe*. Andersen MS, Ekins P (Eds.). Oxford University Press, Oxford, 24-52.

areas close to borders (and hence foreign airports). In 2012, the German government published a detailed evaluation of the duty presenting figures that largely counter these concerns<sup>51</sup>.

In some cases, a number of **exemptions are granted in the early years of an environmental tax which are then gradually phased out over time**. Such an approach can help ensure support for the tax when it is introduced and allows time to adjust to price signals. For example the energy and CO<sub>2</sub> taxation system in Sweden has a complex **system of exemptions** granted to several industry sectors. The latest reform in 2009 requires a reduction or abolition of the exemptions for energy-intensive industries and other cases outside the EU ETS between 2011 and 2015 – see Table 3 for an overview of some of the changes agreed in 2009 by the Swedish Parliament.

**Table 3: Reforms of energy and CO<sub>2</sub> taxes in Sweden**

Area of use	2010	2011 (decided by Parliament in December 2009)
Households and services	100% energy tax – not based on energy content (EUR 0.001-0.008 per kWh) 100% CO <sub>2</sub> tax	100% energy tax – based on energy content (EUR 0.008 per kWh) 100% CO <sub>2</sub> tax
Industry outside the EU-ETS + agriculture	0% energy tax 21% CO <sub>2</sub> tax 0.8% rule – further tax reductions	30% energy tax = EUR 0.0025 per kWh 30% CO <sub>2</sub> tax (60% in 2015) 0.8% rule more strict (abolished in 2015)
Installations within the EU-ETS	Industry + heat production in CHP (combined heat and power plants): 0% energy tax 15% CO <sub>2</sub> tax Other heat plants: 100% energy tax; 94% CO <sub>2</sub> tax	Industry: 30% energy tax = EUR 0.0025 per kWh 0% CO <sub>2</sub> tax Heat production in CHP: 30% energy tax = EUR 0.0025 per kWh 7% CO <sub>2</sub> tax. Proposed to be 0% in 2013. Other heat plants: 100% energy tax; 94% CO <sub>2</sub> tax

**Source:** International Agency (2013) 'Energy Policies of IEA Countries. Sweden 2013 Review', p. 20. URL [http://www.iea.org/textbase/nppdf/free/2013/sweden2013\\_excerpt.pdf](http://www.iea.org/textbase/nppdf/free/2013/sweden2013_excerpt.pdf)

In some cases, **exemptions are conditional** on the achievement of certain targets, voluntary agreements with the government etc. For example in the **Netherlands** in order not to harm their international competitiveness, large industrial electricity consumers receive a refund from the energy tax if they have entered long-term energy efficiency agreements with the government and as long as they pay on average more than the European minimum rate. Some other examples of experiences with such voluntary agreements are set out in Box 5 below.

**Box 5: Some insights from experiences with voluntary agreements**

In the **UK** energy intensive businesses that enter into Climate Change Agreements (CCAs) are eligible to receive a discount from the Climate Change Levy (CCL) in return for meeting energy efficiency or carbon-saving targets. These agreements allow eligible companies to receive a discount from the CCL of 90 per cent for electricity and 65 per cent for other fuels in return for meeting energy efficiency or carbon-saving targets. CCAs cover a wide range of industry sectors, from major energy-intensive processes such as steel, chemicals and cement, to agricultural businesses such as intensive pig- and poultry-rearing (Environment Agency 2013).

In **Denmark**, a scheme of voluntary agreements (VAs) on energy efficiency in industry was launched in 1996 which mainly targets energy-intensive industries that enter into VAs with the Danish Energy Authority (DEA). Under the VAs, companies commit to undertaking tasks to promote energy efficiency, in return for a rebate on the CO<sub>2</sub> tax. To enter a VA the company must implement an energy management system (EMS) and before the VA tool was revised an energy audit was to be carried out to identify 'profitable' energy measures. The

<sup>51</sup> Bundesregierung (2012a) Bericht an den Deutschen Bundestag über die Auswirkungen der Einführung des Luftverkehrsteuergesetzes auf den Luftverkehrssektor und die Entwicklung der Steuereinnahmen aus der Luftverkehrsteuer, 29.06.2012, <http://dipbt.bundestag.de/dip21/btd/17/102/1710225.pdf> [accessed 11/04/2014]

obligation to undertake an energy audit was removed in the revised scheme, however any profitable energy saving projects identified during 'special investigations' or the EMS are to be carried out (Ericsson 2006).

Such agreements have been considered useful, for example in Denmark, evaluations indicate that the VA scheme has reduced energy use in participating companies and led to an estimated CO<sub>2</sub> emission reduction of 6 per cent over 1996-2005 with 60 per cent of CO<sub>2</sub> emission reductions assumed to be a result of implementing and maintaining an EMS (Ericsson 2006). However, some agreements have also been criticised for being weaker than necessary. For example in the case of the UK, some sources suggest errors were made in the design of the CCAs and the way targets were negotiated which led to agreements which have not been very demanding. This meant that in the first target period, 88 per cent of units met their targets while in the second and third periods, 98 per cent and 99 per cent of units met their targets (OECD, 2010).

**Sources:**

Environment Agency (2013) Climate Change Agreements Operations Manual (March 2013 version), URL: [http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/LIT\\_7911\\_6a1fc4.pdf](http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/LIT_7911_6a1fc4.pdf)

Ericsson K. (2006) Evaluation of the Danish voluntary Agreements on Energy Efficiency in Trade and Industry, URL: [www.aid-ee.org/documents/011Danishvoluntaryagreements.PDF](http://www.aid-ee.org/documents/011Danishvoluntaryagreements.PDF)

OECD (2010) Taxation, Innovation and the Environment. Paris

For wider discussion on VAs see ten Brink P. (ed.) (2002) *Voluntary environmental agreements. Process, practice and future use*. Edited by Patrick ten Brink. Greenleaf Publishing, Sheffield, UK

The **process leading up to the introduction or revision of an environmental tax** is also critical and can influence the acceptability of the instrument as well as its impact and effectiveness. For example in **Ireland**, the government undertook extensive advance consultation on the design and implementation of the plastic bag levy with the general public, the Irish Business and Employers' Confederation, and leading retailers prior to its introduction which helped increase support for the levy<sup>52</sup>. In preparing legislation for the levy, the then Irish Environment Minister ensured collaboration between various government departments and was also influential in ensuring a robust legislative and regulatory base for the levy rather than the voluntary scheme initially preferred by industry. Moreover, a national publicity campaign reiterated the message that revenues from the levy would be used for environmental purposes which helped address concerns among retailers that they would be blamed for 'profiteering' from the levy<sup>53</sup>.

In some cases, the **success of the environmental tax, charge or levy can lead to negative impacts, for example on public finances and/or on environmental objectives**. For example the bonus-malus system introduced in **France** in late 2007 aimed to encourage the purchase of vehicles which emit low CO<sub>2</sub> emissions. The system was supposed to be neutral on public finances; however, due to its success it led to a financial deficit of EUR 1.46 billion between 2008 and 2011<sup>54</sup>. Moreover, while the system (together with other instruments such as the scrappage fee, an increase in the oil price and the effects of the economic crisis) contributed to a reduction in average CO<sub>2</sub> emissions of newly registered passenger cars in France from 149.4g CO<sub>2</sub>/km in 2007 to 130.5g CO<sub>2</sub>/km in 2010, it has also had **adverse impacts on the environment**. The system has been strongly criticised for encouraging the purchase of more vehicles, in particular diesel vehicles, increasing congestion and encouraging drivers to travel more given the fuel efficiency of vehicles, and reducing the use of public transport (by incentivising the use of private vehicles)<sup>55</sup>.

<sup>52</sup> GIZ (2013) Environmental Fiscal Reform –Case studies. URL <http://www.giz.de/expertise/downloads/giz2013-en-environmental-fiscal-reform-case-studies.pdf> [15-04-2014]

<sup>53</sup> Convery, F., McDonnell, S. and Ferreira, S. (2007) 'The Most Popular Tax in Europe? Lessons from the Irish Plastic Bags Levy'. In: Environmental and Resource Economics, Vol. 38, No. 1, pp. 1-11

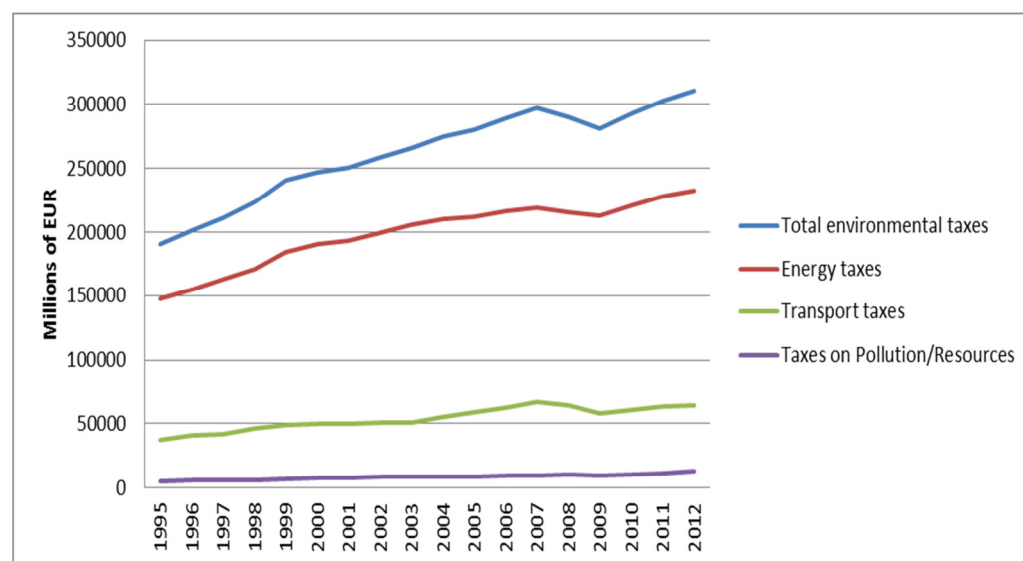
<sup>54</sup> WPS Analysis and Strategy (2013) 'Rapport: Policies for Reducing GHG-Emissions from Road Transport in France'. URL <http://www.sou.gov.se/content/1/c6/21/33/45/ec60784d.pdf> [03/03/2014]

<sup>55</sup> Input from discussions at experts' workshop, April 2014

### 2.2.3 Some insights and lessons on revenues raised

At the **European (EU) level**, environmental taxes raised €311.6 billion in 2012 in the EU, which is equivalent to 6.05 per cent of total taxes and social contributions in EU-28. Total environmental tax revenues have increased by €119.5 billion since 1995 for the EU-27<sup>56</sup> (an increase of 62 per cent) – see Figure 4 below; however environmental taxes as a share of total tax receipts has fallen from 6.87 per cent in the mid-1990s to 6.1 per cent in 2011.

**Figure 4: Total environmental taxes in the EU-27 (millions of EUR in current nominal prices)**



Source: Graphs by authors building on data from Eurostat:

[http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/Environmental\\_taxes\\_-\\_detailed\\_analysis](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Environmental_taxes_-_detailed_analysis)

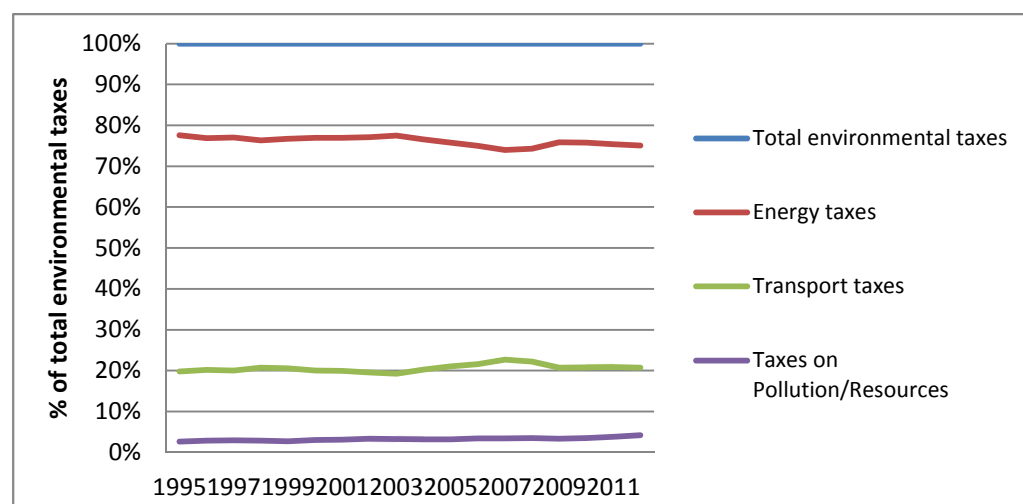
[accessed 23/5/2014]

Overall **energy taxes** are the source of most of the revenues from environmental taxes (accounting for 5.3 per cent of revenues from environmental taxes in 1995 and 4.5 per cent in 2012). **Transport taxes** account for around 1.25 per cent of tax revenues. **Energy and transport taxes are considered useful revenue raising instruments** as well as measures that can support environmental objectives. In contrast **pollution taxes** (e.g. on waste management, resource extraction, water extraction) although often important for environmental objectives, raised on average only 0.25 per cent of revenue in 2012 (up from 0.18 per cent in 1995)<sup>57</sup> – see Figure 5.

<sup>56</sup> Croatian data not available for 1995.

<sup>57</sup> Note that this does not include revenues from environmental charges, e.g. on water supply, waste water collection etc., which can be quite substantial.

**Figure 5: Main sources of environmental tax revenues in the EU-27 (1995-2012)**

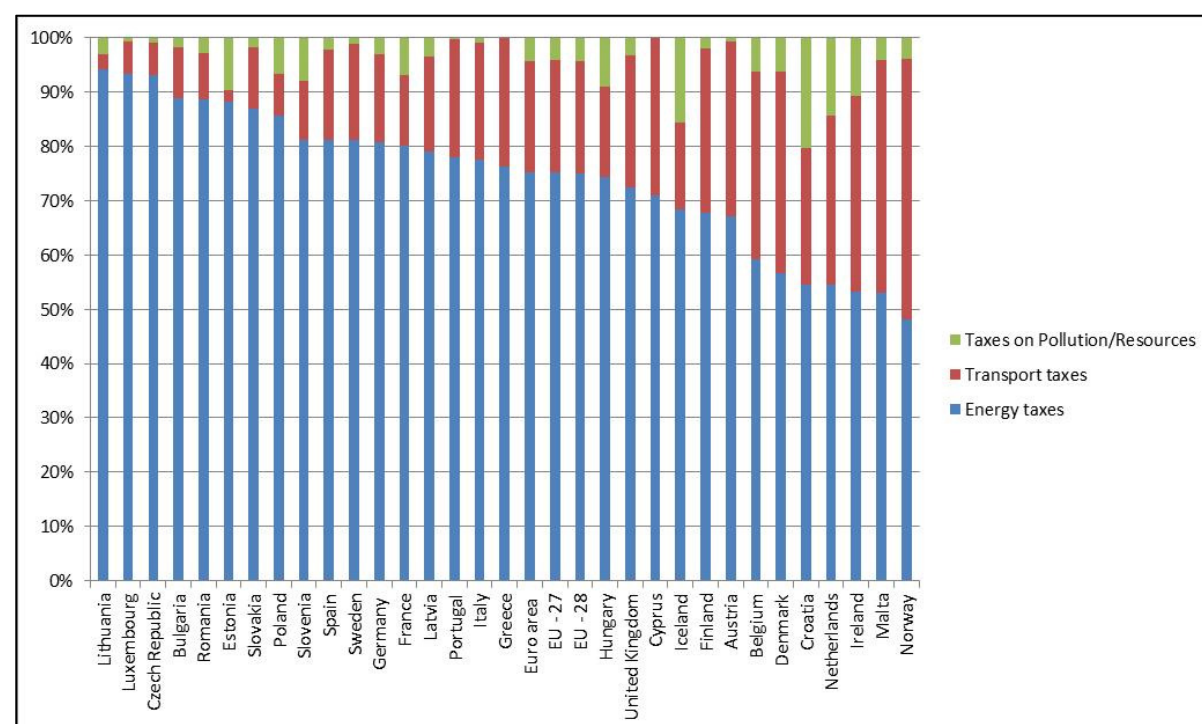


**Source:** Graphs by authors building on data from Eurostat:

[http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/Environmental\\_taxes\\_-\\_detailed\\_analysis](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Environmental_taxes_-_detailed_analysis) [accessed 23/5/2014]

It is however important to note that there are significant differences across countries both in terms of the amount of revenues generated from environmental taxes and the share of different environmental taxes (see Figure 6).

**Figure 6: Share of environmental taxes by type of tax in EU-27 in 2012**



**Source:** Graph by authors building on data from Eurostat:

[http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/Environmental\\_taxes\\_-\\_detailed\\_analysis](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Environmental_taxes_-_detailed_analysis) [accessed 23/5/2014]

In terms of **specific insights from cases** examined in this study, experiences have been mixed, with some countries experiencing **an increase in revenues** from environmental taxes. For example in

**Norway** in 1997-98 the annual income from the pesticide tax was around NOK 20 million<sup>58</sup> (EUR 2.47 million) while in recent years this has increased to about NOK 60 million a year<sup>59</sup> (EUR 7.71 million). In **Denmark**, the water supply tax raised DKK 1,333 million (EUR 178.8 million) in 2011 (0.07 per cent of the GDP), which is well above most other schemes<sup>60</sup>. When introduced in 1994, it raised DKK 294.5 million (EUR 41.4 million). The waste water tax raised DKK 174 million (EUR 23.3 million) in 2011, compared to DKK 164 million (EUR 22.2 million) in 1997 (its first year). Part of the increase can be explained by the 50 per cent increase in the rate that was enacted in 2009. Revenues obtained through both taxes go to the general government budget. In **Sweden**, revenues from energy and CO<sub>2</sub> taxes in relation to GDP and revenues from other taxes have stayed relatively constant over the years – see Table 4 below.

**Table 4: Revenues from energy and CO<sub>2</sub> taxes in Sweden in EUR million (SEK in brackets)**

	2006	2007	2008	2009	2010	2011
Energy tax on fuels	2,313 (19,276)	2,335 (19,457)	2,351 (19,590)	2,427 (20,224)	2,418 (20,146)	2,450 (20,414)
Electricity taxes	2,328 (19,3396)	2,377 (19,812)	2,368 (19,732)	2,486 (20,720)	2,527 (21,061)	2,427 (20,227)
Nuclear power tax (capacity)	384 (3,198)	389 (3,238)	477 (3,976)	407 (3,395)	480 (3,997)	462 (3,852)
CO <sub>2</sub> tax	2,969 (24,745)	3,015 (25,127)	3,092 (25,770)	3,130 (26,084)	3,280 (27,334)	3,044 (25,369)
<b>Energy and CO<sub>2</sub> tax (total)</b>	7,994 (66,615)	8,116 (67,634)	8,288 (69,068)	8,451 (70,423)	8,705 (72,538)	8,383 (69,862)
Per cent of GDP in Sweden <sup>61</sup>	2.2 per cent	2.1 per cent	2.1 per cent	2.4 per cent	2.2 per cent	2.0 per cent
CO <sub>2</sub> and energy tax revenues as share of total revenues from taxes and social contributions <sup>62</sup>	4.7 per cent	4.6 per cent	4.6 per cent	4.9 per cent	4.8 per cent	Not available

**Source:** Withana, S., ten Brink, P., Kretschmer, B., Mazza, L., Hjerp, P., Sauter, R., Malou, A., and Illes, A., (2013) *Annexes to Final Report - Evaluation of environmental tax reforms: International experiences*. A report by IEEP for the State Secretariat for Economic Affairs (SECO) and the Federal Finance Administration (FFA) of Switzerland. Brussels. 2013.

