Enhancing comparability of data on estimated budgetary support and tax expenditures for fossil fuels

final report

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Preface and acknowledgements

This report presents the results of a study for DG Environment of the European Commission, carried out under contract # 070307/2013/666574/EU/ENV.F1. The study was led by the Institute for Environmental Studies (IVM), VU University Amsterdam. The other participating institutes were VITO, the Institute for European Environmental Policy (IEEP) and BIO Intelligence Service.

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Note

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Summary

Phasing out subsidies to producers and users of fossil fuels is increasingly seen as an attractive policy option for climate change mitigation and resource efficiency. A major obstacle to this seemingly obvious strategy is the lack of agreement on the definition of a fossil fuel subsidy and on a common methodology to measure or estimate the levels of financial support from public budgets benefitting fossil fuel production and use.

The present study aims at developing a harmonized approach to the identification and quantification of government support to fossil fuels and by applying this approach to all 28 EU Member States. This could improve the comparability of estimated levels of support between Member States and enable measurement of progress in phasing out fossil fuel subsidies. Compared to the existing databases, the information reported on in this study also covers a slightly wider range of support types, for instance by including subsidies to fossil fuel infrastructure such as pipelines. Furthermore, the country coverage is extended to the EU's 28th Member State, Croatia. Data are reported for 2010 or 2011 and compared with the situation 5 to 10 years earlier. The estimated support levels include support to fossil fuel based electricity (by multiplying the total support to electricity by the share of fossil fuels in each Member State's electricity generation fuel mix).

The study focuses on budgetary support (in OECD terms 'direct transfer of funds') and tax expenditures ('tax revenue foregone'). Both types of support can accrue to producers as well as to consumers. Budgetary support to producers includes not only financial transfers (e.g. to coal mining), but also R&D subsidies as well as public investment in infrastructure (to the extent that it is considered state aid under EU rules). Tax expenditures benefitting producers include for instance reduced rates in royalties and corporate taxes. Support to energy users is mostly provided by means of tax expenditures. Reduced tax rates or preferential tax provisions can benefit specific sectors (e.g. aviation, shipping, agriculture, energy intensive industry), specific fuels (e.g. diesel, LNG) or households.

In estimating support levels, the 'transfer measurement' approach is used, in which the transfer of public money to those benefiting from the support is estimated using budget data and other statistical information. Determining the magnitude of direct budgetary support is usually relatively straightforward, since government budget amounts are generally available at sufficiently disaggregated level (though in some cases subsidy schemes extend beyond the fossil fuels sector and the share of the sector had to be estimated). Tax expenditures, however, are not systematically reported by all Member States. Moreover, tax expenditures require a benchmark in order to be able to estimate subsidy amounts.

The definition of an appropriate common benchmark is one of the most complicated and contentious issues in measuring levels of tax expenditure. The scientific literature on this topic does not provide any widely agreed solution to the problem. The present study takes a pragmatic approach, in which benchmarks are used that follow directly from existing or proposed policies at EU or national level. For excise taxes and other specific taxes on energy use, the proposed rates in the Commission's 2011 proposal for amending the Energy Taxation Directive are used as the main benchmark. For tax expenditures in the Value Added Tax, the benchmark is the standard VAT rate as applicable in the respective Member State.

The results of this first attempt to estimate fossil fuel support levels in the EU using a common approach can be summarized as follows:

- **Direct budgetary support to energy users** is rather limited in the EU. The total amount in all Member States together probably does not exceed EUR 1 billion per year. The largest single items identified are the tax reimbursements for energy intensive industries in Austria and Germany, and the Fuel Allowance in Ireland. Several Member States do not provide any budgetary support to energy users at all. There is no clear trend observable in the level of this type of support.
- **Direct support to producers** (including public infrastructure) is also limited (total annual EU wide amount probably less than EUR 5 billion). Several Member States do not apply any schemes at all. The main support schemes are for coal production (in Germany and Poland) and the Italian 'CIP 6/92' mechanism (mainly benefitting cogeneration). Subsidies to coal production are decreasing, and should be terminated by 2018. Some countries provide support to the development of natural gas infrastructure. The amounts of specific public R&D support to fossil fuels are generally small (in most Member States no more than a few million EUR per year; only in France more than EUR 100 million).
- **Tax expenditures in excise taxes** are substantial when using the benchmark of the **tax rates as proposed in the new Energy Tax Directive** proposal. For most Member States, the estimated support levels are between EUR 100 mln and several billions of euros per year, with an EU wide total of almost EUR 28 billion. The amounts differ widely between Member States, both in absolute and relative (per GJ and per tonne CO2 emissions) terms. In general the amounts of support show a decreasing trend over time. Apparently, Member States are reducing the gap between their energy tax systems and the system as proposed by the Commission, by increasing rates and/or by abolishing exemptions.
- Calculations were also made using an alternative benchmark for excise tax expenditures: the **highest prevailing rate per unit of energy[1] in the Member State** in each of the three main categories (transport, heating / process fuel use, and electricity). This benchmark leads to much higher estimated amounts (more than EUR 10 billion per year in several Member States; more than EUR 200 billion in the entire EU). This is mainly due to the existence of large differences in tax rates between different fuels (e.g. petrol and other motor fuels) and different user types (e.g. small and large electricity users), as well as to the fact that the excise tax exemptions for international aviation and shipping are also included in these estimates. Rather than being 'realistic' estimates of fossil fuel support levels, the figures should mainly be seen as indications for the impact that the choice of a benchmark can have on such estimates, as well as for the fact that the fiscal treatment of energy consumption differs widely between fuels and between energy users in most Member States.
- **VAT reductions** for fossil fuels and/or fossil fuel based electricity are applied in a minority of Member States. The total amounts involved are particularly significant in the UK (over EUR 4 billion per year) and Italy (over EUR 1 billion per year). Overall, there is an upward trend in the level of subsidization. Since VAT is an *ad valorem* tax, support levels tend to become higher as energy prices are increasing. In addition, a number of countries have increased their

[1] Calculations using the benchmark 'highest rate per unit of CO2 emitted' led to broadly similar results.

standard VAT rate in recent years while keeping the reduced rate at the same level, again leading to higher amounts of tax expenditure.

- Tax expenditures in the **corporate income tax and royalty schemes** differ by Member State and interact with eachother. There is no obvious benchmark. Therefore direct international comparisons are not meaningful. Only for two countries (Germany and the UK) estimates of significant amounts of support by way of royalty reductions are available (around EUR 350 million per year in each of them).

1. Introduction

1.1 Policy context

Among the various levers that can help to bring about a transition towards a low-carbon economy, energy prices that reflect the full social costs of energy (throughout the supply chain) play a key role. Subsidies for environmentally-harmful energy carriers distort energy prices and are therefore a major obstacle to achieving environmental goals. Reforming such subsidies can provide incentives for energy conservation and for the use of renewable energy carriers, and thus contribute to the overall goal of resource efficiency. Moreover, it may help alleviate public budget deficits and in some cases (where the subsidy mainly benefits high income groups) even lead to a more equal income and wealth distribution.

The call for phasing out fossil-fuel subsidies has gained momentum on the political level over the last years. Pledges on subsidy reform have been made at high-level events such as the G20 meeting in Pittsburgh (September 2009), the 10th Conference of Parties to the Convention on Biodiversity (Nagoya, October 2010) and the Rio+20 conference (Rio de Janeiro, June 2012).

The EU's 2011 Roadmap for a Resource Efficient Europe, one of the so-called "flagship initiatives" of the 'Europe 2020 strategy' sets the following milestone concerning environmentally harmful subsidies (EHS): "By 2020 EHS will be phased out, with due regard to the impact on people in need"[2]. Similarly, in the Environment Action Programme for 2013-2020, agreed in 2012, the sixth priority objective is to get prices right, highlighting the need to reform environmentally harmful subsidies and to apply the polluter pays principle more systematically.[3]

Previous studies on EHS for DG Environment[4] have emphasized the importance of transparency and the availability of reliable data as a precondition for successful subsidy reform. The present study is intended to contribute to this by developing a harmonized approach to the identification and quantification of government support to fossil fuels and by applying this approach to all 28 EU Member States.

1.2 Existing work on (fossil) energy subsidy estimates and assessments

Recent estimates of the amount of subsidies to fossil fuels arrive at global amounts between almost USD 500 billion and more than 1 trillion per year.[5] Non-OECD countries account for the largest share of total energy subsidies paid out globally, most of it in form of user subsidies.[6]

At the EU level, initial surveys of energy subsidies were done in the early 2000s.[7] A major step forward was taken in 2012 when the OECD presented a report on the estimated budgetary support and tax expenditures in all of its Member States, which was updated in 2013.[8] A complementary study was done by IVM and others, using the

[2] European Commission (2011).
[3] European Commission (2012).
[4] Valsecchi et al. (2007, 2009). Withana et al. (2012).
[5] IMF (2013), Worldwatch Institute (2013).
[6] UNEP (2008).
[7] See e.g. Oosterhuis (2001), EEA (2004).
[8] OECD (2013a).

OECD methodology, to cover the EU Member States that are not OECD members.[9] BIO has also led a recent EU study[10] focusing on modelling macroeconomic effects of phasing out fossil fuel subsidies in EU Member States by 2020, along with an in-depth qualitative assessment of five subsidies, or sets of subsidies in seven selected European countries.[11] DG Energy has recently commissioned a study on energy costs and subsidies in the EU, which is being carried out by a consortium led by Ecofys.

Despite this progress, the comparability of the information collected for the different Member States remains limited, mainly due to the fact that there is no consensus on the definition of an energy subsidy and on the criteria that should be applied to include a specific scheme in an inventory of subsidies and tax expenditures. Moreover, the quantification of subsidy amounts involved is not straightforward: there are issues of benchmark selection, measurement methods, and data availability.

1.3 Objective and scope of the present study

DG ENV would like to improve the comparability of data on fossil fuel subsidies across EU Member States. This would make it possible to obtain better measures of progress towards the objective of phasing out EHS and to create a 'scoreboard' on fossil fuel support across Member States.[12] It would also allow the adding up of national figures on total amounts of support and on specific components, as well as statistical analyses and the calculation of relative figures (e.g. fossil fuel subsidy amounts as percentages of GDP, per capita, per unit of final energy use etc.). Meaningful comparisons between Member States would then become possible, for example between the level of support provided to fossil fuels in comparison to renewable energy sources.

This work takes place in a highly politically sensitive setting. The current lack of uniform fossil fuel subsidy reporting can in part be explained by different views among Member States on the need for reform and its scope, and different preferences for specific reform options. A harmonized approach would need to take these sensitivities into account, while at the same time being methodologically sound and free of subjective judgments and biases.

The overall objective of this study is to produce a more comprehensive picture of subsidies to fossil fuels in the EU-28, a database that provides more comparable data across the Member States. This is done by:

- taking a consistent approach across all MS by harmonising the coverage of certain types of tax expenditures and budgetary expenditures;

[9] Oosterhuis et al. (2013).
[10] BIO et al. (2013).
[11] A different approach was taken recently by NERA (2014). This study aims at presenting a comprehensive picture of all tax and subsidy flows from and to the different energy sectors (both fossil and renewables). In this way the problem of selecting benchmarks for tax expenditures is circumvented, but the results are less suitable for an analysis of specific (dis)incentives for certain fuels and sectors and of possible reform options.
[12] One should be careful, however, when interpreting such 'scores'. For example, if a Member State would terminate certain energy tax breaks for particular groups, but at the same time reduce the general energy tax rate. the amount of subsidy measured would be reduced whereas the average tax burden on energy might have remained the same or even decreased.

- expanding coverage of the database by indirect subsidies to fossil fuels such as for example financing infrastructure for fossil fuels (for example pipelines, storage facilities);
- expanding the database by covering subsidies in Croatia.

The study thus focuses on budgetary support and tax expenditures. In terms of the OECD taxonomy of subsidies (see Table 1.1), these come under the headings 'Direct transfer of funds' and 'Tax revenue foregone'. Support can be absolute (grants) or relative (tax preferences). The study covers subsidies to energy producers as well as to energy users (or consumers). It focuses on measures at (national) MS level, but schemes at lower levels of governance are included when relevant. EU subsidies (e.g. within the framework of the 'Connecting Europe Facility' and the Structural Funds[13]) are outside the scope of the present study.

In order to enable an intertemporal comparison, data are reported for two separate years: the most recent year for which sufficient data are available (for most Member States 2010 or 2011) and a single year in the period 2000-2005 (depending on data availability).

1.4 Structure of this report

Chapter 2 presents the methodology that was developed and discusses the various issues that were considered and choices that were made. In chapter 3, the results for all 28 Member States are summarized. Chapter 4 discusses the outcomes and draws some conclusions. Annex A contains detailed results for each Member State. The Excel files with the calculations for each Member State are available upon request from the authors or from DG ENV.

[13] Financing from the Structural Funds usually has to be complemented by financing from the Member State itself. Such co-financing is included if it can be considered as budgetary support (e.g. grants to private operators) or as tax expenditures. Direct investments by governments (in public companies or in public-private arrangements) are only considered as subsidies under the scope of this study if they are reported as state aid by the European Commission.

Table 1.1 The OECD's matrix of government-support categories

		Statutory or Formal Incidence (to whom and what a transfer is first given)								
		Production							Direct consumption	
		Output returns	Enterprise income	Cost of intermediate inputs	Costs of Production Factors					
					Labour	Land and natural resources	Capital	Knowledge	Unit cost of consumption	Household or enterprise income
Transfer Mechanism (how a transfer is created)	**Direct transfer of funds**	Output bounty or deficiency payment	Operating grant	Input-price subsidy	Wage subsidy	Grant or subsidised loan linked to acquisition of land	Grant or subsidised loan linked to acqui-sition of machinery	R&D carried out by a govern-ment institution	Unit subsidy	Govern-ment-subsidized life-line electricity rate
	Tax revenue foregone	Production tax credit	Reduced rate of income tax	Reduction in excise tax on input	Reduction in social charges (payroll taxes)	Property-tax reduction or exemption	Invest-ment tax credit	Tax credit for private R&D	VAT or excise-tax concession on fuel	Tax reduction related to energy purchases that exceed a given share of income
	Other government revenue foregone			Under-pricing of a government good or service		Under-pricing of access to government land or natural resources; reduction in resource royalty or extraction tax		Government transfer of intellectual property right	Under-pricing of access to a natural resource harvested by a final consumer (e.g., standing trees)	
	Transfer of risk to the government	Government buffer stock	Third-party liability limit for producers	Provision of security (e.g., military protection of supply lines)	Assumption of occupational health and accident liabilities	Credit guarantee linked to acquisition of land	Credit guarantee linked to capital (e.g., loan guarantee)		Price-triggered subsidy	Means-tested cold-weather grant
	Induced transfers	Import tariff or export subsidy	Monopoly concession	Monopsony concession; export restriction	Wage control	Land-use control in favour of a particular use	Credit control (sector-specific)	Stronger than standard IPR protection	Regulated price; cross subsidy	Mandated life-line electricity rate

2. Methodology

2.1 Categorization

Fossil fuel support measures can be categorized in different ways. A first distinction is between producer and consumer subsidies, i.e. subsidies of which the (primary) recipients are energy producers and energy users, respectively.[14] The main types of **producer subsidies** applied in Europe are listed below, together with an indication on whether or not they are included in the scope of this study:

1. **Direct support to primary producers.** In the EU, these subsidies are nowadays mainly restricted to coal mining in a few MS, and are being phased out by 2018, driven by EU State Aid rules. These direct producer subsidies are included in the present study.

2. **Support for restructuring, social plans etc. in former mining areas**. Since such subsidies do not in any way favour the production of fossil fuels, it has been agreed to leave these outside the scope of the present study.

3. **R&D subsidies to the fossil fuels industry**: these can lead to increases in fossil fuel use (e.g. if used for the development of improved drilling technology), but also to higher energy efficiency (better combustion technology) or lower GHG emissions (CCS technology). They may therefore either be environmentally harmful or environmentally beneficial. R&D subsidies are inlcuded in the present study to the extent that data on specific amounts for fossil fuels were available.

4. **Public investment in energy infrastructure**. As indicated above, such investments (in public companies or in public-private arrangements) are not to be considered as subsidies within the framework of this study, unless they can be considered as budgetary support (e.g. grants to private operators) or as tax expenditures. More implicit types of investment support (e.g. when a government accepts lower rates of profitability or lower levels of efficiency than a private investor would do) bring along serious measurement problems and are not quantified. In order to evaluate whether public funding for infrastructure should be considered a subsidy if the user has to pay for its use, the research team has used the criteria applied by the Commission (see Section 0 for a more detailed discussion).
   A specific issue are **"dual use" subsidies**, i.e. subsidies for infrastructure that could be used both by fossil fuels and for instance biofuels. Since most of the existing infrastructure is focused on fossil fuels, subsidies for such infrastructure are regarded as fossil fuel subsidy support (see section 0).

5. **Fiscal incentives for oil and gas exploration and exploitation** (e.g. reduced rates in royalties and corporate taxes) are included in the analysis, but mainly in a descriptive way due to the complications related to the choice of appropriate benchmarks (see Sections 0 and 0).

[14] The term 'consumer' in this respect does not only refer to households, but to all users of energy, including business and institutions. Obviously, there are borderline cases, for instance if the subsidy goes to a sector that transforms one type of energy into another (e.g. refineries, power plants). Please also note that a 'producer subsidy' can influence consumer behaviour (if it leads to lower prices) and vice versa.

6. **Tax reductions and exemptions for energy that is used in the transformation of energy** (e.g. electricity production, refineries, gas pumping). Such subsidies are often provided because the government does not want to tax energy twice (i.e. in two stages of the energy chain/cascade). These tax exemptions are therefore not included. On the other hand, support to electricity that is produced from fossil fuels is included in the scope of this study.[15]

Consumer subsidies can be categorized according to the conditions or criteria for eligibility. There are, for instance, subsidies that benefit specific sectors[16] or specific fuels, and subsidies to households (sometimes limited to low-income households). Some MS, such as France, Greece and Italy, also provide fossil fuel tax preferences to specific regions.

It should be noted that consumer subsidies are commonly given as tax expenditures (see section 0), and that the measurement of tax expenditures is related to the issue of benchmark selection – this is further elaborated below.

Table 2.1 gives a preliminary overview of subsidies to sectors, fuels and households and the extent to which they are covered by previous reports (OECD, 2013a and Oosterhuis et al., 2013). The table reveals that some kinds of support (such as excise tax exemptions for commercial aviation, and differences in tax rates between petrol and diesel) are reported for only a small minority of MS.

[15] Although in principle, for reasons of consistency, the same should have been done for fossil fuel based district heating and other types of (collective) heat supply, this was not feasible due to lack of data.

[16] The use of reduced excise tax rates (or exemptions) for particular sectors, such as rail, inland shipping or agriculture, may to a certain extent be justified by the lower level of negative externalities that the use of fuels in these sectors causes in comparison with road transport (e.g. accidents, congestion). It is then questionable whether the differentiation should be seen as a fossil fuel subsidy, or if the higher rate for road transport fuels is a way of internalising these externalities. This is related to the issue of benchmark setting, discussed below in section 0.

Table 2.1 Categories of energy support identified in the OECD (2013a) and IVM (2013) reports

(X = reported: € = reported and quantified; - = not reported; -! = not reported, but known to exist)

	Tax exemptions and reductions										
	Specific sectors							**Specific fuels**		**Households**	
Member State	**Commercial aviation (domestic)**	**Commercial shipping (domestic)**	**Public transport; railways; taxis**	**Large energy users; energy intensive industry**	**Agriculture (incl. horticulture)**	**CHP and district heating**	**Other sectors**	**Difference between diesel and petrol**	**Exemption or reduction for e.g. LPG, LNG**	**Energy and excise taxes**	**Value Added Tax (VAT)**
Austria	X	X	€	€	€	€	-	-!	-	-	-
Belgium	-!	X	€/X	€/X	€	-	€	-!	-	€	X
Bulgaria	-!	-	-	-	€	-	-	-!	-	€	-
Croatia											
Cyprus	-!	-	-	-	€	-	-	-!	-	X	-
Czech Republic	X	X	X	-	X	X	X	-!	€	€	-
Denmark	X	X	X	-	-	€	-	€	-	-	-
Estonia	X	-	-	X	€/X	€	€/X	-!	-	€	X
Finland	X	€	-	€	€	€	€/X	€	X	€	-
France	€	€	€	-	€	€	€	-!	€	€	€/X
Germany	€	X	€	€	€	X	€	-!	€	X	-
Greece	-!	€	-	-	€	-	€	-!	-	X	X
Hungary	-!	-	€	-	€	-	-	-!	-	-	€
Ireland	-!	-	-	-	-	-	-	-!	-	-	X
Italy	-!	€	€	X	€	-	-	-!	€	X	X
Latvia	€	€			€	€	€	-!	€	€	€

	Tax exemptions and reductions										
	Specific sectors							**Specific fuels**		**Households**	
Member State	**Commercial aviation (domestic)**	**Commercial shipping (domestic)**	**Public transport; railways; taxis**	**Large energy users; energy intensive industry**	**Agriculture (incl. horticulture)**	**CHP and district heating**	**Other sectors**	**Difference between diesel and petrol**	**Exemption or reduction for e.g. LPG, LNG**	**Energy and excise taxes**	**Value Added Tax (VAT)**
Lithuania	X	-	X	-	€	-	€	-!	X	X	€
Luxembourg	-	-	-	-	€	-	-	-!	-	€	X
Malta	X	X	-	-	-	-	-	-!	-	-	X
Netherlands	X	-!	-	-!	€	-	€	-!	-	€	-
Poland	X	X	X	X	€	X	X	X		X	-
Portugal	-!	€	X	-	€/X	€	€	-!	X	€	X
Romania	X	X	€	-	€	-	-	-!	-	X	-
Slovakia	-!	€	€	X	€	€	€	-!	€	€	-
Slovenia	€	€	X	-	€	€	€	-!	€	-	-
Spain	€	X	X	-	€	-	€	-!	-	-	-
Sweden	€	€	€	€	€	€	€	€	€	-	-
United Kingdom	-	-	-	-	X	-	-	-	-	-	€

2.2 Developing common baselines, benchmarks and measurement methods

Quantifying or estimating amounts of fossil fuel subsidies can be done in various ways. Different methods can produce widely different outcomes. Koplow[17] makes a distinction between the 'price gap' and the 'transfer measurement' approach.
In the **'price gap' approach**, the difference between domestic and world market energy prices is taken as a proxy for the impact of subsidies (and other policies). This method is used, for instance, by the IEA in data gathering for the World Energy Outlook and the online fossil fuel subsidy database.[18]

The 'price gap' approach reveals both direct and indirect (general equilibrium) impacts of support, but does not capture subsidies that do not change prices. Moreover, it is unable to single out the impact of individual subsidy schemes. Finally, its relevance may be questioned since in most EU countries internal energy prices are generally above world market prices, due to (among others) taxation.

In principle, one might consider 'tax subsidies'[19] as the IMF (2013) has done. If the objective is to identify distortions, this seems to be the correct benchmark. However, finding the right data within the limits of the budget allocated to the study to estimate this kind of support was not feasible. It was therefore agreed not to use the 'price gap' approach. Instead, the '**transfer measurement**' approach is used, in which the transfer of public money to those benefiting from the subsidy is estimated using budget data and other statistical information.

Determining the magnitude of **direct budgetary support** is usually relatively straightforward, since government budget amounts are generally available at sufficiently disaggregated level (though in some cases subsidy schemes extend beyond the fossil fuels sector and the share of the sector had to be estimated).

Tax expenditures[20] (see section 0), however, which make up the main part of fossil fuel support in EU countries, are not systematically reported by all Member States.[21] Moreover, tax expenditures require a benchmark in order to be able to estimate subsidy amounts.

The issue of benchmark selection raises several intricate questions. For example, if a country has a differentiated rate structure in its energy taxes (decreasing with the

[17] Koplow, D. (2009).
[18] See http://www.worldenergyoutlook.org/resources/energysubsidies/methodology/.
[19] This is, subsidies because taxes are below their efficient level: the level that would maximize social welfare, taking into account externalities and objectives concerning public finance.
[20] One possible definition of tax expenditures is: "provisions of tax law, regulation or practices that reduce or postpone revenue for a comparatively narrow population of taxpayers relative to a benchmark tax". Alternative definitions will be discussed in more detail in Chapter 0.
[21] According to the European Commission's report 'Tax reforms in EU Member States 2013', only 2/3 of the Member States regularly report on or assess their system of tax expenditures. Moreover, there is a lack of agreement on the definition of tax expenditures and on benchmarks. See http://ec.europa.eu/economy_finance/publications/european_economy/2013/pdf/ee5_en.pdf.

amount of energy used), should the benchmark be the highest rate applied? And how should differences in excise tax rates between different fuels be treated, for instance between petrol and diesel? Furthermore, should a benchmark be set at the Member State level, or should a common EU benchmark for each type of support be applied? What if tax expenditures in one category are used to compensate for the lack of environmental incentives in other categories of the tax system? For instance, reduced circulation or purchase taxes for "environmentally friendly" cars could be used to compensate for the lack of distance based road charging. Similar considerations apply to public transport subsidies. Reducing these subsidies could then lead to an increase in the incentives for environmentally undesirable behaviour.

One could argue that if member states report figures on tax expenditures, this means they have effectively chosen a benchmark, and these figures should be used. However, this leaves the question open what the benchmark should be if the member state does not report tax expenditures, or what the comparison point should be if different member states use different benchmarks. It was therefore agreed not to use this approach.

For excise taxes and other specific taxes on energy use, the proposed rates in the Commission's 2011 proposal for amending the Energy Taxation Directive (COM(2011)169) can be seen as a 'natural' benchmark. This benchmark is used in the common methodology developed in the present study. For illustrative purposes, the results of an analysis with an alternative benchmark are also presented. This benchmark is the highest tax level (per unit of energy and per unit of CO_2 emissions) in the respective Member State in each of the three main categories (transport, process/heating, electricity) as it was in the year under consideration. For further discussion on the issue of benchmarks we refer to section 0

For tax expenditures in the Value Added Tax, the standard VAT rate would be a 'natural' benchmark, since this is the rate at which consumption is taxed in principle (reduced rates and exemptions being exceptions to the rule). The standard VAT rate as prevailing in the Member State in the year under consideration is therefore taken as the benchmark in the present study. The VAT benchmark issue is discussed in more detail in section 0.

There are several additional methodological issues at stake in subsidy quantification. For example, if a subsidy leads to higher corporate profits, the receiving firm may have to pay a higher amount of corporate tax, thus reducing the net amount of public budget expenditure.[22] On the other hand, reduced excise tax rates also lead to reduced VAT revenues, since VAT is calculated on the price including excise tax. Theoretically, methodologies such as the 'Marginal Effective Tax Rate' approach would take such interactions and indirect effects into account, but they require modelling and are data-intensive. This would be beyond the scope of the common approach to be developed (although it might be an area for further potential improvement of the methodology). We will therefore stick to 'first order' subsidy estimates (which, in the case of tax reductions, means: difference in rate multiplied by amount consumed). This gives reasonable approximations of the magnitude of the amounts of support involved.

[22] For this and other arguments, see e.g. McKenzie et al. (2011).

2.3 Direct budgetary support

2.3.1 Introduction

In its review of budgetary support and tax expenditures for fossil fuels in its member states, the OECD (2011) has concluded that the data on direct budgetary expenditures constitute a relatively small part of the inventory of transfers. According to the OECD, these direct transfers are concentrated for the most part in three areas:

i. support for energy purchases by low-income households;
ii. government expenditure on research, development and demonstration projects, both through government laboratories and through grants to non-governmental bodies; and
iii. transfers to help redeploy resources in declining fossil-fuel industries, namely coal.

The OECD has pointed out that "(d)ata on direct budgetary support are relatively easy to collect and interpret: the data are usually provided in government budget documents, and there is little need to refer to a hypothetical benchmark – unlike the case for tax expenditures."

Therefore, the methodological issues related to direct budgetary support are limited to the following points:

- Should public investment in energy infrastructure be included as subsidies if the users have to pay for access to the infrastructure? As discussed in Section 0, it was agreed that the research team would consider these investments if they are "state aid" according to the criteria used by the Commission.
- How should we evaluate subsidies for dual use infrastructure, this is infrastructure that can be used both fossil fuels and some categories of renewable such as biogas?
- Under what conditions should measures for direct price support count as direct budgetary support?

These issues will be discussed in the next three sections.

2.3.2 Criteria for the evaluation of state aid

The question that needs to be answered here is: under what conditions does the Commission consider State Aid to be present[23]?

State Aid is defined as follows under EU Law (Article 107 (1) TFEU): "any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods, shall, in so far as it affects trade between Member States, be incompatible with the common market".

The evaluation of an individual support measure thus requires a discussion of the following cumulative criteria:

[23] This is independent from the question whether the State Aid under consideration is compatible with the internal market on the basis of Article 107(3)(c) TFEU. Whether or not State Aid is deemed incompatible with the Treaty is not relevant for the purposes of the current study.

- Aid granted by a Member State or through State resources: here the Commission evaluates whether the aid is considered to be granted from State resources within the meaning of Article 107 (1) TFEU.
- Favouring certain undertakings or the production of certain goods: here the Commission evaluates whether (a) an advantage has been conferred (including whether under normal market conditions, the beneficiary would have to bear those costs from the own means) and (b) whether this advantage has a selective nature.
- Distortion of competition and affectation of trade between Member States: here the Commission evaluates whether the trading conditions will be affected across the European Economic Area (EEA) between the Contracting Parties to the EEA Agreement. This includes an evaluation of the impact on potential competition, and an evaluation of upstream and downstream market conditions.

In the context of the current study, we have used the State Aid Register from DG Competition to identify individual measures:
http://ec.europa.eu/competition/state_aid/register/

State aid cases were identified (for every MS and starting in 2000) where fossil fuel based sectors are the beneficiary. The following sectors were covered :
B.05 Mining of coal and lignite
B.06 Extraction of crude petroleum and natural gas
C.19 Manufacture of coke and refined petroleum products
D.35 Electricity, gas, steam and air conditioning supply
F.42 - Civil engineering
G.46.71 Wholesale of solid, liquid and gaseous fuels and related products
G.47.3 Retail sale of automotive fuel in specialised stores
H.49.5 - Transport via pipeline
The register also includes unnotified[24] state aid.

2.3.2 Subsidies for dual use infrastructure

As noted above in section 0, subsidies to infrastructure that can be used for fossil fuels (such as gas pipelines) are not necessarily 100% fossil fuel subsidies, since the infrastructure could in some cases also be used for renewables. For example, gas pipelines for natural gas can in principle also be used for biogas, with certain modifications[25]. In the foreseeable future, however, the share of biogas in total gas supply is likely to remain small. The targets for two of the most advanced MS (Germany and the Netherlands) for 2020 amount to 7% and 2% of total gas consumption, respectively, and these targets are unlikely to be met[26]. Likewise, the EU target for the share of biofuels in transport is 10% in 2020, implying that in the near future the infrastructure for transport fuels will still be mainly used for conventional oil products. We can therefore safely attribute at least 90% of the estimated amount of subsidies for gas and oil infrastructure to fossil fuels.

2.3.4 Price support

One could argue that guaranteed prices for fossil fuels fall under the header "Induced transfers" in the OECD classification, and are therefore outside the scope of the current study. However, price guarantees are sometimes implemented through a

[24] For instance, because it falls below the *de minimis* thresholds.
[25] See, for instance, Weidenaar (2011).
[26] See van Foreest (2012).

scheme where public money is used to purchase energy products at a guaranteed price, which also falls under the header "direct budgetary support".

The OECD (2013b) discusses a few such schemes (the Coal Pennies in Hungary and the Operating Aid to Coal Producers in Spain). Similar schemes have existed in Germany and in Poland but these have been phased out.

The main conceptual issue is the following:

- If the price support is funded directly by the general budget of the government, then the amount of funding should be used as an indicator of the subsidy (if it can be identified of course).
- In some cases, the price support is funded through earmarked contributions from users or other economic actors. As long as these contributions are independent from the actual consumption of the products that receive price support, they should count as subsidies.

2.4 Tax expenditures

2.4.1 Introduction

Definition

We first make at an attempt at defining the concept of "tax expenditures" and elaborate on some general issues that go beyond the specific topic of tax expenditures for fossil fuels.

The OECD (2010a) uses the definition of Anderson: tax expenditures[27] are "provisions of tax law, regulation or practices that reduce or postpone revenue for a comparatively narrow population of taxpayers relative to a benchmark tax" (Anderson, 2008).
According to the OECD (2010a) tax expenditures may take a number of different forms:

- allowances: amounts deducted from the benchmark to arrive at the tax base;
- exemptions: amounts excluded from the tax base;
- rate relief: a reduced rate of tax applied to a class of taxpayers or taxable transactions;
- tax deferral: a delay in paying tax;
- credits: amounts deducted from tax liability.

However, even after a brief survey of the literature, the large number of alternative conceptual definitions is striking. For instance, Bratić (2006) defines them as "all those items in existing tax forms that mean a loss of central government budgetary revenue because they reduce either the tax base or the tax due." Määttä (2012) refers to at least two different definitions: (a) financial benefits provided through the tax system; (b) deviations from the benchmark tax system. Jacobsen et al. (2010) use the following definition: "The term tax expenditure refers to provisions in the tax code that give favourable tax treatment for an activity or a group of taxpayers."

It is therefore not surprising that, in a survey of the literature, Bratić (2006) concludes: "There is no single and all-encompassing definition of tax expenditures.

[27] Tax expenditures are also known as tax reliefs, tax subsidies and tax aids (OECD 2010).

The different authors who deal with these topics agree on this. Most of them tailor the definition and the scope of tax expenditures to the particular systems they are researching. The particular features of a given tax system determine the kinds, manner and scope of tax expenditures."

Nevertheless, the OECD (2010b) has argued that all definitions of tax expenditures share implicitly or explicitly a certain number of elements: a special tax concession qualifies as tax expenditure if

- it implies a reduction of tax revenue (tax liability);
- it results in deviations from a benchmark tax structure;
- it targets a particular group of taxpayers or economic activity;
- it could be replaced by direct spending.

Things become even fuzzier once one attempts to move to operational definitions. The OECD (2010a) acknowledges that there are several issues with the practical identification of individual measures. For instance: which tax expenditures are part of the benchmark and which ones are an exception to it? What is actually the "basic tax structure"? Which elements of the tax system are structural and which ones not?

In the rest of this section, we shall explore the following issues:

a) what are the different approaches to the definition of the benchmark tax system?;
b) for a given benchmark, what are the possible methods for quantifying tax expenditures?;
c) given the difficulties on finding common approaches, is it possible to have meaningful international comparisons?;
d) what is the approach followed in the current study?

Definition of the benchmark

From the discussion above, it is clear that the definition of the benchmark is crucial in the identification of tax expenditures. As put by Määttä (2012), a central question is indeed "whether e.g. certain tax allowance represents a deviation from a benchmark tax – and thereby tax expenditure – or is considered a general feature of the tax system in that particular country."

Craig and Allan (2001) mention three broad approaches which may be identified when defining a benchmark[28]. First, a conceptual approach uses a 'normal' tax system based on a theoretical concept of income, consumption, or value-added (depending on the tax) modified to address data limitations or technical problems in implementing the concept. Second, a reference law approach uses for the most part a country's own tax laws as a basis to define the benchmark, isolating special concessions judged as tax expenditures. Finally, an expenditure subsidy approach refers only to those concessions that are clearly analogous to an expenditure subsidy.

As an example of a conceptual approach, Määttä (2012) reminds us that tax policy has three guiding principles (efficiency, equal treatment of equals, and simplicity) which may be regarded, in principle, as cornerstones of the benchmark tax system (see also Jacobsen et al. (2010)):

- Efficiency refers to the preservation of incentives for individuals and businesses to make decisions on the basis of productivity rather than for pure tax benefit.

[28] These are also discussed in OECD (2013a).

- Violating the equal treatment gives taxpayers incentives to seek low-taxed sources of income or buy untaxed products for tax rather than economic reasons.
- Simplicity contributes to higher transparency, and is easier to comply with (and thus also to administer and enforce).

However, because these three basic principles often conflict, Määttä (2012) argues that it is impossible to find any agreement about what should and should not be included in the benchmark tax system starting from first principles. Moreover (as discussed for instance in Jacobsen et al. (2010)) the information that is needed to define the "theoretical" benchmark is not always available. As a result, "the benchmark tax system usually is a combination of elements from the theoretical abstract and the actual tax system. (...) The concern is that under this approach the norm cannot be defined rigorously enough to ensure that the identification of tax expenditures leads to an objective and reliable outcome." (Jacobsen et al. 2010)

Therefore, Kraan (2004) concludes that the problem of disagreement in the choice of a benchmark tax…

> "…is rooted in different views of the normative tax base. The normative tax base is the monetary sum in the hands of private households to which the tax ought to be applied, for instance: income, value added, profit, sales… [T]he definition of the normative tax base is a very political exercise. For this reason, attempts in the past to define tax expenditures in terms of the normative tax base…have not been very successful. They have led to neither international nor domestic agreement about the concept of tax expenditure. Thus an alternative definition of a tax expenditure abstracts from the normative tax base. The definition uses rather the more neutral yardstick of the "benchmark tax". Tax expenditures in this sense are deviations from the benchmark tax. The benchmark has no normative significance. Deviations from it in order to arrive at the normative tax base may be perfectly appropriate."

Thus , instead of starting from first principles, one can list the constitutive elements of the benchmark. For instance, Kraan (2004) includes following elements in the definition of the benchmark "the rate structure, accounting conventions, the deductibility of compulsory payments, provisions to facilitate administration, and provisions relating to international fiscal obligations".

According to Kraan's definition, the existence of differentiated rates does not in itself imply the existence of tax expenditures: they can be part of the benchmark. According to OECD (2010b), virtually all benchmark definitions recognize elements to address taxpayer's ability to pay and contain provisions to address vertical equity. Therefore, benchmark systems typically admit progressive tax rate schedules, basic/standard deductions, zero-rate bands, and deductions for expenses in earning income, perhaps subject to a cap. Note that this reasoning is based on the concept of vertical equity, which can also be considered as a first principle. Thus, even in "pragmatic" approaches, it is impossible to completely avoid normative decisions.

Even then, this approach is far from clear-cut in practice. For instance, the OECD considers all provisions that may have an impact on the neutrality and horizontal equity of a tax system or whose objectives could be achieved by alternative public expenditure policies as tax expenditures.(OECD 2010b). But none of these criteria can easily be operationalized, and, again, they all involve some value judgements.

It is therefore not surprising that benchmark systems vary from country to country. As the OECD (2010a) put it:

> "(s)ome countries have very elaborately specified benchmarks, while others have only implicit definitions of tax expenditures from which their benchmark systems are inferred (...) A country with a very general benchmark could consider many provisions of the actual law to be tax expenditures. In another country, a more elaborate benchmark might include some of those same kinds of provisions, which therefore would not be considered tax expenditures."

Taking into account the discussion above, one easily understands that the most important criticism against the concept of tax expenditures is focused on the concept of a benchmark tax system (see Jacobsen et al. 2010). According to Jacobsen et al., some object that the concept does not have a sufficiently rigorous formal basis and is more or less a result of a series of subjective, pragmatic choices. In later sections of this chapter, we shall attempt to derive appropriate benchmarks for several taxes, and our analysis will confirm the difficulty of finding firm grounds for the proposed benchmarks.

Measuring tax expenditures

Even if it were possible to find broad agreement on the definition of the appropriate benchmarks, measuring tax expenditures would still remain far from obvious.

Indeed, as the OECD (2010a) points out: "(s)ince tax expenditures are not actual outlays, the amounts "spent" are notional; that is, they are based on assumptions and estimates as to how taxpayers would behave under particular conditions."

The literature usually list three different approaches to estimate the cost of tax expenditures (see e.g. Burman (2003), Jacobsen et al. (2010) and OECD (2010a)):

- **Revenue foregone**: The cost of a tax allowance is the product of tax rate and the observed amount of the allowance. This is a static estimate of the loss of tax revenue. and does not take account of behavioural responses. This method is the easiest to use, but is not based on realistic behavioural assumptions.
- **Revenue gain**: the amount by which tax revenue is reduced as a consequence of the introduction of a tax expenditure, taking into account behavioural changes and the effects on revenues from other taxes as a consequence of the introduction.
- **Outlay equivalence**: the direct expenditure that would be required in pre-tax terms, to grant the same after-tax gain for the taxpayers as the tax expenditure. As emphasized by Jacobsen et al., this approach takes into account the fact that regular transfers are sometimes estimated gross of the tax paid by the recipient, whereas tax transfers are by definition net of tax. This can create the impression that the tax expenditure is a cheaper way to get the same amount of cash into the hands of the recipient than the regular expenditure.

There are also other issues with the measurement of tax expenditures which we will address when discussing individual tax types in detail. For instance: should one use present value calculations when evaluating accelerated depreciation? Or how should we isolate the effects of tax expenditures that interact with other features of the tax system (that may fall under the competence of a different political subdivision)? As we shall see, none of these questions has clear answers.

Comparability

As we have seen above, there are several reasons why benchmarks vary over countries. Määttä (2012) lists the following criteria according to which the benchmark may differ between countries and over time:

- the definition of the tax base or the tax-paying unit,
- whether it is adjusted for inflation,
- what degree of integration between corporate and individual taxation is considered the norm,
- which accounting period is appropriate,
- whether a realization or accruals basis is used for assessment, and
- how tax sanctions are assessed.

The OECD (2010a) acknowledges that "comparisons from one country to another are potentially vulnerable to benchmark issues, such as the identification of provisions as structural measures of the ability to pay tax."

The question remains how to cope with these difficulties. Some authors propose to give up any attempt at international comparisons. For instance, according to Jacobsen et al. (2010) "a comparison of the number and amount of tax expenditures can be rather misleading. A general definition tends to generate a lot of tax expenditures, while a more narrow definition can lead to less or almost no tax expenditures at all. In between there are systems based on various concepts that differ along several dimensions."

In a study for the World Bank, Brixi et al. (2004) go even a step further: "We do not provide international comparisons of the magnitude of tax expenditures, in part because countries use different benchmark tax systems and data are not comparable. Moreover, there is no agreement on the definition of the benchmark tax system and, consequently, on which provisions are considered tax expenditures and which are benchmark provisions."

While we sympathize with these viewpoints, we also think that they go too far. The relevant question is not whether comparisons are possible, but what type of comparisons are meaningful in the light of the questions that are being asked. This is the approach we propose for this study, and which we explain in more detail in the next subsection.

Approach taken in this study

It is our viewpoint that despite the impossibility to define generally accepted benchmarks, international comparisons are still possible as long as one acknowledges that there is no single indicator that can provide an answer to all questions and for all categories of tax expenditures.

As we shall see below, tax expenditures for fossil fuels can be grouped into three broad categories:

- Some tax expenditures (personal income taxes and social contributions) pose very deep methodological challenges in principle. However, in the context of this study, these methodological issues are not relevant because, to the best of our knowledge, their magnitude compared to other categories of tax expenditures favouring fossil fuels is negligible.
- For royalty concessions, no meaningful international comparisons are possible, because both royalties payments and exemptions need to be evaluated as a whole, and need to be related to the corporate income tax. The only relevant criterion is the impact on the total marginal tax rate of the firm, but it has been agreed with the Commission services that such calculations would fall outside the scope of the project. The same consideration applies to the corporate income tax. Thus, within the scope of the project, we will report country specific provisions on the royalty regime, and we shall group the figures on

royalties and on corporate income taxes. However, the net effect of these provisions will not be estimated.

- VAT and excise taxes confront us with deep methodological issues concerning the choice of the benchmark. Due to the lack of consensus on the appropriate benchmark, it is not clear whether it is possible to develop a methodology for meaningful arithmetic operations on tax expenditures from different countries. It is, however, possible to report estimated tax revenues and tax expenditures for different definitions of the benchmark. This would allow the reader to evaluate how different benchmark affect international comparison. In order to obtain figures that do not depend on the size of the economy, we need to relate the absolute figures to meaningful denominators. In this study the estimates of support are presented[29]:
  - Per unit of energy, as in OECD (2013b);
  - Per unit of CO2.

Thus, acknowledging that no single solution exists for the issue of international comparisons, we have made calculations using a limited number of benchmarks, stressing that alternative benchmark definitions may lead to radically different results.

In what follows, we will explain in more detail how we have applied these principles to, respectively: excise taxes, VAT, personal income taxation and social contribution, corporate income taxation and royalty payments.

2.4.2 Excise taxes

General context

Excise taxes are subject to legal provisions at the European level. DG TAXUD defines excise taxes as:[30]

> indirect taxes on the consumption or the use of certain products. In contrast to Value Added Tax (VAT), they are mainly specific taxes, i.e. expressed as a monetary amount per quantity of the product.

EU legislation on this issue can be divided into three main categories (DG TAXUD):

- The structure of the tax to be applied to a particular group of products. The structure of taxation means the definition of the product categories, the way in which the excise duty is calculated, the scope of possible exemptions, etc.

- The minimum rates of duty that Member States have to respect for each type of product. Above those minimum rates, Member States can freely fix their own rate levels.

- General provisions that apply across the product categories. These provisions concern in particular the production, storage and movement between Member States of excise products, and are not relevant for the purposes of our study.

For energy products, the most relevant piece of legislation is Directive 2003/96/EC restructuring the Community framework for the taxation of energy products and

[29] The advantages and limitations of each denominator are discussed in detail in Section 0.

[30] http://ec.europa.eu/taxation_customs/taxation/excise_duties/gen_overview/index_en.htm

electricity. The Directive widens the scope of the EU's minimum rate system for energy products, previously limited to mineral oils, to all energy products including coal, natural gas and electricity[31].

We should also mention that, on 13 April 2011, the European Commission presented its proposal to overhaul the rules on the taxation of energy products in the European Union. The new rules aim to take into account both their CO2 emissions and energy content. Existing energy taxes would be split into two components that, taken together, would determine the overall rate at which a product is taxed[32].

Conceptual issues

In the case of excise taxation, economic theory provides a clear normative benchmark:

- In order not to distort the choice of inputs by firms, intermediate goods should be untaxed, except in order to correct for externalities.
- Excise taxes on consumption fulfil a dual role:
  - On the one hand, excise taxes are usually levied on substances that are either harmful to others (for instance, fossil fuels) or to the consumers themselves (such as tobacco products and alcohol)– therefore, they have a clear "regulatory" dimension;
  - On the other hand, excise taxes are levied on goods with a very inelastic demand: as optimal tax theory requires, these goods should be taxed heavily. However, because goods with a very inelastic demand tend to be necessities, distributional concerns could lead to lower rates than those based on efficiency considerations alone.

Economic theory thus justifies why VAT is (in principle) only levied on final consumption while excise taxes can be levied on business that use polluting goods as input in production (OECD, 2013a). The question remains open whether this normative benchmark is generally accepted and applied in practice.

Määttä (2012) reports that Norway, for instance, applies a benchmark that is based on the theory of optimal taxation, and explicitly splits the benchmark between fiscal and environmental excise duties:

> For fiscal excise duties the exemption of taxes on production is part of benchmark and the environmental taxes are in line with external costs. In Norway, tax expenditures related to environmental taxes are calculated by deviations from the reference rate that normally is set in accordance with the estimated external costs. Areas that are exempted from taxes subject to other significant measures, e.g. quotas, are not normally treated as tax expenditures.

Other countries take a slightly less rigorous approach. According to Määttä (2012) Denmark does not consider environmental taxes as tax expenditures if they differ from the external costs. However, carbon taxes in sectors *covered by the Emissions Trading Scheme* are regarded as tax *sanction*.

31 http://ec.europa.eu/taxation_customs/taxation/excise_duties/energy_products/legislation/index_en.htm

32 http://ec.europa.eu/taxation_customs/taxation/excise_duties/energy_products/legislation/index_en.htm

In reality, it will never be possible to design a regulatory excise tax that is perfectly correlated with the harm caused by the product. Kraan (2004) gives the following example:

> If an excise is levied on a harmful product (for example, pure alcohol), no exceptions for less harmful products are necessary. In practice excises are almost never levied on the harmful ingredient per se. The normative tax base will then deviate from the benchmark.

Thus, any excise system, even if it is designed with an explicit regulatory dimension, will contain pragmatic choices leading to differentiated rates. It remains open whether such pragmatic deviations from an ideal benchmark should be considered tax expenditures.

Actually, even at the theoretical level, there is no agreement on whether excise duties should be interpreted as merely fiscal taxes or as regulatory taxes as well. To illustrate how this affects the discussion on the appropriate benchmark, let us consider the old example of leaded versus unleaded gasoline, which is discussed in both Kraan (2004) and Määttä (2012):

- Even if excise taxes play a regulatory role, the benchmark is not well-defined: is the lower tax rate of unleaded petrol tax an expenditure or is the higher tax rate of leaded petrol a tax sanction?
- However, some hold the view that excise taxes are not regulatory taxes at all. Kraan (2004) argues that, under this framework, "a special provision for a less harmful product is not part of the definition of the normative tax base but an exception to it."

In practice, countries introduce excise taxes in a largely ad hoc manner without explicit normative framework (see also OECD 2013a). However, even then, the line between conceptual and practical issues is blurred. For instance, "(a)ccording to some, a meaningful definition of a benchmark tax is only possible if the tax is sufficiently broad in range. However, excise duties are narrow-based, selective taxes in contrast to the income taxes and value added tax." (Määttä, 2012). Some would thus argue that the concept on tax expenditures does not make sense in the context of excise taxes.

Two other example of discussions where normative issues are mixed with pragmatic ones are mentioned in OECD (2013b):

- It is common that "fuel used by producers in primary sectors (agriculture, fishing, forestry and mining) is exempted when used in vehicles not operated on publicly financed roads, on the basis that at least part of the tax serves as a means for recovering the cost of building and maintaining those roads or to internalise costs associated with road use (e.g. accidents and noise)." This exemption follows the logic that excise taxes levied on vehicle fuels are (implicitly) partially earmarked for road funding. This is clearly a normative issue; and not one that fits within the economic theory of optimal taxation. The OECD (2013b) thus concludes: "The *intent of the tax* may affect whether or not the country in question considers a particular exemption to be a tax expenditure or not." (emphasis added).
- In most OECD countries, and across the EU, industries engaged in the upgrading or transformation of energy from one form to another enjoy the "manufacturer privilege" – "a provision of the tax code which deems that fossil fuel used in the production of final energy products cannot be taxed". In the view of the OECD, "(i)f the subsequent consumption of the energy products resulting from this type of energy transformation process is subject to taxation (e.g. in the case of an electricity tax at the point of distribution), it might be

logical to exempt from tax the fuel inputs (e.g. natural gas) that are transformed into energy outputs (e.g. electricity) in order to avoid double taxation". At the inception meeting, the Commission services have agreed that "manufacturer privilege" falls outside the scope of this study.

According to Määttä, these difficulties are reflected in a lack of consensus on the appropriate benchmark. The OECD (2013b) has concluded that few reports " attempt to estimate tax expenditures in respect of excise taxes (which, although significant, may in part be because of conceptual difficulties in defining an appropriate benchmark system for a tax that is applied to a specific commodity)."

This issue becomes particularly relevant once one moves from national assessments to international comparisons without using a common benchmark. As the OECD (2013b) has argued: "A country that applies high rates of taxation to fossil-fuel end products within the context of a highly differentiated excise-tax system may thus have higher measured support to fossil fuels than a country with lower but uniform excise-tax rates, even if the tax system of the former country has higher taxes than the latter country on each type of fuel."

We will illustrate this with the excise tax structure that actually exists in the EU, and we will also propose a pragmatic solution.

Implementation

The Excise Duty Tables published by DG TAXUD[33] confirm that that, in several EU countries, excise taxes are highly differentiated according to the energy source that is being taxed and according to the applications (heating, transport etc). There is no evidence that the differentiation reflects differences in external costs according to the fuel or to the application, and this raises the question whether these differences should be considered "tax expenditures" or not.

One possible approach is to assume that "broad" differences (e.g. according to fuel types and "broad" applications such as industry, heating, propelling etc) reflect the "benchmark" system and that "tax expenditures" refer to exemptions *within* those broad categories. Thus, one could argue that the lower taxation of diesel for domestic heating than for transport is part of the benchmark, and only start refer to "tax expenditures" if some categories of households benefit from lower rates (or from a lower tax base).

However, the definition of what constitute "broad" categories is largely an arbitrary one. The OECD (2013b) for instance differentiates *in theory* between three main categories of tax expenditures:

- those related to specific groups of consumers, such as some government entities or low-income earners;
- those related to specific tax bases, such a lower tax rate (or exemption) on diesel relative to gasoline (petrol);
- those related to how the fuels are used, diesel use on highways versus diesel used in primary industries.

33 http://ec.europa.eu/taxation_customs/taxation/excise_duties/energy_products/rates/index_en.htm

However*, in practice*, the differential taxation of diesel and gasoline in Belgium has for instance *not* been reported as tax expenditure in OECD (2013b), which shows that there is no clear-cut practical application of these criteria.

Even if one would agree on the definition of the categories, this leaves open the question of the benchmark rate. We have shown above that we are not even remotely close to a consensus on this point.

Still, the discussion above has also shown that (even qualitative) comparisons between countries are not possible without using benchmarks that are at least broadly similar (even though they do not need to be identical). We have also argued that it is simply impossible to avoid at least some value judgements, even if one does not wish to refer to theoretical considerations of optimal taxation. The question is not whether one wants to use normative benchmarks. The real choices we will have to confront is whether these normative benchmarks should have rigorous foundations, and whether we think that there is one unique meaningful benchmark.

Taking into account that it is impossible to find a generally acceptable benchmark for excise taxes, it is debatable whether it is possible to define meaningful arithmetic operations (such as taking averages) on tax expenditures from different countries unless one would take one common benchmark across the EU. Such a single common benchmark has the disadvantage that it does not acknowledge that differences in tax structures and rates reflect choices made by sovereign countries, which reflect the preferences of the policy under consideration.

As an alternative, one could define several possible benchmarks for each country, and report estimated tax revenues and tax expenditures for these different definitions of the benchmark using some common denominator. This would allow a qualitative comparison between countries under different possible benchmarks, without making a final value judgement on the benchmark that is the most appropriate. However, absolute figures on tax receipts and expenditures depend on the size of each economy, and cannot be meaningfully compared either. Therefore, both tax revenues and tax expenditures need to be defined in comparison to some meaningful common denominator. We discuss all these issues below.

One value judgement that should be broadly acceptable is that excise taxes should be, to some degree, related to the externalities they supposedly correct. We therefore first discuss an approach where the benchmarks are defined as a function of external costs. Next, we elaborate on the approaches that can be taken if one prefers not to follow this approach. Finally, we consider the different options for common denominators.

Benchmarks related to external costs

When using external costs as reference point, one has to face the following complications:

- If the excise taxes on a certain fuel in a certain application are lower than the external costs, then we could argue that this constitutes an implicit subsidy (whether or not the excise is levied on consumption or on intermediate products). However, it could well be that the externality is also internalised through command-and-control measures such as emission standards. Actually, if a sector is included in the ETS (and if one accepts the assumption that the ETS prices correctly reflect the social cost of carbon), then any excise tax on its energy inputs could be considered as an over-internalisation (abstracting from other external effects than climate impacts). Independently of the thorny issue

of whether ETS prices are indeed "correct", excise taxes cannot be considered independently from ETS prices. Also, some countries also levy taxes on energy consumption (expressed in kWh, not in units of the fuel used) or on CO2 emissions. These levies should be converted to taxes on fuel consumption and added to the relevant excise rates to obtain the total "tax".

- In the case of excise taxes on consumption, there is also a public finance component, and the taxes can thus higher than the external costs. Can we then conclude that there is no subsidy from a normative point of view? Let us for instance suppose that (a) both diesel and gasoline are taxed at a rate that is higher than their marginal external costs; (b) the external cost of diesel is higher than the external cost of gasoline; and (c) the unit tax on gasoline is higher than on diesel. Although this example is purely hypothetical, it does illustrate a point: the consumption of both gasoline and diesel will be reduced beyond the optimal level, what can say we about the relative shares of diesel and gasoline from a normative point of view?

Thus, if we would take a "pragmatic" normative approach, we see that we should take not only the complete tax structure into account, but also all other environmental regulations (including other market based instruments). As such a comprehensive approach is not feasible, an alternative approach is to report three different figures which reflect three different concepts of "tax expenditure":

- If the marginal external costs are higher than the excise tax rate, then the difference is a subsidy.
- If the excise tax rate on fuel A is higher than its marginal external costs, but is still lower than the excise rate on other fuel with lower (or equal) external costs than good A, then fuel A can still be considered to be subsidised. The unit subsidy is then assumed to be equal to the difference between the two excise rates (although this is not true from a welfare point of view).
- The comparison above could also be made to the same good in different applications. This would allow us to cope with the difference in excise rates for fuels used in heating versus transport, or between excise rates in inland shipping versus road, for instance. The unit subsidy is then again assumed to be the difference between the two excise rates (again, under the caveat that this is not true from a welfare point of view).

The question remains open whether, for this purpose of this evaluation, we should add ETS prices (correctly converted to the fuel under consideration) and other energy taxes to the excise rate. Here as well, a pragmatic approach seems appropriate, where we would report both the "restricted" and the "extended" excise rate.

A key feature of this approach is that it remains agnostic on the question whether the "public finance" component of the excise tax is fulfilled correctly: we take here that the rates and the differentiation of the rates across products reflect differences in political preferences across MS.

This approach would reconcile to some extent the need to avoid normative statements on the rationale behind the subsidies, while still differentiating according to some broadly comparable categories.

Benchmarks unrelated to external costs

If one does not wish to use external costs as a guideline to define the benchmark, then the number of possible benchmarks becomes very large indeed.
Some key choices are:

Any benchmark should refer to some set of "observed" tax rates. The question remains whether this should be the highest observation in this set, the lowest, or some "central" value (average or median)?
Do we define separate benchmarks for each country, or do we use common benchmarks across the EU?
Do we define separate benchmarks for each fuel:
If no, we need a common denominator for all fuels (see further below).
If yes, do we use one single benchmark for each fuel, or do we define additional subcategories? Possible subcategories could include for instance the use to which the fuel is put (see above).

As a pragmatic approach for the present study, it was decided that for excise taxes and other specific taxes on energy use, the proposed rates in the Commission's 2011 proposal for amending the Energy Taxation Directive (COM(2011)169) will be used. For illustrative purposes, the results of an analysis with an alternative benchmark are also presented. This benchmark is the highest tax level (per unit of energy and per unit of CO_2 emissions) in the respective Member State in each of the three main categories (transport, process/heating, electricity) as it was in the year under consideration.

The choice of a common denominator

The use of a common denominator is key if one wants to compare taxes and subsidies across fuels. Indeed, even though the tax base for an excise always refers to a physical quantity, this variable is not the same for all fuels: sometimes it is the volume, sometimes it is the weight, and in some cases it is the actual energy consumption. Thus, even within a country, comparisons between the tax treatment of different fuels require the use of a common denominator.

We will consider the following common denominators:

- Per unit of energy, as in "Taxing energy use" (OECD 2013b). The advantage of this approach is that it expresses the taxes and the subsidies relative to the units that are relevant for the users. The main drawback is that it does not give any indication to what extent the tax expenditures distorts the market in favour of the most polluting fuels.
- Per unit of CO2, as in "Taxing energy use" (OECD 2013b). The use of such common denominators illustrates how the excise expressed per unit of CO2 varies across fuels and across their application. Thus, if the benchmark to use are the CO2 emissions, then it is clear that some applications (such as heating) and fuels are subject to much lower tariffs than others. The drawback is that this indicator does not provide any information on other externalities (such as local air pollution) and is not expressed in a unit that is relevant for the user.

We have also considered reporting these figures per EUR of external damages. One advantage of this denominator is that it considers all external costs of fossil fuel use, not just CO2 emissions. The main drawback of this approach is that external costs do not only depend on fossil fuel use, but also on other parameters (for instance, in the case of transport on the location of the source) that cannot be taken into consideration in nationwide studies, implying that the monetary values used are just very gross approximations. Even more important is that, in the case of industrial emissions, it is not possible to trace pollutants measured at the stack level back to the fuels that were used in the process or for combustion. We have therefore dropped this criterion.

One final note: in several OECD countries, some sort of support is provided to poor households. This support can take the form of a lump sum grant, but also of reduced

tariffs on energy use (such as the Social Tariff for Natural Gas in Belgium). As the tariff also includes the excise paid, one could argue that the share of the excise in the total tariff reduction corresponds to a tax expenditure rather than direct budgetary support. This is a complication that we will not further consider. This type of support will thus always be labelled as "direct budgetary support".

2.4.3 Value added tax

Context

The OECD (2013b) refers to value added taxes (VAT) as taxes "which are intended to be broad-based taxes on final consumption representing a percentage of the value of the good or service sold." Different rates of VAT apply in different EU member states. Directive 2006/112/EC requires Member States to apply a standard rate of VAT (Article 96). The lowest standard rate of VAT throughout the EU is 15% (Article 97), although member states can apply reduced rates of VAT to certain goods and services (Article 98).

Definition of the benchmark

For VAT, there is no normative benchmark comparable to the one discussed for excise taxes. However, as VAT are based on the values of the goods or services, they are only very indirectly related to any externalities caused by the production or the consumption of these goods. They are therefore not well suited for regulatory purposes. This also implies that, from an optimal tax theory viewpoint, intermediate inputs should be exempt from any VAT (however, see the discussion below).

Therefore, benchmarks are usually defined compared to the "standard VAT rate", without references to external costs.

The VAT Directive (2006/112/EC) sets a standard rate of (currently) at least 15% (art. 96-97). Member States may apply one or two reduced rates of at least 5% (art. 98-99). The supplies to which a reduced rate may be applied (after consultation of the VAT Committee) include natural gas, electricity and district heating (art. 102). There are also some country specific provisions on the use of a reduced rate for energy products (e.g. LPG in Cyprus, art. 104a).

For the purpose of international comparisons, we have considered the following possibilities for the definition of the benchmark:

- Use the minimum EU standard rate of 15%, even when the standard rate in the country is higher. Thus, if the standard rate in the country is 20%, then a measure that would reduce the effective VAT rate for some products to 8%, only 7 percentage points would count as a tax expenditure, even if the difference with the standard rate is 12 percentage points. Note that only Luxembourg applies this minimum standard rate of 15%.
- Use the country specific standard rate. Since standard rates differ between member States, this approach limits the comparability of levels of support across countries. An advantage of this approach is that it acknowledges that the standard rates reflects the political preferences of each country. This is in line with the approach used by, for instance, Määttä (2012).
- Use the highest standard rate that is currently applied in the EU (27%, in Hungary), which would imply that all rates (except in Hungary) are tax expenditures.
- Use some "mid-point" standard rate (for instance, 20%). The choice of the "midpoint" is of course arbitrary.

It was agreed that the standard VAT rate as prevailing in the Member State in the year under consideration would be taken as the benchmark in the present study.

A fundamental feature of VAT is it (and therefore also a reduced VAT rate) is only effective for final consumption: VAT paid on energy as an intermediate input can be claimed back by companies, and a reduced rate therefore makes no difference for them. This is in line with the prescription of optimal tax theory that intermediate products should not be taxed unless in order to correct for externalities (and excise taxes are better suited for this purpose than *ad valorem* taxes).

However, there are exceptions to this rule: companies supplying goods and services that are exempted from VAT (such as medical and financial services) cannot recoup VAT paid on their inputs. Therefore, differentiated VAT rates will affect their input mix (to which a special 'flat rate' scheme may apply[34]). In order to avoid these complications, we will restrict the discussion of reduced VAT to final consumption by households, which account for the main part of the subsidy.[35]

2.4.4 Social contribution and personal income taxes

Conceptual issues

The concept of tax expenditures was first applied to personal income taxes and is attributed to Stanley S. Surrey. Surrey defines tax expenditures as follows (quoted in Burman (2003)):

> The tax expenditure concept posits that an income tax is composed of two distinct elements. The first element consists of structural provisions necessary to implement a normal income tax, such as the definition of net income, the specification of accounting rules, the determination of the entities subject to tax, the determination of the rate schedule and exemption levels, and the application of the tax to international transactions. The second element consists of the special preferences found in every income tax. These provisions, often called tax incentives or tax subsidies, are departures from the normal tax structure and are designed to favor a particular industry, activity, or class or persons. They take many forms, such as permanent exclusions from income, deductions, deferrals of tax liabilities, credits against tax, or special rates. Whatever their form, these departures from the normative tax structure represent government spending for favored activities or groups, effected through the tax system rather than through direct grants, loans, or other forms of government assistance.

There are several problems with this definition. Burman (2003) and Määttä (2012) point out that there is not even a consensus on how to characterize the "normal

[34] As stipulated in the VAT Directive 2006/12, Title XII, Chapter 2.

[35] Final energy consumption by households in the EU is about twice the final energy consumption by the services sector (273 and 143 Mtoe respectively in 2011, according to Eurostat). A non-negligible part of the services provided by the services sector is exempted from VAT (e.g. financial and medical services; education). However, the exact size of VAT-exempt goods and services cannot be estimated since the sectors as distinguished in the National Accounts do not match the boundaries between VAT-exempt and non-VAT-exempt goods and services. The only thing that can be said is that calculating the tax expenditure of a reduced VAT rate on energy for households only implies a significant underestimation of the total tax expenditure, but that it is unlikely that the total amount is more than 50% higher.

income tax." The literature often refers to the so-called Schantz-Haig-Simons (SHS) economic income concept, which defines one period's income as consumption plus the change in net wealth during the period. Because this concept is too abstract for immediate application, the benchmark tax system used in practice is a combination of elements from the theoretical benchmark and the actual tax system.

Examples of practical problems are:

- There is no consensus on how to treat imputed income (such as the imputed rent on a owner-occupied house), in-work deductions or what kind of expenses constitutes cost of earned income.
- Accelerating deductions and deferring taxable income are both mechanisms to reduce taxes by taking advantage of the time value of money. However, in practice, they are not always treated symmetrically in inventories of tax expenditures - only accelerated depreciation is usually accounted as tax expenditure.

We refer to Burman (2003) and Määttä (2012) for more details on these intricate issues.

Implementation

However, for the purposes of this study, it is very unlikely that these discussions will matter in practice. The OECD (2013a) has only identified a very limited number of tax expenditures that fall within this category:

- Reduced social contributions (Exemption or Deferral of Social Contributions in Poland), but these have been phased out.
- Miners' Bonus in Germany: this has been phased out since 2008
- Exemption or Deferral of Taxes and Fines in Poland: in this case, state aid covered unpaid income taxes and fines in the coal mining sector.

None of these examples pose specific problems in terms of international comparability. One specific problem raised by the OECD (2013a) is "support provided through provisions of the income-tax system of many countries that encourages employers to provide employees with fuel credit cards for buying motor fuels used in company-owned automobiles". The OECD has not included these expenditures in the inventory due to a lack of available data.

2.4.5 Corporate income tax

Conceptual issues

As explained by Valenduc in Brixi et al. (2004) the determination of the benchmark for corporate income tax should be based on a correct understanding of the nature of corporations:

> Incorporated enterprises (…) are not "final economic agents" but act only as an intermediary. Any income earned by a corporation is ultimately attributed to workers, executives, lenders, or shareholders.(…). Income distributed by corporations consists mainly of wages, interest, and dividends. Profit also can be retained in the corporation and not distributed. It should be noted that if the personal income tax system had a tax base corresponding perfectly to comprehensive income, no corporate income tax would be needed. Under such a system, wages, interest, and dividends would be included in personal income, as would retained profits, because retained profits would result in unrealized capital gain for the shareholder.

Hence, argues Valenduc, the following guidelines for the benchmark tax base:

- Any income earned by corporations that is not included in the personal income tax base (such as retained earnings) must be included in the corporate income tax base.
- Corporate income tax also has a withholding function: it is easier to subject dividends to tax where they are attributed than where they are received, as there are more shareholders than corporations. As a consequence, any subsequent taxation could result in double taxation.

Here as well, the practical applications of these principles raises questions for which no clear-cut answers exist. Valenduc gives, inter alia, the following examples:

- The withholding argument would justify a tax base before deduction of interest. In practice, this has never been implemented.
- The tax base should be subject to a single tax rate. Income redistribution and progressivity are to take place between households, not between corporations. Therefore, argues Valenduc, any tax rate reduction depending on the size of the company or the type of activity has to be considered a tax expenditure.

One of the most contentious issues is how to deal with depreciation. As argued by Valenduc, any accelerated depreciation resulting in a depreciation rate higher than economic depreciation on a replacement basis must be considered a tax expenditure. However, according to Määttä (2012):

- There is no agreement on a quantitative measure of true depreciation,
- In some countries accelerated depreciation is not even regarded as tax expenditure: these countries justify including accelerated depreciation as part of the benchmark either because of its general applicability or because of the absence of robust information about true economic depreciation to use as a benchmark.

Määttä (2012) concludes that "the absence of a single accepted methodology for defining the benchmark for the corporate income tax has led to considerable differences between countries as to what elements are considered to be in the benchmark."

Implementation

For practical purposes, the discussion here can be limited to the issue of accelerated depreciation (the interaction between royalty payments and corporate taxation will be discussed in Section 2.4.6): from OECD (2013a) and Oosterhuis et al. (2013), these are the only schemes affecting corporate taxation that are relevant for the measurement of fossil fuel subsidies in the EU (there are other issues that are relevant in some non-EU OECD countries, but these are not relevant for the purposes of this study).

In the absence of convincing arguments in favour of an alternative, the existing tax schedule of each individual country will be taken as the relevant benchmark.
The main methodological question then is whether one should use the nominal cash flow approach or the present value approach for the estimation of the corresponding tax expenditure (OECD 2013a):

- The nominal cash flow approach measures the extent to which taxes in a particular year are higher or lower as a result of the accelerated allowance than they would have been in its absence.
- The present value approach measures the discounted value of the time series of annual cash-flow tax expenditures, normally estimated from the time at which the asset is purchased.

Conceptually, the present value approach is the right approach, unless one can assume that the assets benefitting from accelerated depreciation are in some sort of steady state. Indeed, if the age of the assets that enjoy accelerated depreciations is correlated (which seems very likely if the measure was targeted at some specific industry), then the nominal cash flow approach can completely bias our estimates. For instance, if the assets under consideration are sufficiently old, our current observations may include only negative tax expenditures, even though the benefitting firms have enjoyed a net tax credit on a present value basis.

The main limitation of the net present value approach is that it depends on data (the expected longevity of the assets and the expected profits before depreciation over the entire life-cycle) that may not be available.

A specific issue is the following. In the UK gas and oil sector, it is impossible for companies to deduct interest costs and other financing charges. At the same time, these companies enjoy an immediate write-off of both capital and exploration-and-development expenditures. This issue is similar to the problem with royalties we will discuss in Section 2.4.6: there is a combination of favourable tax treatments with unfavourable ones, and it is not clear on prior grounds which effect dominates.

Given the complications discussed above, it was decided not to attempt to develop a common method to estimate amounts involved in corporate income tax facilities. Available national estimates for such types of support will be reported as such.

2.4.6 Royalties

Conceptual issues

The issue of royalties is arguably the most conceptually intricate. The OECD (2013a) defines royalties as follows:

> Royalty – In energy, a term used to describe either the regular payments made by the lessees of subsoil assets to the owners of the assets.

In the view of the OECD, lower royalty rates on less productive or more costly fields may be "tax expenditures" in that they represent a concession relative to standard rates. However, the OECD also acknowledges that "lower royalties may be rough ways of taking into account higher costs and lower margins in systems that otherwise would over-tax (and therefore potentially render uneconomic) economically marginal projects (which generate little or no economic rent)."

It is worthwhile further exploring this concept.

In the context we consider here, the owner is usually the government. Therefore, an important conceptual issue is whether royalties should be considered as "market prices" or as "taxes".

To understand this, let us briefly summarize the arguments made by McKenzie and Mintz (2011):

- Royalties cannot be considered as market prices for the extraction of resources, because they are imposed unilaterally by governments. Therefore, they are conceptually closer to taxes than to market prices. This also means that

reduced rates compared to the standard rate cannot be considered to be deviations from a "correct" market price in any sense[36].

- Economically, the correct tax base for a royalty is the economic rent from extracting the resource. If the royalty equals the rent, then the producer will not be able to make supernormal profits by extracting resources from government owned assets, but the government will not distort the incentives for the extractions of the resource either.
- In practice, it is not possible to estimate the economic rent perfectly, and governments use royalty systems that are proxies to the "ideal" system. For instance, royalties are sometimes levied on the value of production rather than on the value of the rent. If average costs of extraction are increasing, this implies that the government actually "taxes" an amount that is higher than the value of the rent (and, it reduces the incentives for extracting the resource). Therefore, governments introduce provisions that correct (partly) for this, such as reduced royalties for small wells (in order to correct for the fact that these face higher average fixed costs than large wells). Thus, argue McKenzie and Mintz, the point here is that these reduced rates are not a subsidy for the small wells at all; they are an (imperfect) attempt to correct for the fact that real-world royalties use a tax base that is imperfectly correlated with the correct economic base – note that this is in line with the argument by the OECD.
- Finally, if royalties are considered as taxes (rather than as prices), they cannot be isolated from the provisions regarding corporate income tax. For instance, reduced royalty rates will lead to higher corporate income taxes, and the government will still be able to capture (part of) the rent.

The OECD concludes that resource royalty concessions are not indicative of the overall level of royalties in a country. They provide the following example:

> a country could increase resource royalty rates across the board, while simultaneously introducing a special credit to reflect cost increases in a particular subsector. Assuming the credit were reported as a royalty concession (...), it would be included in the inventory of support even though the two changes together resulted in an increase in the overall level of royalties.

Let us illustrate these issues with Ireland. The Irish government does not levy any royalties, nor does it participate in projects. Does this mean that all rents go to the producers? No, because the upstream oil and gas sector in Ireland attracts a specific corporate income-tax rate of 25%, as compared to the 12.5% rate that applies to most other sectors. Thus, the absence of royalty payments is (imperfectly) compensated for by a significantly higher corporate income-tax. Moreover, Iris law allows for full deductions for exploration, development, and field abandonment costs in the year in which they are incurred. This provision can then be interpreted as an attempt to compensate firms for the imperfect correlation between corporate profits and economic rents. Indeed, this full deduction implies a post-tax decrease of several categories of fixed costs[37] .

[36] Based on the general literature on tax expenditures, one could also add: as royalty payments are not very widespread, it does not make much sense to talk about benchmark rates – benchmark rates are only meaningful if they are applied to a broad tax basis, such as the case with income taxation and VAT, for instance.

[37] Starting in January 2007, licenses are now also subject to a Petroleum Resource Rent Tax (PRRT) as provided for in the 2008 Finance Act. The PRRT is a progressive tax on the profits from oil and gas extraction. It is not clear to what extent the tax base for the PRRT actually corresponds to the concept of economic rent.

A second example: in The Netherlands, profits from production of hydrocarbons are subject to a 25.5% corporation tax (Vennootschapsbelasting) rate and royalty payments (Winstaandeel) at a 50% rate. These payments are, however, reduced by a cost uplift that allows for an extra 10% of the costs to be deducted from the income for royalty purposes. Again, we see an attempt to find approximations to the economic rent as a tax base.

Implementation

This is clearly a case where "apparent" subsidies are not necessarily subsidies according to any economically meaningful criterion. Unless we have tools to compare the actual tax bill to a tax system where the economic rents from resource extraction are used a tax basis, we cannot quantify the "subsidy" component of reduced royalty rates (or even evaluate whether the royalty scheme as a whole, and in interaction with general corporate taxation, leads to lower tax rates). We will therefore report the existing provisions, but not quantify them (any available national estimates for this type of support will be reported as such). Moreover, any discussions should be integrated in the broader context of corporate income taxation.

2.5 Data gathering and analysis

The common methodology as described above was applied by Member State experts to each of the 28 EU Member States (their names are in Annex B). They used common templates for calculations and reporting. Common data sources were also used (among others the IEA's (Extended) World Energy Balances), supplemented by national sources of information. Where necessary, information gaps were filled by contacting officials in national administrations. Given the limited time available (only 4 or 5 working days per Member State) it was not always possible to obtain all necessary data and some information gaps are still remaining.

For Croatia, an additional description was made of the energy market, prices, taxes and support mechanisms, similar to the information that was already available for the other 27 MS in the OECD (2013a) and IVM (2013) reports.

Checks on the accuracy and reliability of the information were made by the authors of the present report and by experts at TM Leuven and PBL.

3. Results

In this chapter the levels of support by Member State are brought together and summarized. More detailed information per Member State can be found in Annex A.

Estimated support to electricity was 'translated' into support to fossil fuels by multiplying it by the share of fossil fuels in electricity production for each specific Member State and year (see Annex C).

3.1 Direct budgetary support

Table 3.1 summarizes the amounts of direct budgetary support to energy users (including final consumers as well as business using energy as an input). This type of support is rather limited in the EU: direct support to energy consumers is mainly given by means of tax expenditures. The total amount of direct support in all Member States together probably does not exceed EUR 1 billion per year. Several Member States do not provide any budgetary support to energy users at all. There is no clear trend observable in the level of this type of support.

Table 3.1: Direct budgetary support to consumers/users by member State (mln €)

Member State	Type of support	Amount of support (years 2000-2005)		Amount of support (most recent year)	
		year	amount	year	amount
Austria	Energy-Tax Refund to Energy-Intensive Industries	2005	329	2011	329
Belgium	Social tariff for electricity and natural gas consumers	2002	unknown	2010	unknown
Bulgaria	n.a.				
Croatia	n.a.				
Cyprus	Price regulation	2000	0	2011	unknown
Czech Republic	n.a.				
Denmark	n.a.				
Estonia	Compensation for increased excise duty on diesel	2005	0.3	2011	unknown
Finland	n.a.				
France	Financial aid for electricity			2014	32
	Special solidarity rate (natural gas)			2014	94
Germany	Peak Equalisation Scheme	2005	240	2011	170
Greece	Social Residential Tariff (electricity)	2000	0	2011	unknown
	Program "Energy Efficiency at Household Buildings" (nat. gas)	2000	0	2011	unknown
Hungary	Natural gas and district heating cost subsidies	2005	306	2011	> 81
Ireland	Fuel allowance	2002	47	2011	178
	Electricity allowance	2002	25	2011	71
	Gas allowance	2002	1	2011	5
Italy	Transport fuel subsidy Basilicata region	2002	n.a.	2011	49
Latvia	n.a.				
Lithuania	n.a.				
Luxembourg	n.a.				
Malta	Eco-reduction and Energy benefit			2011	15
Netherlands	n.a.				
Poland	In-kind benefits for coal miners	2004	unknown	2012	3
Portugal	n.a.				
Romania	Fuel subsidies for railways			2011	16
Slovakia	Feed-in tariff for domestic lignite	2005	unknown	2011	unknown
Slovenia	Support for CHP plants	2004	unknown	2012	18
Spain	Aid scheme for coal workers			2010	3
Sweden	n.a.				
United Kingdom	n.a.				

Table 3.2 shows that direct support to producers (including public infrastructure) is also limited. Several MS do not apply any schemes at all. The main support schemes are for coal production (in Germany and Poland) and the Italian 'CIP 6/92' mechanism (mainly benefitting cogeneration). Subsidies to coal production are decreasing, and should be terminated by 2018. Some countries provide support to the development of natural gas infrastructure. Specific public R&D support to fossil fuels is given in several MS, but the amounts are generally limited.

Table 3.2: Direct budgetary support to producers by member State (mln €)

Member State	Type of support	Amount of support (years 2000-2005)		Amount of support (most recent year)	
		year	amount	year	amount
Austria	R&D support	2000	0.5	2011	1
Belgium	n.a.				
Bulgaria	R&D support			2012	< 0.1
	Infrastructure			2011	< 0.4
Croatia	n.a.				
Cyprus	n.a.				
Czech Republic	n.a.				
Denmark	R&D support	2000	2	2010	4
Estonia	n.a.				
Finland	n.a.				
France	R&D support	2000	39	2011	117
Germany	Support to coal mining	2000	3756	2011	1349
	R&D support	2000	9	2010	26
Greece	Subsidy for Suppliers of Fuels to Remote Areas	2005	6	2011	7
	Support for gas supply companies	2001	88	2011	156
	R&D support	2001	0.6	2011	0.7
Hungary	Support to coal mining	2005	61	2011	23
	R&D support	2005	0.5	2011	0.6
Ireland	Public Service Support Levy	2005	62	2011	92
	R&D support	2005	42	2011	68
Italy	CIP 6/92 Subsidy Mechanism ('assimilated sources')	2002	3380	2012	2199
	Compensation for small islands and minor electric companies	2002	unknown	2011	70
	State aid for coal mining	2002	12	2010	39
	R&D support	2002	16	2011	39
	Infrastructure	2002	0	2011	8.5
Latvia	n.a.				
Lithuania	n.a.				
Luxembourg	n.a.				
Malta	n.a.				