**In some cases, taxes have been designed to ensure stable revenue over time.** For example the air passenger duty applied in **Germany** raised revenues of between EUR 940 million and EUR 965 million in 2011-2013. Article 11(2) of the *Luftverkehrsteuergesetz* stipulates a revenue target of EUR 1 billion from the air passenger duty and from auctioning EU ETS allowances to the aviation sector. The rates of the air passenger duty are scheduled to be reduced over time by a certain percentage annually which takes into account the income generated in the previous year from including aviation in the EU ETS, so that the combined tax burden from the air passenger duty and inclusion in the EU ETS is

<sup>58</sup> Rorstad, P. K. (2005) 'Experiences with taxes / levies on fertilisers and pesticides in Norway', Department of Economics and Resource Management, Norwegian University of Life Sciences (UMB), URL: <http://files.foes.de/de/downloads/tagungvilm2005/norwaystudy.pdf> [Accessed: 03/03/2014]

<sup>59</sup> PAN Europe (2005) 'Pesticide taxes – national examples and key ingredients', Pesticides Action Network Europe Briefing No 6, December 2005, URL: <http://www.pan-europe.info/Archive/publications/downloads/PesticideTax.pdf> [Accessed: 03/03/2014]

<sup>60</sup> Eunomia and Aarhus University (2014) 'Study on Environmental Fiscal Reform Potential in 12 EU Member States - Final Report to DG Environment of the European Commission', 28/02/2014, [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>61</sup> Based on calculations from data in Statistics Sweden (Statistics Sweden, 2013)

<sup>62</sup> Based on calculations from:

<http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=ten00064&plugin=0>

in the order of EUR 1 billion<sup>63</sup>. This mechanism is said to help manage the burden on the aviation sector and can be seen as a way of ensuring stable revenues over time; however it has been criticised for preventing further ecological effects of the duty<sup>64</sup>.

In some cases environmental taxes and charges have been more **useful as a behaviour changing tool rather than a revenue raising one**, as revenues raised are not substantial overall and/or have declined as the objectives are met. For example in **Ireland**, revenues from the plastic bag levy gradually increased between 2002-2006 to around EUR 18 million, experienced a reduction in 2007 and an increase again in 2008 to approximately EUR 27 million, which reflects the higher rate introduced in 2007. However revenues subsequently declined to EUR 16 million in 2011<sup>65</sup>. By 2012, a total of EUR 196 million of revenue had been collected from the levy<sup>66</sup>. Due to the success of the levy in reducing the use of plastic carrier bags, annual revenues from the levy have been around one tenth of the amount initially expected<sup>67</sup>. In 2011 a provision was made in national legislation that sets a ceiling for the levy at EUR 0.70 and enables the levy to be amended once in any financial year.

The issue of **revenue erosion** could be a concern from a finance perspective whereas from an environmental perspective a lack of revenue erosion could be a concern as it implies a limited effect on behaviour change. In the **short to medium term** (2020-2030), a substantial shift in the use of fossil fuels, material inputs or pollution that would undermine the tax base and risk an overall erosion of revenues from environmental taxes is not expected, although there may be some cases of an eroding tax base, e.g. plastic bags. There are various options to address the prospect of an erosion of revenues from environmental taxes, charges and levies, e.g. by **indexation** or through a more **dynamic development of tax rates** each year (i.e. ramping up rates) and/or through a **broadening of the tax base** over time (i.e. covering more products). This could be complemented by performance indicators (e.g. as in Switzerland), and informed by developments with regard to affordability, changes in the tax base (e.g. changing share of fossil fuels in energy mix), external factors such as changes in world oil prices and political events (e.g. affecting energy security). Another approach is to reduce exemptions and tax reductions over time which can be considered **environmental harmful subsidies** (EHS) needing reform<sup>68</sup>. Some argue that external factors such as oil prices have also had an impact on declining revenues from energy taxes; moreover demand for energy is relatively inelastic, thus perceived risks of revenue losses from environmental taxes should not be over-stated<sup>69</sup>.

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<sup>63</sup> BMF (2011) Monatsbericht 21.03.2011 "Die Luftverkehrsteuer". Bundesministerium der Finanzen, [http://www.bundesfinanzministerium.de/Content/DE/Monatsberichte/Standardartikel\\_Migration/2011/04/analysen-und-berichte/b04-Luftverkehrssteuer/Luftverkehrssteuer.html?\\_act=renderPdf&\\_idDocId=216914](http://www.bundesfinanzministerium.de/Content/DE/Monatsberichte/Standardartikel_Migration/2011/04/analysen-und-berichte/b04-Luftverkehrssteuer/Luftverkehrssteuer.html?_act=renderPdf&_idDocId=216914) [accessed 11/04/2014]

<sup>64</sup> BUND (2012) Stellungnahme zum Änderungsantrag von CDU/CSU und FDP „Anpassungen des Luftverkehrsteuergesetzes aufgrund europarechtlicher Vorgaben sowie Entwicklungen aufgrund der Einbeziehung des Luftverkehrs in den Handel mit Treibhausgasemissionszertifikaten“ im Rahmen des „Entwurfs des Zweiten Gesetzes zur Änderung des Energiesteuer- und des Stromsteuergesetzes“ (BT-Drucks. 17/10744). Bund für Umwelt und Naturschutz, [http://www.bund.net/fileadmin/bundnet/pdfs/verkehr/luftverkehr/121105\\_bund\\_verkehr\\_anpassung\\_luftverkehrssteuer\\_gesetz\\_121102\\_stellungnahme.pdf](http://www.bund.net/fileadmin/bundnet/pdfs/verkehr/luftverkehr/121105_bund_verkehr_anpassung_luftverkehrssteuer_gesetz_121102_stellungnahme.pdf)

<sup>65</sup> Department of the Environment, Community and Local Government (2012) Report on the Accounts of the Public Services 2011 - Chapter 27 Environment Fund Levies. URL <http://www.audgen.gov.ie/documents/annualreports/2011/report/en/FullReport2011.pdf> [30-04-2014]

<sup>66</sup> Doyle, T. K. and O'Hagan A-M (2013) The Irish 'Plastic Bag Levy': A mechanism to reduce marine litter? Presentation at the Marine Litter Conference in Berlin April 10-12 2013. URL [http://www.marine-litter-conference-berlin.info/userfiles/file/online/Plastic%20Bag%20Levy\\_Doyle.pdf](http://www.marine-litter-conference-berlin.info/userfiles/file/online/Plastic%20Bag%20Levy_Doyle.pdf) [14-04-2014]

<sup>67</sup> Lyons, L. (2013) DYNAMIX policy mix evaluation - Reducing plastic bag use in the UK and Ireland. URL [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) [14-04-2014]

<sup>68</sup> Withana, S., ten Brink, P., Franckx, L., Hirschnitz-Garbers, M., Mayeres, I., Oosterhuis, F., and Porsch, L. (2012). *Study supporting the phasing out of environmentally harmful subsidies*. A report by the Institute for European Environmental Policy (IEEP), Institute for Environmental Studies - Vrije Universiteit (IVM), Ecologic Institute and VITO for the European Commission – DG Environment. Final Report. Brussels. 2012.

<sup>69</sup> Input from discussions at experts' workshop, 14 April 2014, Brussels

In the **long term** (i.e. to 2050 and beyond), the situation may be different, if and where environmental policies and instruments (including taxes) and technological innovations lead to a situation where many environmental challenges have been addressed, and the shift to a low carbon, resource efficient and circular economy has been achieved. This would lead to real downward pressure on revenues from environmental taxes and charges given the smaller tax base over time. If there is environmental progress of this scale, then the rationale for environmental taxes will not be the same as it is today and new sources of government revenue will need to be explored. However, this is an issue for the long term which should be carefully monitored and kept under review to ensure timely action when necessary. In the context of the next ten to twenty years, recent studies suggest that there remains scope for increasing the scale of revenues from environmental taxes in the next decade(s)<sup>70</sup>.

## 2.2.4 Some insights and lessons on revenue use

The effectiveness of an ETR is due not just to the design and level of the taxes and charges, but also importantly to **how revenues are used**. Revenues can be used as part of a wider tax shifting programme to offset some revenue losses from a reduction in other taxes, often on labour, to raise revenues to help with fiscal consolidation, for specific environmental expenditures, or recycled back into the economy such that the overall tax burden remains the same<sup>71</sup>, or a mix of these approaches.

Revenues are sometimes **earmarked for environmental purposes**. For example in the **Czech Republic**, the majority of revenues from the air pollution charges are allocated to the State Environmental Fund (SEF) which finances programs related to air pollution, including the reduction of emissions from smaller emission sources<sup>72</sup>. In **Ireland**, revenues from the plastic bag levy are earmarked to an environment fund which is used to cover the administrative costs of the levy (around 3 per cent) and the rest is used to support waste management, recycling centres, litter clean-up and other environmental initiatives<sup>73</sup>. In **Cyprus**, three quarters of the revenues from the quarrying charge are used to reimburse environmental damage from quarrying in local communities, while the remainder is allocated to support land and habitat rehabilitation projects in abandoned quarries<sup>74</sup>. In **Latvia**, payments collected from water abstraction taxes or charges are earmarked for environmental protection and water management projects<sup>75</sup> while in **Portugal** revenues are used for activities to increase water efficiency, improve water quality and the state of ecosystems, and cover abstraction costs<sup>76</sup>.

**Such earmarking of revenues can have important environment and biodiversity benefits.** For example in **Estonia**, revenues from ‘hunting right’ fees are earmarked to a state environmental fund and used *inter alia* for the restocking and protection of wildlife, replenishing and monitoring wildlife game resources, training, research, surveying of hunting grounds and management planning; while revenues from recreational fishing charges or permits are used for regenerating natural resources,

<sup>70</sup> See for example: Eunomia and Aarhus University (2014) ‘Study on Environmental Fiscal Reform Potential in 12 EU Member States - Final Report to DG Environment of the European Commission’, 28/02/2014, [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>71</sup> Speck, S., (2013) ‘Carbon taxation – two decades of experience and future prospects’, *Carbon Management*, April 2013

<sup>72</sup> OECD (1999) ‘Czech Republic’, OECD Environmental Performance Reviews. URL (<http://www.oecd.org/env/country-reviews/2447400.pdf>) [26/02/2014]

<sup>73</sup> Lyons, L. (2013) DYNAMIX policy mix evaluation - Reducing plastic bag use in the UK and Ireland. URL [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) [14-04-2014]

<sup>74</sup> OECD/EEA database on instruments used for environmental policy and natural resources management. URL <http://www2.oecd.org/ecoinst/queries/> [17/02/2014]

<sup>75</sup> OECD/EEA (2012) Database on instruments used for environmental policy and natural resources management, URL: <http://www2.oecd.org/ecoinst/queries/>

<sup>76</sup> Country Report on Portugal (2013) for study on *Steps towards greening in the EU*, IEEP, Ecologic, IVM, BIO IS

preserving the state of the environment and repairing environmental damage<sup>77</sup>. Other examples include a fishery management fee in **Finland** which is earmarked for the preservation of fish stocks and salmon fishing licenses in **Ireland** – see Box 6.

#### Box 6: Salmon conservation in Ireland

In Ireland revenues from the sale of salmon angling and commercial salmon fishing licenses are earmarked to a Salmon Conservation Fund. The revenues are invested in the recovery of salmon fish stocks and habitats and have been seen as a major contributor to the effective conservation of wild salmon populations in Ireland.

The fund is managed by Inland Fisheries Ireland. Angling clubs, fisheries and fishermen have to send their salmon conservation project applications to the organisation in order to receive funding. After receiving the application the Inland Fisheries Ireland decides which projects receive support from the fund based on the river's conservation limit status, its water quality and the maximum potential of benefits to the river. In 2009, EUR 650,000 was collected through the salmon fishing licences and 11 projects received funding for conservation actions.

**Source:** Inland Fisheries Ireland (2010) Salmon Conservation Fund, URL: <https://www.fishinginireland.info/salmon/fund.htm> [Accessed: 30/04/2014]

In some cases, the **implementation of such fees or charges is linked to specific requirements which seek to improve the sustainable management of the natural resource**. For example in the **UK**, fishing vessel licenses set out the location of allowed fishing, the species which cannot be collected and limits on the stock that can be fished and landed<sup>78</sup>. The UK also has catch-return reporting requirements<sup>79</sup> which require anglers to report on their catches of migratory salmon and sea trout including information on the species of fish caught, the method used, the number of fish released, the weight of fish and the river where the fish was caught. Such statistical data can help in the better management of fish stocks and informs the number of licenses that can be issued. In **Estonia**, in addition to the hunting right fees mentioned above, a 'game monitoring system' is in place which requires local hunters' associations to collect and report monitoring data (observations, biological samples from hunted animals etc.) which is in turn used by the Environment Agency to evaluate the status and changes in specific populations and to set annual quotas for certain species<sup>80</sup>.

In some cases taxes are designed to be **revenue neutral, with revenues raised recycled back into the economy**. For example, the landfill tax in the **UK** was designed to be revenue neutral so that it did not have a detrimental financial impact on businesses. The cost of the tax to business was therefore offset through a reduction in the higher rate national insurance contributions paid by employers (from 10.2 per cent to 10 per cent) from April 1997. At the time of its introduction, UK Chancellor Kenneth Clarke described the landfill tax as 'a **tax on waste in order to reduce the tax on jobs...** that will cut the cost of employment by half a billion pounds and will make it cheaper for businesses to create new jobs'<sup>81</sup>. In addition, the Landfill Tax Credit Scheme (now the Landfill Communities Fund) was created by HM Revenue and Customs to channel tax receipts from landfill operators towards a wide range of environmental projects<sup>82</sup>. Since the introduction of the tax, the

<sup>77</sup> OECD (n.d.) Database on instruments used for environmental policy - Estonia, URL: [http://www2.oecd.org/ecoinst/queries/QueryResult\\_2.aspx?Key=3087ec2e-172c-4622-870e-47026737519f&QryCtx=1&QryFlag=3](http://www2.oecd.org/ecoinst/queries/QueryResult_2.aspx?Key=3087ec2e-172c-4622-870e-47026737519f&QryCtx=1&QryFlag=3) [Accessed: 30/04/2014]

<sup>78</sup> UK Government (2012) Fishing vessel licences, URL: <https://www.gov.uk/fishing-vessel-licences> [Accessed: 13/03/2014]

<sup>79</sup> UK Government (2014) Report a catch return, URL: <https://www.gov.uk/catch-return> [Accessed: 30/04/2014]

<sup>80</sup> Expert input, May 2014

<sup>81</sup> Seely, A. (2009) 'Landfill tax: introduction & early history - Commons Library Standard Note', House of Commons Library. URL <http://www.parliament.uk/briefing-papers/SN00237.pdf> [accessed 13/03/2014]

<sup>82</sup> EEA (2012) 'Overview of the use of landfill taxes in Europe'. URL [http://scp.eionet.europa.eu/publications/WP2012\\_1/wp/WP2012\\_1](http://scp.eionet.europa.eu/publications/WP2012_1/wp/WP2012_1) [accessed 10/03/2014]

total amount donated has been almost EUR 1.5 billion (GBP 1.2 billion)<sup>83</sup>. In the **Netherlands**, revenues from the energy tax are recycled back to the economy with households benefiting from lower income tax rates and higher tax free allowances (especially for pensioners) and industry benefiting from a reduction in the employers' social security contributions, an increase in tax-free allowances for SMEs, and a reduction of corporate tax rates<sup>84</sup>. There is also a tax credit in the form of a lump sum refund on households' electricity bills of currently around EUR 319<sup>85</sup>.

### 2.2.5 Some insights and lessons on administrative costs

Administrative costs of environmental taxes, charges and levies are an important factor for tax authorities, businesses and other affected actors, and thus need to be taken into consideration when discussing issues of environmental tax reform. Limited information could be identified detailing the administrative costs to public administrations or private businesses of environmental taxes and charges. Where this was available, experiences seem to indicate that these costs are often not substantial and can be factored into the design of the instrument and choice of revenue use so as to avoid net burdens for the public sector:

- In **Norway**, the administrative cost of the banded pesticide tax system has been very low, accounting for about 1 per cent of the tax revenue<sup>86</sup>, which could *inter alia* reflect the fact that Norway does not have as many pesticide products as some other European countries<sup>87</sup>.
- In **Latvia**, the administrative cost of the natural resource tax on firms is considered to be low, with exemptions granted for already well-performing firms, reducing their burden<sup>88</sup>.
- In **Sweden**, administrative costs of the CO<sub>2</sub> tax have been found to be very low, accounting for approximately 0.1 per cent of total revenues from energy and CO<sub>2</sub> taxes<sup>89</sup>. This is reportedly due to the simple system in place for tax payers<sup>90</sup>.
- In **Ireland**, costs of implementing the plastic bag levy have been modest. One-off set up costs included EUR 1.2 million for new computer systems and other resources, and advertising costs of the information campaign of EUR 358,000. Administrative costs for the levy represent approximately 3 per cent of revenues<sup>91</sup>. Retailers describe the effects of the levy as neutral or positive, as additional costs of implementation have generally been less than the savings from not having to purchase plastic bags, while implementation costs are low as

<sup>83</sup> HM Revenue and Customs (2014a) 'Landfill Tax (LFT) Bulletin January 2014'. URL <https://www.uktradeinfo.com/Statistics/Tax%20and%20Duty%20Bulletins/lft0114.xls> [accessed 10/03/2014]

<sup>84</sup> Speck S. and Jilkova J. (2009) Design of environmental tax reforms in Europe, In: *Carbon-Energy Taxation: Lessons from Europe*. Andersen MS, Ekins P (Eds.). Oxford University Press, Oxford, 24-52.

<sup>85</sup> Ministerie van Financiën (2013b) 'Wijzigingen in de belastingheffing met ingang van 1 januari 2014', [www.rijksoverheid.nl/bestanden/documenten-en-publicaties/circulaires/2013/12/19/wijzigingen-in-de-belastingheffing-met-ingang-van-1-januari-2014/eindejaarspersbericht-2013.pdf](http://www.rijksoverheid.nl/bestanden/documenten-en-publicaties/circulaires/2013/12/19/wijzigingen-in-de-belastingheffing-met-ingang-van-1-januari-2014/eindejaarspersbericht-2013.pdf) [accessed 04 March 2014].