Netherlands	R&D support	2000	9	2011	9
Poland	Support for coal mining	2004	3531	2012	260
	R&D support	2004	n.a.	2012	0.6
Portugal	R&D support	2005	0.2	2011	0.1
Romania	State aid for coal mining	2001	unknown	2011	84
	R&D support			2007	< 7
	infrastructure			2011	1
Slovakia	Grants for raising accessibility of lignite reserves	2005	unknown	2011	unknown
	R&D support	2005	0	2011	0.7
Slovenia	Support for domestic coal usage	2004	unknown	2012	8
Spain	Preferential dispatch for domestic coal power stations	2002	n.a.	2011	400
	R&D support	2002	3	2011	0
	State aid for gas grid extension	2002	n.a.	2011	4
Sweden	R&D support	2004	0.1	2010	0
United Kingdom	Coal operating aid scheme	2000	66	2011	0
	R&D support	2000	7	2011	53

3.2 Tax expenditures

3.2.1 Excise taxes

Table 3.3 shows the calculated support levels using the benchmark of the excise tax rates as proposed in the new Energy Tax Directive proposal.[38] For most Member States, this benchmark leads to substantial estimated support levels (between 100 mln and several billions of euros per year). Differences between member States are also substantial; not only in absolute amounts, but also on a per GJ or per tonne CO2 basis. Generally speaking, however, the amounts of support show a decreasing trend over time: only three Member States (Croatia, France and Slovakia) had a higher support level in the most recent year than in year of observation in the previous decade. Apparently, Member States are reducing the gap between their energy tax systems and the system as proposed by the Commission, by increasing rates and/or by abolishing exemptions.

[38] This means that, for instance, fuels for international aviation and marine bunkers are still supposed to remain untaxed in the benchmark situation.

Table 3.3: Tax expenditures (excise taxes) by Member State; benchmark: rates as proposed in new Energy Tax Directive proposal

Member State	Year in period 2000-2005			Most recent year		
	Total (mln €)	€ per GJ	€ per tonne of CO2 emissions	Total (mln €)	€ per GJ	€ per tonne of CO2 emissions
Austria	637	0.78	11.91	57	0.07	1.05
Belgium	2012	1.17	16.59	1202	0.68	10.16
Bulgaria	808	2.20	19.04	496	1.62	13.23
Croatia	274	1.08	13.92	333	1.09	13.24
Cyprus	174	2.51	25.37	113	1.53	14.91
Czech Republic	1318	1.51	18.44	436	0.68	8.02
Denmark	872	1.60	17.95	742	1.47	16.45
Estonia	769	4.60	59.57	420	6.51	71.57
Finland	553	0.70	9.02	296	0.39	5.56
France	5559	1.08	16.90	5610	0.94	16.16
Germany	2531	0.32	3.50	871	0.11	1.28
Greece	2173	2.52	18.22	1471	2.10	13.20
Hungary	616	0.88	12.67	262	0.45	6.30
Ireland	332	0.68	8.33	107	0.24	2.85
Italy	3319	0.62	8.23	1983	0.40	5.24
Latvia	246	1.99	27.17	136	1.14	15.68
Lithuania	357	2.91	42.09	208	1.44	20.71
Luxembourg	318	1.93	25.56	190	1.35	17.40
Malta	6	0.14	1.97	1	0.01	0.12
Netherlands	1489	0.56	7.38	424	0.17	2.21
Poland	3204	2.06	28.14	2128	1.25	17.40
Portugal	580	0.95	11.84	287	0.53	5.33
Romania	1279	1.85	24.45	614	0.94	12.04
Slovakia	1216	2.15	38.03	1251	2.19	37.70
Slovenia	734	1.50	17.08	678	1.40	16.20
Spain	4477	1.21	15.83	3632	0.99	12.86
Sweden	406	0.37	8.47	155	0.15	3.37
United Kingdom	4411	0.73	9.44	3704	0.63	7.72

Table 3.4 shows the results when the 'highest rate in category' benchmark is used (to recall: the three categories are transport; heating and process fuel use; and electricity). This leads to very high amounts of estimated support levels, up to tens of billions of euros per year. Obviously, the highest levels are found in MS with high tax rates for specific subcategories (such as petrol in the transport category, or household consumption in the electricity category), since these high rates are the benchmark for all other fuels in the category (e.g. diesel in the transport category or heavy industry in the electricity category). Fuels for international aviation and navigation (bunkers) account for a large part of the total support (under the previous benchmark, the new ETD proposal, these fuels were still assumed to be exempted from tax; their exemption was therefore not counted as support in the estimates presented in Table 3.3).

Rather than being 'realistic' estimates of fossil fuel support levels, the figures in Table 3.4 should mainly be seen as indications for the impact that the choice of a benchmark can have on such estimates, as well as for the fact that the fiscal treatment of energy consumption differs widely between fuels and between energy users in most Member States.

Table 3.4: Tax expenditures (excise taxes) by Member State; benchmark: highest rate per unit of energy consumption[39] in category

Member State	Year in period 2000-2005			Most recent year		
	Total (mln €)	€ per GJ	€ per tonne of CO2 emissions	Total (mln €)	€ per GJ	€ per tonne of CO2 emissions
Austria	1358	1.66	25.42	1764	2.09	32.56
Belgium	7856	4.56	64.78	10,006	5,66	84,60
Bulgaria	669	1.83	15.77	582	1.90	15.50
Croatia	1102	4.35	55.94	1240	4.06	49.33
Cyprus	248	3.58	36.19	316	4.26	41.50
Czech Republic	5484	6.28	76.73	4514	7.01	83.15
Denmark	37,145	68.08	764.87	3472	6.89	76.92
Estonia	1003	6.00	77.67	360	5.57	61.24
Finland	3912	4.98	63.77	2337	3.05	43.93
France	23,515	4.58	71.50	19,226	3.21	55.39
Germany	19,260	2.41	26.61	21,993	2.88	32.40
Greece	3154	3.66	26.45	5505	7.86	49.38
Hungary	4650	6.68	95.62	3602	6.20	86.61
Ireland	1093	2.25	27.43	1307	2.91	34.69
Italy	34,524	6.49	85.60	32,215	6.56	85.09
Latvia	480	3.88	52.93	371	3.09	42.64
Lithuania	439	3.59	51.82	794	5.50	79.16
Luxembourg	529	3.22	42.53	422	3.00	38.66
Malta	348	7.78	109.19	817	11.84	164.20
Netherlands	21,064	7.96	104.39	30,420	11.95	158.80
Poland	21,987	6.98	76.38	22,324	7.19	79.04
Portugal	7056	11.52	144.03	6275	11.51	116.54
Romania	1390	2.01	26.58	3075	4.82	60.28
Slovakia	5471	9.67	171.18	6602	11.53	198.93
Slovenia	658	1.34	15.29	1517	3.14	36.24
Spain	29,568	7.98	104.53	14,152	3.84	50.09
Sweden	4279	3.94	89.39	5439	5.10	118.16
United Kingdom	19,735	3.26	42.25	23,187	3.95	48.33

3.2.2 Value added tax

As Table 3.5 shows, VAT reductions for fossil fuels and/or fossil fuel based electricity are applied in a minority of Member States. The total amounts involved are particularly significant in the UK and Italy. Some MS (Estonia and Hungary) terminated VAT reduction schemes for energy between the observation years,

[39] Figures for the benchmark "highest rate per unit of CO2 emissions" are the same for most Member States; only in the cases of Estonia, Finland, Germany, Hungary, Slovakia and Spain there are small differences. See Annex A.

whereas others (Latvia and Portugal) introduced new ones (which have, however, meanwhile been abolished again). Overall, there is an upward trend in the level of subsidization. Since VAT is an *ad valorem* tax, support levels tend to become higher as energy prices are increasing. In addition, a number of countries have increased their standard VAT rate in recent years while keeping the reduced rate at the same level, again leading to higher amounts of tax expenditure.

Table 3.5: Tax expenditures (VAT) by Member State

Member State	Year in period 2000-2005			Most recent year		
	Total (mln €)	€ per GJ	€ per tonne of CO2 emissions	Total (mln €)	€ per GJ	€ per tonne of CO2 emissions
Belgium	7	0.01	0.14	5	0.01	0.11
Estonia	2	0.03	0.37	0	0	0
Greece	137	0.49	3.11	188	0.61	3.67
Hungary	92	0.23	3.44	0	0	0
Ireland	115	0.45	6.38	194	0.76	10.79
Italy	898	0.33	4.65	1371	0.52	7.37
Latvia	0	0	0	4	0.31	2.88
Luxembourg	11	0.20	2.71	14	0.27	3.74
Malta	6	0.43	4.36	13	1.22	11.47
Portugal	0	0	0	226	0.72	9.33
United Kingdom	2677	1.56	20.02	4361	2.82	37.12

3.2.3 Social contribution and personal income taxes

None of the MS reported any tax expenditures in this type of taxes that specifically related to fossil fuels or electricity.

3.2.4 Corporate income tax and royalties

Tax expenditures in the corporate income tax and royalty schemes differ by Member State and interact with eachother. Therefore direct international comparisons are not meaningful. For details by Member State see Annex A. Only for two countries (Germany and the UK) substantial estimated amounts of support are available. In both Member States, the tax expenditures in foregone royalties for fossil fuels are estimated at around EUR 350 million in the most recent year.

4. Conclusions

The present study aimed at achieving a higher degree of harmonization in identifying and quantifying subsidies (budgetary support and tax expenditures) for fossil fuels in the EU-28. Clearly, with the limited time and resources available this objective could only to a certain extent be achieved, given the substantial number of methodological complications and the limitations due to insufficient data availability, consistency and reliability. The results presented should therefore be mainly seen as a first finger exercise with the approach and not as the final answer to the question "how much financial support is given to fossil fuels in Europe?".

Nevertheless, some general observations can be distilled from the compilation of Member State figures:

- Direct budgetary support to fossil fuel use/consumption is very limited in the EU-28 and does not show a clear trend.
- Direct budgetary support to fossil fuel production (including infrastructure such as pipelines) is also limited. The largest amounts of support are for coal; these show a downward trend and should be phased out by 2018. Significant amounts of support for natural gas infrastructure are identified in a few MS. R&D subsidies from the public budget occur in several MS but the amounts are generally small.
- Estimates of tax expenditures in excises and other energy taxes are very sensitive to the choice of the benchmark. Using the EU minimum tax rates as proposed by the Commission in 2011 (without exemptions except for international air and marine transport) as the benchmark, substantial amounts of tax expenditure are calculated for almost all MS, with large variations between them. Overall, there is a clear trend towards a lower level of support in these tax expenditures, due to increasing tax rates and fewer exemptions.
- Reduced VAT rates for fossil fuels and/or fossil fuel based electricity are applied in a minority of Member States. The total amounts involved are particularly significant in the UK and Italy. Overall, there is an upward trend in the level of support, which can be explained by increasing energy prices and recent increases in the standard VAT rates (while keeping reduced rates at the same level).
- None of the MS reported any tax expenditures in social contributions and income taxes that specifically related to fossil fuels or electricity.
- Tax expenditures in the corporate income tax and royalty schemes differ by Member State and interact with eachother. Therefore direct international comparisons are not meaningful.

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Annex A Member State reports

Austria

Reporting years: 2000 and 2011

Direct budgetary support to consumers/users

Name of the scheme and short description	Energy-Tax Refund to Energy-Intensive Industries (*Energieabgabenvergütungsgesetz*) Introduced in 1996 to provide partial refunds to energy-intensive processes in line with the Directive 2003/96/EC. The scheme has seen several changes over time and was extended to cover all businesses, including in the services sector. Since 2011 not applicable to the services sector anymore but only to those industries producing physical goods.
Final beneficiary	Certain energy consuming businesses
Direct beneficiary	Certain energy consuming businesses
Variability	
Objectives	To prevent a decrease in competitiveness for energy-intensive industries
Conditionality for eligibility	See below under "magnitude"
Conditionality for magnitude of subsidy	The magnitude of the refund is calculated as: energy taxes paid minus 0.5% of the net production value minus €400 own amount retained. Against this calculation a further calculation steps ensures that businesses pay at least the minimum energy-tax rates stipulated by Directive 2003/96/EC.
Source of funding	Federal budget
Fuel	Electricity; natural gas; coal; mineral oil (different grades of heating oil) and LPG
Total amount	2005: € 64+36+229=**329** mln 2011: € 70+46+213=**329** mln These are from OECD (2013) and cover: coal, petroleum, natural gas (not electricity). Numbers split above in that order.
Information sources	OECD (2013); WKO (2013)

Direct budgetary support to producers

Direct budgetary support to primary producers

N.a.

Direct budgetary support for R&D purposes

Name of the scheme and short description	No specific scheme – IEA estimates presented
Final beneficiary	
Direct beneficiary	
Aid category	
Variability	
Objectives	According to the 2007 IEA country review for Austria, priorities for public energy R&D are energy efficiency and renewables, both of which receive roughly one-third of available public funding (IEA, 2007).
Conditionality for eligibility	
Conditionality for magnitude of subsidy	
Source of funding	IEA figures below refer to government R&D, not clear whether this includes lower level government funding or only federal level.
Fuel	Oil, gas and coal as well as CCS reported below.
Total amount	The following are for Government R&D in million EUR (nominal). Sum of categories "oil and gas" and "coal" and separate figures reported for "CO2 capture and storage". **Oil, gas and coal**: 2000: € 0.45 mln 2010: € 0.34 mln; 2011: € 0.59 mln (two years reported due to fluctuation) **CO2 capture and storage**: 2000: € 0 mln 2011: € 0.52 mln These figures seem very low and indeed figures from OECD (2013) give a different picture, reporting an amount of €2.7 million spending on fossil fuels in 2008, or 3.8% of the total public expenditure for R&D in the energy sector. In the same year, OMV AG, the biggest energy supplier in Austria, reported spending of about €140 million from its own funds on R&D.
Information sources	IEA (2007) Energy policies of IEA countries – Austria, 2007 Review, http://www.iea.org/publications/freepublications/publication/austria2007.pdf [accessed: 09/04/2014]. IEA (2014) IEA Energy Technology RD&D Statistics, DOI: 10.1787/enetech-data-en [accessed: 09/04/2014].

Public investments in energy infrastructure

N.a.

Tax expenditures

Excises and other specific taxes on energy use

Name of the tax scheme and short description	Austrian energy taxation encompasses several relevant legislative acts that regulate the level of taxation as well as exemptions depending on the energy products. These are the: • *Mineralölsteuergesetz* (mineral oil tax law) • *Elektrizitätsabgabegesetz* (electricity tax law) • *Erdgasabgabegesetz* (natural gas tax law) Another important piece of legislation setting out the energy tax refund to energy-intensive industries is the *Energieabgabenvergütungsgesetz*, as introduced above under "direct budgetary support to consumers". A tax on coal exists since 2004, introduced through the Budgetbegleitgesetz 2003, BGBl I 2003/71, bringing Austrian legislation in line with Directive 2003/96.		
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	The details of tax rates for each sub-category are reported in the Excel template. **Tax exemptions or reductions** include the following (as per §4, 7, 8 Mineralölsteuergesetz): • Exemption for transport fuels used for domestic aviation and navigation in certain cases; • Refund of duty for gas oil used for agricultural purposes; • Refund of duty for gas oil used for the carriage of goods and passengers by rail; • Refund of duty for gas oil used in combined heat and power generation (in these three cases a refund of 0.299EUR/l applies) **Assumptions**: Austria applies different tax rates for some fuels depending o the sulphur content. As no information available on the consumption of fuels per sulphur content we assume a 50-50 split and use hence the arithmetic average of the two tax rates in these cases.		
Amount calculated (benchmark: highest	total	per unit of energy	per unit of CO2

excise per unit of energy consumption)	2000: € 1 358 mln 2011: € 1 764 mln	2000: € 1.66 / GJ 2011: € 2.09 / GJ	2000: € 25.42 / ton 2011: € 32.56 / ton
Amount calculated (benchmark: highest excise per unit of CO2 emissions)	Total	per unit of energy	per unit of CO2
	2000: € 1 358 mln 2011: € 1 764 mln	2000: € 1.66 / GJ 2011: € 2.09 / GJ	2000: € 25.42 / ton 2011: € 32.56 / ton
Amount calculated (benchmark: proposal new energy taxation directive)	Total	per unit of energy	per unit of CO2
	2000: € 637 mln 2011: € 57 mln	2000: € 0.78 / GJ 2011: € 0.07 / GJ	2000: € 11.91 / ton 2011: € 1.05 / ton
Information sources	See excel template in particular the sheets containing background data for details. Sources for main data: • Tax rates: DG TAXUD Excise Duty Tables (March 2000 edition) were used as the main source for 2000 tax rates, and DG TAXUD tables (January 2011 edition) for the 2011 rates. This was supplemented with some national sources were more detailed information was needed (see excel spread sheet for details) in addition to a tax rates over time overview received from the Austrian Ministry for Finances upon request. • Tax bases (ie consumption across the different energy carriers) for both years: Data was taken from the "IEA Energy Statistics of OECD countries" series. For some sub-categories use was made of the Gesamtenergiebilanz Österreich (1970 bis 2012)[40] • Conversion factors into GJ: in most cases we used those sourced for Belgium, but supplemented / cross-checked witn Austrian sources in some cases (this is indicated in the relevant sheet in the excel file) • Conversion factors to CO2: combination of three sources, as indicated in the exel file.		

[40] Available at: http://www.statistik.at/web_de/statistiken/energie_und_umwelt/energie/energiebilanzen/index.html

Miscellaneous:

- Tax exemption for LPG used in public transport (OECD, 2013): This could not be quantified given the IEA Energy Statistics (and neither the Extended World Energy Balances) single out fuel consumption in public transport. Amount according to OECD (2013):
    - 2005: € 4 mln
    - 2011: € 4 mln
- According to OECD (2013), he Austrian "Stability Law" of 2012 stipulates that the energy-tax exemption from LPG used in public transport, the energy-tax relief for diesel fuel used in railways and the rebates to diesel used in agriculture will all expire at the end of 2012.

Value Added Tax

Not applicable, as no tax expenditures of this kind existed in the reporting years (i.e. all energy supplies were taxed at the standard rate).

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

N.a.

Tax expenditures in royalties

The current royalty system on oil and gas extraction in Austria is regulated through the Section 69 of the *Mineralrohstoffgesetz*, The taxation for oil and gas extraction activities is calculated using the value and quantity of a specific fuel imported to Austria in a given year, as recorded in official statistics. This is the basis for the calculation of a price per ton or TJ and the level of the price determines at which rate the tonne of oil or gas extracted is taxed.

For example if the international prices of oil is high, a higher taxation will be applied. On the other hand, if the international price of hydrocarbons is low, a lower tax rate will apply for domestically extracted oil and gas.

The levy is therefore flexible. The taxation of oil extracted domestically ranges from 2% to 14% and for natural gas extracted domestically varies from 7% to 19% (as indicated in the table below)

Crude Oil		Natural Gas	
Price (€/ton)	Tax rate	Price (€/TJ)	Tax rate
< 75	2%	< 1500	7%
75 - 400	2 - 14%	1500 - 7500	7 - 19%
> 400	14%	> 7500	19%

Sources:
Austrian Mining Law, *Bundesrecht konsolidiert: Gesamte Rechtsvorschrift für Mineralrohstoffgesetz*, Bundeskanzleramt Rechtsinformationwssystem, URL: http://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=10008040&ShowPrintPreview=True [27/05/2014]

Belgium

Reporting years: 2002 and 2010

Direct budgetary support to consumers/users

Social tariff for electricity and natural gas consumers, introduced in 2004.	
Final beneficiary	Households.
Direct beneficiary	Households.
Variability	The reduced social rate is applied to the consumed energy.
Objectives	Social maximum rates for natural gas and electricity which are lower than the commercial rates.
Conditionality for eligibility	- Dependent on characteristics of household members, based on income, sickness or inability or social tenancy.
Conditionality for magnitude of subsidy	Based on the amount energy used.
Source of funding	Not specified.
Fuel	Electricity and natural gas.
Total amount	Not specified.
Information sources	http://economie.fgov.be/nl/consument/Energie/Facture_energie/sociale_energiemaatregelen/sociaal_tarief_elektriciteit_aardgas/#.U0P4JvmSx1Z

The Fonds social chauffage ("Fonds Mazout") , introduced in 2004.	
Final beneficiary	Households.
Direct beneficiary	Households.
Variability	The subsidy is calculated based on the consumed liters as stated on the bill, with a maximum of 1 500 liter, for large amounts of fuel bought. For small amounts of fuel bought, a lump sum of € 210 is granted.
Objectives	Financial aid for the poorest families who are obliged to buy heating fuels from the petroleum sector while the prices of these fuels are rapidly increasing .

Conditionality for eligibility	- Dependent on characteristics of household members, based on income, indebtedness or sickness or inability insurance reimbursment - The beneficiary is required to prove that he/she belongs to one of the eligible categories, he/she uses one of the eligible fuels and that this fuel is delivered on the address of the beneficiary - The subsidy is limited to 300 € and maximum 1 500 liter fuel.
Conditionality for magnitude of subsidy	Based on the amount of fuel bought.
Source of funding	End users contribute to this fund based on their actual consumption of oil products intended for heating.
Fuel	Diesel, kerosene, propane gas.
Total amount	Not specified.
Information sources	http://www.verwarmingsfonds.be/index.asp

Direct budgetary support to producers

Direct budgetary support to primary producers

N.a.

Direct budgetary support for R&D purposes

According to the IEA Database, Belgium spent 1.886 million EUR on *government* R&D for fossil fuels in 2007, but the modalities of these expenditures are not reported. No information is provided for the reporting years.

Public investments in energy infrastructure

N.a.

Tax expenditures

Excises and other specific taxes on energy use

The current basic legislation governing excise taxes in Belgium is the *Wet van 22 december 2009 betreffende de algemene regeling inzake accijnzen* (Belgian Official Journal 31 december 2009). The current implementation for energy taxation follows from the *Programmawet van 27 december 2004* (Hoofdstuk XVIII van Titel XI – Financiën) (Belgian Official Journal 31 december 2004). For each year, the actual excise rates can be obtained from the freely available "Fiscaal memento".	
Summary of fuels and use(r)s to which reduced rates or	The excise tariffs for energy products are differentiated according to:

<table>
<tr><td>exemptions applied in the reporting years</td><td colspan="3">Fuel type: leaded and unleaded gasoline, kerosene, gasoil (according to sulphur content), heavy fuel oil, LPG, natural gas, coal and electricity).
Application: mobile applications, motor fuel for stationary applications, heating
Commercial versus non-commercial applications
Moreover, there are specific reductions. The most important are:
Certain professional users enjoy a reduced rate of excise tax on sales of petroleum products and electricity. Eligible users are companies who possess a Vergunning Milieudoelstelling (Environmental Permit) or an environmental agreement (this includes participation in the ETS). For eligible “energy-intensive” companies, the rate is zero.
Fuel for aviation, maritime applications and inland navigation (except used for leisure purposes) is exempted.
Fuel and electricity for railways are exempted.
Diesel for some professional uses (taxis, heavy duty trucks, public buses) enjoys reduced tariffs.
LPG and natural gas used in transport are exempted.
Fuels and electricity used in agriculture and fisheries are exempted.
Coal and cokes used for household heating is exempted
Electricity produced for own consumption is exempted.
Electricity and energy products used in CHP are exempted.
Electricity and heating for households with low income or in a precarious situation
In transport, gasoline for road transport is subject to the highest rate.</td></tr>
<tr><td rowspan="2">Amount calculated (benchmark: highest excise per unit of energy consumption)</td><td>total</td><td>per unit of energy</td><td>per unit of CO2</td></tr>
<tr><td>year: 2002
€ 7,856 mln
year: 2010
€ 10,006 mln</td><td>€ 4.56 / GJ
€ 5.66 / GJ</td><td>€ 64.78 / ton
€ 84.60 / ton</td></tr>
<tr><td rowspan="2">Amount calculated (benchmark: highest excise per unit of CO2 emissions)</td><td>total</td><td>per unit of energy</td><td>per unit of CO2</td></tr>
<tr><td></td><td></td><td></td></tr>
</table>

year: 2002 year: 2010	€ 7,856 mln € 10,006 mln	€ 4.56 / GJ € 5.66 / GJ	€ 64.78/ ton € 84.60 / ton
Amount calculated (benchmark: proposal new energy taxation directive)	total	per unit of energy	per unit of CO2
year: 2002 year: 2010	€ 2,012 mln € 1,202 mln	€ 1.17 / GJ € 0.68/ GJ	€ 16.59/ ton € 10.16/ ton
Information sources	For information sources: see excel documents. IEA - Energy prices and taxes (1st Quarter 2013) Belgostat Eurostat Fiscaal memento 2002 & 2010 Assumptions: no estimations are available for the energy consumption that is untaxed due to participation in the ETS (source: Belgian Ministry of Finance)		

Value Added Tax

Categories of energy supply to which a reduced VAT rate was applied in one or both of the reporting years	Coal used by households
Standard rate	2002: 21% 2010: 21%
Reduced rate	2002: 12% for coal (res.) 2010: 12% for coal (res.)
Amount of support calculated (refer to Excel file)	2002: EUR 6.70 mln 2010: EUR 4.95 mln
Information sources	For sources: see excel documents for details IEA - Energy prices and taxes (1st Quarter 2013) Belgostat Eurostat Fiscaal memento 2002 & 2010 Assumptions: - Price for kerosene: based on internet for a - Prices for cokes could not be found on-line, and as the amount is negligibly small in total energy consumption, this category will not be included

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

N.a.

Tax expenditures in royalties

To the best of our knowledge, the Belgian tax legislation does not contain specific provisions on royalty regimes for the extraction of natural resources.

Bulgaria

Reporting years:

Direct budgetary support to consumers	-	-
Direct budgetary support for primary producers	2007	2010
Direct budgetary support for R&D purposes	2011	2012
Public investments in energy infrastructure	2011	2014
Excises and other specific taxes on energy use	2007	2011

The variations in the reporting years are related to the lack of systematic reporting in Bulgaria (non-OECD country) on the different subsidies. The information presented is mainly based on national sources, which provide fairly limited information on the type and size of the subsidies. This has led to several limitations of the findings – firstly, the data could not be presented for the same years and secondly, in some cases the information is available for the entire energy sector and it is not possible to determine the precise share of support for fossil fuels. This might compromise the usability of data for comparative purposes but provides a broad picture about the situation in Bulgaria keeping in mind the limitations of the information that is publicly and systematically available on this matter.

Direct budgetary support to consumers/users

Name of the scheme and short description	**Targetted aid for heating**
Final beneficiary	Low income individuals and families
Direct beneficiary	Low income individuals and families
Variability	Eligible for aid are individuals and families whose average monthly income for the six months preceding the month of application for the aid is lower than the differentiated minimum income for heating. Differentiated minimum income is defined as the individual coefficient (K) of the person or family is multiplied by the guaranteed minimum income (GMI) (which is currently 65 BGN or appr. €33 a month). Individual coefficients are determined according to age and social status. The monthly aid is the difference between the differentiated minimum income and the income of individuals/families from the previous month.
Objectives	Social objectives
Conditionality for eligibility	Eligible for aid are individuals and families: • Whose monthly income is lower than the differentiated minimum income; • Own only one apartment and it is not bigger than: One-bedroom apartment for 1 person, two-bedroom apartment for a family of two and three, three-bedroom apartment for a family of four and so on; • Do not own any real estate or other property, which can

	be a source of income; • Are not registered as sole traders and are not owners of capital of a company; • Do not rent out their property for profit and the provision of care activities (except when rentees and the care receivers are retired, disabled, students or unemployed); • Have not sold real estate in the last 5 years; • Have savings (per family member) which do not exceed 500 BGN (appr. €250 euro); • Unemployed workers have at least a nine-month registration at the Labour Office.
Conditionality for magnitude of subsidy	The targeted support is provided on an annual basis for 5 months (November-March). The monthly amount of the aid is based on the equivalent of 350 kWh of electricity, of which 250 kWh day- and 100 kWh night-time electricity, operating on electricity prices at the beginning of the heating season. It is granted for a period of five months.
Source of funding	The general government budget
Fuel	Electricity Natural gas Heat Solid fuel
Total amount	The data is not available
Information sources	Ministry of labour and social policy, http://pomosti.oneinform.com/socialni-pomosti/pomost-za-otoplenie/

Direct budgetary support to producers

Direct budgetary support to primary producers

Name of the scheme and short description	**Temporary concession charge waiver or reduction for exploitation of certain deposits of underground natural resources** The natural resources covered by the Law for the underground natural resources include metal ores, non-metallic/ industrial minerals, oil and natural gas, solid fuels, construction materials, stone materials, and mining waste.
Final beneficiary	Economic agents operating under the specified conditions
Direct beneficiary	Economic agents
Aid category	

Variability	A waiver or a reduction of up to 50% of the concession charge can be granted to the concessionaire for a maximum period of five years.
Objectives	To stimulate the exploitation of certain deposits of underground natural resources in areas with unfavourable conditions or in areas with long-term unemployment
Conditionality for eligibility	• Exploitation of deposits of underground natural resources with unfavourable mining and geological, technological and economic characteristics; and • Restoration of mining in deposits in regions with long-term unemployment where mining had previously ceased
Conditionality for magnitude of subsidy	
Source of funding	
Fuel	Oil and natural gas, solid fuels
Total amount	No data are available for this measure
Information sources	Law for the underground natural resources (1999), www.mi.government.bg/bg/library/zakon-za-podzemnite-bogatstva-321-c25-m258-2.html

Direct budgetary support for R&D purposes

Name of the scheme and short description	**Budgetary spending for R&D for the production, storage, distribution and use of energy**
Final beneficiary	
Direct beneficiary	
Aid category	
Variability	
Objectives	
Conditionality for eligibility	
Conditionality for magnitude of subsidy	
Source of funding	State government
Fuel	
Total amount	2011: 1 502 000 leva (appr. €770 256)

	2012: 273 000 leva (appr. €140 000) Based on the available information it is not possible to determine the specific share of support for fossil fuels.
Information sources	National Statistical Institute, Bulgaria Budgetary spending for R&D in 2011 and 2012 – www.nsi.bg

Public investments in energy infrastructure

Name of the scheme and short description	**Programme 14 "Effective functioning of the energy companies, infrastructure and markets"**
Final beneficiary	
Direct beneficiary	
Aid category	
Objectives	The aim is to accelerate the implementation of priority energy infrastructure projects related to the development of appropriate national, regional and trans-continental energy infrastructure.
Conditionality for eligibility	
Conditionality for magnitude of subsidy	
Source of funding	
Fuel	
Total amount	2011: 808 988 BGN (appr. € 414 865) 2014: 40 885 100 BGN (appr. €20 966 718) Based on the available information it is not possible to determine the specific share of support for fossil fuels.
Information sources	Budget of the Ministry of Economy, Energy and Tourism, 2011 by programs Budget of the Ministry of Economy for 2014 by programs

Tax expenditures

Excises and other specific taxes on energy use

Name of the tax scheme and short description	**(1) Excise tax rebate for motor fuels used in agriculture** **(2) Zero excise duty on electricity for domestic use** **(3) Zero excise duty on coal and coke on sale to households** **(4) Zero rate of excise duty on natural gas used as motor fuel and heating fuel** **(5) Zero rate of excise duty on LPG used for heating**
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	**(1)**: A report by the Institute for Market Economics (2009) states that Bulgaria applies an excise tax return on motor fuels (e.g. gasoil (50 BGN 1000 liters), kerosene (50 BGN per 1,000 liters, natural gas (0 BGN per gigajoule)) used in the processing of agricultural land by farmers who qualify for financial assistance granted by the Law to support farmers. The financial support is provided in the form of preferential rates and reimbursement of the difference. In 2010, this preferential treatment was discontinued. 2008: 62.5mln BGN (€32mln) In 2011, Bulgaria notified the European Commission that the government wants to put in place a measure which aims to assist registered primary agricultural producers by applying a reduced excise duty on gasoil. The measure plans to provide beneficiaries with fuel vouchers in the period 2012-2013. The estimated number of beneficiaries is over 1 000 and the maximum budget for the scheme which runs until 31 December 2013 is 140 million BGN. Reportedly, the scheme has been delayed and will remain active until 31 December 2014. **(2):** The excise rate for electricity for domestic use is 0 BGN per MWh. Beneficiaries of the incentive include persons, which have obtained a license under the Energy Act and sell electricity to consumers. **(3):** The excise rate for coal and coke upon sale to individuals other than sole proprietors is 0 BGN for gigajoule. The tax incentive has a social objective. **(4):** Changes to the Excise Duties and Tax Warehouses Act in 2012 stipulate natural gas used for household heating is exempted from the excise duty. Excise duty of

	0.10 BGN per gigajoule is applied to natural gas for business use; excise duty of 0.85 BGN per gigajoule is applied to natural gas used as motor fuel. **(5):** LPG used for heating is taxed at a zero rate.		
Amount calculated (benchmark: highest excise per unit of energy consumption)	total	per unit of energy	per unit of CO2
	2007: € 669 mln 2011: € 582 mln	2007: € 1.83 / GJ 2011: € 1.90 / GJ	2007: € 15.77 / ton 2011: € 15.50 / ton
Amount calculated (benchmark: highest excise per unit of CO2 emissions)	total	per unit of energy	per unit of CO2
	2007: € 669 mln 2011: € 582 mln	2007: € 1.83 / GJ 2011: € 1.90 / GJ	2007: € 15.77 / ton 2011: € 15.50 / ton
Amount calculated (benchmark: proposal new energy taxation directive)	total	per unit of energy	per unit of CO2
	2007: € 808 mln 2011: € 496 mln	2000: € 2.20 / GJ 2011: € 1.62 / GJ	2000: € 19.04 / ton 2011: € 13.23 / ton
Information sources	Institute for Market Economics (2009 and 2012) 2013 IVM report KPMG news, Bulgaria Excise Duties and tax and Warehouses Act; Report on tax expenditure 2010-2011 - Ministry of Finance; EC, Excise duty tables, part II – Energy and energy products, 2014 International Energy Agency 2009 country statistics on coal and coke, www.iea.org/stats/coaldata.asp?COUNTRY_CODE=BG		

Value Added Tax

Not applicable.

Tax expenditures in social contributions and personal income taxes

Not applicable.

The following documents were reviewed:

- Law on personal income tax; and
- 'Tax preferences and preferential tax regimes in Bulgaria – overview' a report by the Tax Directorate at the Ministry of Finance, Bulgaria.

Tax expenditures in corporate income taxes

Not applicable.

The following documents were reviewed:
- Law on personal income tax; and
- 'Tax preferences and preferential tax regimes in Bulgaria – overview' a report by the Tax Directorate at the Ministry of Finance, Bulgaria.

Tax expenditures in royalties

In Bulgaria, the corporate income tax is 10%. The tax rate is applied in a uniform manner to all taxable persons, regardless of the economic region or sector they are operating in and regardless of the operations carried out. There are no special preferences and /or regimes related to the extraction of fossil fuels.

The state however provides for temporary concession charge waiver or 50% reduction for exploitation of certain deposits of underground natural resources (including, among others, oil, natural gas and solid fuel) – see above.

Croatia

Reporting years: 2003 and 2012

Brief introduction on the Croatian fossil fuel market

Energy resources and market structure

In 2012 fossil fuels accounted for 78% of Croatia's total primary energy supply (TPES). Liquid fuels made the largest share (36.7%), followed by natural gas (27.8%) and hydro power (12.4%). Electricity makes 7.5% of supply, coal and coke 7.8%, fuel wood 5.7%, renewables 1.6% and heat 0.5%. Electricity is generated mainly form liquid fuels (58.2%), gaseous fuels (16.2%) and hydro power (15.9%). Small amounts of electricity were produced from coal (7.6%), renewables (1.3%) and solid biomass (0.8%).[41]

Croatia exports mainly crude oil (36.4% of total exported energy products) and petroleum products (24.7%), followed by natural gas (16.9%) and electricity (12.2%). When it comes to import of energy, the biggest share of import is attributed to the petroleum products (73.4%), natural gas (9.7%), biomass (9.4%) and electricity (6.4%). Energy self-supply is the relation between the total primary energy production and the total primary energy supply. In 2012, it stood at 48.4% and is in decline since 2010 when it stood at 55.5%.[42]

The oil market in Croatia is relatively small when compared to the regional or global oil market. However, liquid fuels still play a very important role in total energy use in Croatia (43.5% share in final energy consumption). Croatia produces less than 20% of its own crude oil demands, while the most oil is transported by Adriatic oil pipeline. Until the beginning of 2014 the highest possible retail prices of petroleum products were dictated by the Ministry of Economy to ensure higher competitiveness in the Croatian oil market. On the 20th February 2014 the petroleum product market was liberalized allowing free forming of retail prices.

While completely dependent on imported crude oil and petroleum products, Croatia produces significant amount of natural gas (39% of total primary energy production) and electricity from hydropower (26%). Natural gas is produced from 17 on-shore and 9 off-shore gas fields meeting 68% of total domestic demand for natural gas. More than half of total natural gas production is gained from Adriatic seabed. Main producer and importer is INA Industrija nafte d.d, acting as the key market player. Natural gas transportation is a regulated energy activity which performs as a public service and represents the primary activity of the company PLINACRO Zagreb, the owner and operator of the gas transport system.

The installed electricity generating capacities in the Republic of Croatia include hydro and thermal power plants, which are owned by the HEP Group (around 95% of generation capacity). Within these installed electricity generating capacities, there are a certain number of industrial power plants and a few privately owned renewable energy source power plants. In the period from 2013 and 2020, Croatia will shut down 1100 MW in thermal power plant due to the building's old and unsatisfactory condition.

[41] Source: Annual Energy Report – Energy in Croatia 2012, Ministry of Economy
[42] Source: Annual Energy Report – Energy in Croatia 2012, Ministry of Economy

The plan is to build additional 2400 MW by 2020. The share of renewables is planned to stay at 35% until 2020.

Prices, taxes and support mechanisms

The national regulator, Croatian Energy Regulatory Agency (HERA), encourages competition in the energy market. The Croatian electricity market was opened for companies with the First Energy Package in 2001 and then for households in 2008.Electricity prices are set by the electricity distributors, and all consumers can choose their electricity supplier.

Since 2001, generation, transmission and distribution are legally separated as independent activities. The Croatian energy markets operator HROTE was established in 2005 as a limited liability company. HROTE performs the activities of organising the electricity and gas market as a public service under the supervision of HERA. In addition, HROTE plays a key role in the support mechanisms for incentivising the production of electricity from renewable sources and cogeneration, and the production of bio-fuels for transport. A full VAT (25% since March 2012.) and excise duty are levied on all fossil-fuel products. Finally, Croatia began to take part in European Emissions Trading Scheme since 1 January 2013 for all generation plants with input power larger than 20 MW_{th}.

Direct budgetary support to consumers/users

N.a.

Direct budgetary support to producers

Direct budgetary support to primary producers

N.a.

Direct budgetary support for R&D purposes

N.a.

Public investments in energy infrastructure

N.a.
Please note: as most fossil fuels distributors and producers are state-owned and the infrastructure is built by these subjects, there is no direct impact on the state budget. The cost of investments is amortised by those subjects. Thus, no scheme exists to quantify the expenditures for such investments.

Tax expenditures

Note: The Croatian excise tax system defines excise tax expenditures for different fuel types and their applications (transport, heating for businesses, heating for households).