<sup>86</sup> Valborg Kvakkestad, A. V. and Rorstad, P. K. (2002) 'Policies for multifunctional agriculture: The trade-off between transaction costs and precision' Report No. 23. Department of Economics and Social Sciences, Agricultural University of Norway, Norway

<sup>87</sup> OECD (2010) 'Taxation, Innovation and the Environment', URL: <http://www.oecd.org/env/tools-evaluation/taxationinnovationandtheenvironment.htm> [Accessed: 05/02/2014]

<sup>88</sup> K. Rademaekers, J. van der Laan, M. Smith, C. van Breugel, H. Pollitt (2011). 'The role of market-based instruments in achieving a resource efficient economy', Client: European Commission: DG Environment, Ecorys, Rotterdam. URL [http://ec.europa.eu/environment/enveco/taxation/pdf/role\\_marketbased.pdf](http://ec.europa.eu/environment/enveco/taxation/pdf/role_marketbased.pdf) [24/02/2014]

<sup>89</sup> Åkerfeldt, S. (2011) 'Swedish Energy and CO<sub>2</sub> taxes. National design within an EU framework' URL [http://www.dt.tesoro.it/export/sites/sitodt/modules/documenti\\_it/eventi/eventi/SESSION\\_I\\_-\\_SUSANNE\\_AKERFELDT\\_x6x.pdf](http://www.dt.tesoro.it/export/sites/sitodt/modules/documenti_it/eventi/eventi/SESSION_I_-_SUSANNE_AKERFELDT_x6x.pdf)

<sup>90</sup> Hammar, H. and Åkerfeldt, S. (2011) 'CO<sub>2</sub> Taxation in Sweden – 20 Years of Experience and Looking Ahead. URL [http://www.globalutmaning.se/wp-content/uploads/2011/10/Swedish\\_Carbon\\_Tax\\_Akerfeldt-Hammar.pdf](http://www.globalutmaning.se/wp-content/uploads/2011/10/Swedish_Carbon_Tax_Akerfeldt-Hammar.pdf) [03/03/2014]

<sup>91</sup> Convery, F., McDonnell, S. and Ferreira, S. (2007) 'The Most Popular Tax in Europe? Lessons from the Irish Plastic Bags Levy'. In: *Environmental and Resource Economics*, Vol. 38, No. 1, pp. 1-11

book-keeping is integrated with VAT returns<sup>92</sup>. Consumers have also indicated that, while the levy caused them some expense, they felt the impact on the environment was positive<sup>93</sup>.

**Administrative costs sometimes vary depending on the level at which they are administered.** For example in the Czech Republic, the administrative costs of air pollution charges for large emission sources are around 2.5-3 per cent of revenues, whereas administrative costs for medium-sized sources exceed revenues by more than 40 per cent, with a similar picture for revenues from non-compliance fees (given high fixed costs)<sup>94</sup>. This variation may be explained by the level at which the charge is assessed, collected and enforced for different sources – see Table 5. To improve the cost-effectiveness of the system, the revision in 2013 abolished air pollution charges on small and medium sources<sup>95</sup>.

**Table 5: Administration of air pollution charges in the Czech Republic**

	Charge Assessment	Collection & enforcement	Revenue recipient
<b>Operators of extra-large and large stationary sources</b>	Region	Czech Tax Administration	State Environmental Fund of Czech Republic
<b>Operators of medium stationary sources</b>	Municipalities with extended delegated authority	Czech Tax Administration	State Environmental Fund of Czech Republic
<b>Operators of small stationary sources</b>	Municipality	Municipality	Municipality

**Source:** Pavel, J. and Vitek, L. (2007), 'Administrative Costs of the Czech System of Environmental Charges', 8th Annual Global Conference on Environmental Taxation, Munich, <http://www.worldcotax.org/downloads/Presentations/PavelVitek.pdf> [26/02/2014]

## 2.3 Plans and processes currently driving ETR in Europe

The study examined **future plans, visions and perspectives** on ETR in eight European countries: Belgium, Denmark, France, Hungary, Italy, Portugal, Sweden and Switzerland – see Annex 2. These short cases provide insights on opportunities for further ETR in Europe and help identify like-minded countries that may be interested in pushing this agenda forward in the future.

The analysis indicates that there is **interest and progress on ETR and wider EFR at different levels**. In some countries, plans and strategies are being discussed at the **national** level. For example, in **France**, the government has recognised that the use of environmental taxation to influence behaviour is largely unexploited, and has planned a number of steps to reform environmental taxes. The 2014 finance bill which the government aimed to make the first act in the greening of French taxation<sup>96</sup>, purportedly lays the basis for '**new smart environmental taxation**'<sup>97</sup>. In **Ireland**, the National Sustainable Development Strategy proposes the development, in the long term (>10 years), of a Framework for Environmental Tax Reform which supports a 'gradual shift of the tax base away

<sup>92</sup> Convery, F., McDonnell, S. and Ferreira, S. (2007) 'The Most Popular Tax in Europe? Lessons from the Irish Plastic Bags Levy'. In: Environmental and Resource Economics, Vol. 38, No. 1, pp. 1-11

<sup>93</sup> Ibid.

<sup>94</sup> Jílková J., Pavel J., Vitek L., Slavík J., (2006), *Poplatky k ochraně životního prostředí a jejich efektivnost*

<sup>95</sup> Máca, V. (2013) 'Choosing Efficient Combinations of Policy Instruments for Low-carbon development and Innovation to Achieve Europe's 2050 climate targets. Country report: Czech Republic' under Cecilia 2050 FP7 Project. URL <http://cecilia2050.eu/system/files/CECILIA2050%20Country%20Report%20Czech%20Republic.pdf> [26/02/2014]

<sup>96</sup> Ministère de l'économie et des finances (2013) Press release : « Le Président du Comité pour la fiscalité écologique remet un rapport d'étape, en vue du PLF pour 2014 »

<sup>97</sup> MEDDE (2012) Feuille de route pour la transition écologique, URL: <http://www.developpement-durable.gouv.fr/La-feuille-de-route-pour-la.html>

from taxing what we want more of, such as investment and labour, towards taxing what we want less of, such as pollution’ as well as ‘Shifting the Fiscal Focus towards the Green Economy’<sup>98</sup>. In **Switzerland**, The Swiss Green Economy Programme, launched in 2010, identifies six areas of action, one of which focuses on ecological tax reform<sup>99</sup>, while the Swiss Federal Council’s programme for the legislative period 2011 – 2015 included the development of an ETR<sup>100</sup>.

In other countries, ETR and EFR are being discussed at **regional or local level**. For example in **Belgium** several strategic documents at both federal and regional level point to the importance of fiscal reform with a number of the documents including a focus on fiscal greening. For example, the Flemish government intends to evaluate and reform potentially environmentally harmful subsidies<sup>101</sup>, and will use the findings and methodology of a 2013 study to develop and evaluate subsidies in the coming years<sup>102</sup>. There have also been efforts at the municipal level; for example the municipality of Laakdal will start using a system of differentiated tariffs based on weighing unsorted waste and fruit/vegetable/garden waste from July 2014<sup>103</sup>, while the city of Hasselt is considering introducing a CO<sub>2</sub> tax for shops that keep their doors open during the next winter, as keeping the door open increases energy use for heating<sup>104</sup>. This reflects the division of competences between governance levels and may increase in the coming months as competence for distribution tariffs for gas and electricity move from the federal to the regional level in July 2014. Transport taxation and environmental levies are already regional competences.

A number of countries have set up **commissions or committees on (green) fiscal reform**, e.g.:

- In **Belgium** a Federal Parliamentary Commission to look at options for a fiscal reform was established in November 2012. The Commission’s final report, presented on 24 February 2014, sets out the opinions of experts consulted in the process which include harmonisation of excise duties on petrol and diesel, introducing a pay-as-you-drive system, a levy on home heating and a carbon tax<sup>105</sup>.
- In **France**, the government has set up three EFR related Commissions over the years. The most recent is the committee for environmental taxation (‘comité pour la fiscalité écologique’) which was launched in 2012 as a permanent advisory and evaluation body responsible for developing opinions on proposed environmental taxation measures and ETR related proposals<sup>106</sup>.
- In **Portugal**, the government established a ‘Commission to the reform of environmental taxation’ which aims to investigate the potential to shift the fiscal burden towards green

<sup>98</sup> Department of the Environment, Community and Local Government (2012) ‘Our Sustainable Future: a Framework for Sustainable Development in Ireland’. URL <http://www.environ.ie/en/Environment/SustainableDevelopment/PublicationsDocuments/FileDownload,30452,en.pdf> [16-04-2014]

<sup>99</sup> EEA (2011) 2011 Survey of resource efficiency policies in EEA member and cooperating countries

<sup>100</sup> Daguet, S. (2014) The Ecological Tax Reform in Switzerland – Risks and resistance. Overview Note for the ‘Environmental Tax Reform in Europe: Opportunities for the Future’ Experts’ workshop organized by IEEP, 10 April 2014, Brussels.

<sup>101</sup> Ministerie van de Vlaamse Gemeenschap (2010) ‘Milieubeleidsplan 2011-2015’. URL <http://www.lne.be/themas/beleid/mina4/leeswijzer/publicaties/Milieubeleidsplan2011-2015.pdf> [11-03-2014].

<sup>102</sup> Vlaamse Overheid (2014) ‘Milieujaarprogramma 2014’. URL <http://www.lne.be/themas/beleid/mina4/leeswijzer/publicaties/mjp2014def.pdf> [11-03-2014].

<sup>103</sup> Laakdal (2014) ‘Zet je huisvuil op dieet! Invoering DIFTAR vanaf 1 juli 2014’. URL <http://www.laakdal.be/home/zet-je-huisvuil-op-dieet-invoering-diftar-vanaf-1-juli-2014.html> [05-03-2014].

<sup>104</sup> Limburg Actueel (2014) ‘Hasselt denkt aan extra taks op geopende winkeldeuren’. URL <http://www.limburg-actueel.be/index.php?job=lve&id=7377#.UxkUMf15MrU> [05-03-2014].

<sup>105</sup> Belgische Kamer van Volksvertegenwoordigers en Senaat (2014) ‘De fiscale hervorming (Verslag namens de bijzondere commissie (Senaat en Kamer))’. URL [http://www.senate.be/www/?MIval=index\\_senate&MENUID=21315&LANG=n](http://www.senate.be/www/?MIval=index_senate&MENUID=21315&LANG=n) [05-03-2014]

<sup>106</sup> MEDDE (2013a) Le Président du Comité pour la fiscalité écologique remet un rapport d’étape, URL : <http://www.developpement-durable.gouv.fr/Le-President-du-Comite-pour-la,33619.html>

taxation, following the example of other European countries. The proposals of the Commission are expected to be put forward in September 2014.

- **Norway** is planning to establish a green tax Commission in the coming months. The date and mandate of the Commission have not yet been decided.
- **There are also initiatives underway beyond Europe.** For example a Green Tax Commission was recently set up in **Canada** with a five year mandate.

There are **several drivers behind these recent developments including the need for fiscal consolidation.** For example in 2011 and 2012, the EU's country-specific recommendations for **Denmark** highlighted the need to implement fiscal consolidation measures. In response to this, Denmark's 2012 National Reform Programme (NRP) highlighted the contribution of the *Spring Package 2.0* to the consolidation of public finances thorough the implementation of financing elements, such as higher energy taxes and the numerous other ETRs included in the package. The importance of the ETR in achieving fiscal stability was also emphasised in the 2013 Danish NRP.

Efforts have also been initiated in response to the **economic and financial crisis.** For example in 2011 in **Italy** the approval of the budget package 'Salva Italia', with the aim of strengthening Italy's position on the financial markets, introduced or revised several environment-related taxes and charges. The 2013 proposal for a fiscal delegation (Delega Fiscale) has been approved by the Senate and the Parliament. This law aims *inter alia* to introduce new green taxes and revise existing ones. Active discussions are also taking place at the national level in Italy on ETR and wider issues of environmental fiscal reform. ETR and wider environmental fiscal reform has also been an important part of the **Irish** response to the economic crisis and has seen the introduction of a number of measures including the a carbon tax on transport fuels, heating and solid fuels (2009/2010/2013), revisions to the Vehicle Registration Tax (VRT) rate and the Motor Tax rate to reflect CO<sub>2</sub> emission levels rather than engine capacity, and changes to water pricing structure.

In some countries, progress is being driven by **both economic and environmental concerns.** In **Denmark** for example, the latest package of tax reform is regarded as an opportunity to reduce the effects of the economic crisis and shift the burden of taxes from labour to environmentally harmful activities. The proposed environmental tax measures in the package form a complex approach and are expected to have a positive impact on the state of the environment - see Table 6. Even though the changes in corporate taxation are expected to increase the burden on business and industry, it is specifically noted that the direct burden on business should be seen in proportion to the green objectives achieved<sup>107</sup>. In **Hungary**, excise tax rates on diesel and LPG were increased to better reflect their polluting nature, while changes to environmental fees on products and the appointment of a National Waste Management Agency aimed to make waste recycling processes more efficient and to increase the potential to achieve positive environmental outcomes. In contrast, the increase in the rate of a special energy tax on profits of energy suppliers (known as the 'Robin Hood tax') is regarded as a solely revenue generating tool<sup>108</sup>.

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<sup>107</sup> Danish Ministry of Taxation (2009) 'Danish Tax Reform 2010' URL: [http://www.skm.dk/media/139042/danish-tax-reform\\_2010.pdf](http://www.skm.dk/media/139042/danish-tax-reform_2010.pdf) [Accessed: 05/03/2014]

<sup>108</sup> Expert input, May 2014

**Table 6: Estimated environmental effects of proposed environmental tax measures in Denmark**

	GHG gases outside ETS (Million tonnes)	Energy consumption (PJ)	RES (PJ)	Particle (Tonnes)	Nitrogen (Tonnes)	Phosphorus (Tonnes)	Organic material (Tonnes)
Energy consumption	-0.5	-16.1	5.6	-30	-	-	-
Environmental issues	0.0	-	-	-	-250	-95	-245
Vehicles	0.0	-0.9	0.0	-30	-	-	-
<b>Total effect</b>	<b>-0.5</b>	<b>-17.0</b>	<b>5.6</b>	<b>-30</b>	<b>-250</b>	<b>-95</b>	<b>-245</b>

**Source:** Danish Ministry of Taxation (2009) 'Danish Tax Reform 2010' URL: [http://www.skm.dk/media/139042/danish-tax-reform\\_2010.pdf](http://www.skm.dk/media/139042/danish-tax-reform_2010.pdf) [Accessed: 05/03/2014]

**Recommendations under the European Semester process have also supported efforts in a number of EU Member States.** For example, Country-Specific Recommendations for **Hungary** repeatedly highlighted the need to alleviate the tax burden on low-wage earners, for example by shifting part of the tax burden to environmental taxes. Hungary's 2013 National Reform Programme notes two environmental tax adjustments which seek to increase the role of consumption taxes including the increased excise duty rate on diesel fuel and increased environmental fees on products which are deemed to have a negative impact on the environment<sup>109</sup>.

Certain countries appear to **support a harmonised EU approach in some areas**, notably in relation to **energy taxation**. For example the **French** government considers that CO<sub>2</sub> emissions from the consumption of fossil energy are insufficiently taken into account in EU tax related rules and has committed to promote, in the context of ongoing discussions to revise the Energy Taxation Directive, a European carbon tax applying to sectors outside the ETS as well as an adjustment mechanism at EU borders<sup>110</sup>. In **Italy** and the **Czech Republic**, the introduction of proposed carbon taxes is linked to the transposition of the revised EU Energy Taxation Directive.

In some countries, **cooperation with other European countries**, in particular neighbouring countries, is important for progress on ETR. For example in **Portugal**, some observers maintain that further progress on ETR such as on congestion charges, air transport taxes and plastic bag charges, is hindered by a lack of action on this issue in Spain<sup>111</sup>. In some cases, countries seem to support a harmonised approach in certain areas but not in others. For example, while **Hungary** supports ongoing discussions to revise the Energy Tax Directive, experts contacted in the course of this study suggest that a harmonised approach on product taxes would be difficult given different approaches adopted by countries<sup>112</sup>.

The analysis indicates that **initiatives are currently underway in a number of areas**, in particular in the area of **energy and climate**, where for example proposals for new or revised energy and/or carbon taxes and charges are being discussed or have recently been adopted in France, Portugal, Sweden, Switzerland, Hungary, Italy and the Czech Republic. For example in **France**, the 'contribution climat-énergie' aims to progressively increase the tax rate on energy products depending on their energy content and to have part of the taxes levied on consumption of fossil

<sup>109</sup> Government of Hungary (2013) 'National Reform Programme 2013 of Hungary' URL: [http://ec.europa.eu/europe2020/pdf/nd/nrp2013\\_hungary\\_en.pdf](http://ec.europa.eu/europe2020/pdf/nd/nrp2013_hungary_en.pdf) [Accessed: 8/4/2014]

<sup>110</sup> MEDDE (2012) Feuille de route pour la transition écologique, URL: <http://www.developpement-durable.gouv.fr/La-feuille-de-route-pour-la.html>

<sup>111</sup> Input from discussions at expert workshop, 14 April 2014, Brussels

<sup>112</sup> Expert input, May 2014

fuels calculated on the basis of their CO<sub>2</sub> content. It applies to gasoline, diesel fuel, coal, natural gas and domestic heating oil. The value of a tonne of carbon will initially be set at EUR 7 per tonne in 2014, increasing to EUR 14.50 in 2015 and EUR 22 in 2016. From 1 April 2014 the tax only applies to three products. It will be extended to remaining products from 2015. The introduction of this measure follows two previous failed attempts to introduce a carbon tax in France<sup>113</sup>. The fact that this measure was passed relatively easily may indicate how in certain cases it can be easier to modify existing taxes than introduce new ones<sup>114</sup>.

**Transport and mobility** is another area where a number of efforts are being discussed, including in Denmark, France, Belgium, Hungary and Portugal. For example a political agreement was concluded between the three **Belgian** regions in January 2011, to introduce kilometre charging for trucks larger than 3.5 tonnes by 2016, based on covered distance, place, time and environmental characteristics of the vehicle<sup>115</sup>. There are also plans for an electronic vignette for light vehicles, through time-bound user rights and some rumours of plans to revise company car taxation. In **Denmark**, the *Spring Package 2.0* includes plans to introduce road pricing for lorries, increase tax on cars without 'particle filters', company cars and registration tax for taxis, and introduce annual tax on vans depending on fuel consumption standards.

There are also developments in a number of other areas including:

- **Resource pricing, notably on water:** For example in **Ireland**, a water charging system based on metered use (above a free allowance) and conservation measures is to be introduced from October 2014 following the transfer of water services responsibilities from local authorities to the State company Irish Water which began in January 2014.
- **Waste:** For example, **Denmark** plans to increase the tax on waste, and in **Italy** a revised tax on municipal waste (TARES) was introduced from 1 January 2013. Waste is also one of the focus areas of current discussions on ETR in Portugal.
- **Products:** For example, in **Hungary**, a 'Green Tax Act' introduced changes to environmental fees on products (including batteries, packaging materials, electric or electronic products, tyres and plastic bags) and the appointment of a new National Waste Management Agency. In **Sweden**, the Government has set up a Committee to investigate the need for new economic instruments in the area of chemicals to reduce the presence of / risk of exposure to and spread of, environmental and hazardous emissions<sup>116</sup>.
- **Biodiversity:** Biodiversity is one of the focus areas of current discussions on ETR in **Portugal**. In **Italy**, an Environmental Bill which is currently under parliamentary scrutiny includes a proposal to set up a natural capital commission<sup>117</sup>. It is likely that new incentives in the field of biodiversity (including productive 'natural assets' such as agricultural land/soil, forestry and fisheries) will arise as countries explore how to meet their biodiversity obligations under the CBD, in particular on addressing incentives harmful to biodiversity.

Some efforts are underway in relation to cross-cutting priorities such as the **circular economy**. For example in **Belgium**, in 2012 Flanders adopted a Materials Programme with a number of actions including one which aims to 'Construct a green fiscal policy to promote a circular economy'. The

<sup>113</sup> Withana, S., ten Brink, P., Kretschmer, B., Mazza, L., Hjerp, P., Sauter, R., (2013) *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. Final Report. Brussels. 2013.