Tax subsidies for natural gas exist when used in transport, households and some industrial processes.
Source: Ministry of Finance - Tax Administration

Excises and other specific taxes on energy use

Excise Tax Rates	Changes are reported in legal_def_rates data sheets in Excel table		
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	Exemptions applied: electricity used in households as well as combined heat and power generation in a single process (cogeneration), used for official needs of diplomatic missions and consular offices, . Excise duty shall not be levied on electricity obtained from the use of renewable sources of energy and where used by the producer for own purposes (wind, wave, tide or geothermal sources, solar energy and biomass), and electricity used for production of electricity and maintaining the capabilty to produce electricity.		
Amount calculated (benchmark: highest excise per unit of energy consumption)	total	per unit of energy	per unit of CO2
	2003: € 1102 mln 2012: € 1240 mln	2003: € 4.35 / GJ 2012: € 4.06 / GJ	2003: € 55.94 / ton 2012: € 49.33 / ton
Amount calculated (benchmark: highest excise per unit of CO2 emissions)	total	per unit of energy	per unit of CO2
	2003: € 1102 mln 2012: € 1240 mln	2003: € 4.35 / GJ 2012: € 4.06 / GJ	2003: € 55.94 / ton 2012: € 49.33 / ton
Amount calculated (benchmark: proposal new energy taxation directive)	total	per unit of energy	per unit of CO2
	2003: € 274 mln 2012: € 333 mln	2003: € 1.08 / GJ 2012: € 1.09 / GJ	2003: € 13.92 / ton 2012: € 13.24 / ton
Information sources	Excel documents: tax_exp_Croatia_2003 and tax_exp_Croatia_2012		

Value Added Tax

N.a.
Note: The Croatian VAT system does not provide any reduced VAT tax rates for fossil fuels.
Source: Ministry of Finance - Tax Administration, Croatian VAT Law and Bylaw

Tax expenditures in social contributions and personal income taxes

N.a.
Note: Croatian State Aid Register does not include any tax exemptions for fossil fuel consumers.
Source: Croatian Competition Agency – State Aid Register

Tax expenditures in corporate income taxes

N.a.

Note: Croatian State Aid Register does not include any tax exemptions for fossil fuel producers.

Source: Croatian Competition Agency – State Aid Register

Tax expenditures in royalties

The fee amount that the Government charges is set by the specific regulation on extrapolation of mineral resources. This fee consists of the fixed charge, which is determined by surface of the area under concession, and a variable charge, which is determined by the amount of minerals extrapolated. However, no other specific aspects of taxation regime or similar conditions apply to the system (e.g. specific tax provisions, accelerated depreciation, etc.).

Source: Ministry of Finance - Tax Administration

Cyprus

Reporting years: 2001 and 2011

Direct budgetary support to consumers/users

Domestic Special Tariff for Specific Categories of Vulnerable Customers (Code 08) - A reduced electricity charge of EUR 0.21 per kWh is is applied to families with more than 4 children and low-income families.	
Final beneficiary	The potential beneficiaries include: - Families with more than 4 children - Low income families. As of 2013, new categories were added, namely families that receive care allowance for quadriplegic persons and families that receive care allowance for paraplegic persons.
Direct beneficiary	The reduced charge is provided directly by energy companies. In Cyprus, the generation and provision of electricity is dominated by the state-owned Electricity Authority of Cyprus (EAC). The Decision No. 01/2010, taken by the Cyprus Energy Regulatory Authority (CERA) allows EAC to recover the loss of revenue derived by the scheme. The recovery of costs is implemented by charging €0,00134 per kWh consumed on all electricity bills.As of 2013, this charge was increased to €0,00134 per kWh, due to the addition of new categories of eligible categories (see above).
Variability	The reduced charge is fixed (0.21 EUR per KWh)
Objectives	The objective is to support vulnerable social groups of consumers.
Conditionality for eligibility	The beneficiaries should belong to one of the following categories: - Multi-member or five-member families which fulfil predefined income criteria - Recipients of public assistance As of 2013, eligible categories also include families that receive care allowance for quadriplegic persons and families that receive care allowance for paraplegic persons.
Conditionality for magnitude of subsidy	The reduced rate is fixed.

Source of funding	Funding derives from: - Energy companies (in Cyprus electricity is provided solely by EAC) - Contributions provided by end-users
Fuel	The subsidy is provided only on electricity.
Total amount	2001 € 0 mln (the scheme started in 2010) 2011 (no available information)
Information sources	Electricity Authority of Cyprus- Public Service Obligations (P.S.O.) – Domestic Special Tariff for Specific Categories of Vulnerable Customers (Code 08) Law 230/2010, http://www.cera.org.cy/main/data/articles/kdp230_2010.pdf IVM (2013), Budgetary support and tax expenditures for fossil fuels. An inventory for six non-OECD EU countries ec.europa.eu/environment/enveco/taxation/pdf/fossil_fuels.pdf

Direct budgetary support to producers

Direct budgetary support for primary producers

N.a.

Direct budgetary support for R&D purposes

N.a.

Public investments in energy infrastructure

N.a.

Tax expenditures

Excises and other specific taxes on energy use

In Cyprus excise taxes are charged on all fuels, except electricity (see the Excel file for more details). Certain exemptions apply (see below).	
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	The following excise tax refunds and exemptions are applied in Cyprus: 1- Reduced excise tax on motor fuels used in agriculture 2- Exemption from excise duty on motor fuels used in agriculture

	3- Reduced excise tax on fuels used for heating purposes 4- Exemption from excise tax on fuels used in international and EU commercial aviation. 5- Exemption from excise tax on fuels used in navigation (including commercial fishing) in EU waters. 6- Exemption from excise tax on fuels used for the generation of electricity. 7- Exemption from excise tax on energy products used in the production of cemen		
Amount calculated (benchmark: highest excise per unit of energy consumption)	total	per unit of energy	per unit of CO2
year: 2004 year: 2011	€ 248 mln € 316 mln	€ 3.58 / GJ € 4.26 / GJ	€ 36.19 / ton € 41.50 / ton
Amount calculated (benchmark: highest excise per unit of CO2 emissions)	total	per unit of energy	per unit of CO2
year: 2004 year: 2011	€ 248 mln € 316 mln	€ 3.58 / GJ € 4.26 / GJ	€ 36.19 / ton € 41.50 / ton
Amount calculated (benchmark: proposal new energy taxation directive)	total	per unit of energy	per unit of CO2
year: 2004 year: 2011	€ 174 mln € 113 mln	€ 2.51 / GJ € 1.53 / GJ	€ 25.37 / ton € 14.91 / ton
Information sources	All calculations are based on simulations in the Excel file.		

Value Added Tax

Categories of energy supply to which a reduced VAT rate was applied in one or both of the reporting years	No fuels are eligible for a reduced VAT in Cyprus

Standard rate	2004: 15% 2011: 15%
Reduced rate	Not applicable
Amount of support calculated	Not applicable
Information sources	Ministry of Finance, http://www.mof.gov.cy/mof/VAT/VAT.nsf/All/0368B9A1A0636E33C22572970022C562?OpenDocument

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

N.a.

Tax expenditures in royalties

No information was found.

Czech Republic

Reporting years: 2001 and 2011

Direct budgetary support to consumers/users

N.a.

Direct budgetary support to producers

N.a.

Direct budgetary support to primary producers

N.a.

Direct budgetary support for R&D purposes

According to the IEA database, there was no expenditure on R&D in the two reporting years. Nevertheless R&D in fossil fuels was supported between 2001 and 2011. For example in 2003 approximately €3,5 million was provided for R&D in this area whereas in 2010 the support reached €1.8 million.

The exact type of this R&D and the organisations involved are unknown.

Public investments in energy infrastructure

No relevant state aids were found for the reporting years

Tax expenditures

Excises and other specific taxes on energy use

In Czech Republic excise taxes are charged on gasoline, diesel, kerosene, LPG, natural gas, fuel oil, coal and electricity (see the Excel file for details). In 2001, coal and natural gas were not subject to excise taxes.	
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	The following excise tax refunds and exemptions apply in Czech Republic: 1. Exemptions on mineral oils used for purposes other than as motor fuel and heating fuel 2. Exemptions on certain electricity uses. 3. Exemptions on certain uses of solid fuels. 4. Exemptions on certain uses of gas. 5. Reimbursement of excise duty of gas oil when it is duly proven that the gas oil has been used for heating purposes. 6. Reduced rate on diesel blend comprising

	of no less than 30 % of rapeseed oil methyl ester of the total weight Excise taxes on solid fuels were introduced in 2008.		
Amount calculated (benchmark: highest excise per unit of energy consumption) year: 2001 year: 2011	Total € 5484 mln € 4514 mln	per unit of energy € 6.28 / GJ € 7.01 / GJ	per unit of CO2 € 76.73 / ton € 83.15 / ton
Amount calculated (benchmark: highest excise per unit of CO2 emissions) year: 2001 year: 2011	Total € 5484 mln € 4514 mln	per unit of energy € 6.28 / GJ € 7.01 / GJ	per unit of CO2 € 76.73 / ton € 83.15 / ton
Amount calculated (benchmark: proposal new energy taxation directive) year: 2001 year: 2011	Total € 1318mln € 436 mln	per unit of energy € 1.51 / GJ € 0.68 / GJ	per unit of CO2 € 18.44 / ton € 8.02 / ton
Information sources	All calculations are based on simulations in the Excel file.		

Value Added Tax

Categories of energy supply to which a reduced VAT rate was applied in one or both of the reporting years	None
Standard rate	2001: 22% 2011: 20%
Reduced rate	No reduced rates apply.
Amount of support calculated (refer to Excel file)	n.a.

Information sources	https://circabc.europa.eu/sd/a/5d907b3b-52ee-4808-9de5-8e2b2647ac0f/EDT%202011%20Jan%20Energy.pdf

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

N.a.

Tax expenditures in royalties

An obligation exists for mining companies to pay royalties to the Regional Mining Authorities. The royalties shall not exceed 10% of the market price of the extracted minerals. A share of 75% of the collected revenue is transferred to municipalities which are located in the territory where the respective mines are located. The other 25% is transferred to the state budget.

Source: OECD (2013), Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels 2013, http://www.keepeek.com/Digital-Asset-Management/oecd/environment/inventory-of-estimated-budgetary-support-and-tax-expenditures-for-fossil-fuels-2013_9789264187610-en#page134

Denmark

Reporting years: 2000 and 2010

Direct budgetary support to consumers/users

N.a.

Direct budgetary support to producers

Direct budgetary support to primary producers

N.a.

Direct budgetary support for R&D purposes

Government R&D for fossil fuels:

2000: DKK 13.8 million / EUR 1.86 million

2010: DKK 31.828 million / EUR 4.28 million

Source: IEA.

Public investments in energy infrastructure

N.a.

A search was done on the state aid database (http://ec.europa.eu/competition/elojade/isef/index.cfm) for Denmark using the keywords 'energy', 'infrastructure', 'fossil' and 'fuel'. Among the search results that could be related to fossil fuel infrastructure investments are Aid granted to CHP plants and an electricity supplier which affect the market for regulating power (http://ec.europa.eu/competition/state_aid/cases/248862/248862_1442211_8_2.pdf) and the Programme for Energy Technology Development and Demonstration / Energiteknologisk Udviklings- og Demonstrationsprogram (which aims to make Denmark independent of fossil energy in 2050). Both are not considered relevant in the context of fossil fuel subsidies.

Tax expenditures

Excises and other specific taxes on energy use

Reduced rates for fuels	
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	Included in the calculated amounts below: - Reduced rates for diesel - Reduced rates for fuels for heating purposes compared with transport - Reduced rates for agriculture and forestry purposes

	- Reduced rates for railways and public transport Not included in the calculations (described above): - Reduced rates for CHP plants		
Amount calculated (benchmark: highest excise per unit of energy consumption)	total	per unit of energy	per unit of CO2
year: 2000	€ 37,145 mln	€ 68.08 / GJ	€ 764.87/ ton
year: 2010	€ 3,472 mln	€ 6.89/ GJ	€ 76.92 / ton
Amount calculated (benchmark: highest excise per unit of CO2 emissions)	total	per unit of energy	per unit of CO2
year: 2000	€ 37,145 mln	€ 68.08 / GJ	€ 764.87 / ton
year: 2010	€ 3,472 mln	€ 6.89 / GJ	€ 76.92/ ton
Amount calculated (benchmark: proposal new energy taxation directive)	total	per unit of energy	per unit of CO2
year: 2000	€ 872 mln	€ 1.60 / GJ	€ 17.95/ ton
year: 2010	€ 742 mln	€ 1.47 / GJ	€ 16.45 / ton
Information sources	Assumptions made in the calculation: - Assuming that heavy fuel, diesel and kerosene are exempt from energy duties for air and ship traffic Source of information: Eurostat: - Gas - domestic consumers - bi-annual prices - old methodology until 2007 [nrg_pc_202_h] - Gas prices for domestic consumers, from 2007 onwards - bi-annual data [nrg_pc_202] - Electricity - domestic consumers - bi-annual prices - old methodology until 2007 [nrg_pc_204_h] - Electricity prices components for domestic consumers, from 2007 onwards - annual data [nrg_pc_204_c] Danish Energy Agency (2012) Energistatistik 2012. http://www.ens.dk/info/tal-kort/statistik-		

	nogletal/arlig-energistatistik Danish Oil Industry Association (EOF) http://www.eof.dk/Priser-og-Forbrug IEA (2013) Energy Statistics of OECD Countries. DG TAXUD (2000) Excise duty tables. (Incorporates all amendments received up to 27 November 2000) DG TAXUD (2010) Excise duty tables. Part II – Energy products and Electricity (July 2010)DG TAXUD (2011) Excise duty tables. Part II - Energy products and electricity. European Commission. (Shows the situation as at 1 July 2011)

Value Added Tax

Categories of energy supply to which a reduced VAT rate was applied in one or both of the reporting years	None
Standard rate	2000: 25% 2010: 25%
Reduced rate	No reduced rates apply.
Amount of support calculated (refer to Excel file)	n.a.
Information sources	Assumptions made in calculation: - No prices for gasoline and LPG could be found for heating use, so transport prices were used. Sources of information: Eurostat: - Gas - domestic consumers - bi-annual prices - old methodology until 2007 [nrg_pc_202_h] - Gas prices for domestic consumers, from 2007 onwards - bi-annual data [nrg_pc_202] - Electricity - domestic consumers - bi-annual prices - old methodology until 2007 [nrg_pc_204_h]

	- Electricity prices components for domestic consumers, from 2007 onwards - annual data [nrg_pc_204_c] Danish Energy Agency (2012) Energistatistik 2012. http://www.ens.dk/info/tal-kort/statistik-nogletal/arlig-energistatistik Danish Oil Industry Association (EOF) http://www.eof.dk/Priser-og-Forbrug KPMG (2009) VAT in Denmark – a short guide.

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

N.a.

Tax expenditures in royalties

Income derived from oil and gas production is subject to various taxes and fees: corporate income tax, a hydrocarbon tax (a specific tax on income derived from oil and gas production), royalties and compensatory payments and profit sharing. The 25% corporate tax is deductible from the hydrocarbon tax base, for which the tax rate is 52%. In addition to this, the oil pipeline tariff and compensatory fee can be offset against the hydrocarbon tax, but not against the corporate tax base.

Reference:
OECD (2013) Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels 2013.

Estonia

Reporting years: 2005 and 2011

Direct budgetary support to consumers/users

Name of the scheme and short description	**Compensation for Farmers and Fishers for an Increased Excise Duty on Diesel (data for 2005)** In 2005, the fuel excise-tax rate on diesel used in agriculture and on board fishing vessels was increased from EUR 26.8 to 44.1 per 1 000 litres. In order to compensate farmers and fishermen for this increase, the government decided to grant compensatory payments to farmers (in 2005) and fishermen (in 2005 and 2006). In the period between 2004 and 2011, marked diesel was used as fuel in rail transport of passengers and goods, water cargo, fishing vessels, stationary engines and for heating and in combined production of heat and electricity. In the same period, marked light heating oil was used as fuel in rail transport of passengers and goods, water cargo, fishing vessels, stationary engines, tractors and other machinery used in agriculture, forestry and construction, machines and vehicles that do not use public roads and in combined production of heat and electricity.
Final beneficiary	The final beneficiaries are farmers and fishermen who have received single area payments in the year 2005. The amount of the grant is calculated based on the consumption of the special purpose diesel.
Direct beneficiary	Same as above.
Aid category	State aid.
Variability	The part of excise duty is compensated if it corresponds to 125 litre for every hectare of the agricultural area that is considered eligible in terms of the single area payments in 2005. If the data in the database of the Tax and Customs Board differs (is less) from the data stated in the compensation application, it shall be the basis for calculating the compensation rate. Those farmers that were recipients of the single area payments, as stipulated by the EU Common Agricultural Policy, were eligible for the compensatory payment amounting to EUR 0.0173 per litre of diesel used. A maximum of 125 litres could be claimed on each hectare of arable land. In 2005 up to 0.017 EUR per liter of the purchased special purpose diesel (diesel fuel marked with a fiscal marker) was reimbursed. If the recoverable amount exceeds the total duty amount of

	funds allocated from the state budget, it is reduced in proportion to the benefit of applicants, following the principle of equal treatment of applicants.
Objectives	The objective is to compensate the increase of the excise duty increase for the farmers and fishermen.
Conditionality for eligibility	Those farmers that were recipients of the single area payments, as stipulated by the European Union's Common Agricultural Policy, were eligible for the compensatory payment amounting to EUR 0.0173 per litre of diesel used. A maximum of 125 litres could be claimed on each hectare of arable land.
Conditionality for magnitude of subsidy	The magnitude of the subsidy is determined based on the actual consumption of the special purpose diesel.
Source of funding	The support is funded from the state budget in accordance with the Minister of the Agriculture decree no 88, as of 08 August 2006 "Requirements and the order regarding the partial compensation of the excise of the special purpose diesel for the agriculturalists" .The support is paid out by Agricultural Registers and Information Centre (the government agency working in the area of administration of the Ministry of Agriculture).
Fuel	Special purpose diesel (diesel fuel marked with a fiscal marker)
Total amount	2005: € 0.306 mln 2011: no data estimates readily available in government publications provided by the Ministry of the Agriculture and the Ministry of Finance
Information sources	Sources: Ministerial Regulations No. 88 (08.08.2006), Nr 98 (28.09.2005), and No. 34 (20.03.2006); PRIA (2005, 2006).

Direct budgetary support to producers

Direct budgetary support to primary producers

N.a.

Direct budgetary support for R&D purposes

According to the IEA database[43], there has been no direct budgetary support for fossil fuel R&D purposes for the years 2005 and 2011 in Estonia.

Public investments in energy infrastructure

N.a.

[43] http://www.iea.org/statistics/RDDonlinedataservice/

Tax expenditures

Excises and other specific taxes on energy use

Name of the tax scheme and short description	Excise-duty taxation ▪ In the period between 2005 and 2011 there has been changes regarding the excise-duty payments. ▪ Since 2009, natural gas used for the purpose of operating natural gas networks is exempt from the excise duty normally levied on natural gas. ▪ From 1 January 2008 electricity is taxed with excise duty. ▪ As of 2011 oil shale used for heat production is subject to excise-duty payments.
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	An exemption from the excise-duty payments is applied to fuels used by commercial or state-owned aircrafts. Fuels (including natural gas) used for production of non-energy products are exempt from the excise-duty payments. Such uses include, e.g. production of glues, paints or in cleaning production equipment. Since 2007 both diesel fuel and light heating oil used by domestic fishing boats are granted an excise-duty exemption. There is a limit imposed on the amount of fuel to which the exemption is applied, it is based on the amount of fish caught or the capacity of the boat's engine. Liquid fuels and natural gas that are absolutely essential for conducting certain mineralogical processes have been exempt from the fuel excise duty since 2005 and 2008 respectively. Oil shale used for heat production in district heating was not subject to excise-duty payments in the period between 2005 and 2010. Shale-derived fuel oil used for heat production in district heating had been benefiting from a tax exemption until the end of 2007, when that excise-duty exemption was abolished. Shale-derived fuels and solid fuels used by households as heating fuels are all exempt from the fuel-excise duty. Although the law stipulates that solid fuels are exempt from the fuel-excise duty, this exemption does not apply to peat, as it is not encompassed by the fuel excise duty. Since shale-derived fuel oil is not used by households for heating purposes, the measure fully pertains to coal. Those fuels that are used in stationary engines and vehicles that are used in warehouses (i.e. vehicles that are not allowed

<table>
<tr><td></td><td colspan="3">to drive on public roads) are exempt from the fuel excise duty.

Since 2009, natural gas used for the purpose of operating natural gas networks is exempt from the excise duty normally levied on natural gas.

Since 1997, a reduced rate of the fuel excise duty is applied to special uses of diesel fuel and light heating oil, for the purpose of which both diesel and light heating oil are marked with a special fiscal marker.

In the period between 2004 and 2011, marked diesel was used as fuel in rail transport of passengers and goods, water cargo, fishing vessels, stationary engines and for heating and in combined production of heat and electricity.

From 01 January 2008 electricity is taxed with excise duty.

For detailed information regarding the tax rates, see the Excel files.</td></tr>
<tr><td rowspan="2">Amount calculated (benchmark: highest excise per unit of energy consumption)</td><td>total</td><td>per unit of energy</td><td>per unit of CO2</td></tr>
<tr><td>2005: € 1003 mln
2011: € 360 mln</td><td>2005: € 6.00 / GJ
2011: € 5.57 / GJ</td><td>2005: € 77,67 / ton
2011: € 61.24 / ton</td></tr>
<tr><td rowspan="2">Amount calculated (benchmark: highest excise per unit of CO2 emissions)</td><td>total</td><td>per unit of energy</td><td>per unit of CO2</td></tr>
<tr><td>2005: € 1063 mln
2011: € 520 mln</td><td>2005: € 6.37/ GJ
2011: € 8.05 / GJ</td><td>2005: € 82.34 / ton
2011: € 88.51 / ton</td></tr>
<tr><td rowspan="2">Amount calculated (benchmark: proposal new energy taxation directive)</td><td>total</td><td>per unit of energy</td><td>per unit of CO2</td></tr>
<tr><td>2005: € 769 mln
2011: € 420 mln</td><td>2005: € 4.60 / GJ
2011: € 6.51 / GJ</td><td>2005: € 59.57 / ton
2011: € 71.57 / ton</td></tr>
<tr><td>Information sources</td><td colspan="3">Alcohol, Tobacco, Fuel and Electricity Excise Duty Act

Excise Duty on Marked Fuel, Explanatory Memorandum of the 2010 State Budget, Explanatory Memorandum of the 2011 State Budget

http://www.indexmundi.com/facts/estonia/co2-emissions</td></tr>
</table>

	http://www.ebrd.com/downloads/about/sustainability/cef.pdf http://www.oecd-ilibrary.org/energy/data/iea-world-energy-statistics-and-balances/extended-world-energy-balances_data-00513-en (data report for Estonia)

Value Added Tax

Categories of energy supply to which a reduced VAT rate was applied in one or both of the reporting years	In the period between the beginning of 2000 and July 2007, a reduced rate of VAT of 5% was applied to heating fuels consumed by households, churches, hospitals, local-government buildings and state-financed organisations. The same reduced rate over the same period was also applied to peat, coal and firewood sold to households.		
Standard rate	2005: 18% 2011: 20%		
Reduced rate	2005: 5% Only one reduced rate was used for the abovementioned categories.		
Amount of support calculated	Total	per unit of energy	per unit of CO2
2005: 2011:	€ 2.02 mln N.A.	€ 0.03 / GJ N.A.	€ 0.37 / ton N.A.
Information sources	Estonian Value Added Tax Act §15		

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

N.a.

Tax expenditures in royalties

N.a.

Finland

Reporting years: 2002 and 2012

Direct budgetary support to consumers/users

N.a.

Direct budgetary support to producers

Direct budgetary support to primary producers

N.a.

Direct budgetary support for R&D purposes

According to the IEA Database, Finland spent 5.258 million EUR on *government* R&D for fossil fuels in 2002, and 8.383 million EUR in 2011 (no information is available for 2012). The modalities of these expenditures are not reported.

Public investments in energy infrastructure

The electricity cables between Åland island and mainland Finland benefit from state support, but we have not identified specific quantitative information.

Tax expenditures

Excises and other specific taxes on energy use

<table>
<tr><td colspan="2">There are 4 relevant acts governing excises on fuel consumption in Finland:

Law on excise duty on liquid fuels – see http://www.finlex.fi/sv/laki/ajantasa/1994/19941472 and

Law on excise duty on electricity and certain fuels – see http://www.finlex.fi/sv/laki/ajantasa/1996/19961260

Law amending the Law on Excise Duty on Liquid Fuels– see http://www.finlex.fi/sv/laki/alkup/1998/19980509 and http://www.finlex.fi/sv/laki/alkup/1998/19980510

Act for refund of excise duty on certain energy products used in agriculture – see http://www.finlex.fi/sv/laki/ajantasa/2006/20060603</td></tr>
<tr><td>Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years</td><td>Excise duties in Finland are differentiated according to the following criteria:
Fuel type: gasoline, diesel, peat, LPG, coal, fuel oil, natural gas
Application: higher rates apply to transport applications than to heating applications
Excises paid for professional use in agriculture</td></tr>
</table>

<table>
<tr><td></td><td colspan="3">are subject to refunds
• Reduced rates apply to fossil fuels used in combined electricity and heat production
• LPG and fuel for commercial aviation and shipping are untaxed
• In cases where the excise duties paid by a company during the accounting period for electricity, coal, natural gas, and other products that exceed 0.5 per cent of the company’s value added during the accounting period, the company is entitled to apply, on the exceeding amount, for a refund of 85 per cent of the amount of the excise duties paid for the products or the excise duties contained in their acquisition price. Only the part exceeding 50 000 euros of the thus calculated tax refund is repaid (source: TEU). This refund is paid based on the information from the previous fiscal year. In 2012, the refund amounted to 71 millions EUR. In 2002, it was 3.1 million EUR
The pronounced decrease in tax expenditures between 2002 and 2012 can be attributed mainly to the very sharp increase in excises levied on coal.</td></tr>
<tr><td rowspan="2">Amount calculated (benchmark: highest excise per unit of energy consumption)
year: 2002
year: 2012</td><td>total</td><td>per unit of energy</td><td>per unit of CO2</td></tr>
<tr><td>€ 3912 mln
€ 2337 mln</td><td>€ 4.98 / GJ
€ 3.05 / GJ</td><td>€ 63.77/ ton
€ 43.93 / ton</td></tr>
<tr><td rowspan="2">Amount calculated (benchmark: highest excise per unit of CO2 emissions)
year: 2002
year: 2012</td><td>total</td><td>per unit of energy</td><td>per unit of CO2</td></tr>
<tr><td>€ 3910 mln
€ 2184 mln</td><td>€ 4.98/ GJ
€ 2.85 / GJ</td><td>€ 63.74/ ton
€ 41.04/ ton</td></tr>
<tr><td rowspan="2">Amount calculated (benchmark: proposal new energy taxation directive)
year: 2002
year: 2012</td><td>total</td><td>per unit of energy</td><td>per unit of CO2</td></tr>
<tr><td>€ 553 mln
€ 296 mln</td><td>€ 0.70/ GJ
€ 0.39/ GJ</td><td>€ 9.02/ ton
€ 5.56/ ton</td></tr>
<tr><td>Information sources</td><td colspan="3">http://www.finlex.fi/sv/laki/alkup/1998/19980509
http://www.finlex.fi/sv/laki/alkup/1998/19980510
http://www.finlex.fi/sv/laki/ajantasa/1994/19941472</td></tr>
</table>

	http://www.finlex.fi/sv/laki/ajantasa/1996/19961260 http://www.finlex.fi/sv/laki/ajantasa/2006/20060603 https://www.iea.org/co2highlights/co2highlights.pdf Taxing Energy Use e-mail correspondence with Finish tax administration

Value Added Tax

There are no reduced rates for fossil fuels or electricity.

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

N.a.

Tax expenditures in royalties

To the best of our knowledge, the Finnish tax legislation does not contain specific provisions on royalty regimes for the extraction of natural resources.

France

Reporting years: 2000 and 2011

Direct budgetary support to consumers/users

<table>
<tr><td colspan="2">Financial aid for electricity supply (« Aide financière pour la fourniture de l'électricité : tarif social électricité. Mise à jour le 19.11.2013 - Direction de l'information légale et administrative »also called « Le tarif de première nécessité (TPN) ») This is a governmental budgetary support for residential electricity consumption for low-income households. This measure has been put in place in 2005, hence this benefit was not yet in place in the first reporting year.</td></tr>
<tr><td>Final beneficiary</td><td>- Households</td></tr>
<tr><td>Direct beneficiary</td><td>- Households receive reimbursement of (part of) their energy bill</td></tr>
<tr><td>Variability</td><td>- The reimbursement varies from 71 to 140€ depending on the amount of people living in a household and according to the total energy usage (3kVa, 6kVa or 9kVa and over)</td></tr>
<tr><td>Objectives</td><td>Financial aid for low income households</td></tr>
<tr><td>Conditionality for eligibility</td><td>There exist 3 different eligibility conditions:
- Households that receive state funded healthcare (“couverture maladie universelle complémentaire (CMU-C)”).
- People who are eligible for state aid for healthcare (“l'assurance complémentaire santé (ACS)”)
- For people earning less than 2,175€ per year and per fiscal person living in France and less than 2,420.78€ of reference fiscal income in the overseas departments.</td></tr>
<tr><td>Conditionality for magnitude of subsidy</td><td>
<table>
<tr><td colspan="4">Amount of electricity bill reduction</td></tr>
<tr><td></td><td>3 kVa</td><td>6 kVa</td><td>9 kVa and more</td></tr>
<tr><td>One person</td><td>71 €</td><td>87 €</td><td>94 €</td></tr>
<tr><td>2 to 4 people</td><td>88 €</td><td>109 €</td><td>117 €</td></tr>
<tr><td>More than 5 people</td><td>106 €</td><td>131 €</td><td>140 €</td></tr>
</table>
</td></tr>
<tr><td>Source of funding</td><td>- By a tax levied on electricity producers for the contribution to public services ("la contribution au service public de l’électricité (CSPE)”)</td></tr>
<tr><td>Fuel</td><td>Subsidy restricted to residential electricity users.</td></tr>
<tr><td>Total amount</td><td>Prevision for 2014: € 327 mln, of which € 32 mln can be attributed to fossil fuels (9.8% share in electricity production) (No other data regarding this budgetary support was found in</td></tr>
</table>

	course of the project)
Information sources	http://vosdroits.service-public.fr/particuliers/F10580.xhtml http://www.developpement-durable.gouv.fr/Le-tarif-de-premiere-necessite-TPN.html legal references: Décret n°2004-325 du 8 avril 2004 relatif à la tarification spéciale de l'électricité comme produit de première nécessité Arrêté du 20 juillet 2012 relatif aux tarifs réglementés de vente de l'électricité Arrêté du 23 décembre 2010 portant modification de la tarification spéciale de l'électricité comme produit de première nécessité

The special solidarity rate (« Le tarif spécial de solidarité (TSS) »). This is a budgetary support scheme for low income households, put in place in 2008.

Final beneficiary	- Households
Direct beneficiary	- Households
Variability	

Deduction or global payment relative to home 's composition in €/year taxes included	Range of consumption			
	Individual			Collective
	0-1000 kWh/year [cooking]	1000-6000 kWh/year [hot water]	> 6000 kWh/year [heating]	[heating]
One single person	22 €	67 €	94 €	72 €
One adult with one child A couple w/o child or with one child One adult with two children or more	29 €	90 €	124 €	95 €
A couple with two children or more	37 €	112 €	156 €	119 €

Objectives	Financial aid for low income households
Conditionality for eligibility	There exist 4 different eligibility conditions: - Households that receive state funded healthcare ("couverture maladie universelle complémentaire (CMU-C)"). - People who are eligible for state aid for healthcare ("l'assurance complémentaire santé (ACS)")

	- For people earning less than 2175€ per year and per fiscal person living in France and less than 2420,78€ in the overseas departments - Households who receive a lump sum grant or a reimbursement of (part of) their energy bill. The TSS is also available for residents of social housing.
Conditionality for magnitude of subsidy	- The amount of people living in a given household - Fuel use: for heating, boilers or cooking - Depends on whether it concernes an individual house of a collective heating system
Source of funding	- This budgetary support is funded by a tax paid by gas suppliers for this support scheme ("la contribution au tarif spécial de solidarité (CTSS)")
Fuel	Natural gas
Total amount	Prevision for 2014: € 94 mln (No other data regarding this budgetary support was found in course of the project)
Information sources	http://www.developpement-durable.gouv.fr/Le-tarif-special-de-solidarite-TSS.html

Direct budgetary support to producers

Direct budgetary support to primary producers

N.a.

Direct budgetary support for R&D purposes

Fiscal credit for research purposes ("Crédit impôt recherche")	
Final beneficiary	Electricity producers[44]
Direct beneficiary	Electricity producers
Aid category	Budgetary support
Variability	- 30% of R&D expenseses for spendings up to 100million euros - 5% of R&D spending for costs over 100 million euros
Objectives	Support for innovation and technological advance
Conditionality for eligibility	- Any industrial or commercial company, or agricultural producer
Conditionality for magnitude of subsidy	The magnitude of the subsidy is determined as a percentage of the total R&D spending.

[44] It is to be noted that the French Electricity Mix is mainly composed by Nuclear and Hydro power (>90%)

Source of funding	Federal government
Fuel	Electricity
Total amount	2002: € 57 mln[45] 2005 : € 134 mln [46] These are the only budgetary support found in course of the project. It is to be noted that this support is destined to electricity producers in general (see previous footnote).
Information sources	http://media.education.gouv.fr/file/14/2/7142.pdf http://media.enseignementsup-recherche.gouv.fr/file/42/2/20422.pdf

In the IEA Data Services[47], the total RD&D budget for fossil fuels is reported to represent € 39 million in 2000 and € 117 million (nominal prices) in 2011. No information on the sources (Federal or Regional governments) and on the beneficiaries of this funding is available.

Public investments in energy infrastructure

The State Aid Register of the European Commission was consulted and no cases of public investments in energy infrastructure were found for the years 2000 and 2011 for France.

Tax expenditures

Excises and other specific taxes on energy use

The main excise tax on energy in France is the TICPE (Taxe Intérieure de Consommation sur les Produits Energétiques). It can be seen from legislation that the excise tax rates on fossil fuels will increase in the years between 2014 and 2016. Except for the tax on Superéthanol E 85 which will decrease from 12.4€/hl to 7.96€/hl in 2016.	
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	The main exemptions are for Jet fuel, Butane and Propane and reduced rates apply to Gas Oil for heating and Process uses and heavy fuel oil, though some exemptions could not be reported in the estimations below, including: - Road transportation of goods and Public Road Transportation - Public Transportation and Garbage collection using LPG or CNG

[45] €53 mln for "electric and electronic industries" and 4 for "hydrocarbons and energy production"
[46] €123 mln for "electric and electronic industries" and 11 for "hydrocarbons and energy production"
[47] http://www.iea.org/statistics/RDDonlinedataservice/

	- Taxi Drivers - Certain merchants located in small towns (less than 3000 habitants); - Co-generation - Activities of the Ministry of Defence - Local Administrations - Stationary Engines.		
Amount calculated (benchmark: highest excise per unit of energy consumption)	Total:	per unit of energy	per unit of CO2
2000 2011	€ 23,515 mln € 19,226 mln	€ 4.58/ GJ € 3.21 / GJ	€ 71.50 /ton € 55.39 /ton
Amount calculated (benchmark: highest excise per unit of CO2 emissions)	total	per unit of energy	per unit of CO2
2000 2011	€23,515 mln € 19,226 mln	€ 4.58 / GJ € 3.21 / GJ	€ 71.5017 /ton € 55.39/ ton
Amount calculated (benchmark: proposal new energy taxation directive)	total	per unit of energy	per unit of CO2
2000 2011	€ 5,559 mln € 5,610 mln	€ 1.08 / GJ € 0.94/ GJ	€ 16.90 / ton € 16.16/ ton
Information sources	http://ec.europa.eu/taxation_customs/resources/documents/taxation/excise_duties/energy_products/rates/excise_duties-part_ii_energy_products_en.pdf https://circabc.europa.eu/sd/a/a163d5b0-c043-47c1-8361-b7a83c6447ba/EDT%202000%20Nov%20-%20REF_1010.pdf http://www.developpement-durable.gouv.fr/La-fiscalite-des-produits,11221.html http://www.developpement-durable.gouv.fr/Prix-de-vente-moyens-des,10724.html		

Value Added Tax

Categories of energy supply to which a reduced VAT rate was applied in one or both of the reporting years	- Electricity power supply of a maximum of <= to 36kVa - Natural gas for heating purposes of a maximum power <= 36kVa
Standard rate	2000: 19.6% (NB: VAT was reduced from 20,6% to 19,6% as of 1 April 2000) 2011: 19.6%
Reduced rate	2000: 17.5% and 5% 2012: 5.5% Not applicable to fossil fuels. The reduced VAT rate applies to the fixed part of a household's gas and electricity bill (standing charge or 'abonnement').
Amount of support calculated	2000: EUR 0 mln 2012: EUR 0 mln
Information sources	http://www.legifrance.gouv.fr/affichCodeArticle.do?idArticle=LEGIARTI000028416983&cidTexte=LEGITEXT000006069577&dateTexte=20000231 http://bofip.impots.gouv.fr/bofip/1438-PGP

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

N.a.

Tax expenditures in royalties

No tax expenditures could be identified for the extraction of fossil fuels in France.

This absence of royalty on energy production has to be put into perspective: (1) most taxes of primary energy production are passed on to final consumers; (2) domestic production of fossil fuels in France is very limited. (http://www.eia.gov/countries/country-data.cfm?fips=fr)

Germany

Reporting years: 2000 and 2011

Direct budgetary support to consumers/users

Name of the scheme and short description	Energiesteuerbegünstigung für Unternehmen des Produzierenden Gewerbes in Sonderfällen (Spitzenausgleich) (§ 55 EnergieStG) (*Peak Equalisation Scheme*) With the 1999 ecotax Germany introduced reductions to pension contributions for manufacturing companies as a compensation for higher energy costs. For those companies where these reductions are not sufficient to compensate for the higher tax burden from electricity tax and increased energy tax on heating fuels, the peak equalization scheme provides an additional refund on their energy tax bill.
Final beneficiary	Certain energy consuming companies
Direct beneficiary	Certain energy consuming companies
Variability	For those companies where the additional tax burden is higher than the reduction in pension contributions, 95% (until 2010; 90% as of 2011) of this difference is refunded.
Objectives	Avoiding disadvantages for German manufacturing companies in international competition
Conditionality for eligibility	See "variability". Conditional upon introduction of energy and environmental management systems as of 2013.
Conditionality for magnitude of subsidy	As above.
Source of funding	Federal budget.
Fuel	Tax burden relates to electricity tax and energy tax on heating fuels.
Total amount	Tax expenditure related to measure: 2005: € 240 mln (not clear when introduced – no earlier data found) 2011: € 170 mln
Information sources	BMF (2007); BMF (2013); OECD (2013)

All other schemes identified for Germany take the form of tax reductions, exemptions etc, so included under excise tax expenditures below.

Direct budgetary support to producers

Direct budgetary support to primary producers

Name of the scheme and short description	Zuschüsse für den Absatz deutscher Steinkohle zur Verstromung, zum Absatz an die Stahlindustrie sowie zum Ausgleich von Belastungen infolge von Kapazitätsanpassungen (*Combined Aids in North Rhine-Westphalia*)	Bergmannsprämie (*Miners' Bonus*) Classified as production subsidy in OECD (2013)
Final beneficiary	Steel industry	Coal mining industry
Direct beneficiary	Hard coal industry	Miners
Aid category	Income support	Income support (via an income-tax deduction)
Variability	Lump sum grant that is reduced in case of higher world market prices for hard coal	Lump sum payment per complete shift underground
Objectives	Socially acceptable end of subsidised hard coal extraction in Germany	Recognising the special nature of the miner's profession. Making wages in the mining industry more attractive. Boosting hard-coal production in Germany.
Conditionality for eligibility	N/A	N/A
Conditionality for magnitude of subsidy	Subsidy may be reduced in case of higher than expected world market prices	Depending on numbers of underground shifts completed by the miner.
Source of funding	Federal government and state government (NRW)	Federal government
Fuel	Hard coal	Coal
Total amount	2000: 3712 million EUR 2011: 1349 million EUR	2000: 44 million EUR 2008: 1 million EUR (after that phased out)
Information sources	BMF (2001) *18. Subventionsbericht, Bericht der Bundesregierung über die Entwicklung der Finanzhilfen des Bundes und der Steuervergünstigungen für die Jahre 1999 – 2002*. Bundesministerium der Finanzen. BMF (2013) *24. Subventionsbericht, Bericht der Bundesregierung*	

	über die Entwicklung der Finanzhilfen des Bundes und der Steuervergünstigungen für die Jahre 2011 – 2014. Bundesministerium der Finanzen. OECD (2013) *Inventory of estimated budgetary support and tax expenditures for fossil fuels 2013*. OECD Publishing, http://dx.doi.org/10.1787/9789264187610-en [accessed: 09/04/2014].

Direct budgetary support for R&D purposes

Name of the scheme and short description	No specific scheme – IEA estimates presented
Final beneficiary	
Direct beneficiary	
Aid category	
Variability	
Objectives	According to the 2007 IEA country review for Germany, the main goal of R&D spending is to increase the efficiency of coal- and gas-fired power plants as more than 30% of Germany's power stations, representing around 40 GW installed capacity, must be replaced by 2020. Development of carbon capture and storage technology is also mentioned as a priority research area (IEA, 2007).
Conditionality for eligibility	
Conditionality for magnitude of subsidy	
Source of funding	IEA figures below refer to government R&D, not clear whether this includes lower level government funding or only federal level.
Fuel	Oil, gas and coal as well as CCS reported below.
Total amount	The following are for Government R&D in million EUR (nominal). Sum of categories "oil and gas" and "coal" and separate figures reported for "CO2 capture and storage". **Oil, gas and coal**: 2000: € 9.15 mln 2009: € 19.12 mln; 2010: € 13.66 mln (two years reported due to fluctuation) (2011 not available)

	CO2 capture and storage: 2000: € 0 mln 2010: € 12.82 mln; 2011: € 5.50 mln
Information sources	IEA (2007) Energy policies of IEA countries – Germany, 2007 Review, http://www.iea.org/publications/freepublications/publication/germany2007.pdf [accessed: 09/04/2014]. IEA (2014) IEA Energy Technology RD&D Statistics, DOI: 10.1787/enetech-data-en [accessed: 09/04/2014].

Public investments in energy infrastructure

No information found for Germany.

Tax expenditures

Excises and other specific taxes on energy use

Name of the tax scheme and short description	Energy taxation for Germany is set out in the *Energiesteuergesetz* (energy tax law), in place since 2006. It replaced the former mineral oil taxation law (*Mineralölsteuergesetz*) to bring German energy taxation in line with Directive 2003/96/EC.		
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	The *Energiesteuergesetz* extended the scope of energy taxation in Germany to coal, coke and lubricants, for which zero rates applied previously (hence also in our reference year 2000). The details of tax rates for each (sub)category are reported in the Excel template: • LPG and natural gas used as transport fuels; • Fuels used in domestic aviation and domestic navigation; • Energy carriers used in certain industrial processes, manufacturing enterprises and agriculture and forestry to ensure international competitiveness; • Others mentioned below under "miscellaneous" heading		
Amount calculated (benchmark: highest excise per unit of energy consumption)	total	per unit of energy	per unit of CO2
	2000: € 19,260 mln 2011: € 21,993 mln	2000: € 2.41 / GJ 2011: € 2.88 / GJ	2000: € 26.61 / ton 2011: € 32.40 / ton

Amount calculated (benchmark: highest excise per unit of CO2 emissions)	Total	per unit of energy	per unit of CO2
	2000: € 19,260 mln 2011: € 21,537 mln	2000: € 2.41 / GJ 2011: € 2.82 / GJ	2000: € 26.61 / ton 2011: € 31.73 / ton
Amount calculated (benchmark: proposal new energy taxation directive)	Total	per unit of energy	per unit of CO2
	2000: € 2,531 mln 2011: € 871 mln	2000: € 0.32 / GJ 2011: € 0.11 / GJ	2000: € 3.50 / ton 2011: € 1.28 / ton
Information sources	See excel template in particular the sheets containing background data for details. Sources for main data: • Tax rates: For 2011, rates were taken from Statistisches Bundesamt (2013), Finanzen und Steuern: Energiesteuer, Fachserie 14, Reihe 9.3[48]. As this series is only available on the internet until 2006, DG TAXUD Excise Duty Tables (March 2000 edition) were used as the main source for 2000 tax rates, supplemented with some national sources were more detailed information was needed (see excel spread sheet for details) • Tax bases (ie consumption across the different energy carriers) for both years: Data was taken from the OECD/IEA Extended World Energy Balances • Conversion factors into GJ for both years: Taken from "Conversion calculator AG Energiebilanzen"[49] (this did not contain conversion factors for all energy carriers covered, in which cases we used those sourced for Belgium – this is indicated in the relevant sheet in the excel file) • Conversion factors to CO2 for both years: UNFCCC National Inventory Report 2013, pp740ff [50]		

[48] https://www.destatis.de/DE/Publikationen/Thematisch/FinanzenSteuern/Steuern/Verbrauchsteuer/Energiesteuer2140930127004.pdf;jsessionid=D86574B34B65D04C0DB12503F8D90345.cae1?__blob=publicationFile

[49] http://www.ag-energiebilanzen.de/DE/energieeinheitenumrechner/energieeinheitenumrechner.html

[50] http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/deu-2013-nir-15may.zip

Miscellaneous:

These include tax reduction sub-categories for which no data on tax bases are available from IEA EWEB; therefore these are not considered in above estimates and reported separately hereunder.

Name of the tax scheme and short description	Amount tax expenditure	Sources
Tax reduction for diesel in the agricultural sector (Art. 57 of EnergieStG) (special rules apply to biodiesel). (*Steuerbegünstigungen für Betriebe der Land-und Forstwirtschaft - Agrardiesel)*	2000: € 235 mln 2011: € 460 mln	Energiesteuergesetz; BMF (2001); BMF (2013)
Tax reduction for transport within area of sea harbours (§ 3a EnergieStG) (*Energiesteuerbegünstigung von Arbeitsmaschinen und Fahrzeugen, die ausschließlich dem Güterumschlag in Seehäfen dienen*)	2000: - 2011: € 25 mln	BMF (2001); BMF (2013)
Tax reduction for public transport (§ 56 EnergieStG) (*Steuerbegünstigung für den öffentlichen Personennahverkehr*) For 2011, national data have been sourced and are hence included above, nevertheless reported here for comparison purposes.	2000: € 41 mln 2011: € 67 mln	BMF (2001); BMF (2013)
Tax reduction on electricity used in electrified rail and bus transport (§ 9 Abs. 2 Nr. 2 StromStG) (*Stromsteuerbegünstigung für den Fahrbetrieb im Schienenbahnverkehr und den Verkehr mit Oberleitungsomnibussen*)	2000: € 102 mln 2011: € 120 mln	BMF (2001); BMF (2013)

Value Added Tax

Not applicable, as no tax expenditures of this kind existed in the reporting years (i.e. all energy supplies were taxed at the standard rate).

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

N.a.

Tax expenditures in royalties

Reductions in royalty rates for coal mines in Germany

As set out in OECD (2013), federal guidelines set royalty rates for hard coal at 10% of the market value of its production. This can therefore be considered the benchmark for royalty rates. The *Länder* are free to deviate from these guidelines and in fact North-Rhine Westphalia, accounting for 90% of hard coal production, sets royalty

rates at 0%. Against the 10% baseline, OECD (2013) calculates ***tax expenditures from reduced royalties on hard coal extraction*** at:

- 151 millions EUR in 2005; and
- 153 millions EUR in 2011 (the latest year available)[51].

A similar approach is followed for ***tax expenditures from reduced royalties on lignite extraction***, for which again a federal guideline of 10% is set. Based on this tax expenditures are estimated to be (OECD, 2013):

- 201 millions EUR in 2005; and
- 199 millions EUR in 2008 (the latest year available).

References

BMF (2013) *24. Subventionsbericht, Bericht der Bundesregierung über die Entwicklung der Finanzhilfen des Bundes und der Steuervergünstigungen für die Jahre 2011 – 2014*. Bundesministerium der Finanzen.

BMF (2001) *18. Subventionsbericht, Bericht der Bundesregierung über die Entwicklung der Finanzhilfen des Bundes und der Steuervergünstigungen für die Jahre 1999 – 2002*. Bundesministerium der Finanzen.

IEA (2007) Energy policies of IEA countries – Germany, 2007 Review, http://www.iea.org/publications/freepublications/publication/germany2007.pdf [accessed: 09/04/2014].

IEA (2014) IEA Energy Technology RD&D Statistics, DOI: 10.1787/enetech-data-en [accessed: 09/04/2014].

Energiesteuergesetz (EnergieStG), "Energiesteuergesetz vom 15. Juli 2006 (BGBl. I S. 1534; 2008 I S. 660, 1007), das zuletzt durch Artikel 1 des Gesetzes vom 5. Dezember 2012 (BGBl. I S. 2436, 2725; 2013 I 488) geändert worden ist", http://www.gesetze-im-internet.de/bundesrecht/energiestg/gesamt.pdf [accessed: 09/04/2014].

OECD (2013) *Inventory of estimated budgetary support and tax expenditures for fossil fuels 2013*. OECD Publishing, http://dx.doi.org/10.1787/9789264187610-en [accessed: 09/04/2014].

Stromsteuergesetz (StromStG), "Stromsteuergesetz vom 24. März 1999 (BGBl. I S. 378; 2000 I S. 147), das zuletzt durch Artikel 2 des Gesetzes vom 5. Dezember 2012 (BGBl. I S. 2436, 2725) geändert worden ist" http://www.gesetze-im-internet.de/bundesrecht/stromstg/gesamt.pdf [accessed: 09/04/2014].

[51] OECD (2012) note that these are conservative values for two reasons: a low benchmark (in some instances sub-national royalty rates amount up to 40%) and the

Greece

Reporting years: 2001 and 2011

Direct budgetary support to consumers/users

Social Residential Tariff– Provided on electricity bills for the protection of the vulnerable social groups of consumers. The support refers to a discount of up to 30% of the normal residential tariffs to be paid to electricity supply companies.	
Final beneficiary	- Persons with low income (category A) - Families with 3 (or more) dependent children (category B) - Long-term unemployed persons (category C) - Disabled people (category D) - People on life support (category E)
Direct beneficiary	- Persons with low income (category A) - Families with 3 (or more) dependent children (category B) - Long-term unemployed persons (category C) - Disabled people (category D) - People on life support (category E)
Variability	The subsidy varies, depending on the energy consumption and the category of the beneficiaries. Regarding the energy consumption, the beneficiaries can benefit from the reduced tariff, for a quarterly consumption of up to 800 kWh. The consumption should be more than 200 kWh and less than a limit that is defined for each of the five categories (1400 Kwh or 1600 KWh). Categories A and B receive a higher discount compared to categories C, D and E.
Objectives	The objective is to support vulnerable social groups of consumers.
Conditionality for eligibility	The eligibility criteria for each category, are as follows: Category A- People with total annual taxable actual or imputed family income consolidated in the financial year preceding the year of their integration in the Social

calculation of production value based on coal import prices due to a lack of better information, which could well be lower than domestic prices.

	Residential Tariff and lower than the amount of 12,000 euros, not including the foreseen income reductions. This limit is increased by 50% if the beneficiary lives permanently in an island with population under 3,100 people. In addition the limit is further increased by €3,000 for each child referring to the first two children as defined by the Income Tax Code. Category B - Parents with three children, as derived from their tax statement consolidated in the year preceding the year of their application and with annual taxable actual or imputed family income lower than 23,500 euros, not including the foreseen income reductions. Category C- Unemployed on the 30th of November of the year preceding the year of their application for a continuous unemployment period of 6 months with annual total actual or imputed family income lower than the amount of €12,000 consolidated in the year preceding to the year of their integration. This limit is increased by 50% for cases which the beneficiary lives permanently in an island with population under 3,100 people. This limit is further increased by €3,000 per child referring to the first two dependent children, as defined by the Income Tax Code. Employment income included in the above mentioned tax statement prior to the unemployment period, is not taken into consideration. Category D - People with handicap of more than sixty seven per cent (67%) or people who have dependent members with handicap of more than 67% as derived from their consolidated tax statement in the year preceding the year of their application and with annual taxable actual or imputed family income lower than the amount limit of Category B, not including the foreseen income reductions. Category E - People in need of medical life-support equipment that is provided at home and is essential for maintaining the patient's life or person who has a dependent family member in need of power consuming life-support equipment, with annual taxable actual or imputed family income lower than €30,000, not including the foreseen income reductions.
Conditionality for magnitude of subsidy	Magnitude of subsidy depends on the energy consumption and the category of the beneficiaries. Regarding the energy consumption, the beneficiaries can benefit from the reduced tariff, for a quarterly consumption of up to 800 kWh. The consumption should be more than 200 kWh and less than a limit that is defined for each of the five categories (1400 Kwh or 1600 KWh). Categories A and B receive a higher discount compared to categories C, D and E.
Source of funding	The general government budget.

Fuel	The subsidy is provided only on electricity.
Total amount	The total amount of subsidy in the two reporting years: 2001 € 0 mln (the scheme started in 2011) 2011 (not available)
Information sources	Ministry for the Environment and Climate Change: http://www.ypeka.gr/Default.aspx?tabid=575&language=el-GR Public Power Cooperation – Social Residential Tariff: http://www.dei.gr/en/oikiakoi-pelates/eualwtoi-pelates/koinwniko-oikiako-timologio

Program "Energy Efficiency at Household Buildings". According to the programme support is provided in upgrade works that recommended by an energy inspector. The eligible interventions include the replacement of petrol heating and hot water supply systems with ones that use natural gas. The Programme runs since 2011.	
Final beneficiary	Owners of buildings
Direct beneficiary	Same as above
Variability	The following support is provided: -Subsidies on loan interest rates (100%) -Subsidy on the final eligible cost (35% for Class A interventions and 15% for Class B interventions) -Minimum cost coverage for energy inspections -Processing fees
Objectives	Reduce GHG emissions and the energy needs of buildings
Conditionality for eligibility	Only natural persons are eligible. It concerns buildings which -are located in areas with an average zone price1 lower than or equal to 2,100 €/sq.m., as set by 31.12.2009; -have a building permit. If there is not a building permit a relevant legalization document must be provided, which verifies that the building is legal. In cases when the building permit has been lost or the relevant documents, on the basis of which the above mentioned legalization document can be issued, are not readily available, the relevant permit and legalization document can be submitted to the bank before signature of the loan agreement. -have been classified, according to the Energy Performance Certificate (EPC), as lower than or equal to

	class D; -have not been marked for demolition
Conditionality for magnitude of subsidy	The subsidy on the final cost of interventions related to the installation of natural gas heating system, varies between EUR 5,000 and EUR 11,000, depending on the type and capacity of the system.
Source of funding	State budget, co-financed by EU funds
Fuel	Natural gas
Total amount	The scheme started in 2011 and was not in place in 2001. The total budget of the programme is EUR 796 million. The programme will run until the budget has been spent.
Information sources	Ministry of the Environment, Energy and Climate Change, http://exoikonomisi.ypeka.gr/Default.aspx

Subsidy of suppliers of fuels to remote areas - The subsidy is provided to companies that supply oil to islands, areas close to boarders and other remote areas. A decision of the Ministry of Development, defines the characteristics of geographic regions according to their needs of adequate supply of petroleum products. The funds derive from a Special Account opened in the Bank of Greece called "Account for Funding Petroleum Supply Companies for the Transportation of Fuels in Problematic Areas of the Country".	
Final beneficiary	Residents and businesses located in remote areas.
Direct beneficiary	Licence holders granted for the supply of fuels in problematic areas.
Variability	A levy rate of 1.2 % is charged in the price (before taxes) of petroleum products supplied by: a) Holders of licences for the supply of petroleum products b) petrol stations c) fuel supply cooperatives or consortia and d) large final customers who purchase fuels directly from refineries, excluding fuels used in armed forces, aviation, domestic and international navigation. The size of subsidy by region, by product and by beneficiary, as well as the process of allocating the funds is defined by the Ministry of Finance
Objectives	To ensure the adequate supply of fuels in remote areas.
Conditionality for eligibility	To be eligible, the beneficiary shall be located in a remote area as defined by the Ministry of Development.
Conditionality for magnitude of subsidy	Same as above.

<table>
<tr><td>Source of funding</td><td>Petrol companies and large final consumers (See section on variability)</td></tr>
<tr><td>Fuel</td><td>The subsidy covers petroleum products</td></tr>
<tr><td>Total amount</td><td>The table below show the amount of subsidy, between 2005 and 2011.
<table>
<tr><th>Support Element</th><th>2005</th><th>2006</th><th>2007</th><th>2008</th><th>2009</th><th>2010</th></tr>
<tr><td>Subsidy for Suppliers of Fuels to Remote Areas</td><td>6</td><td>6</td><td>6</td><td>7</td><td>4</td><td>7</td></tr>
</table></td></tr>
<tr><td>Information sources</td><td>OECD-IEA, Fossil fuel subsidies and other support, http://www.oecd.org/site/tadffss/

Law 3054/2002, on the organisation of the oil market and other provisions, http://portal.tee.gr/portal/page/portal/SCIENTIFIC_WORK/GR_ENERGEIAS/nomothesia/greekLaws/%CD-3054-2002.pdf</td></tr>
</table>

Direct budgetary support to producers

Direct budgetary support to primary producers

N.a.

Direct budgetary support for R&D purposes

According to the IEA database, the total expenditures spent on R&D in the two reporting years are as follows:

2001: € 0.638 mln

2011: € 0.716 mln

The exact type of this R&D and the organisations involved are unknown.

Public investments in energy infrastructure

Support provided through the Operational Programme for Energy and Development 2007-2013 and the Development Law to:

-increase the penetration of natural gas into new regions with the expansion of distribution networks in the regions of Central Greece, Eastern Macedonia & Thrace and Central Macedonia

-expand the transmission system of natural gas and increase its capacity and stability

-connect the national transmission system with Italy

-connect islands with the National Interconnected Transmission System to meet their needs of electricity

- construction of Extra High Voltage (EHV) for a stable and smooth supply of electricity.

Final beneficiary	Energy supply companies and investors
Direct beneficiary	Energy supply companies and investors
Aid category	Direct subsidies on investments, exemption from taxes and wage subsidies
Objectives	Increase the use of natural gas and at the same time decrease the use of petroleum. The subsidy also aims at increasing energy supply security, particularly in remote areas.
Conditionality for eligibility	All entities are eligible for funding. An additional subsidy of 10% is granted on medium-size enterprises. The subsidy increases at 20% for small and micro enterprises.
Conditionality for magnitude of subsidy	The magnitude of subsidy depends on the geographical zone where the investments is taking place.
Source of funding	Government budget, co-financed by EU funds
Fuel	Natural gas, electricity and renewable energy sources
Total amount	No information available
Information sources	Centre for Renewable Energy Sources and Energy Saving (CRES) - Sources of Funding & Financial Incentives for Energy Investments, available at: http://www.cres.gr/kape/epixeiriseis_ependites.htm

Greek gas (EPA) **– state aid provided in 2001**	
Final beneficiary	Gas Supply Companies (EPA)
Direct beneficiary	See above
Aid category	Direct grant Tax base reduction
Objectives	To provide financial aid to compensate the cost of the development of Gas Provision Companies (EPA) in three cities: 1. maximum 2.2 billion drachmas in Thessaloniki (approximately €6.5 million, accounting for 15% of the total cost), 2. maximum 4.9 billion drachmas in Thessaly (approximately €14.4 million, accounting for 70% of the total cost), and

	3. maximum 22.9 billion drachmas in Attica (approximately € 67.4 million, accounting for 43% of the total cost).
Conditionality for eligibility	Not applicable
Conditionality for magnitude of subsidy	Any modification of the aid scheme has to be notified to the European Commission.
Source of funding	State government (national resources)
Fuel	Natural gas
Total amount	Maximum GRD 30 billion (EUR 88.2 million) for grants, not quantifiable for tax benefits
Information sources	http://ec.europa.eu/competition/state_aid/cases/139448/139448_1153859_18_2.pdf http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.C_.2001.333.01.0006.01.ENG

Aid in favour of the gas supply companies in Anatoliki Makedonia Thraki, Kentriki Makedonia and Sterea Ellada**) – state aid provided in 2011**	
Final beneficiary	The beneficiaries of the aid are three gas supply companies, EPA Anatoliki Makedonia Thraki AE, EPA Kentriki Makedonia AE and EPA Sterea Ellada AE (EPA) which are to be established by the public gas corporation of Greece, DEPA AE.
Direct beneficiary	See above
Aid category	Direct grant
Objectives	The measure aims to promote the economic development of the regions of Anatoliki Makedonia Thraki, Kentriki Makedonia and Sterea Ellada, by providing regional investment aid for three investment projects consisting in the development of natural gas distribution networks in these areas.
Conditionality for eligibility	Eligible expenditures are calculated exclusively on the basis of investment costs incurred during the four-year investment period, and only concern

	new assets. Eligible expenditures include the following: (a) network costs, which include the costs of work for the construction of medium-pressure distribution systems (MPDS) and low-pressure distribution systems (LPDS) and meter regulator (M/R) stations; (b) connection costs, which include the costs of work for the connection of the distribution system to the meters installed at customers' premises.
Conditionality for magnitude of subsidy	Any modification of the aid scheme has to be notified to the European Commission.
Source of funding	The aid is granted by the Greek Ministry of the Environment, Energy and Climate Change and the Greek Ministry of Regional Development and Competitiveness
Fuel	Natural gas
Total amount	Total eligible amount - € 155.9 million
Information sources	http://ec.europa.eu/competition/state_aid/cases/139448/139448_1153859_18_2.pdf http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.C_.2001.333.01.0006.01.ENG

Tax expenditures

Excises and other specific taxes on energy use

In Greece excise taxes are charged on all fuels, except natural gas (see the Excel file for more details). Certain exemptions apply (see below).	
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	1. Exemption from excise tax on fuels used in navigation (including commercial fishing) in EU waters. 2. Exemption from excise tax on fuels used to supply commercial aviation.

	3. Taxes are not charged on fuels consumed in facilities where they are produced. 4. Exemption from excise duty on diesel used exclusively as insulation in electrical transformers. 5. Refund of excise tax amounting to 125 Euros per 1000 l on diesel used by industry and commercial enterprises in stationary motors, in machines and mechanical equipment and vehicles which are not intended for use in public roads. 6. Refund of excise tax amounting to 125 Euros per 1000 l on diesel used in hotels. 7. Refund of excise tax amounting to 125 Euros per 1000 l on diesel used in public and private hospitals and charities. 8. Exemption from excise tax on aromatic hydrocarbons and mixtures (benzene, xylene, toluene) used by the industry as raw materials. 9. Exemption from excise tax on diesel, kerosene, white spirit and other light fuels used by industry solely as a raw material for the production their products. 10. Reduced excise tax amounting to 299 Euros per 1000 l on gasoline used in agriculture and forestry. 11. Reduced excise tax amounting to 0.29 Euros per tonne on LPG and methane used in agriculture. 12. Natural gas is exempted from excise taxes. 13. Reduced excise tax amounting to 21 Euros per 1000 l on kerosene used in heating

	14. Reduced excise tax amounting to 21 Euros per 1000 l on diesel used in heating during the winter season. 15. Exemption from excise tax on coal, lignite and coke used for the generation of electricity. 16. Exemption from excise tax on coal, lignite and coke used in mineral processing.		
Amount calculated (benchmark: highest excise per unit of energy consumption)	total	per unit of energy	per unit of CO2
year: 2001 year: 2011	€ 3154 mln € 5505 mln	€ 3.66 / GJ € 7.86 / GJ	€ 26.45 / ton € 49.38 / ton
Amount calculated (benchmark: highest excise per unit of CO2 emissions)	Total	per unit of energy	per unit of CO2
year: 2001 year: 2011	€ 3154 mln € 5505 mln	€ 3.66 / GJ € 7.86 / GJ	€ 26.45 / ton € 49.38 / ton
Amount calculated (benchmark: proposal new energy taxation directive)	Total	per unit of energy	per unit of CO2
year: 2001 year: 2011	€ 2173 mln € 1471 mln	€ 2.52 / GJ € 2.10 / GJ	€ 18.22 / ton €13.20 / ton
Information sources	All calculations are based on simulations in the Excel file.		

Value Added Tax

Categories of energy supply to which a reduced VAT rate was applied in one or both of the reporting years	Electricity and natural gas. Reduced VAT on these fuels were applied both in 2001 and 2011.
Standard rate	2001: 18% 2011: 23%

Reduced rate	2001: 9% 2011: 13%
Amount of support calculated	2001: EUR 137 mln 2011: EUR 188 mln
Information sources	Tax Institute, http://www.forin.gr/articles/article/4455/suntelestes-f-p-a-agathwn-kai-uphresiwn

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

N.a.

Tax expenditures in royalties

N.a.

Hungary

Reporting years: 2005 and 2011

Direct budgetary support to consumers/users

Name of the scheme and short description	**Natural gas and district heating cost subsidies** From 2003 until 2006 a natural gas cost subsidy system was in place which was based on subjective rights (*alanyi jogon járó gázár-támogatási rendszer*), i.e. all household consumers were eligible for the subsidy. In October 2005, a district heating cost subsidy for retired people (*nyugdíjasok távhőszolgáltatási támogatása*) was introduced and was in place until the end of 2006. In 2006, the district heating cost subsidy was extended by including large families (*nagycsaládosoknak nyújtott távhő – és gázár támogatás*). This system changed in 2007 when the subsidy was no longer given to all household consumers but was based on social aspects (*szociális alapú gázár támogatás*), i.e. low-income households could only receive the support. This support system was in place until September 2011. Since this date the so-called household maintenance cost subsidy (*lakásfenntartási támogatás*) is restricted to heat only., i.e. various types of fuel use for heating are supported..
Final beneficiary	Households
Direct beneficiary	Households
Variability	In the first system (2003-2006) the natural gas cost subsidy was differentiated between two users: (i) residential consumers and (ii) consumers who generated heat for residential use. The subsidy then was determined by the amount consumed (per m3). For instance, in 2005 subsidies were the followings: [52] Residential consumers a) 0-1500 m3/year: HUF 16.25 (€ 0.065) b) 1500-3000 m3/year: HUF 11.22 (€ 0.044) Heat generated for residential use a) < 20m3/h: HUF 13.29 (€ 0.053) b) 20-100 m3/h: HUF 16.86 (€ 0.067) c) 100-500 m3/h: HUF 14.65 (€ 0.058) d) > 500 m3/h: HUF18.6 (€ 0.074)

[52] Euro figures were calculated based on the 2005 average exchange rate (1€=248.05 HUF).

	District heating cost subsidy was determined on a monthly basis and it was HUF 2000/month for retired people in 2005. In 2007, the subsidy changed to a social based system and income categories were introduced in order to determine the amount of the support. The subsidy for natural gas was indicated in HUF/MJ and HUF/m3 and for district heating in HUF/GJ.
Objectives	Financial help. Since 2007, support is only given to low-income households.
Conditionality for eligibility	Until 2007 all household consumers were eligible for the subsidy. Since 2007, only those households are eligible for the subsidy where the monthly net income per one consumption unit does not exceed the minimum pension multiplied by 3.5. This conditionality changed at the end of 2011 but it is not detailed here as the reporting years are 2005 and 2011.
Conditionality for magnitude of subsidy	In the period of 2007-2011, four income categories were established which were linked to different amounts of the subsidy. In addition, natural gas consumption limits were also established. For instance in 2007 the maximum consumption of natural gas was determined at 102 000 MJ and 170 000 MJ for large families.
Source of funding	The founding source of the subsidy is mainly the mining royalty that is collected by the government. In cases where the collected amount was not enough (and this was very common) the government had to complement the amount.
Fuel	First it was linked to natural gas, and then when district heating was introduced other sources were included. Nevertheless, it should be noted that in Hungary district heating makes an extensive use of natural gas.
Total amount	2005: HUF 76 billion (€ 306 mln) (Energiaklub, 2009) 2011: HUF 20 billion (€ 81 mln) (only until September) (OECD, 2013)
Information sources	OECD (2013) Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels Energiaklub (2009) Ösztönzött pazarlás - Lakossági energiaárak állami támogatasa 2003-2009, URL: http://energiaklub.hu/sites/default/files/energiaarak_allami_tamogatasa_0906.pdf

Direct budgetary support to producers

Direct budgetary support to primary producers

Name of the scheme and	**Coal penny (*szénfillér rendszer*)** The scheme is a direct support system for coal production in

short description	Hungary and it is in operation since 2006. It consists of a levy which is paid by the final electricity consumers and in 2011 it changed to HUF 0.19 (€ 0.0006) per kWh from HUF 0.23 (€ 0.0008) per kWh. The scheme subsidises the unprofitable last active underground mine Márkushegy which provides lignite for the Oroszlányi power plant. As the mine is expected to be closed in 2014 it is expected that the Coal penny will be abolished after this date.
Final beneficiary	Márkushegy underground mine
Direct beneficiary	Vértesi Erőmű Zrt (Vertesi Power Plant Ltd) – operator of the mine and the Oroszlanyi power plant
Aid category	Direct support
Variability	The subsidy is in the form of a HUF 0.19 (€ 0.0006) levy to be paid by the final consumers per kWh.
Objectives	The objective of the support scheme is to support coal mining of the unprofitable Markushegy mine which provides lignite for the Oroszlanyi power plant.
Conditionality for eligibility	Only the Márkushegy underground mine is eligible for the support.
Conditionality for magnitude of subsidy	The subsidy is fixed at HUF 0.19 (€ 0.0006) per kWh.
Source of funding	The support is paid by final consumers per kWh of coal generated electricity.
Fuel	Coal – lignite
Total amount	2005: HUF 11 billion (€ 44 mln) (OECD, 2013) (even though the direct support system has been created in 2006 the Vertesi Power Plant Ltd has been receiving support before this date too) 2011: HUF 7 billion (€ 25 mln) (OECD, 2013)
Information sources	IEA/OECD (2007) Energy policies of IEA countries – Hungary, 2006 Review IEA (2011) Energy policies of IEA countries – Hungary, 2011 Review OECD (2013) Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels NOL (2012) Ezermilliárd Vértesi-fillér URL: http://nol.hu/gazdasag/20120815-ezermilliard_vertesi-filler-1325581 [Accessed: 24/03/2014] Hungarian Government (2011) A Kormány szénfillérből kívánja támogatni a Vértesi Erőművet URL: http://www.kormany.hu/hu/miniszterelnokseg/hirek/a-kormany-szenfillerbol-kivanja-tamogatni-a-vertesi-eromuvet [Accessed: 24/03/2014}

Name of the scheme and short description	**N92/2005 State aid to the coal industry (2004-2010) and NN3/2008 State Aid for coal industry (2007-2010) (*Állami támogatás N 92/2005 – Magyarország A magyar széniparra vonatkozó szerkezetátalakítási terv 2004–2010 és NN 3 / 2008 (ex N 776/2007) sz. állami támogatás – Magyarország A szénipar részére nyújtott állami támogatás (2007-2010)*)** In 2005, the European Commission authorised the State-aid to coal production in the Márkushegy underground coal mine. The total amount of the state aid was HUF 64.3 billion (€259 million) between 2004 and 2010.
Final beneficiary	Márkushegy Undeground coal mine[53]
Direct beneficiary	Vértesi Erőmű Zrt. - Vertesi Power Plant Ltd.
Aid category	Direct support
Objectives	The support intends to cover the price difference between the coal production costs of the Márkushegyi underground mine and the selling price of coal purchased by the Oroszlányi power plant. A decreasing yearly aid was applied which aimed to force the company to adapt to changes, for instance increase its capacity to co-fire biomass.
Conditionality for eligibility	Only the Márkushegy underground mine is eligible for the support.
Conditionality for magnitude of subsidy	The magnitude of the subsidy is determined by the amount of the collected coal penny.
Source of funding	The source of the support is the coal penny detailed above.
Fuel	Coal
Total amount	2005: HUF 10,775 million (€43.4 million) (EC, 2008) (The state aid was in total HUF 64.3 billion (€259 million) over the period of 2004-

[53] The mine will be closed in 2014 for which the Commission has authorised a HUF 42,247 million (approximately €140 million) State Aid in 2013, the SA.33861 State aid to facilitate the closure of uncompetitive coal mines. This state aid will be provided until 2018. (http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_33861)

	2010. The support was degressive as it declined from HUF 12 billion (€47 million)[54] in 2004 to HUF 0.7 billion (2.5 million)[55] in 2010.) 2011: n.a.
Information sources	EC (n.d.) State Aid Registry - NN3/2008 Aid for coal industry (2007-2010), URL: http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_NN3_2008 [Accessed:24/03/2014] EC (n.d.) State Aid Registry - N92/2005 State aid to the coal industry URL: http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_N92_2005 [Accessed:24/03/2014] EC (2005) Állami támogatás N 92/2005 – Magyarország A magyar széniparra vonatkozó szerkezetátalakítási terv 2004–2010, Brüsszel, 22.6.2005 URL: http://ec.europa.eu/competition/state_aid/cases/198451/198451_520560_19_2.pdf EC (2008) NN 3 / 2008 (ex N 776/2007) sz. állami támogatás – Magyarország A szénipar részére nyújtott állami támogatás (2007-2010), Brüsszel, 29.9.2008 URL: http://ec.europa.eu/competition/state_aid/cases/223801/223801_896791_28_2.pdf IEA/OECD (2007) Energy policies of IEA countries – Hungary, 2006 Review IEA (2011) Energy policies of IEA countries – Hungary, 2011 Review

Name of the scheme and short description	**Support for mine decommissioning** The Hungarian Government provides direct support for the decommissioning of certain state-owned coal mines. For instance, in 2003 the Lencsehegyi coal mine received a HUF 583 million (€2.3 million)[56] support for its closure.
Final beneficiary	Coal mines
Direct beneficiary	Coal mines
Aid category	Budgetary transfers
Variability	It is assumed based on the above example of the support for the Lencsehegyi coal mine that the mine decommissioning support is given as a lump sum.
Objectives	The objective of the budgetary transfers is to help in the closure of

[54] Euro figures were calculated based on the 2004 average exchange rate (1€=251.68 HUF)
[55] Euro figures were calculated based on the 2010 average exchange rate (1€=275.41 HUF)
[56] Euro figures were calculated based on the 2003 average exchange rate (1€=253.51 HUF).

	certain coal-mines.
Conditionality for eligibility	No information available
Conditionality for magnitude of subsidy	No information available
Source of funding	State government
Fuel	Coal
Total amount	2005: no data available 2011: HUF 1-2 billion (€3.5 – 7 million) (OECD, 2013)
Information sources	IEA/OECD (2007) Energy policies of IEA countries – Hungary, 2006 Review OECD (2013) Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels Fn (20003) Félmilliárdos támogatás szénbánya bezárására, URL: http://fn.hir24.hu/itthon/2003/05/13/felmilliardos_tamogatas_szenbanya_bezarasara/ [Accessed:24/03/2014]

Direct budgetary support for R&D purposes

Name of the scheme and short description	**R&D spending on fossil fuels** No specific schemes were identified, thus this section only gives an overall estimate for R&D spending on fossil fuels in Hungary in 2005 and 2011.
Final beneficiary	
Direct beneficiary	
Aid category	
Variability	
Objectives	
Conditionality for eligibility	
Conditionality for magnitude of subsidy	
Source of funding	The general public sources of R&D funding are: the Structural Funds, the Research and Technology Innovation Fund (*Kutatási és Technológiai Innovációs Alap (KTIA*)) and the National Scientific Research Fund (*Országos Tudományos Kutatási Alapprogramok (OTKA)*). In 2005, 49% of total R&D expenditure came from the government, 39% from private sources and 11% from foreign (including the EU)

	sources. In 2011, these numbers were 39%, 47% and 13%, respectively.
Fuel	
Total amount	Government R&D spending on fossil fuels (oil and gas and coal): 2005: EUR 0.45 million (IEA, 2014) 2011: EUR 0.612 million (IEA, 2014)
Information sources	IEA (2011) Energy policies of IEA countries – Hungary, 2011 Review IEA (2014) IEA Energy Technology RD&D Statistics, DOI: 10.1787/enetech-data-en [Accessed: 26/03/2014] National Innovation Agency (2014) A kutatás, fejlesztés és innováció (KFI) forrásai URL: http://www.nih.gov.hu/strategiaalkotas/kfi-forrasai [Accessed:25/03/2014] KSH (2013) Financial resources of research and development, URL: http://www.ksh.hu/docs/hun/xstadat/xstadat_eves/i_ohk004a.html [Accessed: 25/03/2014]

Public investments in energy infrastructure

N.a. The State Aid Register was checked and nothing was found for 2005 or 2011.

In 2007, state aid was granted to the Matrai Power Plant to set up a new unit for the production of electricity based on domestically mined lignite (see: http://ec.europa.eu/competition/state_aid/cases/218164/218164_724620_8_1.pdf) but as 2007 is no a reporting year this is not indicated here.

Tax expenditures

Excises and other specific taxes on energy use

Name of the tax scheme and short description	**Excise tax on transport and heating fuels and energy tax on natural gas, coal and coke and electricity** An excise tax is applied to gasoline, kerosene, gas oil / diesel, LPG and heavy fuel oils (biofuels are also covered). Excise tax rates are published every year by the National Tax and Customs Administration of Hungary (*Nemzeti Adó és Vámhivatal*) and the legal base of the excise duty is indicated in the CXXVII. Law of 2003 on excise duty and special excise rules for the marketing of products (*2003. évi CXXVII. Törvény a jövedéki adóról és a jövedéki termékek forgalmazásának különös szabályairól*). The national legislation differentiates between the different uses of the fuels and applies different rates. An energy tax is applied to natural gas, coal and coke and electricity. The energy tax was introduced after the EU accession in 2004 and first only applied to natural gas and electricity. Coal and coke was exempted until the end of 2009 but since then a rate also

<table>
<tr><td></td><td colspan="3">applies to these sources. The legal base of the energy tax is in LXXXVIII. Law of 2003 on energy tax (2003. évi LXXXVIII. Törvény az energiaadóról).</td></tr>
<tr><td>Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years</td><td colspan="3">The following reduced rates are applied:
Excise duties levied on diesel used by rail are fully refunded.
Diesel used by domestic shipping is exempt.
Diesel used in the agriculture sector has a reduced tax rate (around 80 per cent can get refunded).
Since 2011 part of the excise tax on diesel use for commercial/professional purposes (lorries and buses) is refunded.
Excise duties levied on aviation fuel used by domestic airplanes are fully refunded.
There is a special tax exemption for diesel use by foreign military staying in Hungary.
LPG used for heating purposes is exempt.
The residential use of natural gas (for heating purposes), coal and coke and electricity is exempt.
Before 2009 no rates applied to coal and coke.</td></tr>
<tr><td rowspan="2">Amount calculated (benchmark: highest excise per unit of energy consumption)</td><td>total</td><td>per unit of energy</td><td>per unit of CO2</td></tr>
<tr><td>2005: € 4650 mln
2011: € 3602 mln</td><td>2005: € 6.68 / GJ
2011: € 6.20 / GJ</td><td>2005: € 95.62 / ton
2011: € 86.61 / ton</td></tr>
<tr><td rowspan="2">Amount calculated (benchmark: highest excise per unit of CO2 emissions)</td><td>total</td><td>per unit of energy</td><td>per unit of CO2</td></tr>
<tr><td>2005: € 4596 mln
2011: € 3525 mln</td><td>2005: € 6.60 / GJ
2011: € 6.07/ GJ</td><td>2005: € 94.51 / ton
2011: € 84.76 / ton</td></tr>
<tr><td rowspan="2">Amount calculated (benchmark: proposal new energy taxation directive)</td><td>total</td><td>per unit of energy</td><td>per unit of CO2</td></tr>
<tr><td>2005: € 616 mln
2011: € 262 mln</td><td>2005: € 0.88/ GJ
2011: € 0.45 / GJ</td><td>2005: € 12.67 / ton
2011: € 6.30 / ton</td></tr>
<tr><td>Information</td><td colspan="3">Sources of information – Excise tax rates</td></tr>
</table>

sources	National legislation: • CXXVII. Law of 2003 on excise duty and special excise rules for the marketing of products (*2003. évi CXXVII. Törvény a jövedéki adóról és a jövedéki termékek forgalmazásának különös szabályairól*) URL: http://net.jogtar.hu/jr/gen/hjegy_doc.cgi?docid=A0300127.TV [Accessed: 11/03/2014] • LXXXVIII. Law of 2003 on energy tax *(2003. évi LXXXVIII. Törvény az energiaadóról)* URL: http://net.jogtar.hu/jr/gen/getdoc2.cgi?dbnum=1&docid=A0300088.TV [Accessed: 11/03/2014] • 341/2007. (December 15th) Government Regulation on terms and conditions of excise tax rebate of diesel used in agriculture (*341/2007. (XII. 15.) Korm. Rendelet a mezőgazdaságban felhasznált gázolaj utáni jövedékiadó-visszatérítés feltételeiről és szabályairól*) URL: http://net.jogtar.hu/jr/gen/hjegy_doc.cgi?docid=A0700341.KOR [Accessed: 11/03/2014] National Tax and Customs Administration of Hungary (2013) Excise Tax Codes by the National Tax and Customs Administration of Hungary URL: http://www.nav.gov.hu/nav/ado/jovedeki_ado/tajekoztatok_informaciok/fajtakodok_jogcimkodok/jovedeki_ado_fajtakodok.html EC DG TAXUD (2005) Excise duty tables, Part II – Energy products and electricity, Ref 1.020, January 2005 EC DG TAXUD (2011) Excise duty tables, Part II – Energy products and electricity, Ref 1032, January 2011 <u>Sources of information – Energy balances</u> IEA (2013) Energy statistics of OECD countries, 2013 Edition, ISBN 978-92-64-20298-6 IEA (2007) Energy statistics of OECD countries 2004-2005, 2007 Eidition <u>Sources of information - National conversion factors and emission factors</u> • KVV (2008) Klímapolitika: Az üvegházhatású gázok kibocsátás csökkentésének energetikai vonatkozásai, URL: http://klima.kvvm.hu/documents/14/NES_energetika.pdf • 213/2006. (X. 27.) Korm. Rendelet az üvegházhatású gázok kibocsátási egységeinek kereskedelméről szóló 2005. évi XV. törvény végrehajtásának egyes szabályairól, URL: http://klima.kvvm.hu/documents/41/213_2006_kr.pdf [Accessed: 11/03/2014] • IEA (2013) Energy balances of OECD countries, 2013 Eiditon, ISBN 978-92-64-20300-6 • Belgian conversion factors from excel spreadsheet:

	tax_exp_Bel_2009 Assumptions made in the calculations • Belgian conversion factors were used for gasoline, diesel, LPG, kerosene and electricity. (National conversion factors could not be found for electricity and kerosene. In addition, Hungarian conversion factors for heavy fuel oil, gasoline, diesel and LPG were identical with the provided Belgian ones.) • For coal and coke products Hungarian conversion factors were used. • No emission factors could be found for sub-bitumen coal products thus the emission factor for bitumen coal products were used. • In 2011, there were different tax rates for gas oil used on roads and used for commercial purposes (lorries and buses) nevertheless no energy statistics could be accessed on the share of these uses. It was therefore assumed that the share is 50-50 per cent. • Different excise tax rates exist for LPG used on roads and for LPG used for other motoric use. As no energy statistics could be found on the share of these two uses it was assumed that the share is 50 - 50 per cent. • Final consumption of gas oil by the agriculture sector in the energy statistics is not differentiated between use for heating purposes and transport purposes. It was assumed that all final consumption was linked to heating purposes. • In Hungary three different excise tax rates apply to heavy oil fuels based on their sulphur content and quality. In 2013, OECD estimated that the low sulphur content heavy fuel oil is more widely used (80 per cent of the heavy fuel oil consumption). It was therefore assumed that 80 per cent of consumption is for low sulphur content heavy fuel oils, 20 per cent for high sulphur content heavy fuel oils and there is no consumption of the low quality heavy fuel oil which has the highest excise tax rate. • Even though separate excise tax rates apply to leaded and unleaded gasoline as leaded gasoline has been phased out from Hungary since 2002 leaded gasoline was excluded from the scope of the calculations.