<sup>114</sup> Input from discussions at expert workshop, 14 April 2014, Brussels

<sup>115</sup> Transport and Mobility Leuven (2012) 'The Implementation of Kilometer Charging and a Vignette in Belgium'. URL Source: <http://www.tmlleuven.be/project/kmheffingenwegenvignet/home.htm> [05-03-2014].

<sup>116</sup> Swedish Government (2013) 'Budget Statement' URL: <http://www.government.se/content/1/c6/22/37/15/adf87802.pdf> [Accessed: 28/03/2014]

<sup>117</sup> Input from discussions at experts' workshop, 10 April 2014, Brussels

Brussels Capital Region is currently developing a strategy on circular economy and the Walloon region has a regional development strategy ('Marshall Plan 2022') which involves circular economy aspects. At the Federal level, a roadmap on the circular economy to support and complement actions at the regional level is being developed. One of the recommendations of a working group set up to develop the federal roadmap is a proposal for action on green taxation<sup>118</sup>.

There are also efforts underway in relation to **wider issues of reforming environmentally harmful subsidies (EHS)**. For example in **Flanders** (Belgium), the Flemish government intends to evaluate and reform potentially EHS, commissioned studies in 2012-2013 to explore these issues and is expected to use the results of these studies to develop and evaluate subsidies in the coming years<sup>119</sup>. In **Italy** an Environmental Bill connected to the Stability Law which is currently under parliamentary scrutiny includes a proposal (not yet approved) to develop a catalogue of EHS and environmentally friendly subsidies<sup>120</sup>.

Wider discussions of drivers of ETR, possibilities for cooperation and windows of opportunity are discussed in the next chapter in more detail.

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<sup>118</sup> De Schoenmakere, M., (2014) Circular economy in Belgium, Presentation at experts' workshop on circular economy, 8 May 2014, Brussels

<sup>119</sup> Vlaamse Overheid (2014) 'Milieujaarprogramma 2014'. URL <http://www.lne.be/themas/beleid/mina4/leeswijzer/publicaties/mjp2014def.pdf> [11-03-2014]

<sup>120</sup> Input from discussions at experts' workshop, 10 April 2014, Brussels

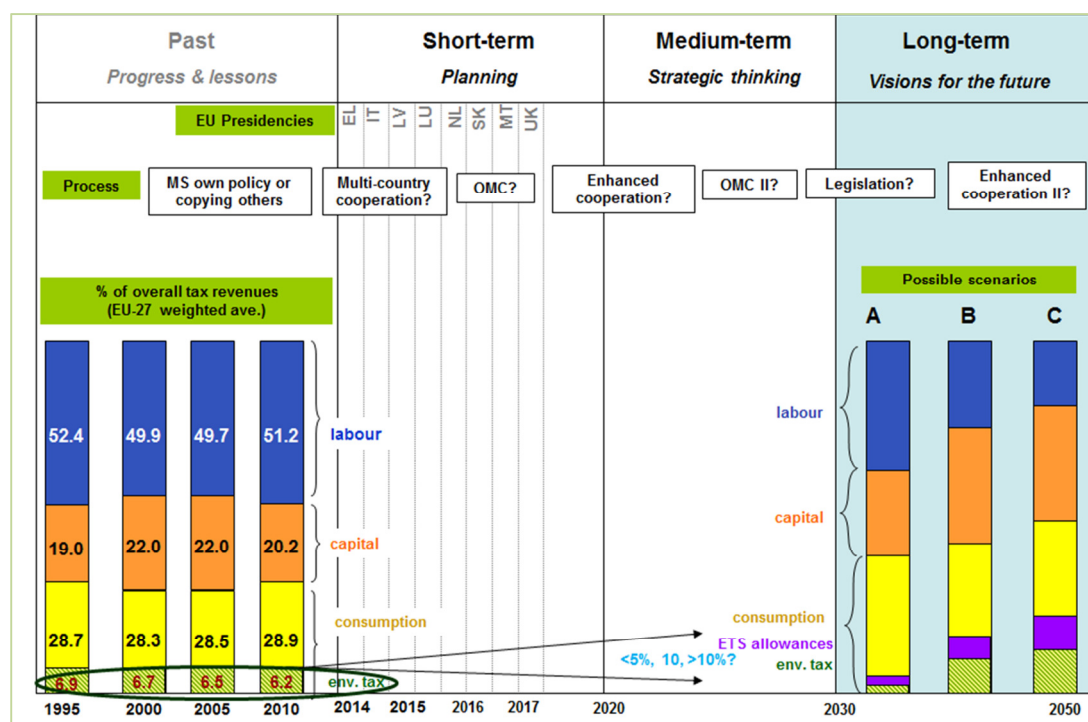
### 3 Motivating progress on ETR in Europe

#### 3.1 Potential scenarios and approaches for the way forward on ETR in Europe

The number of countries and regions engaging in some form of ETR continues to increase. As the benefits of ETR become better understood, one can expect more countries to join the ranks and for those that have implemented ETR to broaden, deepen and fine-tune their systems. Different scenarios for the development of ETR in Europe can be envisaged over time – see Figure 7 for a simplified illustration.

At the moment, environmental taxes account for around six per cent of total tax revenues among EU Member States<sup>121</sup>. One possible scenario as one looks to the future would be that the share of tax revenues from environmental taxes decreases over time (e.g. falls to less than five per cent); other potential scenarios could foresee a growth in the share of environmental tax revenues, e.g. to increase to near 9-10 per cent of total revenues as is already the case in some countries such as the Netherlands or to rise above 10 per cent under a more ambitious and broad use of ETR. When considering the development of environmental taxes over time, one should keep in mind the issue of revenue erosion which as discussed in section 2.2.3, could be a concern from a finance perspective whereas from an environmental perspective a lack of revenue erosion could be a concern, with prospects varying between the short to medium term and the long-term.

**Figure 7: Possible future scenarios for ETR<sup>122</sup>**



**Source:** Adapted from Bassi, S., ten Brink, P., Pallemmaerts, M. (IEEP) and von Homeyer, I. (Ecologic) (2009) Feasibility of implementing a radical ETR and its acceptance'. Report under task C of the 'Study on Tax Reform in Europe over the Next Decades: Implication for the Environment, for Eco-Innovation and for Household Distribution'

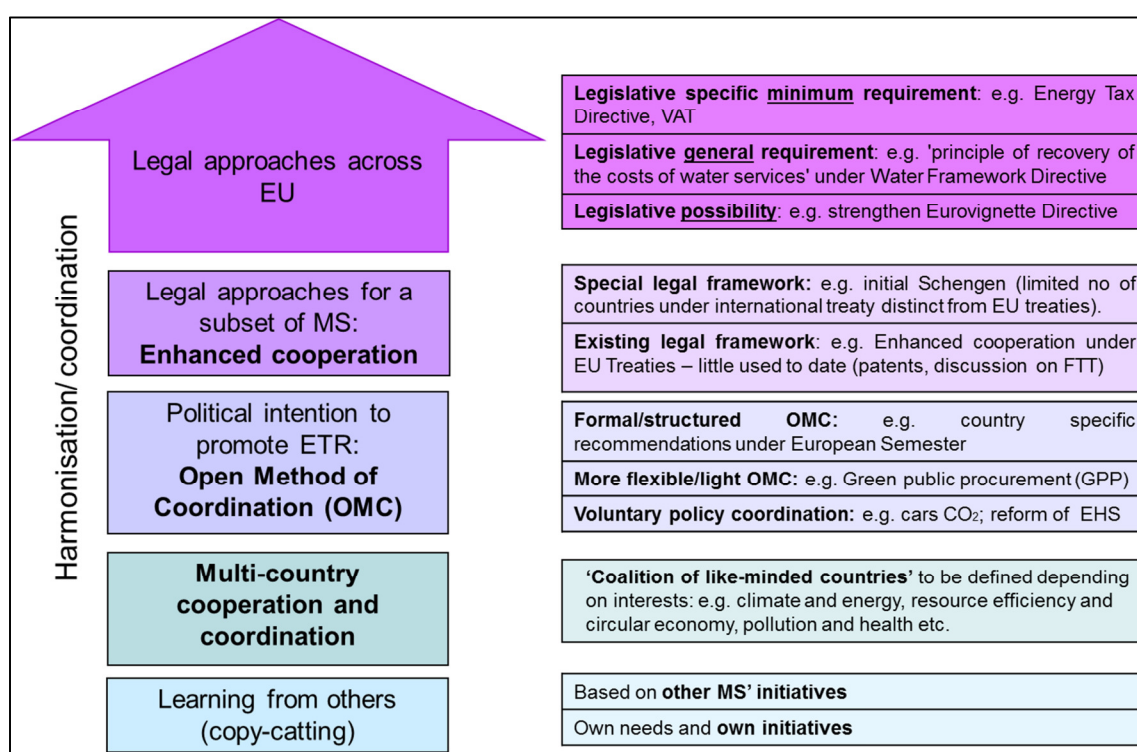
<sup>121</sup> Eurostat (2013) Taxation trends in the European Union – Data for the EU Member States, Iceland and Norway, 2013 edition, Taxation and customs union, [http://epp.eurostat.ec.europa.eu/cache/ITY\\_OFFPUB/KS-DU-13-001/EN/KS-DU-13-001-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-DU-13-001/EN/KS-DU-13-001-EN.PDF)

<sup>122</sup> The feasibility of the scenarios needs to be assessed, particularly to 2050 in a low carbon economy which would have implications for revenues raised and the potential tax base of environmental taxes.

There are a range of different approaches to ETR. Historically (with some exceptions for specific taxes), countries have been progressing on their own, in some cases inspired by actions in neighbouring countries or held back or limited by a lack of action in other countries. In some cases progress has been driven by EU legislation both explicitly (e.g. Energy Tax Directive, Eurovignette Directive) or implicitly (e.g. requirements for cost recovery under the Water Framework Directive and related infringement proceedings<sup>123</sup>) and encouraged through processes such as the European Semester. This has led to a **significant diversity in practices** among European countries, which to some extent may be inevitable and appropriate given different national and local interests and circumstances. However, this diversity can also have implications for a level playing field in Europe and could lead to competitiveness problems or less effective results in certain areas.

Figure 8 presents **different approaches to the development of ETR** which have implications for the level of harmonisation between different countries and hence the extent to which there is a level playing field. The approach taken depends on the issue at hand and could include a small group of countries ‘copycatting’ and learning from each other, an informal form of coordination or cooperation, a more structured collaboration and benchmarking (e.g. through the ‘open method of coordination (OMC)’), a more formal approach through enhanced cooperation among a wider group of countries, or potentially legislative action in certain areas. One should keep in mind the wider global context and be realistic about the scale of the potential for ETR and the scale of its effect, keeping in mind that ETR is one element in a wider policy mix. This study focuses on prospects for further ETR under the multi-country cooperation and coordination approach in Europe as discussed below.

**Figure 8: Possible approaches for further ETR in Europe**



**Source:** Adapted from Bassi, S., ten Brink, P., Pallemarts, M. (IIEP) and von Homeyer, I. (Ecologic) (2009) Feasibility of implementing a radical ETR and its acceptance'. Report under task C of the 'Study on Tax Reform in Europe over the Next Decades: Implication for the Environment, for Eco-Innovation and for Household Distribution'

<sup>123</sup> Expert input, April 2014

A voluntary, informal approach of **multi-country cooperation and coordination** could be useful to ensure more effective instruments in certain circumstances. Given that the fiscal unanimity rule often prevents meaningful action on ETR in the EU, some form of enhanced cooperation or '**coalition of like-minded countries**' could be explored rather than mandatory approaches. For example, approaches such as the Irish plastic bag levy are being encouraged across the EU and illustrate that a formal approach is not always necessary to achieve progress. Cooperation and coordination between countries can be helpful in **building support** for ETR by overcoming countries' reluctance to be the 'first mover' and illustrating to the public that other countries are interested in pursuing a similar path<sup>124</sup>. **Informal exchanges of national experiences and plans** can also be helpful in sharing lessons between countries, e.g. lessons from overcoming opposition to the introduction of a plastic bag charge in Ireland could be useful to other countries considering similar measures such as Portugal<sup>125</sup>.

**Different forms of cooperation are likely to be needed** for different resources, materials, pollutants and issues to be addressed. In some cases cooperation could potentially lead to harmonised or synchronised (i.e. an agreed minimum level or threshold) approaches between countries, while in others they would be about sharing of information on experiences and plans to ensure the design of instruments takes into account relevant factors. In some cases, this cooperation could be linked to implementation of EU policies where Member States have existing information and discussion platforms (e.g. Working Groups under the Common Implementation Strategy of the Water Framework Directive).

Cooperation is also likely to be more useful in certain circumstances, in particular depending on the ease with which a given tax or charge could be avoided, e.g. through **trade** (e.g. waste exports – see Box 7) or **movement of consumers** (e.g. to avoid an airline tax or a fuel tax)<sup>126</sup>. For example, in the **UK**, a Fuel Duty Escalator was introduced which attempted to promote new low-carbon fuels and transport technologies. The Duty was in place for seven years and contributed to a reduction in the rate of growth of road traffic in the UK by 13 per cent between 1993 and 1999. However, the price of fuel became out of line with prices in Europe and led to strikes by lorry drivers which eventually led to the escalator being abolished in 1999<sup>127</sup>. In contrast, it is more difficult to avoid taxes/charges on resources/materials/products which are consumed locally (e.g. plastic bags). Thus such instruments are less complicated to introduce in isolation (i.e. do not need cooperation or collaboration between countries), although some form of information exchange between countries on experiences and lessons learnt could still be useful.

#### **Box 7: Landfill tax and waste exports in the UK**

The UK landfill tax was introduced in 1996. It has two rates, a 'lower rate' which applies to less polluting (inactive/inert) wastes and a 'standard rate' which is applied to all other wastes (including general/unsorted municipal waste). Although untreated mixed municipal waste may not be exported for disposal (i.e. landfill), waste that is subject to even minimal pre-treatment to convert it to refuse-derived fuel (RDF) may be exported for energy recovery in facilities that meet the requirements of the Waste Framework Directive.

Evidence suggests that the amount of RDF produced in and exported from the UK each year has increased whilst the rate of the landfill tax has also increased. In 2011, around 272,000 tonnes of RDF were exported; which rose to 892,900 tonnes in 2012, and 1,586,946 tonnes in 2013 (Letsrecycle.com, 2014). As the landfill tax will not fall below GBP 80 (EUR 100) per tonne until 2020 at the earliest, export volumes of RDF are also

<sup>124</sup> Input from discussions at expert workshop, 10 April 2014, Brussels

<sup>125</sup> Input from discussions at expert workshop, 10 April 2014, Brussels

<sup>126</sup> Input from discussions at expert workshop, 10 April 2014, Brussels

<sup>127</sup> Green Fiscal Commission (2010) Reducing Carbon Emissions Through Transport Taxation, Briefing Paper Six Input from expert consultations carried out for study, 17 February 2014

expected to continue increasing in the short term (Associate Parliamentary Sustainable Resource Group, 2013 and CIWM, 2013), at least until the UK increases its own energy-from-waste capacity. In 2013, 43 UK firms chose to export RDF to continental European destinations, compared with 25 during 2012. Eight European countries received RDF exported from the UK in 2013: the most significant destinations were the Netherlands (1,175,000 tonnes), Germany (181,000 tonnes) and Denmark (119,941 tonnes), with Sweden, Estonia, Ireland, Latvia and Norway also receiving UK exports (Letsrecycle.com, 2014).

The existence of excess capacity in easily accessible markets, e.g. the Netherlands which has an estimated 15 per cent over-capacity for energy-from-waste (Associate Parliamentary Sustainable Resource Group, 2013), has resulted in reduced costs of sending RDF to be incinerated abroad. Countries with excess capacity need to import RDF to keep incinerators running efficiently (or to meet contractual obligations), and 'gate fees' are reduced so it remains an attractive option for exporting countries. For example, in 2013 the UK landfill tax was at GBP 72 (EUR 90) per tonne, whereas Norwegian incinerators were charging fees as low as NOK 400 (GBP 43, EUR 53.8), making exports economically attractive to UK waste producers (OECD, 2013). Estimates suggest that around 36,000 tonnes of waste were sent from the UK to Norway for energy recovery in 2013 (Environment Agency, 2014). This has led to a sub-optimal situation which goes against the waste hierarchy.

#### Sources:

Associate Parliamentary Sustainable Resource Group (2013) 'Exporting Opportunity? Putting UK waste to work at home and abroad'. URL <http://www.sita.co.uk/downloads/APSRG-ExportingOpportunityReport-web.pdf> [accessed 23/04/2014]

Chartered Institution of Wastes Management (CIWM) (2013) 'Research into SRF and RDF Exports to Other EU Countries: Final Technical Report'. URL

[http://www.ciwm.co.uk/web/FILES/Technical/Research\\_into\\_SRF\\_and\\_RDF\\_Exports\\_to\\_Other\\_EU\\_JULY\\_2013.pdf](http://www.ciwm.co.uk/web/FILES/Technical/Research_into_SRF_and_RDF_Exports_to_Other_EU_JULY_2013.pdf) [accessed 23/04/2014]

Environment Agency (2014) 'RDF Exports data 2013' URL <http://www.letsrecycle.com/news/latest-news/energy/resolveuid/09919a50fb776ecbaacd1a488d881acb> [accessed 01/05/2014]

Letsrecycle.com (2014) 'RDF exports top 1.5 million tonnes in 2013'. URL <http://www.letsrecycle.com/news/latest-news/energy/rdf-exports-top-1.5m-tonnes-in-2013> [accessed 28/04/2014]

OECD (2013) 'Working Party No. 2 on Competition and Regulation: WASTE MANAGEMENT SERVICES: Norway'. URL [http://www.konkurransetilsynet.no/Global/publikasjoner/OECD/DAF-COMP-WP2-WD\(2013\)43-ENG.pdf](http://www.konkurransetilsynet.no/Global/publikasjoner/OECD/DAF-COMP-WP2-WD(2013)43-ENG.pdf) [accessed 01/05/2014]

There are a number of cases where a **lack of cooperation or coordination between countries led to a sub-optimal solution**. Some examples of this are provided in Boxes 8 and 9 below. These examples illustrate the value of some form of cooperation or coordination between relevant countries to ensure the more effective application of environmental taxes and charges in certain areas. There are also some cases where **cooperation between countries is taking place and has been successful**, for example, the largest harbours in Europe - Amsterdam, Rotterdam, Antwerp and Hamburg are co-operating to harmonise port reception facilities<sup>128</sup>. Such examples illustrate that there is potential for cooperation and benefits to be had from such approaches.

As noted by the **European Commission** 'to achieve a socially optimal level of environmental taxation, to benefit from the experiences of those Member States that have made intensive use of environmental taxes and to contribute to a level playing field for EU businesses, **EU wide and international coordination should be enhanced**'<sup>129</sup>.

#### Box 8: Air passenger duties in the Netherlands and Germany

The Netherlands introduced an air passenger duty on 1 July 2008 which was removed again after one year<sup>130</sup> due to concerns about passengers diverting to airports in neighbouring Germany. Shortly thereafter, an air

<sup>128</sup> Input from discussions at experts' workshop, 10 April 2014, Brussels

<sup>129</sup> European Commission (2012), Growth-friendly tax policies in Member States and better tax coordination in the EU. (COM (2011)815), VOL. 5/5 - ANNEX IV to Commission Communication on Annual Growth Survey 2012.