Value Added Tax

<table>
<tr><td>Categories of energy supply to which a reduced VAT rate was applied in one or both of the reporting years</td><td colspan="3">In 2011, a reduced VAT rate of 5 per cent was applied for district heating. [57] For all other energy sources the standard VAT was applied.

In 2005, for coal and coke use a reduced VAT rate of 15 per cent was applied. In addition, the use of natural gas and LPG for heating purposes also had a reduced VAT rate of 15 per cent.</td></tr>
<tr><td>Standard rate</td><td colspan="3">2005: 25%

2011: 25%</td></tr>
<tr><td>Reduced rate</td><td colspan="3">2005: 15% for coal and coke and LPG and natural gas for heating purposes

2011: 5% for district heating</td></tr>
<tr><td rowspan="2">Amount of support calculated

(refer to Excel file)</td><td>total</td><td>per unit of energy</td><td>per unit of CO2</td></tr>
<tr><td>2005: € 92.16 mln

2011: € 0 mln</td><td>2005: € 0.23 / GJ

2011: € 0 / GJ</td><td>2005: € 3.44 / ton

2011: € 0 / ton</td></tr>
<tr><td>Information sources</td><td colspan="3">Sources of information – VAT

National legislation

• CXXVII. Law of 2007 on VAT (2007. évi CXXVII. Törvény az általános forgalmi adóról) URL: http://net.jogtar.hu/jr/gen/hjegy_doc.cgi?docid=A0700127.TV [Accessed: 11/03/2014]

• LXXIV. Law of 1992 on VAT (1992. évi LXXIV. Törvény az általános forgalmi adóról) URL: http://www.bfvk.hu/old/downloads/1992_LXXIV.pdf [Accessed: 11/03/2014]

EC (2014) VAT Rates Applied in the Member States of the European Union, Situation as of 13 January 2014, URL: http://ec.europa.eu/taxation_customs/resources/documents/taxation/vat/how_vat_works/rates/vat_rates_en.pdf

Sources of information – Energy prices

Central Statistical Office (KSH) (2014) Annual average prices of some consumer goods and services (1996 -) (Egyes termékek és szolgáltatások éves fogyasztói átlagára (1996–)) URL: http://www.ksh.hu/docs/hun/xstadat/xstadat_eves/i_qsf003</td></tr>
</table>

[57] District heating is not part of the calculations. The OECD 'Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels' indicates that under this reduced VAT rate in 2011 2 billion HUF (€ 7.1 mln) support was provided for coal, 5 billion HUF (€ 17.9 mln) for petroleum and 22 billion HUF (€ 78 mln) for natural gas. Please note that the numbers for 2011 are provisional figures.

	a.html?1170 [Accessed: 12/03/2014] National Tax and Customs Administration of Hungary (2013) Fuel prices URL: http://www.nav.gov.hu/nav/szolgaltatasok/uzemanyag Eurostat (2014) Energy statistics – gas and electricity prices URL: http://epp.eurostat.ec.europa.eu/portal/page/portal/energy/data/database [Accessed: 11/03/2014] Sources of information – Energy balances IEA (2013) Energy statistics of OECD countries, 2013 Edition, ISBN 978-92-64-20298-6 IEA (2007) Energy statistics of OECD countries 2004-2005, 2007 Edition Sources of information - National conversion factors and emission factors • KVV (2008) Klímapolitika: Az üvegházhatású gázok kibocsátás csökkentésének energetikai vonatkozásai, URL: http://klima.kvvm.hu/documents/14/NES_energetika.pdf • 213/2006. (X. 27.) Korm. Rendelet az üvegházhatású gázok kibocsátási egységeinek kereskedelméről szóló 2005. évi XV. törvény végrehajtásának egyes szabályairól, URL: http://klima.kvvm.hu/documents/41/213_2006_kr.pdf [Accessed: 11/03/2014] • IEA (2013) Energy balances of OECD countries, 2013 Edition, ISBN 978-92-64-20300-6 • Belgian conversion factors from excel spreadsheet: tax_exp_Bel_2009 Assumption made in the calculations In addition to all of the above indicated assumptions the following assumptions were also made in calculations in relation to VAT: • No separate prices could be found for the different types of coal and coke thus it was assumed that the price indicated in the national statistics for briquette applies for all types of coal and coke. • As no prices could be found for residential use of gas oil for heating purposes and the consumption was very low or zero this energy source was excluded from the calculations. • The price of LPG for road use cannot be found for 2005 thus 2007 prices were used.

	• Prices for natural gas used on roads was only found for 2011 thus based on the price changes of other fuels between 2005 and 2011 it was assumed that the price of natural gas in 2005 was 65 per cent of the price in 2011.

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

N.a.

The standard rate of corporate income tax for Hungarian and foreign companies is **19%**. However, for the first HUF 500 million (€ 1.7 mln) of taxable income, the tax rate is 10%. Tax incentives include a research and development tax credit, tax credits related to funding film making and performance arts, tax credits for small and medium businesses and a sport sponsorship tax credit.[58]

In 2009, an additional **Robin Hood tax** was introduced at 8 per cent on pre-tax profits on energy suppliers (among others on electricity and gas providers).[59] This rate was increased to 31 per cent in 2013.[60]

Tax expenditures in royalties

- The **XLVIII. Law of 1993 on mining**[61] covers the activities linked to the mining of mineral resources.
- According to the mining law a **12 per cent royalty** (*bányajéradék*) is charged on the value derived from the extraction of mineral oil and natural gas. This rate was increased to 16 per cent in 2013.
- The royalty is 12 per cent if the amount of the extracted natural gas is 300 million m3 per annum or the amount of the extracted oil is no more than 50 kt per annum. If the amount of the extracted natural gas is between 300 and 500 million m3 per annum or for oil is between 50 kt and 200 kt the royalty is 20%. If the extracted amounts exceed these limits the royalty is 30%.
- The royalty is 8 per cent if the natural gas with a high inert gas content.

[58] LXXXI. Law of 1996 on corporate tax and tax dividend (*1996. évi LXXXI. Törvény a társasági adóról és az osztalékadóról*) URL: http://net.jogtar.hu/jr/gen/hjegy_doc.cgi?docid=99600081.TV [Accessed: 25/03/2014]

[59] LXVII. Law of 2008 on imporving the competitiveness of the district heating sector (*2008. évi LXVII. Törvény a távhőszolgáltatás versenyképesebbé tételéről*) URL: http://net.jogtar.hu/jr/gen/hjegy_doc.cgi?docid=A0800067.TV [Accessed: 25/03/2014]

[60] Hungarian Government (2012) Hungary's new tax system (*2013 – A megújuló Magyarország adórendszere – Adóváltozások összefoglaló*) URL: http://www.kormany.hu/download/e/bc/b0000/2013%20Ad%C3%B3v%C3%A1ltoz%C3%A1sok%2012%2011%2027.pdf [Accessed: 08/04/2014]

[61] XLVIII. Law of 1993 on mining (*1993. évi XLVIII. Törvény a bányászatról*) URL: http://net.jogtar.hu/jr/gen/hjegy_doc.cgi?docid=99300048.TV [Accessed: 25/03/2014]

- **The royalty is 0 per cent for solid mineral which are mined in underground mines and for other solid minerals it is 2 per cent.**
- The royalty covers: natural gas, oil, coal, lignite, geothermic energy, carbon di-oxide, minerals, peat, clay, sand, gravel and stones.
- In **2005, HUF 24 million** (€ 0.09 mln) royalty was declared and HUF 16 000 reduction was authorised by the government.[62] In **2011, HUF 112 million** (€ 0.4 mln) royalty was declared and HUF 43 681 (€ 156) reduction was authorised by the government.[63]
- No royalty should be paid for oil and natural gas extracted via environmentally friendly methods with an enhanced efficiency.
- The standard rate of **corporate income tax** applied to mining activities is **19%**. However, in Hungary for the first HUF 500 million (€ 1.7 mln) of taxable income, the tax rate is 10%.[64]

[62] MBH (2006) Tájékoztató bányajáradék bevallásról, befizetésről, 2005. Év, URL: http://www.mbfh.hu/gcpdocs/201004/banyajaradek_2005.pdf

[63] [63] MBH (2012) Tájékoztató bányajáradék bevallásról, befizetésről, 2011. Év, URL: http://www.mbfh.hu/gcpdocs/201306/2011.pdf

[64] LXXXI. Law of 1996 on corporate tax and tax dividend (*1996. évi LXXXI. Törvény a társasági adóról és az osztalékadóról*) URL: http://net.jogtar.hu/jr/gen/hjegy_doc.cgi?docid=99600081.TV [Accessed: 25/03/2014]

Ireland

Reporting years:2002 and 2011

Direct budgetary support to consumers/users

Name of the scheme and short description	Fuel Allowance	Electricity Allowance	Gas Allowance
Final beneficiary	Households dependent on long-term social welfare and unable to provide for own heating needs	Households receiving social welfare payments and meeting certain criteria	Households receiving social welfare payments and meeting certain criteria
Direct beneficiary	Households receiving social welfare payments	Utility company (if household is an Electric Ireland customer) or paid directly to eligible households each month through a selected financial institution or the Post Office	Gas provider or paid directly to eligible households each month through a selected financial institution or the Post Office
Variability	Fuel Allowance is a fixed amount paid weekly from October – April each year (for 26 weeks) integrated with existing social welfare payments In 2011, the standard fuel allowance was €20 per week in 2002 it was €9 per week.	Fixed cash credit paid each month either automatically applied to household's bill (if Electric Ireland customer) or as a cash payment to be used with other suppliers. In 2011, the electricity allowance for a group account was €43.80 per month while in 2003 it was €22.50 per month.	Depending on supplier, paid as a fixed cash credit on gas bill or as a cash payment to an account in a financial institution or a post office. In 2011, the natural gas allowance provided a credit of up to €111.00 in each two-monthly billing period in the winter and a credit of up to €52.00 in each two-monthly billing period in the summer. The bottled gas refill allowance was €40.70 per month**.** In 2003, the natural gas allowance covered the supply charge of €27.93 plus up to €11.11 of free natural gas in each two-monthly

			billing period in winter and up to €1.29 in each two-monthly billing period in summer. The Bottled Gas Refill Allowance provided five cylinders every four months.
Objectives	To provide a contribution to the heating needs of qualified low income households.	Provided as part of the Household Benefits Package which contribute to the costs of running a household	Provided as part of the Household Benefits Package which contribute to the costs of running a household
Conditionality for eligibility	Means-tested payment linked to the maximum rate of the State Pension (Contributory)	Dependent on age, receipt of qualifying allowances, permanently living at address at which allowances are applied, registered consumer of electricity etc. If aged between 66 and 70 and not receiving a qualifying payment, a means test must be satisfied linked to appropriate weekly means limit based on maximum rate of State Pension (Contributory). If the applicant has an electricity slot meter or if the registered consumer of electricity at their address is the landlord, they may qualify for a Cash Electricity Allowance of €35 (2014).	Dependent on age, receipt of qualifying allowances, permanently living at the address at which allowances are applied, registered consumer of gas etc. If aged between 66 and 70 and not receiving a qualifying payment, a means test must be satisfied linked to appropriate weekly means limit based on maximum rate of State Pension (Contributory). If the applicant's home is not connected to an electricity or natural gas supply but otherwise satisfy conditions, they may qualify for a Cash Gas Allowance of €35 (2014).
Conditionality for magnitude of subsidy	Fixed amount, does not take into consideration heating requirements or energy efficiency of dwelling	Fixed allowance per month	Fixed allowance per month
Source of funding	General government budget	General government budget - Department	General government budget - Department of

	- Department of Social Protection (formerly known as Department of Social and Family Affairs)	of Social Protection (formerly known as Department of Social and Family Affairs)	Social Protection (formerly known as Department of Social and Family Affairs)
Fuel	Not specified	Not specified	Not specified
Total amount	2002: €47.2m 2011: €177.9m	2002: €25.3m 2011: €71.0m	2002: €871,000 2011: €5.3m
Information sources	Citizen's Information Board, Fuel Allowance, http://www.citizensinformation.ie/en/social_welfare/social_welfare_payments/extra_social_welfare_benefits/fuel_allowance.html [accessed 18/3/2014] Sustainable Energy Ireland (2003) A Review of Fuel Poverty and Low Income Housing, http://www.seai.ie/Grants/Warmer_Homes_Scheme/Fuel_Poverty_Report.pdf [accessed 18/3/2014] Department of Public Expenditure and Reform, Estimates of public expenditure, 2012 revised estimates for public services, http://www.per.gov.ie/estpubexp2012/ [accessed 26/3/2014] Department of Public Expenditure and Reform, Revised estimates of public expenditures, Vol.	Department of Public Expenditure and Reform, Estimates of public expenditure, 2012 revised estimates for public services, http://www.per.gov.ie/estpubexp2012/ [accessed 26/3/2014] Sustainable Energy Ireland (2003) A Review of Fuel Poverty and Low Income Housing, http://www.seai.ie/Grants/Warmer_Homes_Scheme/Fuel_Poverty_Report.pdf [accessed 18/3/2014] Department of Social Protection, Household Benefits Package, https://www.welfare.ie/en/Pages/Household-Benefits-Package.aspx#admin [accessed 18/3/2014] Department of Public Expenditure and Reform, Revised estimates of public expenditures, Vol. 2003, Part 5 http://www.per.gov.ie/estpubexp2003/ [accessed 26/3/2014] Department of Social	Citizen's Information Board, Households Benefits Package, http://www.citizensinformation.ie/en/social_welfare/social_welfare_payments/extra_social_welfare_benefits/household_benefits_package.html [accessed 18/3/2014] Department of Public Expenditure and Reform, Estimates of public expenditure, 2012 revised estimates for public services, http://www.per.gov.ie/estpubexp2012/ [accessed 26/3/2014] Sustainable Energy Ireland (2003) A Review of Fuel Poverty and Low Income Housing, http://www.seai.ie/Grants/Warmer_Homes_Scheme/Fuel_Poverty_Report.pdf [accessed 18/3/2014] Department of Social Protection, Household Benefits Package, https://www.welfare.ie/en/Pages/Household-Benefits-Package.aspx#admin [accessed 18/3/2014] Department of Public Expenditure and Reform, Revised estimates of public expenditures, Vol.

	2003, Part 5 http://www.per.gov.ie/estpubexp2003/ [accessed 26/3/2014] Department of Social Protection, Fuel Allowance Scheme, https://www.welfare.ie/en/Pages/820_National-Fuel-Scheme.aspx [accessed 18/3/2014] Department of Social Protection, Rates of payment 2011, https://www.welfare.ie/en/downloads/sw19_jan_jun_2011.pdf [accessed 26/3/2014]	Protection, Rates of payment 2011, https://www.welfare.ie/en/downloads/sw19_jan_jun_2011.pdf [accessed 26/3/2014] Department of Social and Family Affairs, Rates of payment 2003 https://www.welfare.ie/en/downloads/sw19_03.pdf [accessed 26/3/2014]	2003, Part 5 http://www.per.gov.ie/estpubexp2003/ [accessed 26/3/2014] Department of Social Protection, Rates of payment 2011, https://www.welfare.ie/en/downloads/sw19_jan_jun_2011.pdf [accessed 26/3/2014] Department of Social and Family Affairs, Rates of payment 2003 https://www.welfare.ie/en/downloads/sw19_03.pdf [accessed 26/3/2014]

Direct budgetary support to producers

Direct budgetary support to primary producers

Name of the scheme and short description	Public Service Obligation (PSO) levy[65]
Final beneficiary	Certain peat-fired gas (and renewable generation) power plants. All three remaining new-build peat-fired electricity generation in Ireland fall under the PSO.
Direct beneficiary	Electricity Supply Board (ESB)
Aid category	Price support / induced transfer (included as direct grant on EC state aid registry)
Variability	Value of the PSO is set on an annual basis by the Commission for Energy Regulation (CER) corresponding to the additional costs in sourcing, and producing a proportion of electricity from such generators. This value can vary significantly from year to year, notably depending on fuel prices. For example, between 2007-2010, the levy was zero as market conditions were such that electricity generation from peat was competitive with gas-fired power plants without support.

[65] To check with study team whether this falls within the scope of our study

	Support to peat fired power plants is expected to cease by 2020 – the mechanism has been approved by the European Commission until 2019.
Objectives	The PSO levy is designed to offset the charges incurred by the Electricity Supply Board (ESB) for its obligation to have a certain quantity of electricity generated out of peat as mandated by Government and approved by the European Commission. The underlying policy objectives are of the levy relate to security of energy supply, use of indigenous fuels (i.e. peat) and promotion of renewable energy in electricity generation.
Conditionality for eligibility	Electricity generated from peat, certain gas (and renewable) power plants.
Conditionality for magnitude of subsidy	The PSO levy is determined each year based on estimates of costs to be recovered by all relevant parties, relative to the PSO benchmark price (determined, inter alia, using forecasts of fuel and carbon prices). This amount is usually corrected retrospectively ('R-factor') two PSO periods later, once actual costs are verified and the true market price and generation levels are known.
Source of funding	The levy is paid by final electricity consumers (domestic customers, small commercial customers, medium and large customers) which pay a differentiated levy amount each month. The levy is displayed as a separate item on consumers' electricity bills. The transmission system operator (TSO) and distribution system operator (DSO) collect the levy from suppliers (who in turn are responsible for collecting the levy from their customers). The TSO is responsible for ensuring that payments are distributed correctly.
Fuel	Peat (also covers certain gas and renewables)
Total amount	2005: €62m 2011: €92.12m Note: PSO periods run from 1 October to 30 September of the following year. Thus, data reported for 2011 covers the period from 1 October 2011 to 30 September 2012.
Information sources	OECD (2013) Inventory of estimated budgetary support and tax expenditures for fossil fuels 2013 Commission for Energy Regulation (2011) Public Service Obligation levy 2011/2012, http://www.cer.ie/docs/000077/cer11130.pdf [accessed 18/3/2014] IEA (2013) Energy policies of IEA countries – Ireland 2012 Review, http://www.iea.org/publications/freepublications/publication/IRE

	LAND2012_free.pdf [accessed 18/3/2014] EC (2001) State aid n° N 6/A/2001 – Ireland Public Service Obligations imposed on the Electricity Supply Board with respect to the generation of electricity out of peat, http://ec.europa.eu/competition/state_aid/cases/134269/134269_423080_39_2.pdf

Direct budgetary support for R&D purposes

Name of the scheme and short description	**Energy research programmes :** Specific programmes targeted at RD&D for fossil fuels could not be identified. Thus this section provides some overall estimates for R&D spending on fossil fuels in Ireland.
Final beneficiary	
Direct beneficiary	Universities (primary beneficiaries of fossil fuel research projects listed in SEAI inventory)
Aid category	Grants for research and development
Variability	
Objectives	
Conditionality for eligibility	
Conditionality for magnitude of subsidy	
Source of funding	
Fuel	
Total amount	According to the IEA database, the Irish government spent the following amount on R&D for fossil fuels (which includes oil & gas, coal and CCS): 2003: € 0.288m 2011: € 0.068 The inventory of energy RD&D compiled by Sustainable Energy Ireland provides the following estimates: 2004: € 39,425 (fossil fuels) 2005: € 41,547 (other oil and gas) 2011: € 68,126 (other oil and gas) More detailed break-downs of this expenditure could not be identified.
Information sources	Department of Public Expenditure and Reform, Estimates of public expenditure, 2012 revised estimates for public services, http://www.per.gov.ie/estpubexp2012/ [accessed 26/3/2014] IEA (2013), "RD&D Budget", *IEA Energy Technology RD&D Statistics* (database), doi: 10.1787/data-00488-en (Accessed on 26 March 2014) Sustainable Energy Ireland, Energy Research, Development and Demonstration in Ireland, 2007 and 2008 inventories report, http://www.seai.ie/Publications/Energy_Policy_Publications/Energy_Research_Development_and_Demonstration/RDD_Inve

	ntory_2007_and_2008.30012.shortcut.pdf [accessed 3/4/2014] **Sustainable Energy Ireland, Energy Research, Development and Demonstration in Ireland, Inventory, http://inventory.sei.ie/analysis/iea?year=2011&showSubClassifications=on [accessed 3/4/2014]** Sustainable Energy Ireland, Energy RD&D Inventory, http://www.seai.ie/Publications/Energy_Policy_Publications/Energy_Research_Development_and_Demonstration/Energy-RD_D-Inventory-2004.3965.shortcut.pdf [accessed 3/4/2014]

Public investments in energy infrastructure

Not applicable (no relevant cases could be identified in EC state aid registry)

Tax expenditures

Excises and other specific taxes on energy use

Name of the tax scheme and short description	**Mineral Oil Tax (MOT)** is charged on all mineral oils produced or imported to Ireland. The tax applies to hydrocarbon oil (light and heavy), liquefied petroleum gas (LPG), substitute fuel, additives and from July 2005 to coal. **Carbon tax** has been applied to transport fuels (petrol and auto-diesel) from December 2009, to non-transport fuels (kerosene, marked gas oil, LPG, natural gas) from May 2010 and to solid fuels (coal, lignite, peat) from May 2013. **Electricity tax** has been applied on supplies of electricity since October 2008.
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	In 2002, coal and natural gas were not subject to the MOT; there was no electricity tax in place. Exemptions/reductions from the **MOT** apply for: - Heavy oil, diesel oil or LPG used for horticulture and cultivation of mushrooms - Heavy oil used for passenger road service vehicles - Fuel oil used in relation to manufacture of alumina - Mineral oil used to reduce chemicals in blast furnaces as an addition to coke used as the principal fuel; - Mineral oil used for navigation, other than in private pleasure craft; - Heavy oil used for aviation, other than private pleasure flying; - Diesel used for private pleasure navigation was subject to a reduced rate until 31 October 2008 after which the same MOT rate which applies to auto diesel has been applied. - Jet kerosene for private pleasure flying was exempted from the tax, and a reduced rate was allowed for aviation

	gasoline used for such flying up until 31 October 2008 after which these fuels have been taxed at the same rates as auto diesel and petrol respectively. - Diesel used in railways - Diesel used as motor fuel for agricultural purposes The **MOT was extended to users of coal from July 2005** with exemptions for the following users of coal: - Households, - Generation of electricity, - Combined heat and power generation, - Agricultural, horticultural or pesciculture works, and in forestry, - Mineralogical processes, - Dual use, - Use by a charitable organisation, - Fuel for trains, - Use in energy intensive business which holds a GHG emission permit. In addition, from 2007, a variable National Oil Reserves Agency (NORA) levy is applied on oil companies and oil consumers for disposals of petroleum products to support achievement of Ireland's oil stocks obligations. The levy was 0.476 cent per litre to 1.00 cent per litre with effect from 1st November 2007, and 2.00 cent per litre with effect from 1st October 2009. The levy applies to motor spirits; gas oil, diesel oil and kerosene (excluding jet fuel of the kerosene type) and fuel oils. Note that from July 2013, a proportion of the MOT paid on auto-diesel used in qualifying motor vehicles (bus/coach operators and road haulage operators) will be repaid. The amount of the repayment varies according to the average price at which auto-diesel is available for purchase during a repayment period. In 2002 a reduced rate was applied for diesel used in scheduled passenger road transport services. Exemptions/reductions from the **carbon tax** include: - Full relief for gas and solid fuel supplied for use in generation of electricity - Partial relief for gas used in installations with a GHG emissions permit. - Full relief for biofuels and the biofuel content of blended fuels. - Partial relief for certain high efficiency CHP with a capacity of 50 kW. - Relief for farm diesel - Coal and peat exempted until 2013 - Full relief for natural gas used in chemical reduction, electrolytic or metallurgical processes Since 2008, the **electricity tax** is applied to business use and non-business use (except domestic use which are not subject to the tax). Reliefs are also provided for electricity: - generated from renewable sources,

<table>
<tr><td></td><td colspan="3">- produced from environmentally friendly heat and power cogeneration,
- used for chemical reduction or in electrolytic or metallurgical processes,
- used for combined heat and power generation,
- used for, or in connection with, the production of electricity,
- produced on board a craft.
-
Furthermore, as in almost all other EU Member States, the excise duty applied on diesel in Ireland is lower than the duty applied on petrol. In 2002 the excise duty applied on unleaded petrol was EUR 401.36/1000l while the average excise duty applied on diesel was EUR 328.14/1000l (average of duty applied on diesel as a propellant with sulphur content >50 mg/kg and with sulphur content <=50 mg/kg). In 2011 the excise duty applied on petrol was EUR 576.22/1000l while the excise duty applied on diesel was EUR 465.7/1000l.</td></tr>
<tr><td rowspan="2">Amount calculated (benchmark: highest excise per unit of energy consumption)</td><td>total</td><td>per unit of energy</td><td>per unit of CO2</td></tr>
<tr><td>2002: € 1093 mln
2011: € 1307 mln</td><td>2002: € 2.25 / GJ
2011: € 2.91/ GJ</td><td>2002: €27.43 / ton
2011: € 34.69 / ton</td></tr>
<tr><td rowspan="2">Amount calculated (benchmark: highest excise per unit of CO2 emissions)</td><td>Total</td><td>per unit of energy</td><td>per unit of CO2</td></tr>
<tr><td>2002: € 1093 mln
2011: € 1307 mln</td><td>2002: € 2.25 / GJ
2011: € 2.91 / GJ</td><td>2002: € 27.43 / ton
2011: € 34.69 / ton</td></tr>
<tr><td rowspan="2">Amount calculated (benchmark: proposal new energy taxation directive)</td><td>Total</td><td>per unit of energy</td><td>per unit of CO2</td></tr>
<tr><td>2002: € 332 mln
2011: € 107 mln</td><td>2002: € 0.68 / GJ
2011: € 0.24 / GJ</td><td>2002: € 8.33 / ton
2011: € 2.85 / ton</td></tr>
<tr><td>Information sources</td><td colspan="3">DG TAXUD (2011) Excise Duty Tables, Part II – Energy products and Electricity, REF 1033, July 2011

EC (2011) Proposed minimum tax rates under revised Energy Tax Directive, http://ec.europa.eu/taxation_customs/resources/documents/taxation/minima_explained_en.pdf [accessed 24/3/2014]

Gargan, E., (2012) Reflections on the implementation of the carbon tax in Ireland, Presentation to the UCD/ NESC Workshop: Climate Change Meeting Ireland's 2020 Obligations – 16 May 2012, Department of Finance, Ireland, http://www.nesc.ie/assets/files/downloads/project_climate___per</td></tr>
</table>

cent20change/ucd_workshop/ericgargan.pdf [accessed 6/3/2013]

IEA (2013) Energy statistics of OECD countries, 2013 edition

Irish Tax and Customs (2013) Excise Duty – Guide to Electricity Tax - Leaflets & Guides, Update from December 2013

Irish Tax and Customs, Excise leaflets - Mineral Oil Tax on Coal – Public Notice 889, http://www.revenue.ie/en/tax/excise/leaflets/pn1889.html [accessed 3/4/2014]

Irish Tax and Customs, Excise leaflets - Guide to Natural Gas Carbon Tax, http://www.revenue.ie/en/tax/excise/leaflets/pn1889.html [accessed 3/4/2014]

Irish Tax and Customs, Excise leaflets – Guide to Electricity Tax, http://www.revenue.ie/en/tax/excise/leaflets/pn1889.html [accessed 3/4/2014]

Irish Tax and Customs, Excise leaflets – Payment of Mineral Oil Tax on Heavy Oil (Diesel) used for Private Pleasure Navigation, http://www.revenue.ie/en/tax/excise/leaflets/pn1889.html [accessed 3/4/2014]

Irish Tax and Customs, Excise leaflets – Rates of Mineral Oil Tax for aviation fuels for Business Use, and for Private Pleasure Flying, http://www.revenue.ie/en/tax/excise/leaflets/pn1889.html [accessed 3/4/2014]

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Irish Tax and Customs, Diesel Rebate Scheme, http://www.revenue.ie/en/tax/excise/diesel-rebate-scheme/index.html [accessed 26/5/2014]

Irish Statute Book, Finance Act 1999, http://www.irishstatutebook.ie/1999/en/act/pub/0002/sec0094.html#sec94 [accessed 3/4/2014]

Irish Statute Book, Mineral Oil Tax Regulations, 2001, S.I. No. 442/2001, http://www.irishstatutebook.ie/2001/en/si/0442.html

Joyce, D., Convery, F., Dunne, L., (2012) Ireland's carbon tax: Equity and regressivity impacts, Presentation at Green Budget Europe + the Institute Sustainable Development and International Relations (IDDRI) Conference: Green taxation as a key for sustainable fiscal reform, PARIS 29-30 October, 2012, http://www.foes.de/pdf/20121107_GBE_IDDRI_Paris_3_Joyce.pdf [accessed 17/4/2013]

NESC Secretariat (2012) Towards a New National Climate Policy: Interim Report of the NESC Secretariat to the Department of Environment, Community and Local Government, June 2012,

	http://www.environ.ie/en/Publications/Environment/ClimateChange/FileDownLoad,31202,en.pdf [accessed 10/4/2013] Revenue Commissioners (2013) Statistical Report 2012 - Excise, http://www.revenue.ie/en/about/publications/statistical/2012/index.html [accessed 18/3/2014] Sustainable Energy Authority of Ireland (SEAI) 1990-2011 Energy Balances http://www.seai.ie/Publications/Statistics_Publications/Energy_Balance/Previous_Energy_Balances/ [accessed 17/3/2014] Please see excel spreadsheet for further details

Value Added Tax

Categories of energy supply to which a reduced VAT rate was applied in one or both of the reporting years	**Standard VAT rate applies to:** • Petrol • Road diesel (unmarked) • Industrial methylated spirits • Other gas oils • LPG motor gas **Reduced VAT rate applies to:** • Coal, peat and other solid substances offered for sale solely as fuel • Supply of electricity, but not distribution if distribution is wholly or mainly in connection with transmission of communication signals • Supply of gas used for domestic or industrial heating or lighting, not including motor vehicle gas, gas used for welding or cutting metal, gas sold as lighter fuel • Supply of hydrocarbon oil used for domestic or industrial heating, excluding gas oil other than marked gas oil (paraffin, kerosene jet fuel, marine diesel and tractor diesel) **A zero rate of VAT applies to:** • Aircraft used or to be used by a transport undertaking operating for reward chiefly on international routes • Sea-going vessels of a gross tonnage of more than 15 tons used for the carriage of passengers for reward, for the purposes of a sea fishing business, for other commercial or industrial purposes, or for rescue or assistance at sea Note that from 1 January 2012, the standard VAT rate increased to 23%, reduced rate remains at 13.5%.		
Standard rate	2002: 21% 2011: 21%		
Reduced rate	2002: 12.5% 2011: 13.5%		
Amount of support	**total**	**per unit of energy**	**per unit of CO2**

calculated (refer to Excel file)	2002: €11584 mln 2011: € 194 mln	2002: €0.45 / GJ 2011: € 0.76/ GJ	2002: € 6.38 / ton 2011: € 10.79/ ton
Information sources	Irish Tax and Customs, VAT Rates (Current and Historic) http://www.revenue.ie/en/tax/vat/rates/current-historic-rates-vat.html#rates Vat Consolidation Act 2010 - Schedule 3 - Goods and services chargeable at the reduced rate, available from http://www.revenue.ie/en/tax/vat/guide/vat-rates.html#section4 [accessed 18/3/2014] Irish Tax and Customs, VAT rates, http://www.revenue.ie/en/tax/vat/rates/index.jsp#G [accessed 18/3/2014] VAT Consolidation Act 2010 - Schedule 1 - Exempt activities, available from http://www.revenue.ie/en/tax/vat/guide/vat-rates.html#section4 [accessed 18/3/2014] Irish Tax and Customs, VAT Rates (Current and Historic) http://www.revenue.ie/en/tax/vat/rates/current-historic-rates-vat.html#rates [accessed 18/3/2014] Sustainable Energy Authority of Ireland - Archived Domestic Fuel Costs - Average Price per Unit (€) [accessed 18/3/2014] VAT Consolidation Act 2010 – Schedule 2 – Zero rated activities, available from http://www.revenue.ie/en/tax/vat/guide/vat-rates.html#section4 [accessed 26/5/2014] Sustainable Energy Authority of Ireland - Domestic fuels, comparison of energy costs - 2014 [accessed 18/3/2014] Eurostat energy statistics, Electricity prices – Households & Gas prices – Households, http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=ten00115&plugin=1 DG TAXUD (2011) Excise Duty Tables, Part II – Energy products and Electricity, REF 1033, July 2011 Irish Tax and Customs (2013) Excise Duty – Guide to Electricity Tax - Leaflets & Guides, Update from December 2013 Revenue Commissioners (2013) Statistical Report 2012 - Excise, http://www.revenue.ie/en/about/publications/statistical/2012/index.html [accessed 18/3/2014] Proposed minimum tax rates under revised Energy Tax Directive, http://ec.europa.eu/taxation_customs/resources/documents/taxation/minima_explained_en.pdf [accessed 24/3/2014] IEA (2013) Energy statistics of OECD countries, 2013 edition		

	Sustainable Energy Authority of Ireland (SEAI) 1990-2011 Energy Balances http://www.seai.ie/Publications/Statistics_Publications/Energy_Balance/Previous_Energy_Balances/ [accessed 17/3/2014] Please see excel spreadsheet for further details

Tax expenditures in social contributions and personal income taxes

Information on social contributions and personal income taxes of relevance to fossil fuels could not be found in the assessment undertaken for this study. There are however some benefits-in-kind, such as the tax treatment of company cars[66], which can be considered indirect forms of support through tax expenditure.

Tax expenditures in corporate income taxes

Name of the scheme and short description	**Corporate tax** The standard corporation tax is 12.5% for trading income. A higher rate of 25% is applied on excepted trades which include working minerals and petroleum activities (since 1992).
Type of tax expenditure	Capital allowances – 100% write-offs for exploration and development costs and deductions for abandonment costs. In 2007 an additional Profit Resource Rent Tax was introduced of 5% to 15% linked to the profitability of discoveries, thus potentially yielding 40% revenue for licenses issued after 1/1/2007. Petroleum activities are also subject to a ring fence which prevents losses from extraction activities being set off against profits arising from non-petroleum-related activities for tax purposes.
Objectives	To encourage exploration offshore.
Conditionality for eligibility	Petroleum industry receives a 100% deduction in corporate tax for exploration expenditures and development expenditures that become available when petroleum extraction activities commence (for exploration expenditures) and when production in commercial quantities commences (for development expenditures). Furthermore a deduction for expenditures that companies may incur in withdrawing from/shutting down an oil or gas field is also provided. A 100% allowance applies for abandonment expenditure for the chargeable period when the expenditure is incurred.
Conditionality for magnitude of subsidy	Development expenditure allowance is subject to production in commercial quantities, having begun in the field for which the assets were provided. Excludes expenditure on vehicles, land, buildings, machinery/plants/structures for processing or storing petroleum (other than initial treatment or storage), acquisition / rights over petroleum deposits and interest payments.

[66] Irish Tax and Customs, Private Use of Company Cars, http://www.revenue.ie/en/tax/it/leaflets/benefit-in-kind/private-use-cars.html [accessed 4/4/2014]

	Exploration expenditure allowance is provided for capital expenditure on petroleum exploration activities, but excludes any interest payments. It includes successful and abortive exploration expenditures. Abandonment activities are those which a company undertakes to comply with requirements under its petroleum lease on closing down, decommissioning or abandoning the field or part thereof. This includes dismantling and removing pipelines used to bring petroleum to land.
Fuel	Applies to the petroleum industry (oil and gas)
Total amount	Estimates could not be found
Information sources	Ernst and Young (2012) Global Oil and Gas Tax Guide 2012, http://www.ey.com/Publication/vwLUAssets/2012-global-oil-and-gas-tax-guide/$FILE/EY_Oil_Gas_Tax_Guide_2012.pdf [accessed 4/4/2014] Joint Committee on Communications, Natural Resources and Agriculture (2012) Report Offshore Oil and Gas Exploration, May 2012 http://www.oireachtas.ie/parliament/media/Report-on-Offshore-Oil-and-Gas-Exploration.pdf [accessed 4/4/2014] OECD (2013) Inventory of estimated budgetary support and tax expenditures for fossil fuels 2013

Tax expenditures in royalties

The government does **not levy any royalties,** nor does it participate in projects through production-sharing contracts etc. (since 1987). Investment in oil exploration and production is encouraged through various measures including licensing terms, the regulatory framework and one-off initiatives.

- Since 1992 a **Corporation Tax Rate of 25%** has applied to profits from oil and gas production. This compares to the 12.5% rate that applies to most other sectors. Thus, the absence of royalty payments is somewhat compensated for by a higher corporate income-tax rate.
- **Operating expenses** are 100% deductible. **Allowances and loss relief** with respect to abandonment expenditures are also available.
- The capital costs of **exploration and development can be written off** (i.e. 100% write off in year 1 or as early as possible thereafter). Unclaimed deductions can be carried forward for an unlimited period. There is also a possibility of writing off the cost of unsuccessful exploration in one area against profits from future successful exploration. This full deduction implies a post-tax decrease of several categories of fixed costs.
- **Licence application and rental fees** are kept at a low level. Moreover, licences are offered with attractive conditions in terms of matching the requirement of exploration companies
- From January 2007, an additional **Petroleum Resource Rent Tax** (PRRT) has been introduced on profits from oil and gas extraction with rates ranging from 5% to 15% depending on the profitability of a field. This additional tax applies

to petroleum leases that follow on from new exploration licences granted after 1 January 2007. This is payable in addition to the 25% corporate tax.