<sup>130</sup> The tax was first set to zero and thus effectively phased out as of 1 July 2009 and then ultimately abolished as of 1 January 2010 (PWC, 2013).

passenger duty was introduced in Germany which came into force on 1 January 2011 (Expert input, 2014). The duty is levied on airlines for all passengers departing from German airports. Rates vary depending on which of three zones the final destination falls within; rates for the three zones currently range from EUR 7.50 to EUR 42.18. After the introduction of the German tax, there has been some (anecdotal) evidence of German passengers increasingly booking flights that depart from Dutch or Belgian airports. Austria introduced a similar duty in April 2011, allegedly due to 'pressure' from Germany, which has consequently meant there has been no discussion about passengers diverting to Austrian airports as a result of the German duty (STERN, 2011).

**Sources:**

Input from discussions at experts' workshop, 10 April 2014, Brussels

STERN online edition (2011), 'Steuer treibt Fluggäste ins Ausland', <http://www.stern.de/reise/service/luftverkehrsabgabe-steuer-treibt-fluggaeste-ins-ausland-1708071.html> [accessed 11/04/2014]

<https://www.iata.org/publications/airlines-international/june-2011/Pages/taxation.aspx> [accessed 11/04/2014]

**Box 9: Incineration taxes in Sweden and Norway**

Sweden introduced a tax on the incineration of household waste on 1 July 2006, and abolished it on 1 September 2010. The tax rate was calculated based on the electrical production (i.e. level of energy recovery) of energy-from-waste facilities. Towards the end of its lifetime, the tax was EUR 49 (SEK 487) per tonne for facilities without any electrical production; at 15 per cent electricity production, the tax was around EUR 8.3 (SEK 83) per tonne, and at 20 per cent around EUR 7.6 (SEK 76) per tonne (Watkins et al, 2012). The Norwegian government introduced a disposal tax on landfilling and incineration in 1999. The incineration tax was altered in 2004 to better take into account emissions (OECD, 2013), and was then abolished on 1 October 2010 (when the tax was around EUR 11.5 per tonne). This was partly in response to the removal of the Swedish tax, but it was also claimed that the tax was a rather blunt instrument and was ineffective in comparison with other environmental taxes (Waste-to-energy Research and Technology Council, 2010).

The Swedish tax was deemed to have had an 'insignificant effect' on behaviour and also to have led to unnecessary transportation of household waste (Government Offices of Sweden, 2009). The Norwegian tax, which was higher than that charged by the most efficient energy-from-waste facilities in Sweden, was deemed to have led to the export of waste to Swedish incinerators (Waste-to-energy Research and Technology Council, 2010); although some observers suggest that Norwegian incinerators could still compete due to the transportation cost of exports (OECD, 2013). Sweden also has significantly higher incineration capacity, and therefore higher demand for combustible waste to use as fuel, which contributed to increased exports from Norway to Sweden (OECD, 2013).

**Sources:**

Government Offices of Sweden (2009) 'New green cars to be exempted from vehicle tax'. URL <http://www.government.se/sb/d/11760/a/122175> [accessed 28/04/2014]

OECD (2013) 'Working Party No. 2 on Competition and Regulation: WASTE MANAGEMENT SERVICES: Norway'. URL [http://www.konkurransetilsynet.no/Global/publikasjoner/OECD/DAF-COMP-WP2-WD\(2013\)43-ENG.pdf](http://www.konkurransetilsynet.no/Global/publikasjoner/OECD/DAF-COMP-WP2-WD(2013)43-ENG.pdf) [accessed 01/05/2014]

Waste-to-energy Research and Technology Council (2010) 'Sweden and Norway in harsh competition for the incineration of waste'. URL <http://www.wtert.eu/Default.asp?Menu=18&NewsPPV=7881> [accessed 28/04/2014]

IEEP, Eunomia, BIO IS, Umweltbundesamt, Ecologic and Arcadis (2012) 'Economic instruments to improve waste management', Final report, Contract ENV.G.4/FRA/2008/0112, European Commission (DG ENV), Annex 1'. URL [http://ec.europa.eu/environment/waste/pdf/annexes\\_report10042012.zip](http://ec.europa.eu/environment/waste/pdf/annexes_report10042012.zip) [accessed 11/03/2014]

### 3.2 Current drivers and windows of opportunity for ETR collaboration

The study team has identified a number of **drivers or windows of opportunity** that can be used to push the ETR agenda forward in the future and/or to develop multi-country collaborations. These include **horizontal themes** of:

- **Fiscal consolidation**
- **Competitiveness concerns**
- **Jobs, equity, social costs and benefits**

In addition, **specific themes** that could become the focus for a ‘coalition of like-minded countries’ include (see section 3.3 for details):

- **Resource efficiency and the circular economy:** with potential focus areas on **plastic bags, waste, and water pricing**
- **Climate change and energy:** with a potential focus area on next steps with **carbon and energy taxes**
- **Transport and mobility:** with potential focus areas on **fuel taxation** (petrol versus diesel, level of tax rates), **vehicle taxation** (registration and circulation taxes, including company cars), infrastructure charging (e.g. road pricing), **air passenger taxes** (e.g. between neighbouring countries), and reduce or phase out **kerosene tax exemptions** (e.g. for aviation, shipping/fishing, agriculture)
- **Pollution and pressures on environment, biodiversity and health:** potential focus areas include **marine litter and pesticides**.

These issues are discussed below.

### 3.3 Horizontal themes to motivate progress

#### 3.3.1 *Fiscal consolidation as a new window of opportunity for ETR*

In the current political climate, when governments are very much focused on balancing budgets and keeping down national debt, opportunities for raising revenues through ETR have gained increasing prominence both in political discussions (e.g. within the European Semester) and in practice (e.g. in Ireland). Given the scale of the **fiscal consolidation** challenge in many European countries, it is likely that revenue raising needs will remain a political necessity for the foreseeable future in many European countries and not just the geographic periphery that has captured the attention of the financial markets.

Available literature suggests that consumption taxes (including environmentally-related taxes) are less detrimental to growth than other forms of taxes such as income taxes, and thus can not only contribute to consolidation needs but also offer additional benefits<sup>131</sup>. Increasing environmental taxes and wider EFR (i.e. tax reform and subsidy reform as part of a wider fiscal reform agenda) can thus be seen as useful tools to contribute to fiscal consolidation through medium-term effects on growth, income, productivity and tax receipts<sup>132</sup>. Such instruments have already been used in some countries (e.g. higher fuel taxes, introduction of a CO<sub>2</sub> tax and charges for water use Ireland) as part of their response to their fiscal consolidation strategies. Fiscal consolidation needs can thus be seen as a **useful driver and a new window of opportunity for the ETR agenda among interested countries**. A working paper for DG TAXUD found that ‘the use of green taxes for fiscal consolidation would be more effective where there to be close coordination across EU countries’<sup>133</sup>, given spill over effects between countries.

Countries could come together to **exchange information**, and **learn from each other’s experiences** in using ETR for fiscal consolidation purposes which can offer **inspiration and inform their own**

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<sup>131</sup> See for example: DG TAXUD (2013) Tax reforms in EU Member States 2013 - Tax policy challenges for economic growth and fiscal sustainability, Working Paper No. 38 - 2013

<sup>132</sup> European Commission (2012), Growth-friendly tax policies in Member States and better tax coordination in the EU. (COM (2011)815), VOL. 5/5 - ANNEX IV to Commission Communication on Annual Growth Survey 2012.

<sup>133</sup> Barrios, S., Pycroft, J., Saveyn, B., (2013) The marginal cost of public funds in the EU: the case of labour versus green taxes, DG TAXUD Taxation Papers, Working Paper No. 35 - 2013, [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/gen\\_info/economic\\_analysis/tax\\_papers/taxation\\_paper\\_35\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/gen_info/economic_analysis/tax_papers/taxation_paper_35_en.pdf) [accessed 23/5/2014]

**efforts** in this regard and point at others' practice to facilitate domestic support for action. This could build on lessons from countries where fiscal consolidation concerns have driven reform such as Ireland and Turkey. In Ireland for example, the package of measures adopted by the government to respond to the financial and economic crisis in 2007-2008 included a number of environmental taxes and charges including a carbon tax, a domestic water pricing system, changes to the basis for vehicle registration tax (VRT) and annual motor tax, as well as a site-value tax on land. Insights from Ireland's experience could be invaluable to others considering similar packages of fiscal reform such as Portugal and Italy. Similarly there are arguably merits for a wider set of countries to explore the potential for ETR to support fiscal consolidation including (but not limited to) Greece, Belgium, France, Portugal, Italy, Hungary and the UK. Key windows of opportunity include discussions on national budgets. The European Semester process could also be used as a regular (annual) avenue for encouraging action as a type of Open Method of Coordination (OMC) type approach.

### 3.3.2 Cooperating to avoid competitiveness impacts

**Competitiveness** impacts are a key concern when introducing ETR, particularly for industries whose products compete in international markets. These concerns have often led to the introduction of partial or full exemptions for certain sectors in the economy. Such exemptions, also known as mitigation measures (i.e. mitigating impacts by reducing taxes) or as compensation measures such as refund systems, reduce the environmental effectiveness of the tax by reducing the level of incentives for investment and consumption<sup>134</sup>.

While opposition on the basis of competitiveness is sometimes misplaced, it is still **one of the major obstacles to meaningful ETR in several areas and thus needs to be carefully examined**<sup>135</sup>. Competitiveness concerns need to be considered in the wider context of impacts on a nation's overall competitiveness, the competitiveness of a particular sector and of individual enterprises within the economy, as **competitiveness is defined differently at each level** – see Box 9.

#### Box 10: Competitiveness: Some definitions and issues to keep in mind

The OECD states that competitiveness denotes 'the degree to which a country can, under free and fair market conditions, produce goods and services which meet the test of international markets, while simultaneously maintaining and expanding the real incomes of its people over the longer term' (OECD 2003). Competitiveness is defined differently at the national, sector and firm level.

- **At the firm (and site) level** competitiveness can broadly be seen as 'being able to produce products [or provide services] that are either cheaper or better than those of other firms [in a competitive market]' (OECD 2003). The issue is therefore about price and quality, measured in sales and within global markets, the level of trade. Note that a product can be more expensive yet still competitive. The impact is then on the product margins/profitability but not one of competitiveness. In practice, 'competitiveness' is used as a proxy for 'profitability'. Carbon-energy taxes can and will affect short-term firm profitability, generally negatively, but this does not necessarily lead to an effect on competitiveness as such. That depends on the scale of the effect (i.e. whether there is still a sufficient rate of return from competing in markets) and the relative price effect (i.e. whether prices can compete).
- **At a sector level** competitiveness translates into maintaining or expanding market share – which can be a national or international issue (OECD 2003). The sector performance can be seen as an aggregate of the performance of all firms. The OECD, after recognising that exemptions and tax reductions avoided competitiveness effects, observe that: '...skills and capital investment largely determine sectoral competitiveness' (OECD 2001, pp. 10).

<sup>134</sup> OECD (2001) *Environmentally Related Taxes in OECD Countries: Issues and Strategies*, Paris, France: OECD, [http://www.peblids.org/files/Publications/OECD/OECD\\_Environmentally\\_Related\\_Taxes.pdf](http://www.peblids.org/files/Publications/OECD/OECD_Environmentally_Related_Taxes.pdf)

<sup>135</sup> Input from discussions at expert workshop, 10 April 2014, Brussels

- **At a national level**, competitiveness is seen as equivalent to the ability to produce goods and services in internationally competitive markets and have a sustainable rise in standards of living and low level of involuntary unemployment (OECD 2003 and EC 2007). This is beyond the sector that faces the carbon-energy tax and considers impacts across different sectors in the economy.

Issues affecting competitiveness at the international level include trade barriers, import tariffs and exchange rate variation (Ekins and Speck 2012). At the national level, issues include wages, availability, and costs of inputs, including transport costs, taxes, subsidies and regulation. There are natural comparative advantages that lead to competitiveness advantages, e.g. abundance of land, fertile soil, fuel and quality raw materials for products and processes, infrastructure and production methods. Similarly skills and education can affect productivity, innovation and hence competitiveness, as can the rule of law and corruption which can facilitate or distort markets, market access and pricing. Carbon and energy pricing is therefore one factor among many that affect competitiveness.

In addition to distinguishing between competitiveness at the national, sector and firm level, it is useful to distinguish between short-term competitiveness and long-term competitiveness. Taxes may create a burden in the short term but serve as a catalyst for innovation that supports long-term improvements including in the use of resources, help to reduce costs of factor inputs, product price and hence support profit margins and eventually competitiveness in the long term. It is also useful to distinguish between different players in a sector as a new tax burden will burden efficient and well-managed firms less than it will affect inefficient poorly managed ones.

#### Sources:

Ekins P. and S. Speck (2012) Impact on competitiveness: what do we know from modelling? Chapter 21 in Milne and Anderson 2012.

European Commission (EC) (2007) "Raising productivity growth: key message from the European Competitiveness Report 2007 (COM (2007)666). Commission staff working document SEC (2007) 1444. Brussels Belgium

OECD (2003) Environmental taxes and competitiveness: An Overview of Issues, Policy options and Research Needs, Organisation for Economic Co-operation and Development, Paris

OECD (2001) *Environmentally Related Taxes in OECD Countries: Issues and Strategies*, Paris, France: OECD, [http://www.pebls.org/files/Publications/OECD/OECD\\_Environmentally\\_Related\\_Taxes.pdf](http://www.pebls.org/files/Publications/OECD/OECD_Environmentally_Related_Taxes.pdf)

Withana, S., ten Brink, P., Kretschmer, B., Mazza, L., Hjerp, P., Sauter, R., (2013) *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. Final Report. Brussels. 2013.

There is a need for an **improved evidence base** on the economic and competitiveness impacts of ETR. The available literature on concerns about negative impacts of environmental regulation on competitiveness, exports, trade flows, and relocation of companies does not reveal statistically significant or robust evidence to support the claim<sup>136</sup>. Evidence seems to suggest that environmental policies (including taxes) can benefit the environment without having a harmful impact on the economy. The main reason for this lack of effect has been the 'successful' integration of competitiveness concerns into the design and implementation of policy instruments to date which

<sup>136</sup> See for example: Jaffe A., Peterse P., Portney P., and Stavins R. (1995) Environmental regulation and the competitiveness of US manufacturing: What does the evidence tell us? *Journal of Economic Literature*, XXXIII (March) 132-63; Smarzynska B., and S-J Wei (2001) Pollution havens and foreign direct investment: dirty secret or popular myth? World Bank, Policy Research Working Papers 2673, Washington, DG, US: World Bank; Sijm J.P.M. et al (2004) Spill overs of climate policy. An assessment of the incidence of carbon leakage and induced technological change due to CO2 abatement measures. Netherland Research Programme on Climate Change Scientific Assessment and Policy Analysis. Netherlands: ECN; Oikonomou V., Paerl M., and Worell E. (2006) Climate policy: bucket or drainers?, *Energy Policy*, 34, 3656-68; OECD (1996) *Implementation Strategies for Environmental Taxes*, Paris, France: OECD; Ekins P. and S. Speck (2012) Impact on competitiveness: what do we know from modelling? Chapter 21 in Milne and Anderson 2012.

have reduced the risk of their occurrence<sup>137</sup>. The **available literature is not sufficient to clearly claim that ETR either supports or hinders competitiveness and there is a need for further evidence on this.**

Furthermore, a range of other factors (such as **impacts on innovation**) are often not fully taken into account in assessments of the effects of environmental taxes, charges and levies on competitiveness which can underestimate the overall effects of these instruments. As noted by the OECD, 'environmentally related taxes can provide significant incentives for innovation, as firms and consumers seek new, cleaner solutions in response to the price put on pollution'<sup>138</sup>, although impacts depend on various factors including the tax design, predictability, wider context including other policies and support mechanisms in place etc. For example in **Sweden**, revenues from the NOx charge are recycled back to polluting companies in relation to the amount of energy produced by the specific plant. This has provided a strong incentive for innovation and a reduction in emissions among liable firms. The refund mechanism also made the instrument more acceptable to firms<sup>139</sup>. In the **US**, revenues from a small but rapidly rising charge on CFCs were used to invest in innovation in substitutes. Although this charge is currently being phased out, it is nevertheless considered an effective use of revenues which has driven innovation in the sector with minimal costs to the public purse (i.e. relating to monitoring, regulating etc.)<sup>140</sup>. In **Denmark**, revenues from the tax on solvents have been used for innovation in substitutes.

It is interesting to note that countries with strong competitiveness performance and innovation include those with the highest shares of environmental taxes. For example, countries identified by the European Commission as consistent performers in all areas of competitiveness include Sweden, Belgium, Finland, Germany, Luxembourg, Denmark, Austria, the Netherlands, Ireland, the UK, France and Spain<sup>141</sup>, while those identified as 'innovation leaders' in 2014 include Denmark, Finland, Germany and Sweden (see Figure 9). These high achievers are also among the countries that have engaged in ETR, with some exceptions (notably Spain and France)<sup>142</sup>. Although this is a comparison which is too approximate to imply any sort of causality, it is interesting that ETR vanguard countries are also among the innovation front runners and do not appear to have been hampered or held back by policies in place (including environmental taxes). This is an issue that could merit **further investigation to contribute to building the evidence base** on the impacts of ETR on competitiveness, growth and innovation.

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<sup>137</sup> Withana, S., ten Brink, P., Kretschmer, B., Mazza, L., Hjerp, P., Sauter, R., (2013) *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. Final Report. Brussels. 2013.

<sup>138</sup> OECD (2010) *Taxation, innovation and the environment*, OECD Publishing

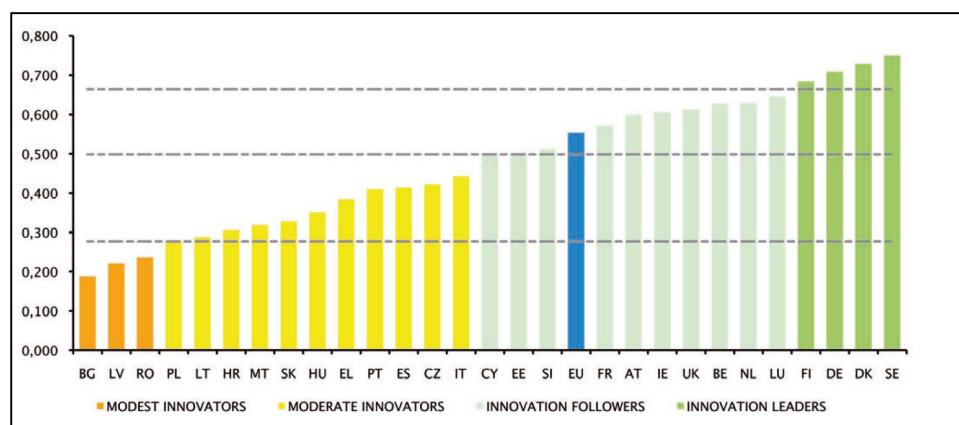
<sup>139</sup> ECOTEC et al. (2001) *Study on the economic and environmental implications of the use of environmental taxes and charges in the European Union and its Member States*, Final report – Chapter 5 – Nitrogen oxides, <http://ec.europa.eu/environment/enveco/taxation/pdf/ch5nox.pdf>

<sup>140</sup> Expert input, February 2014

<sup>141</sup> EC (2013) *Member States' Competitiveness Performance and Implementation of EU Industrial Policy report 2013*, A Europe 2020 Initiative, 2013 edition

<sup>142</sup> Eurostat (2013) *Taxation trends in the European Union – Data for the EU Member States, Iceland and Norway*, 2013 edition, Taxation and customs union, [http://epp.eurostat.ec.europa.eu/cache/ITY\\_OFFPUB/KS-DU-13-001/EN/KS-DU-13-001-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-DU-13-001/EN/KS-DU-13-001-EN.PDF)

**Figure 9: Innovation performance of EU Member States**



Source: DG Enterprise and Industry (2014) Innovation Union Scoreboard 2014, [http://ec.europa.eu/enterprise/policies/innovation/files/ius/ius-2014\\_en.pdf](http://ec.europa.eu/enterprise/policies/innovation/files/ius/ius-2014_en.pdf) [accessed 6/5/2014]

**Competitiveness impacts depend on the design of the ETR**, including for example the point of application of the tax and the potential to pass through costs, other taxes, use of revenues raised (i.e. whether recycled and in what way; or in the case of a tax shift, which other taxes may be reduced), as well as a range of other factors that may affect a firm's competitiveness including for example labour costs, quality of the workforce, infrastructure, regulatory and fiscal frameworks. As discussed above, innovation stimulated by certain market based instruments can be a source of competitive advantage (at firm, sector or even national level); it is, however, not possible with the current evidence base to clearly claim that ETR supports competitiveness; there is equally no evidence to suggest that ETR causes competitiveness problems. What is clear is that competitiveness concerns have a major influence on instrument design (e.g. use of exemptions noted above; tax rates and revenue recycling) and in some cases on the very existence of an instrument (e.g. air passenger tax in the Netherlands).

In the current climate in particular, **competitiveness, growth and innovation can be used as a 'hook' to attract interest from a range of actors in the ETR agenda**, including relevant government departments such as ministries of economy and finance who may not necessarily prioritise environmental objectives ETR but would be attracted to discussions when growth or competitiveness is concerned. It would thus be useful for a group of countries which have common competitiveness interests to be **brought together to discuss ways to address competitiveness-related concerns**. As noted by the OECD, 'by far, the most effective method to minimise potential carbon leakage is to co-ordinate environmental policies across countries. By expanding the reach of policies, potential areas for relocation are reduced and leakage diminishes quickly'<sup>143</sup>.

Although it is too early to say whether ETR can be a driver of competitiveness gains (some modelling results suggest this, but there is still not sufficient real world data to provide concrete evidence), one can see common concerns about competitiveness as a driver for collaboration between like-minded countries which can also **support the development of more ambitious efforts**. It may be easier to launch a tax (or reform) and garner support if it is possible to say that competitiveness concerns have been taken into account as key competitor countries (e.g. neighbouring countries) are working together to design and launch individual measures. Within this wider topic, one could envisage having **more targeted working groups on specific themes or focus areas** where competitiveness concerns (and opportunities) may merit cooperation, for example between neighbouring countries on issues of aviation taxes and impacts on airport choice, fuel pricing and fuel tourism.

<sup>143</sup> OECD (2010), Taxation, innovation and the environment, OECD Publishing

### 3.3.3 Jobs, equity, social costs and benefits

**Wider social impacts** of ETR including on **jobs, equity, distribution**<sup>144</sup>, **consumer prices**, and **household income levels** are among the core issues for consideration when designing ETR. Such issues are sometimes presented as barriers to ETR and thus there is a need for careful consideration of how they can be best addressed or mitigated. For example, proponents of reduced VAT rates on food and water say such measures are needed to protect the poor even though evidence suggests that such mechanisms tend to benefit the richer deciles of society as high-income households spend more on food and water than low-income households (as the income elasticity of demand for such products is positive)<sup>145</sup>. Other social issues of relevance include the availability of public goods and natural resources for future generations which are an important equity and ethical consideration (as well as an economic concern); and health impacts and livelihoods (e.g. job opportunities from sustainable resource use).

Social impacts of ETR **vary across applications and over time and are strongly dependent on a number of factors** including the nature of the wider ETR, what other taxes or charges are reduced (e.g. labour taxes), how the tax is designed, and the use of revenues within the wider revenue recycling mechanisms. Similarly the point of application of the tax will be important with regard to where job losses may take place - as even if there will be positive impacts for the country as a whole, there may be losses for specific companies in a given sector.

In **some cases, environmental taxes can have negative social impacts depending on how they are designed and on what they are applied**. For example carbon or energy taxes can have regressive impacts when applied on heating fuels particularly in the short to medium term (depending on the type of fuel taxed and characteristics of the national economy) as low-income households spend a higher share of their total income on energy bills than high-income households<sup>146</sup>. However carbon or energy taxes may not have such an effect when applied on transport fuels, which tend to affect higher deciles of society more than poorer deciles depending on motor vehicle ownership in a country, use of public transport etc.). For example **Turkey** has very high tax rates on petrol and given that it is less dependent on personal vehicles than other OECD countries, these fuel taxes are considered a progressive means of taxation<sup>147</sup>. In **France**, the bonus-malus system has led to an increased number of cars on the road, in particular diesel vehicles which emit less CO<sub>2</sub> compared to gasoline vehicles, however have more of a negative impact on human health given impacts on PM levels etc.<sup>148</sup>

In some cases, **environmental taxes can be used to alleviate social concerns**. For example, the fisheries resource tax in **Iceland** was introduced in 2002 to allay criticisms that the system of individual transferable quotas (ITQs) was unfair as rights were distributed for free to existing vessel owners. The tax aimed to lower the value of fishing rights (quotas) which would make the fishing industry more accessible and attractive to outsiders and as a means of capturing some of the profit

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<sup>144</sup> i.e. whether the ETR is progressive favouring poorer deciles of society, or regressive leading to a higher relative burden on poorer households.

<sup>145</sup> Oosterhuis, F., and Bachus, K., (2014) 'Agriculture, food and water' in Oosterhuis F. and ten Brink P. (eds.) (2014) *Paying the Polluter. Environmentally Harmful Subsidies and their Reform*. Edward Elgar 2014

<sup>146</sup> Chancel, L., and Ilse, S., (2014) Environmental taxes and equity concerns: A European perspective – Background paper prepared for the Spring Alliance conference 'Go green, be social'

<sup>147</sup> OECD (2010) Taxation, innovation and the environment

<sup>148</sup> Input from discussions at expert workshop, 10 April 2014, Brussels

derived from the exploitation of the resource<sup>149</sup>, with revenues used to facilitate a reduction in the fishing fleet and to cover the costs of managing the fisheries<sup>150</sup>.

Various **options exist for addressing social concerns** including for example tax free allowances provided for basic use, targeted at specific groups of people (e.g. linked to income level or family size) with an increasing rate as consumption rises rather than means-tested subsidies which are not linked to consumption<sup>151</sup>. For example in Denmark, water pricing is based purely on metering, however affordability of water and waste water services is ensured by income support through Danish social policy<sup>152</sup> which has the advantage of retaining an incentive element in water pricing for all water users, irrespective of their income<sup>153</sup>.

Other options to address social concerns include promoting ETR as **part of a package of measures**, including lower corporate taxes, reduced social security payments, and the provision of support to encourage or facilitate behaviour change (e.g. programmes for energy efficiency improvements and insulation<sup>154</sup>, tax breaks on public transport to reduce the costs of public transport). It should however be noted that in some cases reducing social security contributions or reducing income taxes may not be the best way to address regressivity concerns as it only affects people who are working/pay taxes, thus other instruments are needed to target low-income households<sup>155</sup>. Other issues to consider include the **timetable** for introducing tax reforms (e.g. reduce income taxes first, and then introduce environmental taxes) and **how they are implemented**, e.g. start with low rates and progressively scale them up over time, or consider revisions to existing taxes rather than new taxes as it can be easier to garner support for this approach<sup>156</sup>.

**Carefully designed ETR can be used to support social objectives, including employment.** For example, the FP7 COMETR project showed that ETR can contribute to growth in employment (by up to 0.5 per cent in Denmark and Sweden, and by around 0.2 per cent in Germany). These employment benefits are due to the use of ETR revenue to reduce labour costs. The Danish benefits occur in the short term and benefits in Germany and Sweden take longer to be realised. Benefits in the UK are found to be smaller as the level of revenue recycled was smaller<sup>157</sup>. In Germany ETR in the 1990s was introduced at the same time as high oil prices and led to a lot of protests against the ETR, even though the environmental tax was a small part of the overall increase in prices. The ETR was nonetheless maintained because of the positive impact on jobs (from reduced social security contributions)<sup>158</sup>. It should also be noted that in some cases, reductions in income tax may not lead to a net increase in disposable income or consumer purchasing power as it may also lead to increased prices through increases in other taxes (e.g. VAT) depending on the flow through. These wider distributional impacts should be considered.

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<sup>149</sup> Matthiasson, T. (2008) Rent Collection, Rent Distribution, and Cost Recovery: An Analysis of Iceland's ITQ Catch Fee Experiment. *Marine Resource Economics*, No 23, pp105-117.

<sup>150</sup> Haraldsson, G. and Carey, D. (2011) *Ensuring a Sustainable and Efficient Fishery in Iceland*. 891, OECD Publishing.

<sup>151</sup> Input from discussions at expert workshop, 10 April 2014, Brussels

<sup>152</sup> OECD (2008). 'OECD Environmental Performance Reviews: Denmark 2007', OECD Publishing, Paris. DOI: <http://dx.doi.org/10.1787/9789264039582-en>

<sup>153</sup> European Environmental Agency (2013). 'Assessment of cost recovery through water pricing'. EEA Technical Report No 16/2013.

<sup>154</sup> Chancel, L., and Ilse, S., (2014) Environmental taxes and equity concerns: A European perspective – Background paper prepared for the Spring Alliance conference 'Go green, be social'

<sup>155</sup> Input from discussions at expert workshop, 10 April 2014, Brussels

<sup>156</sup> Input from discussions at expert workshop, 10 April 2014, Brussels

<sup>157</sup> Andersen, M.S., Barker, T., Christie, E., Ekins, P., Gerald, J.F., Jilkova, J., Junankar, S., Landesmann, M., Pollitt, H., Salmons, R., Scott, S. and Speck, S. (eds.), 2007: Competitiveness Effects of Environmental Tax Reforms (COMETR). Final report to the European Commission. National Environmental Research institute, University of Aarhus. 543 pp. - [http://www.dmu.dk/Pub/COMETR\\_Final\\_Report.pdf](http://www.dmu.dk/Pub/COMETR_Final_Report.pdf)

<sup>158</sup> Input from discussions at expert workshop, 10 April 2014, Brussels

Furthermore, in some cases, people who are not in the labour market can benefit from changes in taxes, e.g. through reduced VAT etc.

There is a need for **more evidence to support arguments** on the link between ETR and employment to support arguments on the ‘double dividend’, with gains dependent on the relative labour intensity of affected sectors. Such assessments could also usefully distinguish between implications for jobs at the local, national, regional and EU level, as well as on the wider distributional impacts of ETR (e.g. beyond the labour market). In such discussions, one should bear in mind that ETR can lead to both **winners and losers** – e.g. creating jobs in one sector and leading to a loss of jobs in another.

Social considerations are often presented as barriers to ETR and there is a need to discuss how such concerns can be addressed. Moreover, the potential contribution of ETR to support social issues should be explored. Given current high unemployment levels and social concerns in many European countries, arguments on the potential of ETR to support such objectives provide a **powerful political message that can facilitate support for action** from a range of actors. Within this theme, targeted working groups could focus on specific areas where opportunities to address social objectives are more likely, e.g. a landfill tax that encourages recycling and composting can lead to increased employment in these sectors. Some tax reforms can combine both social and environmental objectives, e.g. car taxation and airline travel taxation tend to benefit a certain segment of society and could have significant environmental benefits.

### 3.4 Specific themes to motivate progress

The study team has also identified the following **broad, overarching ‘themes’** which could help motivate progress on ETR among different **coalitions of like-minded countries**:

1. **Resource efficiency and the circular economy**
2. **Climate change and energy**
3. **Transport and mobility**
4. **Pollution and pressures on the environment, biodiversity and health**

These themes could be used to bring together different groups of countries (and actors) with similar interests to discuss their plans in a particular area and explore potential approaches (either individual or common) to issues of interest to them. Within each theme, more **focused sub-themes or focus areas** could be identified around which smaller groups of countries could collaborate. This **cooperation could be structured in different ways depending on the issue at hand**. For example a specific issue or sectoral approach could be adopted (e.g. vehicles, pesticides etc.), a regional approach could be useful for some shared problems (e.g. marine litter), while a neighbouring country approach could be helpful in some situations (e.g. airline tax, fuel tax)<sup>159</sup>. The most suitable approach will very much depend on the issue at hand. A brief summary of each theme, potential focus areas and approaches to structuring cooperation between countries are set out below. Additional analysis is needed for a more detailed assessment of these issues and to further explore possible focus areas and potential coalitions of the willing in relation to each.

#### 3.4.1 Resource efficiency and the circular economy

Resource efficiency and the circular economy have attracted growing attention from different actors in recent years and are increasingly important priorities, for both policy-makers and business at the EU, national, regional and local levels. The resource efficiency agenda seeks to encourage greater

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<sup>159</sup> Input from discussions at experts’ workshop, 10 April 2014, Brussels

efficiency in the use of minerals and other abiotic materials, as well as biological materials. The circular economy represents a development strategy that enables economic growth while optimising the consumption of natural resources, deeply transforming production chains and consumption patterns and re-designing industrial systems. These discussions are closely linked to wider ambitions to decouple the economy from resource use and impacts, which in turn aim at avoiding resource scarcity and impacts on the environment, promote green growth and long-term sustainability.

**Figure 10: Circular economy and fiscal policy instruments – A simplified illustration**

**Source:** IEEP (2014) building on Figure 2 from Ellen MacArthur Foundation (2012) Circular Economy, Executive summary

<sup>160</sup> Input from discussions at experts' workshop, 10 April 2014, Brussels

particular country or outside the EU, where practical and appropriate, in a sustainable, responsible way. External factors such as rising prices of raw materials are also a key issue. This has implications in terms of trade and governance which need to be taken into account.

**The role of environmental taxes and charges in encouraging the more efficient use of resources (both abiotic and biological) and supporting the circular economy is already recognised.** For example, the manifesto adopted by the European Resource Efficiency Platform (EREP) notes that a circular, resource-efficient and resilient economy should be achieved by *inter alia* 'shifting the tax burden away from jobs to encourage resource efficiency, and using taxes and charges to stimulate innovation and development of a job-rich, socially cohesive, resource-efficient and climate-resilient economy'<sup>161</sup>. Similarly, in 2010 the EU Council adopted conclusions on sustainable materials management and sustainable production and consumption which call on Member States to consider *inter alia* 'the possibility of shifting the revenue base for national budgets from taxing labour towards taxing energy and resource use'<sup>162</sup>. It is likely that such instruments will play an **increasingly important role in ongoing policy discussions** on resource efficiency and the circular economy.

This attention provides a **new window of opportunity for action** and potential cooperation constellations between countries and specific issue/sector-related stakeholders. There are a number of countries which are frontrunners in this area and could be well-placed to collaborate with others on this topic, e.g. both the UK and the Netherlands have initiated or supported a number of efforts in this area including voluntary agreements, information campaigns, advisory services and support for industrial symbiosis<sup>163</sup>. Discussions are also underway on resource efficiency and the circular economy and/or associated fiscal instruments in other countries such as Scotland (fiscal instruments for circular economy), Belgium (in the three regions and at the Federal level) Luxembourg (circular economy), Denmark (product taxes), and Czech Republic (plastic bag charge). While a broader, more holistic and integrated approach is needed overall, **a focused approach on specific issues may be helpful in engaging countries and ensuring progress in particular areas.**

A **potential sub-theme or focus area** within this wider umbrella could be **waste**. Given some of the issues discussed earlier, for example regarding waste exports between countries with different systems (see Box 6), some level of cooperation between countries in particular front runners (e.g. the UK, Netherlands, Belgium, Norway, Sweden)<sup>164</sup> in setting waste-related taxes and fees could usefully be explored if such instruments are to achieve the best possible environmental results and support the application of the waste hierarchy. This should include deterring the export of waste for which recycling, reuse or prevention is environmentally preferable to the use of such waste as fuel in energy-from-waste plants (taking into account plant efficiencies and reasonable economic considerations). This could be attempted, for example, by ensuring that the price of waste treatment (i.e. any tax plus facility gate fees, transport costs etc.) is higher at the bottom of the waste hierarchy (landfill, incineration without energy recovery and energy recovery) and lower towards the top (recycling, reuse). This would not necessarily mean applying the same rate of tax in each Member State, or even in neighbouring Member States, but tax rates could be set at the level needed to discourage exports/imports. For example, the European Commission has previously indicated a

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<sup>161</sup> European Resource Efficiency Platform (EREP), Manifesto and policy recommendations, [http://ec.europa.eu/environment/resource\\_efficiency/documents/erep\\_manifesto\\_and\\_policy\\_recommendations\\_31-03-2014.pdf](http://ec.europa.eu/environment/resource_efficiency/documents/erep_manifesto_and_policy_recommendations_31-03-2014.pdf) [accessed 21/5/2014]

<sup>162</sup> Council of the EU (2010), Sustainable materials management and sustainable production and consumption: key contribution to a resource-efficient Europe – Council conclusions, 13 December 2010, Brussels, <http://register.consilium.europa.eu/doc/srv?l=EN&f=ST%2017495%202010%20INIT> [accessed 21/5/2014]

<sup>163</sup> 'Industrial symbiosis is an association between two or more industrial facilities or companies in which the wastes or byproducts of one become the raw materials for another', WRAP, 'What is industrial symbiosis?', <http://www.wrap.org.uk/content/what-industrial-symbiosis> [accessed 23/5/2014]

<sup>164</sup> Input from discussions at experts' workshop, 10 April 2014, Brussels

willingness to consider developing a common method for calculating a minimum rate of landfill tax for the EU Member States, to drive waste management improvements<sup>165</sup>. Another issue to be explored could be in relation to **food waste**, where there is growing attention at both EU and national level and ETR could potentially play a role in the wider policy mix, e.g. through taxes/pay-as-you-throw charges on biowaste disposal, reduced tax rates/tax breaks to encourage donations of edible unsold food etc.

Another potential sub-theme or focus area could be around the introduction of taxes or charges on **specific products, e.g. plastic bags**, packaging waste etc. The introduction of product taxes are often a Member State response to achieve EU targets, as products with corresponding EU targets (e.g. packaging and batteries) have more taxes in place in more countries when compared to products without EU targets. Plastic bags have become the focus of increasing efforts among countries, and the issue has become a target for EU action; a recent Commission proposal to amend the Packaging and Packaging Waste Directive recognises the use of economic instruments such as taxes to reduce consumption of lightweight plastic carrier bags<sup>166</sup>. Plastic bag taxes are currently in place in some European countries (e.g. Belgium, Denmark, France, Ireland, Malta, Wales and Northern Ireland) with plans to introduce such taxes in others (e.g. Scotland and England). Such instruments have had significant impacts, for example in Ireland plastic bag use fell from an estimated 328 bags per capita before the introduction of the levy in 2002 to 14 bags per capita in 2012<sup>167</sup>, although there have been some concerns (e.g. related to potential job losses in Bulgaria<sup>168</sup>). Such instruments are attracting increasing attention given *inter alia* the negative impacts of plastic bags on the environment including in particular marine biodiversity. Such efforts could be encouraged through more informal, collaborative-type approaches. Information exchange and sharing of lessons (e.g. in overcoming opposition to the introduction of a plastic bag charge among retailers) could be useful to other countries considering similar measures, such as Portugal<sup>169</sup>. The role of such instruments in addressing issues such as the embedded impacts of products (e.g. water use, land use etc.) could also be further explored in such a context.