Information sources

IEA (2013) Energy policies of IEA countries – Ireland 2012 Review, http://www.iea.org/publications/freepublications/publication/IRELAND2012_free.pdf [accessed 18/3/2014]

Department of Communications, Energy and Natural Resources, Petroleum Taxation in Ireland, http://www.dcenr.gov.ie/nr/rdonlyres/e226421f-47b6-42db-9458-c5ef0ee61930/0/petroleumtaxationinireland.pdf [accessed 26/3/2014]

OECD (2013) Inventory of estimated budgetary support and tax expenditures for fossil fuels 2013

Italy

Reporting years: 2002 and 2011

Direct budgetary support to consumers/users

Fondo Riduzione Prezzo Carburanti – Bonus Idrocarburi	
This subsidy scheme was created immediately after the approval of the Law 99 of 23 July 2009 *(Art. 45 - Legge 23 Luglio 2009, n. 99)* and following the increase from 7% to 10% of the tax regime applied for onshore oil and gas production. With the new revenues, the Italian State created in 2010 a special fund (*Fondo Riduzione Prezzi carburanti*) aimed at reducing the final pump price for the inhabitants currently living in the Basilicata region, in the southern part of Italy. The residents of Basilicata – which is the largest onshore oil producer of the country – are eligible to receive a special credit card which can be used only the purchase of transport fuels (*Carta Bonus Idrocarburi*), on which the State annually charges an amount of money linked to the annual revenues obtained from the oil and gas royalties in the region.[67]	
Final beneficiary	Adult Italian citizens resident in the Basilicata Region (within the Provinces of Potenza and Matera) in possess of a driver licence.
Direct beneficiary	The "*Fondo Riduzione Prezzi Carburanti – Bonus Idrocarburi*" was created in 2009 as an intermediate body between the State and the final beneficiaries and was charged to manage some of the royalties paid by the
Variability	The subsidy is related to the amount of royalties paid by the Exploration and Production (E&P) oil and gas companies that have active upstream operations in hydrocarbon-rich regions of the country. The amount paid changes annually and not all the funding are directly diverted into subsidies for consumers.
Objectives	The Basilicata region is considered as disadvantaged area at the same time hosts significant oil and gas reservoirs. Therefore, this subsidy could be considered as a form of "compensation" especially for households and Italian citizens living in hydrocarbons-rich regions. At the same time, given the status of disadvantaged area of the region, this could be considered also as financial help for the citizens.
Conditionality for eligibility	All adult Italian citizens resident in the Basilicata Region (within the Provinces of Potenza and Matera) in possess of a driver licence are eligible to obtain this specific type of subsidy.
Conditionality for magnitude of	According to data provided by the Italian Ministry of Economic Development, the following subsidies were paid to the residents of Basilicata who were elected as eligible for the subsidy.

[67] In 2012, the Northern Veneto region challenged this subsidy, arguing for a broader interpretation of the original law (*Sentenza del Consiglio di Stato n. 4134 del 6 agosto 2013*). Currently, the subsidy scheme is ongoing a process of reform and the distribution of the subsidy is currently suspended (*Comunicato Interministeriale 18 Novembre 2013 – Temporanea sospensione dell'erogazione dei contributi*)

subsidy	- € 100,70 (per person) were paid in 2011, - € 140,23 (per person) were paid in 2012[68]
Source of funding	The subsidy is mainly paid by oil & gas companies which have assets or are acting as service operators in the Basilicata Region.[69]
Fuel	The subsidy is directly addressed to the consumers of transport fuels such a as gasoil, unleaded petrol and liquefied petroleum gas.
Total amount	2002: N/A 2011: 48,78 million €[70]
Information sources	Ministero dello Sviluppo Economico (2012), 'Fondo riduzione prezzi carburanti : Seconda Erogazione – ANNO 2012' URL:http://unmig.mise.gov.it/unmig/royalties/fondo_seconda_erogazione.asp [24/02/2014] Ministero dello Sviluppo Economico (2013) 'Gettito royalties - Anno 2013: Proventi delle royalties applicate alle produzioni idrocarburi degli anni 2011 e 2012' URL:http://unmig.sviluppoeconomico.gov.it/unmig/royalties/2013/royalties.2013.pdf [25/02/2014] Ministero dello Sviluppo Economico (2011), 'Decreto Interministeriale 30 dicembre 2011 – Riconoscimento delle somme, finalizzate a benefici per i residenti, spettanti ad alcune regioni, province e comuni interessate dalle attività di estrazione di idrocarburi, in proporzione alle relative produzioni. Versamenti effettuati nell'anno 2011.' URL: http://unmig.sviluppoeconomico.gov.it/unmig/norme/di301211.htm [2/4/2014] Consiglio di Stato (2013), 'Sentenza del Consiglio di Stato 6 Agosto 2013', n. 4134' URL:http://unmig.sviluppoeconomico.gov.it/unmig/norme/sentenza_cds_060813.pdf [02/04/2014]] Parlamento Italiano (2009), 'Legge del 23 luglio 2009 , n. 99 – Disposizioni per lo sviluppo e l'internazionalizzazione delle imprese, nonche' in materia di energia', URL:http://www.cnac.gov.it/attachments/article/6/Legge-23-luglio-2009.pdf [05/02/2014].

[68] It must also be added that not all the potential beneficiaries of the subsidy for 2012 have been paid and the distribution of the subsidies is currently blocked.
[69] Eni, Shell Italia and Edison are the biggest contributing companies for this subsidy.
[70] The total amount which has been paid by the E&P to the Fondo Riduzione Prezzi carburanti, has been 55, 322 million € which have been partially diverted to other regions of Italy.

Direct budgetary support to producers

Direct budgetary support to primary producers

CIP 6/92 Subsidy Mechanism ('assimilated sources')	
The so-called "CIP 6/92 Mechanism", was introduced following the resolution of 29 April 1992 of the Inter-ministerial Price Committee (CIP) and was originally conceived with the objective to increase domestic renewable energy production and stimulate the construction of more efficient power plants using the latest technology (co-generation, waste heat recovery or CHP units). However, the subsidy created two categories of energy sources: renewables and the so-called "assimilated" sources. Within the type of plants which are not considered renewable energy plants are called 'Assimilated energy sources' includes not only thermal power stations with very specific efficiency levels, but also plants which are burning waste derived from refinery processes and also fossil-fuels powered plants that were operating in remote areas of the country.[71] Under the CIP6 scheme, electricity produced from renewable or assimilated plants was acquired at a stable price initially by the old national utility ENEL, and following the liberalization by the national electricity service operator, the *Gestore Servizi Energetici* (GSE).	
Final beneficiary	Co-generation Plants (with combined production of Thermal and electrical energy), CHP plants, heat recovery and waste fumes. Plus, power plants which are using fossil fuels derived from minor isolated hydrocarbon fields or coal mines were eligible for this subsidy.
Direct beneficiary	*Cassa Conguaglio Settore Energetico (CCSE)* and *Gestore Servizi Energetici* (GSE) act as intermediate bodies between the State and the final benificiaries.
Aid category	Direct support
Variability	The subsidy can be found as a part of the levy *Componente A3* which of the energy bill of the consumer.[72] Through this feed-in tariff, the electricity could be acquired at surcharged price and then re-sold to to the market.
Objectives	The mechanism was implemented following the approval of the Law 9/1991, which signed the landmark for the privatization of the former monopoly company ENEL. The scheme was therefore a way to stimulate the installation of the most recent technology for electricity generation and also to foster the use of renewable energy sources and waste-to-energy plants in the country. However, the subsidy has

[71] Under the *Decreto del Presidente della Repubblica of 24 January 1994*, fossil sources coming from "minor isolated fields" were considered as "assimilated" sources, and therefore, eligible to obtain a State aid provided in the form of guaranteed purchases of electricity at fixed subiszided prices. This is important because this subsidy was also the major source of founding for the Carbosulcis coal power plant over the period 2001-2010 (cfr. *State Aid S.A.20867 – (ex 2012/NN) – State aid in favour of Carbosulcis. Invitation to submit comments pursuant to Article 108(2) of the Treaty on the Functioning of the European Union*).

[72] This part of the electricity bill is comprehensive also of the subsidy given to renewable sources.

	been used also to subsidize electricity produced from fossil fuel products too.
Conditionality for eligibility	Under the CIP 6/92 mechanism are eligible fossil-energy energy power plants whose construction request occurred between January 1992 and June 1995. Moreover, the power stations must have an overall thermal and electricity efficiency of above 51 % (with no limits to the thermal energy supplied) or must use equipment for heat and energy recovery (such as steam traps).
Conditionality for magnitude of subsidy	In 2002, around 41,183 GWh were subsidized under this scheme (source: ISIS-MURE, 2011), while in 2011, around 21,807 GWh worth of electricity from assimilated sources were subsidised using this scheme (source: Autorita' per l'Energia Elettrica ed il Gas, 2013).
Source of funding	The subsidy is finally paid by final consumers through a levy in the final electricity bill (per kWh of consumed electricity).[73]
Fuel	Waste residues from refinery processes (usually discarded fossil fuel products), heavy fuel oil, natural gas and coal.
Total amount	2002: € 3380 mln (source: Poletti et al., 2009) 2012: € 2199 mln[74] (source: Autorita' per l'Energia Elettrica ed il Gas, 2013)
Information sources	Pellini, E. (2012), 'Measuring the impact of market coupling on the Italian electricity market', Energy Policy, Vol. 48, pp. 322-333. Poletti, c. et al (2009), 'L'incentivazione della produzione di energia elettrica da fonti rinnovabili e assimilate attraverso il Provvedimento CIP n. 6/92: Un'analisi economica', IEFE Research Report, N. 4., URL:http://www.iefe.unibocconi.it/wps/allegatiCTP/studio_IEFE_CIP_6.pdf [24/02/2014]. Lorenzoni A. (2003), 'The Italian Green Certificates market betwen uncertainty and opportunities', Energy Policy, Vol. 31, pp. 33-42. Whitley S. (2013), 'Time to change the game: Fossil fuel subsidies and climate', Oversead Development institute, London, URL:http://www.odi.org.uk/sites/odi.org.uk/files/odi-assets/publications-opinion-files/8668.pdf [25/02/2014] Autorita' per l'Energia Elettrica ed il Gas (2013), 'Relazione Annuale sullo Stato dei Servizi e sull'Attivita Svolta: Volume I Stato dei Servizi', Roma, URL:http://www.autorita.energia.it/allegati/relaz_ann/13/RAVolumeI_2013.pdf [21/02/2014] ISIS-MURE (2011), 'Definition of Energy Prices (CIP 6/92 Pricing Scheme)', URL:http://www.measures-odyssee-mure.eu/public/mure_pdf/general/ITA5.pdf [4/04/2014] Cassa Conguaglio per il Settore Elettrico (2012), 'Rendiconto

[73] The subsidy can be found as a levy in the final energy bill of the consumer under the name *Componente A3*.
[74] This data accounts only for the 'assimilated' sources and not for the renewables.

	dell'esercizio finanziario 2012', URL:http://www.ccse.cc/site/chi-siamo/bilancio [4/04/2014] Official Journal of the European Union (2013), 'State Aid – Italy – State aid SA.20867 – Stae Aid in favour of Carbosulcis – Invitation to submit comments pursuant to Article 108(2) of the Treaty on the Functioning of the European Union'URL:http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:C:2013:020:FULL&from=EN [2/04/2014]

Compensation for small islands and minor electric companies	
This subsidy was introduced with the idea to provide compensation to small electric companies which do not have a direct connection with the national grid and are usually located on small islands (such as Giglio, Ustica and Capri). These Islands were therefore forced to autonomously produce their own electricity at higher price than the national level because almost the majority of the power stations of the islands were fuelled with diesel or LPG fossil fuels. The subsidy was intitially conceived in 1974 following the implementation of the CIP 34/74[75] and has been revised in 1991 according to the Article 7 of Law n. 10/91[76].	
Final beneficiary	Small energy producer companies operating on small islands (and not connected to the continental grid)[77]
Direct beneficiary	*Cassa Conguaglio Settore Energetico (CCSE) and Gestore Servizi Energetici* (GSE) act as intermediate bodies between the State and the final benificiaries.
Aid category	Direct support
Variability	The subsidy can be found as the levy *Componente UC4* which accounts for roughly 0,94% of the so-called *Oneri di Sistema* section of the electricity bill of the consumer. [78]
Objectives	The UC4 scheme was created with the idea to subsidise energy production for the population living on several small islands (such as Ustica and Capri) not connected yet to the continental grid. For around 47,000 inhabitants, energy production is still provided usually using naval diesel engines. As the expenses for fossil fuels have increased steadily over the last decade and the electricity connections with the mainland have not been realized yet, the costs of the subsidy continue to weigh on the final user's electricity bill.
Conditionality for eligibility	Only companies geographically located on small Islands, remote towns not connected yet to the national grid with less than 5000 customers

[75] Inside Chapter VII, comma 3, lettera a) of CIP n. 34/74
[76] Articole 7 of Law n. 10/91
[77] After 2009, the subsidy has been extended also to the energy companies with less than 5000 customers. A coincise list of enterprises could to be found on: http://www.autorita.energia.it/it/elettricita/onerigenerali.htm#UC4
[78] This part of the electricity bill is comprehensive also of the subsidy given to renewable sources.

	are eligible for the subsidy.
Conditionality for magnitude of subsidy	During the fiscal year 2011, the subsidy has covered an overall value of 274347 GWh worth consumption.
Source of funding	The subsidy is finally paid by final consumers per kWh of consumed electricity.
Fuel	Not Indicated. But almost all the companies which are providing electricity are running their facilities using fossil fuels (usually Diesel or Gasoil).
Total amount	2009: € 69 mln (latest data found) 2011: € 70 mln
Information sources	Autorita' per l'Energia Elettrica ed il Gas (2013), 'Copertura delle integrazioni tariffarie alle imprese elettriche minori (isole minori e altri) – UC4', URL:http://www.autorita.energia.it/it/UC4.htm [25/02/2014] Autorita' per l'Energia Elettrica ed il Gas (2013), 'Elettricita' : La bolletta trasparente', URL:http://www.autorita.energia.it/allegati/consumatori/bolletta_trasparente.pdf [25/02/14] Autorita' per l'Energia Elettrica ed il Gas (2013), 'Gli oneri generali di sistema : Componente UC4 (imprese elettriche minori)', URL:http://www.autorita.energia.it/it/elettricita/onerigenerali.htm#UC4 [25/02/14] Cassa Conguaglio per il Settore Elettrico (2012), 'Rendiconto dell'esercizio finanziario 2012', URL:http://www.ccse.cc/site/chi-siamo/bilancio [4/04/2014]

SA.20867 (2012/C) State Aid to Carbosulcis SpA (1994 – 2010)

Carobsulcis S.p.A, a coal-mining company which operated the Nuraxi-Figus coal mine in the Sulcis-Iglesiente area of Sardinia, encountered several economic and technical difficulties since it was sold by the major energy company ENI in 1994. In order to sustain the survivability of the mine, the *Decreto del Presidente della Repubblica of 24 January 1994* introduced a specific aid for this mine into the final energy bill, through the CIP 6/92 scheme.[79] In addition to current production aids, which alone accounted around € 405 million in the period 1998 – 2010, more funding have been added from the central government. Over the period between 1998 and 2010, the company benfitted for a total of € 405 million State Aid. This amount was divided into: early retirement and servance benefits (€ 23,71 million)[80], production aids (€ 277,43 million), support for training activities (€ 28,10 million), funding for Research & Development programs (€ 9,43 million) and environmental protection purposes (€ 66,35 million).

[79] *Supra* 'CIP 6/92 Subsidy Mechanism'
[80] Only in 2001 and 2002.

Final beneficiary	Carbosulcis S.p.A. (owned by the *Regione Autonoma della Sardegna*) in the territory Sulcis-Iglesiente in Sardinia
Direct beneficiary	Carbosulcis S.p.A. (owned by the *Regione Autonoma della Sardegna*) in the territory Sulcis-Iglesiente in Sardinia
Aid category	Direct Support
Variability	Major part (around 70% of total amount) of the subsidy provided through the CIP 6/92 scheme. Remaining through transfers from Central Government.
Objectives	To maintain the economic sustainability of the mine, provide environmental protection for the mining site, provide early retirement schemes for certain workers, training activities and R&D activities.
Conditionality for eligibility	N/A
Conditionality for magnitude of subsidy	N/A
Source of funding	Major part (around 70% of total amount) of the subsidy provided through the CIP scheme, the remaining amount provided by the Central government.
Fuel	Coal
Total amount	2002: € 34 mln total (€ 12 mln without the CIP 6/92) 2010: € 39 mln total 2011: € N/A
Information sources	Official Journal of the European Union (2013),' State aid — Italy — State aid SA.20867 (2012/C) (ex 2012/NN) — State aid in favour of Carbosulcis — Invitation to submit comments pursuant to Article 108(2) of the Treaty on the Functioning of the European Union Text with EEA relevance', 2013/C 20/01 ,URL: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.C_.2013.020.01.0001.01.ENG [08/04/2014] European Commission (2012), 'State aid: Commission opens two in-depth inquiries into Italian support measures in energy sector in Sardinia (Press Release)', IP/12/1242, URL: [08/04/2014]

Direct budgetary support for R&D purposes

R&D Spending on fossil fuels
No specific schemes were identified. However, the OECD indicated that there is actually a spending on R&D in Italy in the period between 2002 and 2011. The biggest

part of the spending (in 2011) was allocated mainly on research related to the development of CCS Technologies.[81] Currently, in Italy there are several demonstration plants which have implemented CCS technologies and the bulk of OECD expenditures should be referred to these projects.[82]	
Final beneficiary	No data
Direct beneficiary	No data
Aid category	No data
Variability	No data
Objectives	Mainly research & development for CCS projects.
Conditionality for eligibility	No data
Conditionality for magnitude of subsidy	No data
Source of funding	No data
Fuel	Research mainly focused on coal, oil and natural gas
Total amount	2002: € 16.374 mln 2011: € 39.221 mln (Mainly on Coal R&D)
Information sources	IEA (2014) IEA Energy Technology RD&D Statistics, DOI: 10.1787/enetech-data-en [Accessed: 21/03/2014] Petro Barbucci, (2009), 'The ENEL CCS Projects', URL: http://www.geology.sk/co2neteast/documents/workshop_bratislava/P_BARBUCCI.pdf [05/04/2014]. Commission of the European Communities (2008), 'Supporting Early |Demonstration of Sustainable Power Generation from Fossil Fuels', COM (2008) 13 final, URL: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52008DC0013&from=EN [24/03/2014] Official Journal of the European Union, 'Regulation (EU) No 1233/2010

[81] A potential assumption would be that these funds are directly linked to the development of the CCS Sulcis integrated Project (found in the State Aid register under reference SA.33424).

[82] The ENEL Brindisi Coal-fired power station installed a CO2 capture system at its Unit 4 plant (contract awarded in April 2008 and completed in in December 2009). This contract is part of a Strategic Cooperation Agreement to develop technologies for CO2 capture signed between ENI and ENEL. The other project is ENEL's Porto Tolle project, to convert a fuel oil power plant to coal. Even if ENEL has already completed 70% of the total investment and had received almost 100€ million funding through the *European Energy Recovery Programme* (EEPR), the plant project is currently on hold because ENEL is still waiting for the operating license.

	of the European Parliament and of the Council of 15 December 2010 amending Regulation (EC) No 663/2009 establishing a programme to aid economic recovery by granting Community financial assistance to projects in the field of energy', L346/5, URL: http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32010R1233 [07/04/2014] European Commission (2011), 'REPORT FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT on the implementation of the European Energy Programme for Recovery', COM/2011/0217 final URL:http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52011DC0217 [05/04/2014]

Public investments in energy infrastructure

State Aid N 275/08: refuelling infrastructure for natural gas-powered vehicles (Bolzano) This subsidy comes as a regional financial contribution from the autonomous Province of Bolzano and it was aimed to partially cover the construction of new gas outlets and the upgrade of the existing equipment. As natural gas has lower carbon dioxide emissions than Diesel and gasoline, the subsidy was oriented with the double aim to promote the use of natural gas vehicles among the local population and reduce emissions. Given the low penetration of gas-powered vehicles in the province, the local administration decided to implement between 2009 and 2011 a grant for investments in the region.[83]	
Final beneficiary	Owners of existing gas service stations located in the province of Bolzano (or investors located in the same province)
Direct beneficiary	Owners of existing gas service stations located in the province of Bolzano (or investors located in the same province)
Aid category	Direct financial contribution originated from the budget of the province (Bolzano)
Objectives	Reinforce the compressed natural gas network across the provincial territory and increase the use of compressed natural gas vehicles among the population. This will thus reduce the amount of CO2 emissions and other pollutants (like benzene, nitrogen dioxide and particulate) in the region.
Conditionality for eligibility	The eligible station must be located in the eight districts (*comprensori*) that are inside the provincial territory.
Conditionality for magnitude of	The subsidy proposed would take the form of a maximum contribution of 350.000€ per gas outlet and with a maximum aid intensity of 70%

[83] The case has been also analysed by the European Commission as an example of State Aid, but the EC has concluded that this measure is not liable to negatively affect competition and trade between the different member states of the EU (*State aid N 275/08 – Italy: Refuelling infrastructure for natural gas-powered vehicles (Bolzano)*.

subsidy	regarding an investment of 500.000€.
Source of funding	The autonomous Province of Bolzano (Regional level).
Fuel	The subsidy is limited for the construction of infrastructure related to the compressed natural gas station and it is limited to natural gas.
Total amount	2002: N/A (Subsidy started in 2009) 2011: € 1 mln (total amount for three years is € 3.2 mln)
Information sources	European Commission (2008), 'State aid N 275/08 – Italy Refuelling infrastructure for Natural gas-powered vehicles (Bolzano)', URL: http://ec.europa.eu/competition/state_aid/cases/225963/225963_854187_25_1.pdf [01/04/2014]

State Aid N 180/2009 for En Plus Power Plant	
The motivation behind this scheme was to endorse the regional development through the construction of a thermo-electrical power plant (combined cycle gas turbine) with a nominal power of 415 MW and a net efficiency of 57.1% in San Severo, in the Apulia Region. The project was encouraged with the intent to bring development into the Macro-South zone and foster the development of cogeneration systems in the regions. The project started officially in 2007 and the power plant was finished in 2012.	
Final beneficiary	EN plus s.r.l. (limited liability partnership) consortium charged for the construction and maintenance of the power plant
Direct beneficiary	EN plus s.r.l. (limited liability partnership) consortium charged for the construction and maintenance of the power plant
Aid category	Grant
Objectives	The subsidy is given in the form of an automatic tax credit and it is aimed at developing co-generation plants in the Apulia region.
Conditionality for eligibility	Only the San Severo power plant is eligible for this support.
Conditionality for magnitude of subsidy	No data available
Source of funding	Public Funding (in the form of tax breaks)
Fuel	Natural Gas
Total amount	2002: N/A (Subsidy started in 2007) 2011: € 7.5 mln (total amount between 2007 and 2010 € 30 mln)
Information	European Commission (2009), 'State aid N 180/2009 – En Plus Power Plant- Corrigendum',

sources	URL:http://ec.europa.eu/competition/state_aid/cases/230482/230482_1019072_51_1.pdf [20/04/2014] European Commission (2009) 'Aiuto di Stato N 180/2009 – Italia grande progetto di investimento – En Plus Centrale termoelettrica' URL:http://ec.europa.eu/competition/state_aid/cases/230482/230482_1019868_53_2.pdf [20/04/2014 Parlamento Italiano (2007)'Disposizioni per la formazione del bilancio annual e pluriennale dello Stato (*legge finanziaria 2007*)' URL:http://www.parlamento.it/parlam/leggi/06296l.htm [20/03/2014] En Plus (2013) 'Centrale turbogas a ciclo combinato di San Severo. Un impianto eco-efficiente per lo sviluppo della capitanata' URL:http://www.enplus.it/enplus/pdf/enplus07.pdf [01/04/2014]

Tax expenditures

Excises and other specific taxes on energy use

Excise taxes An excise tax is applied to gasoline, diesel, kerosene, LPG, fuel oil (light and heavy) and natural gas. Every year the excise tax rates are published by the Central Direction of excises (*Direzione Centrale Legislazione e procedure Accise*), a body of the National Agency for Customs and Duties of Italy (*Agenzia delle Dogane e dei Monopoli*). The provided legal base has changed frequently over the reference years, however, the most important documents are the Decreto Legislativo 26 Ottobre 1995, n. 504, the DPCM 15/01/1999, the Law 388 of 23 December 2000 (*Disposizioni per la Formazione del Bilancio Annuale e Plurieannale dello Stato – Legge Finanziaria 2001)* and the Law 99/2009 (*Disposzioni per lo sviluppo e l'internazionalizzazione delle imprese*). An excise tax is applied to natural gas, LPG, Diesel, coal and coke and Electricity. Italy has experienced a series of changes regarding its taxation of energy products especially if we take into account regional taxes. The legal base for the taxation is broadly based into the Law Decree n. 504 of 26 October 1995, which has been modified taking into consideration the Law Decree 2/2/2007 n. 26 and the Law Decree n. 159 of 1 October 2007.	
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	The following reduced rates are applied: ○ Kerosene used by international aviation is exempt ○ Kerosene used by domestic aviation is exempt ○ Diesel used by domestic shipping is exempt ○ Diesel used by international navigation is exempt ○ Heavy fuel oil used for international navigation is exempt

	○ Fuel tax concession exists for the fisheries sector ○ Tax breaks for agriculture, forestry and aquaculture are present.[84] [85] ○ Reduction rate for petroleum products used for public transports is applied.[86] ○ Rail transport (diesel) has a differentiated tax rate (30% of the standard tax rate) ○ Since 1995 a reduction rate for petroleum products is applied for ambulances (40% of the benchmark rate for diesel, gasoline and LPG) ○ Tax relief (90% of the benchmark excise tax) is in place for LPG used as transportation and in certain industrial plants.[87] ○ In 2011, residential users of natural gas were taxed differently according to the amount of natural gas annually consumed. Between 2004 and 2008 a differentiated tax tariff system for natural gas used for residential purposes was put in place between the Southern (*Mezzogiorno*) and the North-Centre part of the country. ○ Large industrial users of natural gas (with consumption over 1.200.000 cubic meters of natural gas/year) are subject to a reduction of 60% in the rate of excise tax usually levied on sales of natural gas. ○ Trucking companies operating in Italy are partially refunded of the excise tax paid for fuel purchases ○ Differentiated tax regime for the national army (Diesel and gasoline) ○ In Italy there are two different excise tax rates which apply to heavy fuel oil according to the sulphur content. In the calculations ○ There is a taxation put in place for heavy fuel oil with different sulphur content and for the use (domestic or industrial use)[88] ○ A tax relief for people living in disadvantaged areas (not yet connected to the natural gas network) in the form of a set of reductions of excise taxes

[84] According to the OECD benchmark rate, a reduction of 78% for diesel and 51% for gasoline is applied. However, the national legislation assumes that diesel is taxed at 22% of the current standard rate and petrol is taxed at 49% of the standard rate.
[85] This data was given by the OECD,however, the national legislation There is also a tax break in the gasoline use for agriculture, but given that the consumption of this fuel accounts for no more than 1% of the overall energy consumption in these sectors it has been allocated to fuel use.
[86] The reduction also applies for fuel used for boat transport in places where road connections are not existing.
[87] No data avalilable.
[88] ATZ (*Alto Tenore di Zolfo*) and BTZ (Basso Tenore di Zolfo)

Amount calculated (benchmark: highest excise per unit of energy consumption)	Total	per unit of energy	per unit of CO2
	2002: € 34,524 mln 2011: € 32,215 mln	2002: € 6.49 / GJ 2011: € 6.56 / GJ	2002: € 85.60 / ton 2011: € 85.09 / ton
Amount calculated (benchmark: highest excise per unit of CO2 emissions)	Total	per unit of energy	per unit of CO2
	2002: € 34,524 mln 2011: € 31,690 mln	2002: € 6.49 / GJ 2011: € 6.45 / GJ	2002: € 85.60 / ton 2011: € 83.70 / ton
Amount calculated (benchmark: proposal new energy taxation directive)	total	per unit of energy	per unit of CO2
	2002: € 3319 mln 2011: € 1983 mln	2002: € 0.62 / GJ 2011: € 0.40 / GJ	2002: € 8.23 / ton 2011: € 5.24 / ton
Information sources	**Sources of information – Excises** National Legislation: ○ Law n. 388 of 23 December 2000, (*Disposizioni per la formazione del bilancio annuale e pluriennale dello Stato – legge finanziaria 2001)*, URL: http://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:legge:2000-12-23;388 [30/06/2014] ○ Law Decree n. 504 of 26 October 1995 (*Decreto Legislativo 26 Ottobre 1995, n. 504 – Testo unico delle disposizioni legislative concernenti le imposte sulla produzione e sui consume e relative sanzioni penali e amministrative*), URL: http://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:1995;504 [01/04/2014] ○ Law Decree n. 159 of 1 October 2007 (*Decreto legislativo del 1 Ottobre 2007 n. 159 - Interventi urgenti in materia economico-finanziaria, per lo sviluppo e l'equita' sociale*) URL: http://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legge:2007;159 [05/04/2014] Agenzia delle Dogane (2011), 'Aliquote di imposta vigenti nel settore delle accise - Aggiornamenti al primo Gennaio 2011', URL:http://www.agenziadogane.gov.it/wps/wcm/connect/40d910804573601d8329e79503fb0af3/aliq-naz-gennaio_2011.pdf?MOD=AJPERES&CACHEID=40d910804573601d8329e79503fb0af3 [05/04/2014] EC DG TAXUD (2002) Excise duty tables – April 2002, Ref 1.014, April		

2002.

EC DG TAXUD (2011) Excise duty tables, Part II – Energy products and electricity, Ref 1032, January 2011

OECD (2013), 'Taxing Energy Use: A graphical Analysis', OECD Publishing.

OECD (2013) 'Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels', OECD Publishing.

Martini, R. (2012), 'Fuel Tax Concessions in the Fisheries Sector', OECD Food, Agriculture and Fisheries Papers, No. 56, OECD Publishing. URL: http://www.oecd-ilibrary.org/docserver/download/5k9bdccqft30.pdf?expires=1401097797&id=id&accname=guest&checksum=4265DC4921023368E5E3C91B0460AC17 [02/04/2014]

EUNOMIA (2013), 'Study on Environmental Fiscal Reform Potential in 12 EU Member States – Final Report to DG Environment of the European Commission', URL: http://ec.europa.eu/environment/integration/green_semester/pdf/EFR-Final%20Report.pdf [02/04/2014]

ENI (2007), 'Manuale delle Accise 2007', URL: https://www.eni.com/it_IT/attachments/documentazione/fiscale/testo-unico-accise/Manuale_delle_Accise2007.pdf [30/06/2014]

ENI (2010), 'Manuale delle Accise 2010', URL: http://www.eni.com/it_IT/attachments/documentazione/bilanci-rapporti/rapporti-2010/Manuale-delle-Accise-2010.pdf [30/06/2014]

Sources of Information – energy prices:

OECD (2013), 'Energy Prices and Taxes, Volume 2013 Issue 3. Third Quarter 2013', OECD Publishing.

OECD (2005), 'Energy Prices and Taxes, Quarterly Statistics, Second Quarter 2005', OECD Publishing.

Eurostat (2014), Energy statistics – gas and electricity prices' URL: http://epp.eurostat.ec.europa.eu/portal/page/portal/energy/data/database [Accessed: 18/03/2014]

Unione Petrolifera Italiana (2014), 'Statistiche economiche, energetiche e petrolifere',URL:http://www.unionepetrolifera.it/it/Statistiche2012/menu.html [Accessed: 2/04/2014]

Ministero dello Sviluppo Economico (2014), 'Statistiche dell'Energia', URL:http://dgerm.sviluppoeconomico.gov.it/dgerm/ [Accessed: 21/03/2014]

Sources of Information – energy balances:

IEA (2004), 'Energy Statistics of OECD Countries 2004', OECD Publishing.

IEA (2013), 'Energy Statistics of OECD Countries 2013', IEA.

	IEA (2004), 'Energy Balances of OECD Countries: 2004', OECD Publishing. IEA (2013), 'Energy Balances of OECD Countries: 2013 Edition', IEA' **Assumptions taken into account during the calculation:** ○ Belgian conversion factors were used for almost all the sources taken into account (National conversion factors could not be found). ○ As no emission factors were found for sub-bitumen coal products, over the calculations the emission factor for bitumen were used ○ In 2011, data regarding the consumption levels of the households sector for natural gas was not found. Therefore, having only aggregated data, the calculations were conducted using the average between the highest tax rate and the lowest tax rate. ○ The calculations taking into consideration the difference between the Northern and the southern part of the country were not considered as data regarding consumption levels in the northern part of Italy and in the southern part was not found. In this case the tax rate used for the calculations was derived from the Eurostat TAXUD data. ○ Leaded gasoline has been phased out in Italy since 2002. Therefore, it has been not taken into account in the study. ○ As the fuel tax concession for the fisheries sector is the same for the shipping sector.

Value Added Tax

Categories of energy supply to which a reduced VAT rate was applied in one or both of the reporting years	**VAT Rates** In 2002, a reduced VAT rate of 10% was applied for household's users of electricity. Domestic users of natural gas in the Southern part of Italy had a regional VAT rate of 10%.[89] In 2011, a reduced VAT rate of 10% on electricity was applied for all household consumers and also for agricultural purposes. The same VAT rate (10%) was also applied to natural gas consumers with an annual consumption between 0 and 480 m3/year. For higher consumption levels the applied tax rate is 20%.
Standard rate	2002: 20% 2011: 20%[90]

[89] Between 1995 and 2007. Following 2008, the VAT is not differentiated by region anymore.
[90] The VAT rate was increased from 20% to 21% during the month of September 2011.

Reduced rate	2002: 10% 2011: 10% for household consumers of electricity and certain users of natural gas
Amount of support calculated	2002: € 898 mln 2011: € 1,371 mln
Information sources	**Sources Information for VAT Rates:** National Legislation: - Law Decree n. 328 of 29 September 1997, 'Decreto-Legge 29 settembre 1997, n. 328: Disposizioni Tributarie Urgenti' URL :http://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legge:1997-09-29;328 [04/03/2014] - Law Decree n. 138 of 13 August 2011, 'Decreto Legge n. 138 de 13 Agosto 2011: Ulteriori misure urgenti per la stabilizzazione finanziaria e per lo sviluppo', URL: http://www.governo.it/backoffice/allegati/64632-6995.pdf [25/03/2014] OECD (2013), 'Energy Prices and Taxes, Volume 2013 Issue 3. Third Quarter 2013', OECD Publishing. OECD (2013) 'Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels', OECD Publishing EC (2014) VAT Rates applied in the Member States of the European Union, Situation as of 13 January 2014, URL:http://ec.europa.eu/taxation_customs/resources /documents/taxation/vat/how_vat_works/rates/vat_rates_en.pdf [02/04/2014]. EC DG TAXUD (2002) Excise duty tables – April 2002, Ref 1.014, April 2002. EC DG TAXUD (2011) Excise duty tables, Part II – Energy products and electricity, Ref 1032, January 2011 **Sources of Information – energy prices:** IEA (2004), 'Energy Prices and Taxes, Vol. 2003/4', OECD Publishing. OECD (2013), 'Energy Prices and Taxes, Volume 2013 Issue 3. Third Quarter 2013', OECD Publishing. Eurostat (2014), Energy statistics – gas and electricity prices' URL: http://epp.eurostat.ec.europa.eu/portal/page/portal/energy/data/database [Accessed: 18/03/2014] Unione Petrolifera Italiana (2014), 'Statistiche economiche, energetiche e petrolifere',URL:http://www.unionepetrolifera.it/it/Statistiche2012/menu.html [Accessed: 2/04/2014] Ministero dello Sviluppo Economico (2014), 'Statistiche dell'Energia', URL:http://dgerm.sviluppoeconomico.gov.it/dgerm/ [Accessed: 21/03/2014]

	Sources of Information – energy balances: IEA (2004), 'Energy Statistics of OECD Countries 2004', OECD Publishing. IEA (2013), 'Energy Statistics of OECD Countries 2013', IEA. IEA (2004), 'Energy Balances of OECD Countries: 2004', OECD Publishing. IEA (2013), 'Energy Balances of OECD Countries: 2013 Edition', IEA' **Assumptions taken into account during the calculation:** o Disaggregated data for to the different levels of natural gas consumption between households and industry was not found. Therefore, the assumption is that the VAT rate is an average between the four different rates taken into account. o Data regarding the price (final or commercial) of Kerosene was not found o Data regarding 2002 consumption levels between the North and the South of Italy was not found. o Prices of natural gas for households between 2000 and 2003 were confidential.

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

N.a.

Tax expenditures in royalties

Italy does have a system which can be identified as "lower royalties" for encouraging the exploration and the harvest of hydrocarbons (the legislative framework can initially be found within the Decreto Legislativo 25 novembre 1996, n. 625, Art. 19). Between 1997 and 2010 Italy applied a low tax regime for onshore oil and gas production (7% of original taxation), for offshore oil production (4%) and for offshore gas production (7%).

An increase was decided in 2009. State's royalty for offshore oil production now equals to 7% and 10% for gas.

As part of the Decree 96/625, since 1996 a full royalty relief is put in place for the first 50.000 tonnes of oil produced offshore and for the first 20.000 tonnes of oil extracted onshore. A similar exemption is applied for the first 25 million cubic meters of natural gas produced from onshore production and for the first 80 million cubic meters for offshore production.

Natural gas used in the harvest of hydrocarbons (offshore and onshore) has a differentiated tax rate of 11,73 EUR per 1000 cubic meters.

Sources:

Ernst & Young (2013), 'Global Oil and Gas Tax Guide 2013', URL: http://www.ey.com/Publication/vwLUAssets/2013_global_oil_and_gas_tax_guide/$FILE/EY_Oil_and_Gas_2013.pdf [06/04/2014]

OECD (2013), 'Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels 2013', OECD Publishing.

Governo Italiano (1996), 'Decreto Legislativo 25 novembre 1996 n. 625', URL:*www.parlamento.it/parlam/leggi/deleghe/96625dl.htm* [25/02/2014].

Parlamento Italiano (2009), 'Legge del 23 luglio 2009 , n. 99 – Disposizioni per lo sviluppo e l'internazionalizzazione delle imprese, nonche' in materia di energia', URL: http://www.cnac.gov.it/attachments/article/6/Legge-23-luglio-2009.pdf [05/02/2014].

Governo Italiano (2007), 'Decreto legislativo del 1 Ottobre 2007 n. 159 - Interventi urgenti in materia economico-finanziaria, per lo sviluppo e l'equita' sociale' URL:http://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legge:2007;159 [05/04/2014]

Latvia

Reporting years: 2005 and 2011

Direct budgetary support to consumers/users

N.a.

Direct budgetary support to producers

Direct budgetary support to primary producers

N.a.

Direct budgetary support for R&D purposes

N.a.