Another potential sub-theme or focus area could be **water pricing**. The Water Framework Directive (WFD) requires Member States to 'take account of the principle of recovery of water services, including environmental and resource costs' (Directive 2000/60/EC, Article 9). However, reaching full cost recovery is challenging, and thus the WFD allows some flexibility and lower recovery rates, if appropriately justified (e.g. via reference to affordability)<sup>170</sup>. Although there is cost recovery of water services in many European countries, the environmental cost of water supply is rarely integrated in water pricing systems, with some exceptions, notably Denmark where both economic and environmental costs are covered in water prices<sup>171</sup> and the Czech Republic where water prices were reformed according to the cost recovery principle in the early 1990s. Reforming countries' water pricing systems to provide incentives for more efficient use water could go some way to addressing emerging challenges of water stress and scarcity prevalent in certain countries, e.g. in southern

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<sup>165</sup> IEEP, Eunomia, BIO IS, Umweltbundesamt, Ecologic and Arcadis (2012) 'Economic instruments to improve waste management', Final report, Contract ENV.G.4/FRA/2008/0112, European Commission (DG ENV), <http://www.ieep.eu/publications/2012/04/economic-instruments-to-improve-waste-management>

<sup>166</sup> EC (2013) 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, (COM(2013)761)

<sup>167</sup> Lyons, L. (2013) DYNAMIX policy mix evaluation - Reducing plastic bag use in the UK and Ireland. URL [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) [14-04-2014]

<sup>168</sup> Country Report on Bulgaria for study on Steps towards greening in the EU, IEEP, Ecologic, IVM, BIO IS (2013)

<sup>169</sup> Input from discussions at experts' workshop, 10 April 2014, Brussels

<sup>170</sup> Withana S., ten Brink P., Mazza L., and D. Russi (2014). Hidden subsidies: The invisible part of the EHS iceberg. Chapter 3 in *Environmentally Harmful Subsidies and their Reform*, eds. Oosterhuis F. and P. ten Brink. Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing.

<sup>171</sup> Country Report on Denmark (2013) for study on Steps towards greening in the EU. Monitoring Member States' achievements in selected policy areas' IEEP, Ecologic, IVM, BIO IS (2013)

Europe. However, increasing water tariffs is often controversial as water is considered a key commodity, for which affordability should be ensured. Nonetheless cost recovery does not necessarily mean high tariffs for all groups as compensatory measures can be put in place for certain groups (e.g. reduced tariffs for low-income users, by applying a rising block tariff, compensating poorer households with a lump sum or a discount of a fixed water tariff<sup>172</sup>, while higher tariffs can be applied to those that can afford them as a way to raise funds to improve water infrastructure and the quality of water supply for all users<sup>173</sup>. Such discussions could for example take place in the context of improving the implementation of the WFD and could include *inter alia* development of guidelines and information exchange.

### 3.4.2 Climate change and energy

Environmental taxes related to carbon and energy tend to be a key **element of discussions** on ETR given the scale of the taxes (i.e. transport fuels), their potential revenue raising role, as well as policy priorities related to climate change and energy including associated targets (e.g. EU 2020 and 2030 targets, and 2050 decarbonisation ambitions). Environmental taxes and charges offer **dynamic incentives, signals** and sources of **information** which can be used to incentivise energy efficiency and fuel savings, fuel switching (to lower-carbon fuels and renewable energies), modal shift (e.g. road to rail), consumer choices (e.g. house, vehicle and appliance purchases), investments (e.g. insulation), wider innovation and resource efficiency. Although carbon and/or energy taxes have been introduced (or are being planned) in several countries across the world, the overall rate of emission reductions is insufficient to meet medium- and long-term GHG emission reductions targets. The limited effectiveness of these taxes is often linked to the exemptions and tax reductions provided to sectors with the greatest potential to achieve emission reductions<sup>174</sup>.

**Climate change and energy** will remain a common challenge for countries in Europe and beyond for the foreseeable future. Energy security concerns, particularly in light of recent events in Ukraine, as well as wider discussions on the 2030 climate policy framework mean that this topic will remain on the political agenda. Carbon pricing is a necessary element in the transition to a low carbon economy and thus ETR will continue to play an important role in the wider climate and energy policy mix. In some cases, countries' proposals to introduce carbon taxes are linked to progress at EU level on the revised Energy Tax Directive (e.g. as is the case in the Czech Republic and Italy) on which discussions are currently stalled and face significant opposition. This highlights the potential limits to national efforts and the need for harmonisation or cooperation on certain issues. Thus, this could be a useful theme around which to establish a coalition of the willing. The potential for ETR in this area is also significant given that energy taxes account for 75 per cent of environmental taxes, and also given the important role of transport taxes<sup>175</sup>. Furthermore, there is a new and additional urgency for cooperation in this area in light of **energy security** particularly in light of recent events in Ukraine (which could help engage a wider group of countries, e.g. in central and eastern Europe) as well as how to meet challenges related to national choices to phase out **nuclear energy** (e.g. in Germany, Switzerland and Italy).

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<sup>172</sup> Withana S., ten Brink P., Mazza L., and D. Russi (2014), Hidden subsidies: The invisible part of the EHS iceberg. Chapter 3 in *Environmentally Harmful Subsidies and their Reform*, Oosterhuis F. and P. ten Brink (eds.), Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing.

<sup>173</sup> OECD (2010a), *Pricing Water Resources and Water and Sanitation Services*. Paris: Organisation for Economic Co-operation and Development.

<sup>174</sup> Withana, S., et al., (2013) *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. Final Report. Brussels. 2013.

<sup>175</sup> Input from discussions at experts' workshop, 10 April 2014, Brussels

**A potential sub-theme or focus area** could be on **next steps with carbon and energy taxes**. Carbon taxes, together with other policy instruments, have contributed to a reduction in CO<sub>2</sub> emissions in several countries, e.g. Denmark (where total CO<sub>2</sub> emissions decreased by 24 per cent between 1990-2001), Sweden (where average 2008-2011 emissions were 12.6 per cent lower than 1990 levels) and Finland (where carbon emissions declined by over seven per cent in 1990-1998); and a reduction in fuel consumption, e.g. Denmark, Finland, Sweden, Slovenia, British Columbia (Canada)<sup>176</sup>. It would be interesting to explore how to make existing instruments more effective in incentivising behaviour change (e.g. by phasing out exemptions, ramping up tax rates over time, ensuring more harmonised carbon price/CO<sub>2</sub> abatement costs across different energy sources, sectors and users etc.). Interactions between such taxes and the EU ETS could also be usefully explored.

Cooperation or coordination between countries could be an innovative way to address competitiveness-related concerns in this area which has had a strong impact on the design of carbon and energy taxes to date. Cooperation could for example bring together a group of countries which have common competitiveness interests to discuss and address these concerns<sup>177</sup>. Such discussions could also usefully link to ongoing work to reform fossil fuel subsidies and be supported through various processes such as the European Semester. A coalition in this area could include frontrunners learning lessons from each other's experience (e.g. how Sweden managed to introduce a reduction or abolishment of exemptions for energy-intensive industries and other cases outside the EU ETS between 2011 and 2015). It could also be used to inspire efforts in other countries which are currently discussing potential proposals for CO<sub>2</sub> taxes (e.g. Portugal, Italy, Czech Republic) as well as contribute to discussions on energy security and on how to achieve certain national choices to phase out nuclear energy (e.g. in Germany, Switzerland, Italy).

### 3.4.3 Transport and mobility

Addressing growing emissions from the transport sector and improving the mobility of citizens remains a challenge for several countries. Environmental taxes and charges in this area are primarily in the area of road transport, with some instruments in place in relation to the aviation sector. Despite current efforts, there remains significant potential for EFR in a number of sub-areas within the transport theme and wider issue of mobility (which could include issues of fuel taxes)<sup>178</sup>.

Within this wider theme, **a potential sub-theme or focus area** could be on the issue of **taxation of transport fuels, including the differential treatment of diesel and petrol** as well as the **level of tax rates applied** where there is further potential for revenue raising via the EU Energy Tax Directive. Excise duties on diesel are generally lower than on petrol in European countries (with some exceptions, e.g. UK, Switzerland, Turkey), despite evidence of harmful impacts on human health of diesel consumption - see Table 7<sup>179</sup>. There is major potential to raise revenues from moving to equal tax treatment of petrol and diesel<sup>180</sup>. Given the role of diesel in the road transport of goods and by businesses there will be significant opposition to diesel tax reform; similarly there will be incentives

<sup>176</sup> Vivid Economics, *Carbon Taxation and fiscal consolidation: the potential of carbon pricing to reduce Europe's fiscal deficits*, report prepared for the European Climate Foundation and Green Budget Europe, May 2012, 19; Withana, S., et al, (2013) *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. Final Report. Brussels. 2013

<sup>177</sup> Input from discussions at experts' workshop, 10 April 2014, Brussels

<sup>178</sup> Input from discussions at experts' workshop, 10 April 2014, Brussels

<sup>179</sup> Cottrell, J., (2014) 'Reforming EHS in Europe: success stories, failures and agenda setting' in Oosterhuis F. and ten Brink P. (eds.) (2014) *Paying the Polluter. Environmentally Harmful Subsidies and their Reform*. Edward Elgar 2014

<sup>180</sup> Eunomia and Aarhus University (2014) 'Study on Environmental Fiscal Reform Potential in 12 EU Member States - Final Report to DG Environment of the European Commission', 28/02/2014, [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)

for cross-border fuel tourism, underlining the importance of collaboration on this issue, particularly between neighbouring countries.

**Table 7: Excise duties on unleaded petrol and diesel in European countries** (in Euros/litre, Jan 2009)

Country	Unleaded Petrol	Diesel
Austria	442	347
Belgium	592	318
Bulgaria	350	307
Cyprus	299	245
Czech Republic	483	406
Denmark	561	382
Estonia	359	330
Finland	627	364
France	607	428
Germany	655	470
Greece	359	302
Hungary	448	368
Ireland	509	368
Italy	564	423
Lithuania	434	330
Latvia	379	330
Luxembourg	462	302
Malta	459	352
Netherlands	701	413
Poland	488	339
Portugal	583	364
Romania	336	284
Slovakia	515	481
Slovenia	403	383
Spain	360	302
Sweden	568	446
United Kingdom	661	661

**Source:** ACEA (2009) cited in Milne E J, Andersen M S (2012) Handbook of Research on Environmental Taxation, Chapter 16

Another potential focus area could be on **vehicle taxation**. In a number of countries, vehicle registration taxes have been designed to promote the purchase of low-carbon vehicles. For example in the Netherlands<sup>181</sup>, Spain<sup>182</sup>, and Ireland<sup>183</sup> **vehicle registration tax rates** are lower for the most fuel-efficient cars. These systems have had positive environmental effects. For example in Ireland, 90 per cent of car sales in 2011 belonged to lower-carbon bands<sup>184</sup> and in the Netherlands the market share of A-labelled cars increased from 0.3 to 3.2 per cent from 2002 to 2006.<sup>185</sup> Countries with such approaches could consider cooperating or coordinating to further strengthen efforts and/or inspire progress in others. Another focus could be on **company cars** which are largely under-taxed in Europe

<sup>181</sup> Green Fiscal Commission (2010), 'Reducing Carbon Emissions Through Transport Taxation', Briefing Paper Six, March 2010, p 4.

<sup>182</sup> Country Reports on Spain for study on 'Steps towards greening in the EU. Monitoring Member States' achievements in selected policy areas' IEEP, Ecologic, IVM, BIO IS (2013)

<sup>183</sup> Country Report on Ireland for study on 'Steps towards greening in the EU. Monitoring Member States' achievements in selected policy areas' IEEP, Ecologic, IVM, BIO IS (2013)

<sup>184</sup> Country Report on Ireland for study *Steps towards the greening in the EU*, IEEP, Ecologic, IVM, BIO IS (2013)

<sup>185</sup> Green Fiscal Commission (2010) 'Reducing Carbon Emissions Through Transport Taxation', Briefing Paper Six, March 2010, p 4

and considered a harmful subsidy.<sup>186</sup> There should be fewer concerns of cross-country competitiveness on this issue, rather cooperation benefits would most likely be in the form of mutual support and joint action that could be used to resist pressure to water down reform as well as scope to learn from each other. For example (partial) reforms of company car taxation systems have taken place in Belgium, the Netherlands and the UK<sup>187</sup>. Another area could be **infrastructure charging**, e.g. road pricing through the Eurovignette Directive as well as other national and local initiatives.

Another potential focus area where there is scope for further progress relates to **exemptions for kerosene used in aviation, shipping/fishing and the agriculture sector** in several European countries. In this regard, there is a need for work at the international (or OECD) level to move forward<sup>188</sup> as taxation in this area is determined by international treaties which limit the use of aviation taxes in single countries<sup>189</sup>. Council Directive 2003/96/EC allows EU Member States to tax aviation fuel for domestic flights and, by means of bilateral agreements, fuel used for intra-Community flights.<sup>190</sup> Thus, some form of EU or international cooperation (e.g. OECD) is required to address this issue.

Another related focus area could be **air passenger taxes**, where given concerns of losing business to neighbouring airport hubs, cross-border cooperation in this area could prove beneficial. The lack of cooperation, particularly between neighbouring countries, could lead to a sub-optimal situation. For example, as illustrated in Box 7, the Netherlands introduced an airline tax before Germany, but subsequently had to abolish the tax due to passengers using airports in Germany and Belgium to avoid the tax. Shortly after the Dutch tax was abolished, Germany and Austria introduced a similar tax. In Ireland, an air travel tax introduced in 2009 was abolished in 2014 with the intention of generating new airline routes into Ireland, and thus boosting tourism and local economies. In Northern Ireland an air passenger duty is applied on passengers of GBP 13 (EUR 16) per flight, although competition concerns have led industry to call for abolition of the UK air tax as well. Given cross-border issues, these experiences highlight that there may be a case for a more coordinated approach to introducing certain taxes and charges such as air passenger taxes especially among neighbouring countries so as to avoid concerns about passengers diverting to airports in neighbouring countries which do not apply such taxes/duties.

### 3.4.4 Pollution and pressures on the environment, biodiversity and health

Environmental taxes and charges can play an important role in addressing pollution and other pressures on the environment, biodiversity and health such as air pollution (e.g. NO<sub>x</sub>), water pollution (e.g. fertilisers), product use (e.g. batteries, pesticides), and degradation of nature (e.g. deforestation). Such instruments have had important effects in practice. For example in Sweden, NO<sub>x</sub> and SO<sub>2</sub> charges appear to have driven reductions of SO<sub>2</sub> emissions by 85 per cent and NO<sub>x</sub> and particulate emissions by 40 per cent between 1986 and 2002<sup>191</sup>.

<sup>186</sup> DG TAXUD (2010) 'Company Car Taxation'. Working Paper n. 22, [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/gen\\_info/economic\\_analysis/tax\\_papers/taxation\\_paper\\_22\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/gen_info/economic_analysis/tax_papers/taxation_paper_22_en.pdf) [20.02.2014]

<sup>187</sup> Withana, S., ten Brink, P., Franckx, L., Hirschnitz-Garbers, M., Mayeres, I., Oosterhuis, F., and Porsch, L. (2012). *Study supporting the phasing out of environmentally harmful subsidies*. A report by the Institute for European Environmental Policy (IEEP), Institute for Environmental Studies - Vrije Universiteit (IVM), Ecologic Institute and VITO for the European Commission – DG Environment. Final Report. Brussels. 2012.

<sup>188</sup> Input from discussions at experts' workshop, 10 April 2014, Brussels

<sup>189</sup> Ibid.

<sup>190</sup> DG TAXUD, 'Taxation of aircraft fuels'. [http://ec.europa.eu/taxation\\_customs/taxation/excise\\_duties/energy\\_products/aircraft\\_fuel/index\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/excise_duties/energy_products/aircraft_fuel/index_en.htm) [01/03/2014]

<sup>191</sup> Country Report on Sweden for study Steps towards greening in the EU, IEEP, Ecologic, IVM, BIO IS (2013)

Traditionally, environmental taxes and charges have focused on certain aspects of pollution including a (growing) subset of products and in a few cases on the sustainable use of natural resources. A limited number of countries also apply charges on land use changes (e.g. Croatia, Czech Republic, Poland, and some parts of the US), land value taxes which could in principle help to protect natural spaces and reduce urban sprawl<sup>192</sup> (e.g. Denmark, Estonia) and other tax-related incentives which seek to protect biodiversity – see Box 11. There is also increasing interest in the use of incentive measures relating to biotic natural resources (i.e. fish) and wider biodiversity. This reflects *inter alia* the adoption of new commitments, e.g. the adoption by Parties to the Convention on Biological Diversity (CBD) of the Strategic Plan for Biodiversity for 2011-2020 which contains a target on reforming incentives potentially harmful to biodiversity.

#### **Box 11: Tax incentives that support biodiversity protection and conservation**

In **Wallonia (Belgium)**, tax breaks are applied to land owners in Natura 2000 areas. Since 2011, owners of agricultural and forested land that fall within the Natura 2000 network are exempted from inheritance tax on the land and from the property tax (*précompte immobilier*). This is an interesting example of how tax incentives are used to support activities within the Natura 2000 network.

In **France**, from 2005 to 2007 a series of tax reforms aligned the tax regime on natural heritage with that on cultural heritage. This includes in particular the fact that investments by private parties in maintaining rare/protected natural heritage can be claimed back through tax breaks. Furthermore, natural heritage can also be donated (to avoid paying the inheritance tax) which is a system similar to ‘acceptance in lieu’ under which inheritance tax can be written off in exchange for the acquisition of objects of national importance. The idea is that by encouraging land owners whose land is part of the Natura 2000 network to maintain the natural environment in good ecological status, this may lead to cost savings in the long run for public authorities given that they have an obligation to maintain Natura 2000 sites in good ecological condition.

#### **Sources:**

Agriculture en Natura 2000, URL:

[http://www.naturawal.be/images/stories/page\\_intermediaire/Agriculteurs/02\\_natura2000\\_agriculteur\\_05\\_fr.pdf](http://www.naturawal.be/images/stories/page_intermediaire/Agriculteurs/02_natura2000_agriculteur_05_fr.pdf)

Indemnités fiscales en Natura 2000, URL : <http://www.ntf.be/indemnites-fiscales-en-natura-2000>

Taxe d'aménagement, <http://vosdroits.service-public.fr/professionnels-entreprises/F23263.xhtml>

<http://www.developpement-durable.gouv.fr/Bilan-de-la-taxe-departementale.html>

Sustainable fisheries, forestry, agriculture (including soils), and other natural resources as well as related issues of water and food are likely to rise up the policy agenda in the coming years. Given multiple pollution sources and pressures on the environment, biodiversity and health, the requirements under various pieces of legislation as well as other commitments at national, European and international level, it is likely that there will be increasing interest in the use of environmental taxes and charges as well as incentive measures in this area in the coming years. These instruments have the potential to play an important role in reducing local, national and in some cases international pressures alongside other supporting instruments and thus could be another organising theme around which certain countries could collaborate.

A potential focus area could be **marine litter** which is a growing problem with costly environmental and socio-economic impacts. It reflects a lack of incentives for appropriate waste disposal or perverse incentives to litter<sup>193</sup>. For example, it has been estimated that municipalities in the UK

<sup>192</sup> Raslanas, S., Zavadskas, E. K., Kaklauskas, A. (2010) LAND VALUE TAX IN THE CONTEXT OF SUSTAINABLE URBAN DEVELOPMENT AND ASSESSMENT. PART I – POLICY ANALYSIS AND CONCEPTUAL MODEL FOR THE TAXATION SYSTEM ON REAL PROPERTY, International Journal of Strategic Property Management (2010) 14, 73–86

<sup>193</sup> ten Brink, P., I. Lutchman, S. Bassi, S. Speck, S. Sheavly, K. Register and C. Woolaway (2009), *Guidelines on the Use of Market-based Instruments to Address the Problem of Marine Litter*, Brussels: Institute for European Environmental Policy (IEEP), and Virginia Beach, Virginia, USA: Sheavly Consultants

spend approximately EUR 18 million each year removing beach litter, while those in the Netherlands and Belgium spend approximately EUR 10.4 million each year<sup>194</sup>. This issue can be addressed through various tools including instruments to address land-based litter such as deposit refund schemes for drinks packaging which encourage recycling (e.g. Denmark, Germany, Malta) and plastic bag charges (e.g. Ireland where the amount of plastic bags in marine litter decreased from 5 per cent in 2001 to 0.25 per cent in 2010 after the introduction of the plastic bag levy<sup>195,196</sup>). In this case, a regional approach could be considered, e.g. within the framework of the OSPAR Convention or Regional Action Plans under the Marine Strategy Framework Directive<sup>197</sup> in the Baltic Sea, North Sea or Mediterranean. It would also need to include consideration of a package of instruments to address this issue (beyond taxes and charges to include information and awareness raising campaigns etc.) which can have an important impact on the marine environment. Other tools include those which reduce ship-generated litter such as cost recovery systems at ports that encourage the delivery of waste on land<sup>198</sup>. For example, indirect waste fee systems in the Baltic region have played an important role in the reduction of illegal discharges of oil thus affecting the quality of the marine environment in the Baltic Sea<sup>199</sup>. Greater collaboration could lead to more effective efforts to address a common threat.

Another potential focus area could be **pesticides taxes** which are in place in some European countries and which provide some interesting lessons for other countries considering such instruments. For example in Denmark, since July 2013 the pesticide tax has been applied so that farmers are taxed according to the environment and health toxicity of pesticides used rather than their nominal value<sup>200</sup>. In Norway, since 1999 the pesticides tax has been area-based with seven tax bands according to the environmental and health related risks of the pesticides. The use of economic instruments in this area is also supported by the Sustainable Use Directive on Pesticide (EU Directive 128/2009, SUDP) which notes that 'economic instruments can play a crucial role in the achievement of objectives relating to the sustainable use of pesticides. The use of such instruments at the appropriate level should therefore be encouraged...'<sup>201</sup> A number of countries may be interested in such cooperation, e.g. the Danish Environment Ministry was contacted by officials in Switzerland, Norway and the Netherlands when they started discussing revisions to the tax, and several others took part in a workshop organised by the Danish Ministry on this topic<sup>202</sup>. A related issue is the use of lower VAT rates on pesticides (and fertilizers) which can be seen as encouraging further use<sup>203</sup> and could merit reform.

<sup>194</sup> Mouat, J., R.L. Lozano and H. Bateson (2010), 'Economic impacts of marine litter', Report of Kimo international, available at <http://www.kimointernational.org/Home.aspx> (accessed 8 August 2013).

<sup>195</sup> IEEP (2013) How to improve EU legislation to tackle marine litter

<sup>196</sup> ten Brink, P., I. Lutchman, S. Bassi, S. Speck, S. Sheavly, K. Register and C. Woolaway (2009), *Guidelines on the Use of Market-based Instruments to Address the Problem of Marine Litter*, Brussels: Institute for European Environmental Policy (IEEP), and Virginia Beach, Virginia, USA: Sheavly Consultants

<sup>197</sup> Input from discussions at experts' workshop, 10 April 2014, Brussels

<sup>198</sup> Øhlenschläger, J.P., S. Newman and A. Farmer (2013), *Reducing ship generated marine litter - Recommendations to improve the EU Port Reception Facilities Directive*. Report produced for Seas At Risk. London: Institute for European Environmental Policy

<sup>199</sup> IEEP (2013) Reducing ship generated marine litter – recommendations to improve the EU port reception facilities directive

<sup>200</sup> Input from expert consultations carried out for study, 20 January 2014

<sup>201</sup> Directive 2009/128/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for Community action to achieve the sustainable use of pesticides

<sup>202</sup> Danish Ministry of the Environment (2013), International seminar on a new Danish pesticide tax <http://eng.mst.dk/topics/pesticides/international-seminar-on-a-new-pesticide-tax> [accessed 30/5/2014]

<sup>203</sup> PAN Europe, Reducing pesticide use across the EU, <http://www.pan-europe.info/Resources/Reports/PANE%20-%202013%20-%20Reducing%20pesticide%20use%20across%20the%20EU.pdf> [accessed 6/5/2014]

## 4 Catalysing change – next steps on ETR in Europe

### 4.1 Main insights from current experiences

The assessment in this study confirms that environmental taxes, charges and levies are in place in Europe across a number of areas. To date, the **main focus of efforts has been in the areas of transport, energy and water**, albeit with significant variation in the type of instrument, rate applied and impact across countries. There has also been **significant attention in the areas of products and waste** and **some focus in relation to air**. There has been **less focus in relation to materials and carbon** with taxes or charges explicitly or directly addressing these areas in place in fewer than 14 European countries, although interest in these areas is growing. There also appears to have been **less direct focus on terrestrial and marine biodiversity and agriculture**, although instruments in other sectors (e.g. air, water, waste) have an important impact in these areas.

Interesting initiatives are also underway **beyond Europe**, for example carbon taxes in India, British Columbia (Canada) and South Africa (from 2015), water related taxes and charges in Israel and Singapore, air pollution charges in Japan, and land use change taxes in New Hampshire (US) to name a few. A number of European countries also have **ongoing plans and strategies** for the further use of environmental taxes and charges in the coming years including Belgium, Denmark, France, Hungary, Italy, Portugal, Switzerland and Sweden. A range of **commissions and committees for (green) fiscal reform** have been set up in Europe (e.g. Portugal, France) and beyond (e.g. Canada). Progress is taking place at **different levels** (national, regional and local) and in a number of **different areas** from energy and climate change (e.g. France, Sweden, Switzerland, Hungary, Czech Republic) to water pricing (e.g. Ireland, Denmark), waste (e.g. Denmark, Portugal) and biodiversity (e.g. Italy, Portugal).

There are a number of examples where these instruments have had **important environmental impacts**, alongside other policies and external factors, e.g. plastic bag levy in Ireland, taxes and charges on water supply in Denmark, landfill tax in the UK, energy tax in the Netherlands. In some cases, environmental taxes can lead to negative environmental impacts, e.g. bonus-malus system in France. The impacts of environmental taxes, charges and levies are determined by several factors including their **design** (i.e. point of application, breadth of coverage), **level** (i.e. rate, evolution over time), **implementation** (i.e. exemptions, conditionalities and their evolution), and **use of revenues**. Furthermore, impacts of these instruments need to be seen in the context of the wider **policy mix** and **external factors**.

Some environmental taxes, charges and levies seek to **encourage behaviour change** and thus support environmental objectives (e.g. landfill tax in UK, pesticide tax in Norway, water pricing in Denmark); some are primarily used as **revenue raising** tools (e.g. energy tax in Netherlands, air passenger tax in Germany) with environmental objectives a secondary concern, while others support wider objectives such as fuel security (e.g. fuel taxes) and social concerns (e.g. fisheries resource tax in Iceland). In some cases, environmental taxes are part of a wider fiscal reform package including reductions in income taxes and/or social security contributions to support employment (e.g. CO<sub>2</sub> tax in Sweden).

**Competitiveness impacts** are a key concern when introducing ETR and have often led to the use of exemptions for certain sectors. Although helpful in addressing competitiveness and political concerns, such practices tend to impair the environmental effectiveness of the ETR by reducing incentives for investment and changes to consumption. Furthermore, in some cases competitiveness concerns can be over-estimated, e.g. a Government evaluation of the air passenger duty in Germany largely counters concerns raised by the aviation sector about potential adverse impacts of the duty.

Competitiveness impacts depend on design and need to be considered in the wider context of impacts at national, sectoral and enterprise level. There is a need for an improved evidence base on economic and competitiveness impacts of ETR, including wider impacts such as on innovation.

**Social impacts** including on jobs, equity, distribution, and consumer prices vary across applications and over time and are strongly dependent on several factors including what other taxes or charges are reduced, how the tax is designed, and the use of revenues. Carefully designed ETR can be used to support social objectives including employment, with gains dependent on the relative labour intensity of affected sectors and use of revenues. For example, the FP7 COMETR project showed that ETR can contribute to a growth in employment by up to 0.5 per cent in Denmark and Sweden, and by around 0.2 per cent in Germany. However, further evidence is needed on impacts, including wider distributional impacts (e.g. beyond the labour market).

**Revenue erosion** could be a concern from a finance perspective whereas from an environmental perspective a lack of revenue erosion could be a concern as it implies limited effect on behaviour. In the **short to medium term** (2020-2030), a substantial shift in the use of fossil fuels, material inputs or pollution that would undermine the tax base and risk an overall erosion of revenues from environmental taxes is not expected, although there may be some cases of erosion, e.g. plastic bags. Options to address this risk include indexation, dynamic development of rates, broadening the tax base, reduce exemptions, use a performance indicator, etc. In the **long-term** (i.e. to 2050 and beyond), if environmental challenges have been addressed, this may lead to downward pressure on revenues given the smaller tax base and new sources of government revenue will need to be explored. This is however an issue for the long-term which should be monitored and kept under review to ensure timely action when necessary.

## 4.2 Themes and ‘coalitions of like-minded countries’ to drive forward the agenda

Historically (with due exceptions), countries have progressed the ETR agenda unilaterally, in some cases inspired by actions in neighbouring countries or sometimes held back or limited by a lack of action in other countries. In some cases progress has been driven by EU legislation both explicitly (e.g. Energy Tax Directive, Eurovignette Directive) and implicitly (e.g. requirements for cost recovery under the Water Framework Directive). Recent efforts among several European countries have been driven by factors including the need for fiscal consolidation, responses to the economic and financial crisis as well as to support environmental objectives. Recommendations under the European Semester have also supported efforts in some EU Member States. As we look to the future, different approaches to ETR can be considered to ensure further progress - see Figure 8 - which have implications for the level of harmonisation between countries and hence the extent to which there is a level playing field.

One option that could help increase the effectiveness of ETRs and overcome certain obstacles to ETR is **multi-country cooperation and coordination through ‘coalitions of like-minded countries’**. Such coalitions would be voluntary initiatives, bringing together different groups of countries (and relevant actors) with similar interests in a particular **thematic area**. Such an approach could help to avoid sub-optimal situations similar to those that have occurred in the past, e.g. relating to air passenger duties in the Netherlands and Germany, incineration taxes in Sweden and Norway, and the Fuel Duty Escalator in the UK. There are already some cases where cooperation between countries is taking place, e.g. to harmonise port reception facilities in the largest harbours in Europe (Amsterdam, Rotterdam, Antwerp and Hamburg) which help illustrate the potential for cooperation and benefits from such approaches. The benefits of such cooperation is also recognised by the European Commission which notes that ‘to achieve a socially optimal level of environmental taxation, to benefit from the experiences of those Member States that have made intensive use of

environmental taxes and to contribute to a level playing field for EU businesses, EU wide and international coordination should be enhanced<sup>204</sup>.

**Different forms of cooperation are likely to be needed for different resources, materials and pollutants.** Some issues are more amenable to collaboration between neighbouring countries (e.g. to reduce the risk of fuel tourism across borders, the leakage of products or activities), some may be more suitable to a multi-country or regional approach (e.g. marine litter in the Baltic Sea, North Sea or the Mediterranean), while others could focus more on common challenges independent of geography (e.g. fiscal consolidation needs) or on general pan-European concerns (e.g. climate, energy security, biodiversity).

This study identifies a number of **drivers or windows of opportunity** that can be used to push the ETR agenda forward in the future and/or to develop **multi-country collaborations and 'coalitions of like-minded countries'** depending on a country's specific needs, commitments, opportunities and political expediency. This study has identified a number of themes in this regard, including three **horizontal themes**:

- ***Fiscal consolidation as a new window of opportunity for ETR;***
- ***Cooperating to avoid competitiveness concerns;***
- ***Jobs, equity, social costs and benefits***

The study also identified **four specific themes**:

- ***Resource efficiency and the circular economy***, with potential focus areas on products (e.g. plastic bags), waste and water pricing.
- ***Climate change and energy***, with potential focus area on next steps with carbon and energy taxes
- ***Transport and mobility***, with potential focus areas on fuel taxes (petrol and diesel, level of rates), vehicle taxes (e.g. vehicle registration taxes, circulation taxes including company car taxes); infrastructure charging (e.g. road pricing); air passenger taxes (e.g. between neighbouring countries); and kerosene tax exemptions (e.g. in aviation, shipping/fishing and agriculture sectors).
- ***Pollution and pressures on environment, biodiversity and health***, with potential focus areas on marine litter and pesticides.

Within each theme, more **focused sub-themes or focus areas** have been identified around which smaller groups of countries could collaborate. This **cooperation could be structured in different ways**, e.g. around a specific issue or sector, a group of neighbouring countries, a regional approach etc. depending on the issue at hand. The themes and focus areas are discussed in detail in chapter 3 of this report.

#### **4.3 Catalysing change - next steps for ETR in Europe**

This study, and associated workshop, has explored current practices with environmental taxes, charges and levies in Europe, discussed plans and visions for the further use of such instruments in several countries, and identified a range of themes which are promising drivers of ETR and/or areas where coalitions of like-minded countries could work together to facilitate progress.

The approach described in the study of **'coalitions of like-minded countries'** would complement existing unilateral and EU-wide approaches, and could help ensure more effective environmental

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204 European Commission (2012), Growth-friendly tax policies in Member States and better tax coordination in the EU. (COM(2011)815), VOL. 5/5 - ANNEX IV to Commission Communication on Annual Growth Survey 2012.

taxes and charges as well as overcome certain obstacles to progress (e.g. competitiveness concerns, institutional barriers such as the fiscal unanimity rule in the EU on tax related issues which often prevents meaningful action on ETR in the EU). Further **benefits of such cooperation on ETR** include:

- Facilitating **political and public support** for, or **reducing opposition to**, ETR on the grounds that others are also reforming and overcoming reluctance to be the 'first mover'.
- Contributing to **a level playing field** which should facilitate business practice and hence **support growth and jobs**, and help avoid some **competitiveness risks and/or concerns**.
- Support **greater efficiency** (e.g. compatible road pricing) and **effectiveness** of measures (e.g. avoiding leakage).
- **Allow for more ambitious ETR** which could in turn lead to more revenues that can help with fiscal consolidation or support innovation, potential support for wider objectives related to growth and employment through tax shifts.
- **Enable informal exchanges of national experiences and plans** which can be helpful in sharing lessons between countries.
- **Facilitate achievement of policy targets and objectives** including broad aims, e.g. on the circular economy, energy security, implementing the waste hierarchy, halting biodiversity loss; as well as more specific objectives, e.g. to reduce GHG emissions, ensure cost recovery (of water supply, waste services), reduce marine litter.

**Such cooperation is likely to be more useful in certain circumstances**, in particular depending on the ease with which a given tax or charge could be avoided, e.g. through trade (e.g. waste exports) or movement of consumers (e.g. airline tax/fuel tax). It is more difficult to avoid taxes/charges on resources/materials/products which are consumed locally (e.g. plastic bags); in such situations cooperation is less necessary, although there could still be benefits from informal information exchanges on lessons learnt.

**Different forms of cooperation are likely to be needed** in relation to different resources, materials, pollutants. Some issues are more amenable to collaboration between **neighbouring countries** (e.g. to reduce risk of fuel tourism across borders, leakage of products or activities), some may be more suitable for a **multi-country or regional focus** (e.g. marine litter in the Baltic Sea, North Sea or Mediterranean), while others could focus more on **common challenges independent of geography** (e.g. fiscal consolidation needs) or on **general pan-European concerns** (e.g. climate change, energy security, biodiversity). The approach to be taken will depend on the issue at hand.

Coalitions of like-minded countries could be developed for **different themes**, led by **individual countries** and/or **other actors** that could support or contribute to leadership such as the European Commission (e.g. on the issue of water pricing linked to implementation of the Water Framework Directive), OECD (e.g. through its Joint Committee of Tax and Environment experts), the EEA (e.g. through national focal points and other working groups) etc. It is important that these coalitions **engage policy-makers from different areas** (including finance/tax departments) as well as **wider stakeholders** such as the scientific community, business and civil society in this process<sup>205</sup>. Such coalitions should be **kept open to engage others** which may not yet be ready to actively participate in the coalition, but may consider joining in the future. Existing platforms could also be revived and used to support such efforts, e.g. the Forum for market based instruments (MBI Forum) coordinated by DG Environment and DG TAXUD which brings together officials from Ministries of Finance and the Environment.

This study was designed to be an **initial scoping assessment to identify areas where there is potential for progress**. Further analysis is needed to **identify particular issues to focus on, which**

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<sup>205</sup> Input from discussions at experts' workshop, 10 April 2014, Brussels

**specific actors to engage**, including potential drivers of the different coalitions. Once these have been identified, **thematic working groups** could be set up to focus on specific issues. These groups could engage a core group of interested actors with the capacity to support change, identify specific focus areas, develop operational roadmaps for ETR, and identify windows of opportunity within different policy processes as these will vary across the different themes. For example, there are varying degrees of targets and commitments across different areas, e.g. commitments to reform incentives harmful to biodiversity by 2020, targets for sustainable fisheries, forestry and agriculture by 2020, climate and energy targets for 2020, 2030 and 2050 as well as specific targets, e.g. to reduce CO<sub>2</sub> emissions from passenger cars. In addition, it would be useful to have some form of co-ordination across the different thematic working groups to facilitate mutual learning, encourage progress and maintain an overall vision of ETR progress and needs.

Successive **EU Presidencies** can be engaged to develop momentum, continuity and buy-in to the process. A **high-level conference** could be held to launch this process (and later conferences organised in order to evaluate progress). This could be complemented by a **targeted series of events** around the thematic working groups and specific issues identified within each theme to help develop momentum and engagement in the process.

The process should also be coordinated with and make use of wider **policy processes** and **windows of opportunity** at different levels, for example:

- **At national level**, these include national budget announcements, legislative proposals, meetings of national fiscal commissions/committees, elections, reports by relevant stakeholders etc.
- **At European level**, these include the European Semester, regular reports and statistics on taxes and charges as part of the EU Regulation on Accounts, processes and reviews of EU legislation (e.g. Energy Tax Directive, Eurovignette Directive, CAP, CFP, Water Framework Directive, waste legislation etc.), parallel initiatives and commitments on EHS reform which includes tax reform (e.g. on fossil fuel subsidies).
- **At international level** these include official meetings such as Conferences of the Parties to the Convention of Biological Diversity (CBD) where countries communicate progress on incentive measures for biodiversity, G-20 meetings, academic publications, public conferences such as the Global Conference on Environmental Taxation in September 2014 and the Green Budget Europe Annual Conference in November 2014.

## Annexes – see separate attachments

- **Annex 1: Overview inventory**
- **Annex 2: Case studies on the impacts and effectiveness of selected environmental taxes, charges and levies**
- **Annex 3: Case studies on future plans and visions on environmental taxation in selected European countries**
- **Annex 4: Agenda and summary of discussions from experts' workshop**