In 2005, a total amount of 94,500 EUR and in 2011 214,000 EUR of state public budget was allocated for energy research. The main focus was on renewable energy sources, energy independence and energy efficiency. The following information sources were used:

- Zinātne Latvijā. Valsts pētījumu programma.Izglītības un zinātnes ministrija, 2010. [Latvian Science. National Research programmes.Ministry of Education and Science, 2010 (in Latvian)]
- Latvijas Zinātnes padomes fundamentālo un lietišķo projektu finansējuma sadale starp zinātnes nozarēm 2005.gadā apstiprināts ar LZP 2004.g. 6. jūnija lēmumu Nr. 4-1-2 un 2005.g. 25. janvāra lēmumu Nr. 1-1-1 [Latvian Council of Science of fundamental and applied project finance breakdown in 2005 Confirmed by LCS 2004 6th June Decision No. 4-1-2 and 2005 25th January No decision. 1-1-1 (in Latvian) (available on http://www.lzp.gov.lv/parskati/Proj_2005/PRJ05-2.HTM)]
- Latvijas Zinātnes padomes 2011.gadā finansētie fundamentālo un lietišķo pētījumu projekti saskaņā ar LZP 06.01.11.g. lēmumu Nr.7-1-230 [Latvian Science Council funded fundamental and applied research projects in 2011 under the LCS 06.01.11.g. decision No.7-1-230 (available on http://www.lzp.gov.lv/parskati/Fin-2011.htm (in Latvian)]
- Pārskats par valsts pētījumu programmas enerăētikā "Inovatīvas enerģijas resursu ieguves un izmantošanas tehnoloģijas un zema oglekļa emisiju nodrošināšana ar atjaunojamiem energoresursiem, atbalsta pasākumi vides un klimata degradācijas ierobežošanai 2. etapa izpilde", 2011 [Overview of national research programs in the energy sector "Innovative energy resource extraction and use of technology and the provision of low-carbon renewable energy, support measures for environmental degradation and climate (second phase of execution)" (in Latvian) (available on http://www.innovation.lv/fei/projects/VPP_energetika_atskaite_2011.pdf)]

Public investments in energy infrastructure

N.a.

No entries in the State Aid Register of the European Commission were found.

Tax expenditures

Excises and other specific taxes on energy use

Name of the tax scheme and short description	Excise taxes are imposed on both oil products and natural gas.		
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	▪ Diesel used as fuel for transport in agriculture is subject to the excise tax exemption. ▪ Excise tax exemption for oil products for industrial consumers and excise tax reduction for petroleum, fuel oil and diesel oil used for heating. ▪ Oil products used in Special Economic Zones for (1) ships and other floating vessels that are not used for leisure and entertainment, (2) vessels used for the construction, testing and maintenance needs, (3) ships and other floating vessels used for waterway dredging and expansion works, (4) production of electricity and CHPs, which produce electricity and heat are fully exempted from the excise tax. ▪ Oil products used in domestic shipping except for private leisure and entertainment are exempted from the excise tax. ▪ Oil products which individuals import for their own consumption (one full vehicle standard fuel tank additionally to fuel portable tank with no more than 10 liters per vehicle) from non-EU countries is subject to excise tax exemption. ▪ From July 1, 2011 till December 31, 2013 greenhouses and industrial poultry rising were granted a full excise tax rebate for natural gas used for heating. ▪ From July 1, 2011 till December 31, 2013 a number of industries were granted a full excise tax exemption for natural gas used for industrial manufacturing and other processes related to it, the processing of agricultural raw materials, and technology required to maintain indoor climate of industrial and agricultural raw material processing premises. ▪ Natural gas use was granted excise tax rate exemption till 30.06.2011.		
Amount calculated	Total	per unit of energy	per unit of CO2

(benchmark: highest excise per unit of energy consumption)	2005: € 480 mln 2011: € 371 mln	2005: € 3.88 / GJ 2011: € 3.09 / GJ	2005: € 52.93 / ton 2011: € 42.64 / ton
Amount calculated (benchmark: highest excise per unit of CO2 emissions)	Total	per unit of energy	per unit of CO2
	2005: € 480 mln 2011: € 371 mln	2005: € 3.88 / GJ 2011: € 3.09 / GJ	2005: € 52.93 / ton 2011: € 42.64 / ton
Amount calculated (benchmark: proposal new energy taxation directive)	Total	per unit of energy	per unit of CO2
	2005: € 246 mln 2011: € 136 mln	2005: € 1.99 / GJ 2011: € 1.14/ GJ	2005: € 27.17 / ton 2011: € 15.68 / ton
Information sources	1. Law On Excise Duties (in force since 01.05.2004) 2. Law On Excise Duties (in force since 12.12.2008) 3. Law On Application of Taxes in Free Ports and Special Economic Zones (in force since 01.01.2002) 4. Regulations of Cabinet of Ministers of Latvia No.344 "Kārtība, kādā no akcīzes nodokļa atbrīvo dīzeļdegvielu (gāzeļļu), ko izmanto lauksaimniecības produkcijas ražošanai, lauksaimniecības zemes apstrādei un meža vai purva zemes apstrādei, kurā kultivē dzērvenes vai mellenes, kā arī zemes apstrādei zem zivju dīķiem" (Procedures on exemption from excise duty diesel (gas oil), which is used for agricultural production, agricultural processing and forest and swamp land, is cultivated cranberries or blueberries, as well as to process soil underneath the fish ponds) (in force since 03.05.2011.) 5. Database of the State Revenue Service of Latvia available on http://www.vid.gov.lv/default.aspx?tabid=11&id=401&hl=1&lIzveleId=563&periodsId=1168; 6. Regulations of Cabinet of Ministers of Latvia No.177 "Par Koncepciju par akcīzes nodokļa atvieglojumu vai kompensācijas mehānismu zemniekiem, iegādājoties dīzeļdegvielu" (The concept of the excise tax relief or compensation mechanism for farmers for purchasing diesel) (in force since 29.03.2010.) 7. Report by Ministry of Finance of Latvia „Par iespēju valsts budžeta apakšprogrammas „Akcīzes nodokļa par dīzeļdegvielu atmaksāšana zemniekiem" līdzekļus		

	atspoguļot pārskatā atbilstoši šo līdzekļu ekonomiskajai būtībai" available on www.mk.gov.lv/doc/2005/FMZino_240409_lauk.1320.doc (23.04.2009.) 8. Regulations of Cabinet of Ministers No.559 (14.08.2012.) on Regulations on Climate Change Financial Instrument projects funded by open competition "Complex solutions to reduce greenhouse gas emissions' (Klimata pārmaiņu finanšu instrumenta finansēto projektu atklāta konkursa "Kompleksi risinājumi siltumnīcefekta gāzu emisiju samazināšanai" nolikums) 9. No data on diesel consumptions (tonns/year) were found on diesel oil consumption for agriculture transport, therefore this figure was obtained calculating it backwards from financial amount compensated to end users based on data from sources listed above. 10. The movement of oil products in 2006 (Naftas produktu (degvielas) aprite 2006.gadā) available on http://www.vid.gov.lv/default.aspx?tabid=11&id=402&hl=1&lIzveleId=1551&periodsId=5735 11. The movement of oil products in 2011 (Naftas produktu (degvielas) aprite 2011.gadā) available on http://www.vid.gov.lv/default.aspx?tabid=11&id=402&hl=1&lIzveleId=1551&periodsId=5735 12. State Revenue Service has estimated the average annual amount of oil products imported by individuals and it has been used as basis for calculations [24]. The benchmark against which this tax expenditure is calculated is the excise tax rate on unleaded gasoline. 13. Regulations of Cabinet of Ministers of Latvia No.457 "Noteikumi par dabasgāzes apriti un akcīzes nodokļa piemērošanas kārtību" (Regulations on natural gas movement and excise tax application) (in force since 01.07.2011.) 14. The Central Statistical Bureau does not provide detailed data on natural gas consumption for greenhouses and industrial poultry rising. Natural gas consumption calculations are based on information available from different sources: ▪ Information sheet of the Agriculture Organizations Cooperation Board (LOSP) available on www.losp.lv/sites/default/files/.../infolapa_16_23_4_2010.doc ▪ Pollution permission No. RI11IA0009 issued to poultry rising factory Ķekava by Latvia Environmental Office available on

	www.vpvb.gov.lv/lv/piesarnojums/a-b-atlaujas/?download=2576 ▪ Pollution permission No. Nr. JET- 4- 017A issued to poultry rising factory Balticovo by Latvia Environmental Office available on www.vpvb.gov.lv/lv/piesarnojums/a-b-atlaujas/?download=1722 15. Regulations of Cabinet of Ministers of Latvia No.457 "Noteikumi par dabasgāzes apriti un akcīzes nodokļa piemērošanas kārtību" (Regulations on natural gas movement and excise tax application) (in force since 01.07.2011.) 16. Database of the the Central Statistical Bureau of Latvia available on www.csb.gov.lv. 17. Energy balances of non-oecd countries (2013 edition) for Latvia, 2005 and 2011, International Energy Agency

Value Added Tax

Categories of energy supply to which a reduced VAT rate was applied in one or both of the reporting years	**VAT Tax Reduction for Natural Gas for Households** Natural gas used by households was subject to lower VAT tax rates from July, 2006 until July 1, 2011. In 2005 the standard VAT rate was applied to natural gas for households.		
Standard rate	2005: 18% 2011: 22%		
Reduced rate	2005: n.a. 2011: 12%		
Amount of support calculated (refer to Excel file)	Total	per unit of energy	per unit of CO2
	2005: - 2011: € 4.3 mln	2005: - 2011: € 0.31 / GJ	2005: - 2011: € 2.88 / ton
Information sources	1. Law On Value Added Tax (in force since 09.03.1995.) 2. Naural gas consumption: IEA Energy Balances for Latvia for 2005 and 2011. 3. Natural gas prices EUROSTAT (http://ec.europa.eu/geninfo/legal_notices_en.htm). 4. Regulations of Cabinet of Ministers No.559		

	(14.08.2012.) on Regulations on Climate Change Financial Instrument projects funded by open competition "Complex solutions to reduce greenhouse gas emissions' (Klimata pārmaiņu finanšu instrumenta finansēto projektu atklāta konkursa "Kompleksi risinājumi siltumnīcefekta gāzu emisiju samazināšanai" nolikums)

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

N.a.

Tax expenditures in royalties

N.a. In Latvia no fossil minerals for energy use are extracted. Peat as the only mineral is extracted for agriculture and gardening purposes.

Lithuania

Reporting years: 2001 and 2011

Direct budgetary support to consumers/users

N.a.

Direct budgetary support to producers

Direct budgetary support to primary producers

N.a.

Direct budgetary support for R&D purposes

There are two national action programmes (1st Action Program for Development of Human Resources and 2nd Action Program for Economic Growth). Up to now no fossil fuel related projects were financed under these programmes.

Public investments in energy infrastructure

Name of the scheme and short description	Regional Development Guidelines: Sectorial Measure for Energy. The scheme consists of six sub-measures. One of them is 'development of the natural gas system'.
Final beneficiary	Final natural gas consumers.
Direct beneficiary	Eligible beneficiaries of the scheme are private legal entities, state enterprises and municipal enterprises. Sub-measure "Development of the natural gas system" provided grants to entities, which owned natural gas tranmission network, i.e. AB "Amber Grid".
Aid category	Regional development
Objectives	The sub-measure 'Development of the natural gas system aims at modernising the natural gas transmission system in order to increase the reliability of natural gas supplies and creating conditions for the preparation for the integration in the single natural gas market of the EU.
Conditionality for eligibility	The sub-measure 'Development of the natural gas system' is available to natural gas transmission system operators which build and modernize the natural gas transmission network. The scheme requires that a beneficiary maintains the investment in the territory of Lithuania for a minimum period of five years (three years in case of SMEs) after its completion.
Conditionality for magnitude of subsidy	50% Gross Grant Equivalent (GGE) is the maximum aid intensity and 40 million LTL (11.6 million EUR) is the maximum support under the sub-measure 'Development of the natural gas system'.
Source of	The beneficiary needs to provide a contribution of at least 25% of the value of the total eligible costs. The scheme is financed using

funding	both resources from the Structural Funds and financial resources from various legal entities. Support from the State budget is not foreseen.
Fuel	Natural gas.
Total amount	Support to natural gas transmission system operator is provided since 2012. Financial resources from State budget was 0 LTL (0 EUR).
Information sources	1. Lithuanian State aid register http://ec.europa.eu/competition/elojade/isef/index.cfm?clear=1&policy_area_id=3. 2. Sub-measure "Development of the natural gas system" // http://www.esparama.lt/priemone?priem_id=000bdd538000a981.

Tax expenditures

Excises and other specific taxes on energy use

Name of the tax scheme and short description	Excise tax. From 1994 until 2002, excise tax was applied to a small share of energy products produced in and imported to Lithuania. Since 1 July 2002 a new edition of Law on Excise Tax came into force. It implemented the main provisions of EU laws regarding the method how alcohol, tobacco, energy products and electricity must be taxed. In 2010 the Law on Excise Tax was replaced. Excise tax system was harmonized with EU provisions. Currently, Law on Excise The prevailing excise tax rates on energy products, coal and electricity in Lithuania meet or exceed the minimum rates set out in Directive 2003/96/EEC. The only exception for the 2011 rates is for natural gas for which Lithuania had an exemption based upon article 15(g) of this Directive (until the end of 2013).		
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	In 2001, excise tax was applied to motor gasoline, jet fuels, kerosene, gasoil (diesel), fuel oil, liquefied gases for transport and electricity. Only gasoil (diesel) used in agricultural sector was exempted from an excise tax. Excise taxes were not differentiated. The following exemptions to excise tax were in force in 2011: • natural gas (if it wasn't used in transport), • fuel used by aviation and shipping (both international and domestic?); • LPG if it was poured to home gas cylinders or supplied to households; • gasoil if it was used in agriculture or fishing activities. .,Reduced rates were applied to • gasoil and fuel oils used for heating; • fuel oils that satisfied certain criteria set by the Government; • coal, lignite and coke used for business needs (taxed by 50% lower rate compared to the standard rate).;		
Amount	total	per unit of energy	per unit of CO2

calculated (benchmark: highest excise per unit of energy consumption)	2001: € 439 mln 2011: € 794 mln	2001: € 3.59 / GJ 2011: € 5.50 / GJ	2001: € 51.82 / ton 2011: € 79.16 / ton
Amount calculated (benchmark: highest excise per unit of CO2 emissions)	total	per unit of energy	per unit of CO2
	2001: € 439 mln 2011: € 794 mln	2001: € 3.59 / GJ 2011: € 5.50 / GJ	2001: € 51.82 / ton 2011: € 79.16 / ton
Amount calculated (benchmark: proposal new energy taxation directive)	total	per unit of energy	per unit of CO2
	2001: € 357 mln 2011: € 208 mln	2001: € 2.91 / GJ 2011: € 1.44 / GJ	2001: € 42.09 / ton 2011: € 20.71 / ton

Information sources	1. Lithuanian Statistics (2006). Fuel and energy balances 2001-2005. Vilnius.
	2. Lithuanian Statistics (2012). Fuel and energy balance 2011. Vilnius.
	3. International Energy Agency. Energy Balances of non-OECD countries, 2001-2002 and 2010-2011: Lithuania.
	4. Law on Excise Tax (1994) // http://www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=145304&p_tr2=2.
	5. Law on Excise Tax (2010) // http://www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=389313&p_tr2=2.
	6. Konstantinaviciute *et al*. (2012). Assessment of country-specific CO_2 emission factors for Lithuanian fuel combustion sector: study. Kaunas.
	7. Lithuanian Statistics (2014) // http://osp.stat.gov.lt/temines-lenteles39; http://osp.stat.gov.lt/web/guest/statistiniu-rodikliu-analize?portletFormName=visualization&hash=58a15338-fadd-4050-8e57-738e052cb5d5.
	8. Lithuanian District Heating Association (2012) // http://www.lsta.lt/files/statistika/2011_statistika.pdf.		

	Volume of fossil fuels followed under the categories "Non-energy use", "Transfers" "Distribution losses" and part of "Energy industry own use" were not assessed. The reason for this is that specific fuels (shale oil, sulphur from petroleum, paraffin, waxes, lubricants, bitumen, petroleum coke, refinery gas) fall under the categories or because fuels were not actually consumed / combusted. For assessment of electricity tax expenditures, volume of electricity used in CHPs, heat plants and energy industries were taken from Lithuanian Statistics (2006; 2012). Volume of oil products and coal was disaggregated based on the data provided by Lithuanian Statistics (2006; 2012). Fuels used for electricity production were not included in the assessment of tax expenditures. Volume of fuels used for electricity production was calculated considering to total fuels used in CHPs (data are provided by Lithuanian Statistics and IEA) and fuels used for heat production (data are provided by Lithuanian District Heating Association).

Value Added Tax

N.a. The standard VAT rate is applied to all types of fossil fuels and electricity.

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

The Law on Profit Tax (2001; 2010) states that a standard profit tax rate was 24% in 2001 and 15% in 2011. The Law (2010) also foresaw profit tax concessions. Fossil fuel related companies (including gas and oil extracting companies) could use tax concessions if they satisfied determined criteria. However, these concessions were not specifically related to fossil fuel related companies. Contrary, the list of activities, where concessions could be applied says that companies which executed wholesale and retail trade of oil products cannot use concessions. The Law on Profit Tax (2010) also provides general rules for taxation of profit from fossil fuel related activities. General provisions and principles are provided to all economic activities for amortization of fixed asset. The 12th Business Accounting Standard "Non-current tangible asset" is applied when recording non-current tangible assets, in accounting, calculating their acquisition (production) cost and depreciation. The Law states that non-current tangible assets used in the exploration and extraction of non-renewable natural resources (gas and oil), are recorded in accounting in the manner established by this standard.

Tax expenditures in royalties

The Law on Taxation of State's Natural Resources (2001; 2011) states that natural mineral substances are subject for a tax. Based on this Law extracted peat is taxed at a standard rate of 0.62 Lt/m^3 (0.18 EUR/m^3). Extracted peat, which is used in sanatoriums and other health facilities for treatment purposes, is not taxed (but this does not imply fossil fuel support, since the peat is not used as a fuel in this case).
The Law on Taxation of Oil and Gas (1996; 2003) states that gas and oil extracted in Lithuanian territory and in its economic zone in the Baltic sea, is subject to a tax. In 2001, the basic tax rate was 20% of the selling price of extracted gas and oil. The basic tariff was enlarged by 9 percentage points if oil and gas was extracted from fields, which were explored using State's financial resources. If fields were partially explored by State, then an additional 9% tax rate was proportionally reduced

considering to amount of financial resources provided by entities. In 2003 the taxation system was changed and updated, although the general tax structure remained the same. In 2011, two basic tariff rate schemes were available. If oil and gas was extracted in the fields, which were explored till 1 July 2003, then a 20% basic tax rate is applied. If oil and gas was extracted in the fields, which were explored after 1 July 2003, the basic tariff rate is differentiated depending on the field location and extracted volume. In 2011, basic tariff rates varied in a range of 2-16%. A 9% compensatory tax rate was additionally applied if State's financial resources were used to explore the field. The amount of taxes can be reduced by 50% if company posted money to explore new fields. Based on the assessments (Simonyte, 2011) if oil and gas compensatory tax rate was increased by 20-30%, then the State budget would additionally have received 6-11 million LTL (1.7-3.2 million EUR). If 20% basic tax rate would be applied to all companies, then 0.5 million LTL (0.2 million EUR) would be additionally received by the State. If concession would be removed, then 0.5 million LTL (0.2 million EUR) would be additionally received by the State budget too. 471 thousand tons (2001) and 107.7 thousand tons (2011), of oil were extracted (Lithuanian Statistics, 2012). Total amount of taxes paid to State's budget was 7.8 million Lt (2.3 million EUR) in 2011 (Lithuanian Statistics, 2014).

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Luxembourg

Reporting years: 2005 and 2010

Direct budgetary support to consumers/users

N.a.

Direct budgetary support to producers

Direct budgetary support to primary producers

N.a.

Direct budgetary support for R&D purposes

The IEA Database does not report any expenditures on *government* R&D for fossil fuels in the reporting years.

Public investments in energy infrastructure

N.a.

Tax expenditures

Excises and other specific taxes on energy use

The current basic legislation governing excise taxes in Luxembourg are the *Loi du 17 décembre 2010 fixant les droits d'accise et les taxes assimilées sur les produits énergétiques, l'électricité, les produits de tabacs manufacturés, l'alcool et les boissons alcooliques* and the *Règlement grand-ducal du 17 décembre 2010 fixant les taux applicables en matière de droits d'accise autonomes sur les produits énergétiques*. The current implementation is modified by the *Règlement grand-ducal du 16 décembre 2011 fixant les taux applicables en matière de droits d'accises autonomes sur les produits énergétiques* and the *Règlement grand-ducal du 21 juillet 2012 fixant les taux applicables en matière de droits d'accises autonomes sur les produits énergétiques*. For each year, the actual excise rates can be obtained from the freely available "*Tableau synoptique des taux d'accise en euros*" on the website of the Administration des Douanes et Accises (http://www.do.etat.lu/acc/Taux_droits_accise/Luxembourg.htm).	
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	The excise tariffs for energy products are differentiated according to: ▪ Fuel type: leaded and unleaded gasoline (according to sulphur content), gasoil (according to sulphur content), heavy fuel oil, biofuels, LPG/methane, natural gas, coal/cokes and electricity).

<table>
<tr><td></td><td colspan="3">▪ Application: motor fuel, industrial/commercial use, heating

Moreover, there are specific reductions. The most important are:

▪ For gasoil used in agriculture and horticulture, pisciculture and silviculture, the rates are zero.

▪ For natural gas used as motor fuel or used in electricity generation, the rates are also zero.

In transport, gasoline for road transport is subject to the highest rate.</td></tr>
<tr><td rowspan="2">Amount calculated (benchmark: highest excise per unit of energy consumption)

year: 2005

year: 2010</td><td>total</td><td>per unit of energy</td><td>per unit of CO2</td></tr>
<tr><td>€ 529 mln

€ 422 mln</td><td>€ 3.22 / GJ

€ 3.00 / GJ</td><td>€ 42.53 / ton

€ 38.66 / ton</td></tr>
<tr><td rowspan="2">Amount calculated (benchmark: highest excise per unit of CO2 emissions)

year: 2005

year: 2010</td><td>total</td><td>per unit of energy</td><td>per unit of CO2</td></tr>
<tr><td>€ 529 mln

€ 422 mln</td><td>€ 3.22 / GJ

€ 3.00 / GJ</td><td>€ 42.53 / ton

€ 38.66 / ton</td></tr>
<tr><td rowspan="2">Amount calculated (benchmark: proposal new energy taxation directive)

year: 2005

year: 2010</td><td>total</td><td>per unit of energy</td><td>per unit of CO2</td></tr>
<tr><td>€ 318 mln

€ 190 mln</td><td>€ 1.93 / GJ

€ 1.35 / GJ</td><td>€ 25.56 / ton

€ 17.40 / ton</td></tr>
<tr><td>Information sources</td><td colspan="3">IEA, Energy prices and taxes

Tableau des taux d'accise applicables au Grand-Duché de Luxembourg à partier du 1er février 2010

https://www.iea.org/co2highlights/co2highlights.pdf

Taxing Energy Use

e-mail correspondence</td></tr>
</table>

Value Added Tax

Categories of energy supply to which a reduced VAT rate was	LPG for road transport

applied in one or both of the reporting years	Diesel (residential clients) LPG (residential clients) Natural gas (residential clients) Coal (residential clients) Electricity (residential clients)
Standard rate	2005 and 2010: 15%
Reduced rate	2005 and 2010: LPG road: 6% Diesel (res.): 12% LPG (res.): 6% Natural gas (res.): 6% Coal (res.): 12% Electricity (res): 6%
Amount of support calculated	2005: EUR 11 mln 2010: EUR 14 mln
Information sources	For sources: IEA, Energy prices and taxes Tableau des taux d'accise applicables au Grand-Duché de Luxembourg à partier du 1er février 2010 https://www.iea.org/co2highlights/co2highlights.pdf Taxing Energy Use e-mail correspondence see excel documents. Assumptions: ▪ Where retail prices in Luxemburg were missing, Belgian prices were applied ▪ In line with TEU, it is assumed that 80% of diesel is consumed by foreign professional users (and is therefore recovered)

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

N.a.

Tax expenditures in royalties

To the best of our knowledge, the tax legislation in Luxemburg does not contain specific provisions on royalty regimes for the extraction of natural resources.

Malta

Reporting years: 2005 and 2011

Direct budgetary support to consumers/users

Name of the scheme and short description	Eco-reduction	Energy Benefit for Low Income Families	Energy Allowance Compensation
Final beneficiary	Households	Households	Households
Direct beneficiary	Households	Households	Households
Variability	The eco-reduction scheme is based on the number of registered occupants in every household and deducted from the final energy bill.	The energy benefit to low income families is paid in the form of a voucher.	The scheme is based on the number of registered occupants in every household paid in the form of a lump sum.
Objectives	The scheme is aimed to encourage the sustainable use of electricity by providing a discount on low consumption.	The scheme is aimed to mitigate the effect of the increase in expenditure on water and electricity bills of low income families. Utility meter subsidies are also applicable.	A one-off payment was distributed to families in order to cover the increase in energy prices.
Conditionality for eligibility	Conditional on a lower energy consumption than the established benchmark. No discounts are applicable if the threshold is exceeded.	- Individuals in receipts of social security benefits - Persons qualifying through a means test - Humanitarian grounds	Based on the number of registered occupants in every household. Around 97% of all households were eligible for this scheme.
Conditionality for magnitude of subsidy	The reduction depends on the consumption of electricity for the billing period in question, calculated in	Subsidies entitle beneficiaries to offset up to 80% of the consumption of electricity tariffs before the eco-	Families which did not consume more than 10,000 units a year were eligible for this scheme. Lone individuals were entitled to

	accordance on a pro-rata basis of the relative annual cumulative consumption. For single person households, a 25% discount on all electricity consumption is given, if less than 2,000 units per year are consumed. For two or more person households, if consumption does not exceed 1,750 units per person annually, 25% discount applies on the first 1,000 units and a 15% on the remaining 750 units or part thereof is applicable.	reduction.	€55, a household of two benefitted from €80, three people from €105, four people from €130, five people from €155, while a household of six individuals was entitled to €180.
Source of funding	The general government budget.	The general government budget.	The general government budget.
Fuel	Subsidy is not limited to a specific fuel. Since energy use in Malta is almost 100% fossil fuel based, the support can be mainly attributed to fossil fuels.	Subsidy is not limited to a specific fuel. Since energy use in Malta is almost 100% fossil fuel based, the support can be mainly attributed to fossil fuels.	Subsidy is not limited to a specific fuel. Since energy use in Malta is almost 100% fossil fuel based, the support can be mainly attributed to fossil fuels.
Total amount	2010: €11.3 mln* 2011: €10.8mln*	2011: €4.6mln†	Subsidy was only given as a one-off allowance in 2010. 2010: €11mln
Information sources	House of Representatives	Department of Information (2010)	Department of Information (2010)

	(2011)* Oosterhuis *et al*. (2013) ARMS Ltd (2014)	House of Representatives (2012) Oosterhuis *et al*. (2013)	House of Representatives (2010) Oosterhuis *et al*. (2013)

Notes:

* Efforts to obtain data from ARMS Ltd have proved futile. However, an answer to Parliamentary Question 28080 of 2011 shows that in 2010, €11.3 million were deducted from energy bills. In 2011, €6.3 milion were deducted till July of the same year. Therefore an average was taken: €6.3 milion/7months = €0.9million/month. This figure was then multiplied by 12 (months) to give the estimate of €10.8mln for 2011.

† An answer to Parliamentary Question 33377 of 2012 shows that in 2011, €4,596,498 million were subsidisied through energy benefit vouchers. Efforts to obtain data from ARMS Ltd proved futile.

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Direct budgetary support to producers

Direct budgetary support to primary producers

N.a.

Direct budgetary support for R&D purposes

N.a.

Public investments in energy infrastructure

Final beneficiary	Enemalta (State-owned)
Direct beneficiary	Enemalta (State-owned)
Aid category	Services of general economic interest D - Electricity, gas, steam and air conditioning supply
Variability	Lump sum grant
Objectives	Malta planned to support the modification of boilers 1 and 2 at the Delimara power station. to meet its obligations to reduce nitrogen oxide (NOx) and dust emissions under the Large Combustion Plants (LCP) Directive 2001/80/EC and the Integrated Pollution Prevention and Control (IPPC) Directive 2008/1/EC, which requires the application of the best available technologies for large plants.
Conditionality for eligibility	Investment was meant unconditionally for Delimara power station to reduce the investment costs of meeting the existing environmental standards applicable to large combustion plants across the EU.
Conditionality for magnitude of subsidy	Investment was meant unconditionally for Delimara power station to reduce the investment costs of meeting the existing environmental standards applicable to large combustion plants across the EU.
Source of funding	The Maltese authorities planned to finance €15.5 million (i.e. 84.7%) from regional funds put at its disposal by the EU. The remainder €2.8 million would have been financed by a commercial loan with a government guarantee at market prices
Fuel	Subsidy not limited to some specific fuels
Total amount	€18.3 million

The European Commission closed formal investigation procedures after Malta withdrew notification and did not pursue project further. The support is therefore not reported in the 'direct budgetary support' table in the main report of the present study.

Source:

European Commission, DG Competition (2009). *SA.29427 Environmental Project for Delimara Power Station*. Available at: http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_29427.

Final beneficiary	Enemalta (State-owned)
Direct beneficiary	Enemalta (State-owned) Investments on electricity transmission and interconnector infrastructure
Aid category	Execution of an important project of common European interest D.35.13 - Distribution of electricity
Objectives	The first project is the design and construction of one high voltage sub-sea interconnector rated at 200MVA between Pembroke in Malta and Marina Di Ragusa in Sicily, with an option for a second similar interconnector to be installed at a later date. The shore installations shall be appropriately sized for both interconnectors and the first interconnector is required to be in service before the end of 2012. The Tender shall include all required works to deliver a fully functioning and ope rational interconnector, including theobtaining of all administrative permits and approvals. The second project is the extension of the 132kV distribution network in order to connect to the interconnector at a newly equipped distribution centre at Kappara to transmit and distribute the electricity imported. Although by 2015 the distribution centre could also connect a planned offshore large (c.100 MW) windfarm planned for construction at Sikka l-Badja, the establishment of the distribution centre for imported electricity is a pre- condition for the operation of the subs ea interconnection with Sicily by 2012 at the latest, so that the project will primarily serve this purpose
Conditionality for eligibility	Investment meant unconditionally for this project.
Conditionality for magnitude of subsidy	Financing put into effect in 2010. However, the government guarantee component is envisaged to remain in force until 2027. Like other costs of the projects, the guarantee price will be

	subject to the 6.61% return and full cost recovery requirements on electricity tariffs.
Source of funding	The financing of the projects is covered by a combination of EU contributions under the Regulation, equity contributions from Enemalta (€10 million) and loans taken by Enemalta Corporation at commercially negotiated conditions, with the guarantee of the Government of Malta for not more than 80% of the total capital I nvestment. The terms of the loans are under discussion with international financial institutions, including the European Investment Bank.
Fuel	Subsidy not limited to some specific fuels
Total amount	€150 million – one time investment

The European Commission concluded that the project does not constitute aid. The support is therefore not reported in the 'direct budgetary support' table in the main report of the present study.

Source:
European Commission, DG Competition (2010). *N419/2009 Investments in electricity transmission and interconnector infrastructure*. Available at: http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_N419_2009.

Tax expenditures

Excises and other specific taxes on energy use

Name of the tax scheme and short description	Final energy use in Malta is subject to excise taxes. The rates are differentiated by fuel and type of use. In 2005, electricity use was not yet taxed.		
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	Exempted: Fuel oil and gas oil used for electric power generation (not within the scope of this study) Reduced rate: Gas oil / diesel for non-transport use		
Amount calculated (benchmark: highest excise per	total	per unit of energy	per unit of CO2
	2005: € 348 mln	2005: € 7.78 / GJ	2005: € 109.19 / ton

unit of energy consumption)	2011: € 817mln	2011: € 11.84 / GJ	2011: € 164.20 / ton
Amount calculated (benchmark: highest excise per unit of CO2 emissions)	Total	per unit of energy	per unit of CO2
	2005: € 348 mln 2011: € 817 mln	2005: € 7.78 / GJ 2011: € 11.84 / GJ	2005: € 109.19 / ton 2011: € 164.20 / ton
Amount calculated (benchmark: proposal new energy taxation directive)	Total	per unit of energy	per unit of CO2
	2005: € 6 mln 2011: € 1 mln	2005: € 0.14 / GJ 2011: € 0.01 / GJ	2005: € 1.97 / ton 2011: € 0.12 / ton
Information sources	Malta Resources Authority (2014). *Regulated tariffs*. Available at: http://mra.org.mt/regulated-tariffs/. Enemalta (2013). *Fuel Price Revisions*. Available at: http://www.enemalta.com.mt/newsDetails.aspx?id=18083. IEA Energy Balances (Malta for 2010-2011) as provided by Frans Oosterhuis IEA Energy Balances (Malta for 2004-2005) as provided by Frans Oosterhuis IEA Extended World Energy Balances (Malta for 1999-2011) as provided by Frans Oosterhuis Eurostat Energy balance sheets - 2010-2011 - 2013 edition Available at: http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-EN-13-001/EN/KS-EN-13-001-EN.PDF. Eurostat Energy balance sheets – 2004-2005 - 2007 edition Available at: http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-EN-07-001/EN/KS-EN-07-001-EN.PDF. Malta Customs Department (2011) List of TARIC Codes with their respective VAT and Excise Rates Malta Customs Department (2005) Excise Duties 2005 Malta Customs Department (2005) List of TARIC Codes with their respective VAT Assumptions made in the calculations:		

	For electricity, the given Eurostat values were used. The price for LPG was calculated at Loose/kg (household consumers usually mostly purchase a 12kg cylinder). For 2005, some average prices could be found for motor fuels and LPG, however they are not from an official source. For 2005, all prices were changed from Maltese Lira to Euro using the official conversion rate of 1 EUR = 0.4293 MTL. IEA and Eurostat Energy Balances were mostly in line, however to obtain a more disaggregate image of the fuels used, the Eurostat balances had to be referred to. The numbers did not always match up, however the differences in tonnes of oil equivalent values were minimal.

Value Added Tax

Categories of energy supply to which a reduced VAT rate was applied in one or both of the reporting years	Electricity Supply		
Standard rate	2005: 18% 2011: 18%		
Reduced rate	2005: 5% 2011: 5%		
Amount of support calculated (refer to Excel file)	total	per unit of energy	per unit of CO2
	2005: € 5.89 mln 2011: € 12.67 mln	2005: € 0.43/ GJ 2011: € 1.22/ GJ	2005: € 4.36/ ton 2011: € 11.47/ ton
Information sources	Sources of information: VAT Department (various years) . *Value Added Tax Act*. Available at: http://www.vat.gov.mt/en/VAT-Information/VAT-Legislation/Pages/VAT-Legislation.aspx. Malta Resources Authority (2014). *Regulated tariffs*. Available at: http://mra.org.mt/regulated-tariffs/. Enemalta (2013). *Fuel Price Revisions*. Available at: http://www.enemalta.com.mt/newsDetails.aspx?id=18083. IEA Energy Balances (Malta for 2010-2011) as provided by Frans Oosterhuis		

	IEA Energy Balances (Malta for 2004-2005) as provided by Frans Oosterhuis Eurostat Energy balance sheets - 2010-2011 - 2013 edition Available at: http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-EN-13-001/EN/KS-EN-13-001-EN.PDF. Eurostat Energy balance sheets – 2004-2005 - 2007 edition Available at: http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-EN-07-001/EN/KS-EN-07-001-EN.PDF. Malta Customs Department (2011) List of TARIC Codes with their respective VAT and Excise Rates Malta Customs Department (2005) Excise Duties 2005 Malta Customs Department (2005) List of TARIC Codes with their respective VAT Assumptions made in the calculations: For electricity, the given Eurostat values were used. The price for LPG was calculated at Loose/kg (household consumers usually mostly purchase a 12kg cylinder). For 2005, some average prices could be found for motor fuels and LPG, however they are not from an official source. For 2005, all prices were changed from Maltese Lira to Euro using the official conversion rate of 1 EUR = 0.4293 MTL. IEA and Eurostat Energy Balances were mostly in line, however to obtain a more disaggregate image of the fuels used, the Eurostat balances had to be referred to. The numbers did not always match up, however the differences in tonnes of oil equivalent values were minimal.

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

N.a.

Tax expenditures in royalties

Oil exploration and production licences in Malta are awarded under Production Sharing Contracts (PSC).

Revenue derived from oil and gas production is subject to an income tax of 35% on the contractors' profits.

An investment allowance amounting to 50% of the initial development assets is applied to developments in water depths exceeding 200m. Depreciation expenses are calculated over 4 years, however in the case of development in water depths exceeding 200m, depreciation is calculated over a 3 year period.

The Netherlands

Reporting years: 2000 and 2011

Direct budgetary support to consumers/users

N.a.

Direct budgetary support to producers

Direct budgetary support to primary producers

N.a.

Direct budgetary support for R&D purposes

Name of the scheme and short description	**Publicly financed energy research** In 2011, a total amount of € 163 million was spent by public authorities on energy research. Of this amount, 6% (€ 9 million) was allocated to the IEA theme 'fossil fuels'. In the three preceding years, this amount was higher (€ 14, 19 and 31 million respectively). In 2000, the amount of public support for fossil fuel R&D was € 8.6 million.
Final beneficiary	Society at large (through positive externalities of innovation).
Direct beneficiary	Energy companies; other enterprises; research institutions.
Aid category	Grants.
Variability	Depending on the specific scheme/contract.
Objectives	Stimulating innovation.
Conditionality for eligibility	Depending on the specific scheme/contract.
Conditionality for magnitude of subsidy	Depending on the specific scheme/contract.
Source of funding	State budget (main source is the Ministry of Economic Affairs).
Fuel	Several.
Total amount	2000: EUR 8.6 million. 2011: EUR 9 million.
Information sources	PriceWaterhouseCoopers, Monitoring Publiek Gefinancierd Energieonderzoek 2005 en 2006. Openbare Samenvatting, 24 december 2007. Agentschap NL, Monitor publiek gefinancierd energieonderzoek 2012, August 2013.

Public investments in energy infrastructure

No relevant cases found in the State Aid register.

Tax expenditures

Excises and other specific taxes on energy use

Name of the tax scheme and short description	**Excise taxes** (accijnzen) apply to oil products only. The **energy tax** (energiebelasting) is levied on the supply of natural gas and electricity to the (final) users of these energy products. Coal is subject to a **coal tax**, but since this tax has no reduced rates or exemptions (except for the non-energy use of coal), it is not included in the analysis. In 2000, the structure of energy taxes was more complicated, with some oil products being subject to a combination of excise tax, energy tax and a separate fuel tax (brandstoffenbelasting). The sum of the applicable tax rates has been used for each subcategory in the analysis.		
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	Apart from the usual exemptions (e.g. for navigation and aviation) and differentiated rates (e.g. between petrol and diesel) the following main schemes can be mentioned: ▪ A decreasing block rate in the energy tax (the higher the energy use, the lower the tax rate); ▪ Reduced energy tax rates for greenhouse horticulture and for religious and not-for-profit institutions; ▪ Reduced excise tax rates for diesel (gas oil) for non-road use (e.g. agricultural tractors). This reduced rate was abolished in 2013.		
Amount calculated (benchmark: highest excise per unit of energy consumption)	total	per unit of energy	per unit of CO2
	2000: € 21,064 mln 2011: € 30,420 mln	2000: € 7.96 / GJ 2011: € 11.95 / GJ	2000: € 104.39 / ton 2011: € 158.80 / ton
Amount calculated (benchmark: highest excise per unit of CO2 emissions)	Total	per unit of energy	per unit of CO2
	2000: € 21,064 mln 2011: € 30,420 mln	2000: € 7.96 / GJ 2011: € 11.95 / GJ	2000: € 104.39 / ton 2011: € 158.80 / ton
Amount calculated (benchmark: proposal	total	per unit of energy	per unit of CO2

new energy taxation directive)	2000: € 1,489 mln 2011: € 424 mln	2000: € 0.56 / GJ 2011: € 0.17 / GJ	2000: € 7.38 / ton 2011: € 2.21 / ton
Information sources	IEA/OECD: Energy Statistics of OECD countries, 2000-2001 and 2013 edition EWEB database Eurostat Energy balances Website Dutch Tax Authorities (www.belastingdienst.nl) Eric Drissen (PBL), personal communication A number of assumptions had to be made regarding the share of different use(r) categories in the total use of various energy carriers. These assumptions are specified as comments in the Excel tables. NB: The estimated amount of support contains a slight overestimation due to the fact that an (unknown) part of the natural gas used in greenhouse horticulture is used for electricity production (cogeneration).		

Value Added Tax

N.a. All energy supplies are subject to the standard VAT rate.

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

Not applicable. There are a number of tax expenditure schemes (such as accelerated depreciation for environmental and energy saving investments), but none of these are specifically targeted at the fossil fuel industry.

Tax expenditures in royalties

There are two schemes stimulating the exploitation of small gas fields and the exploration of offshore marginal gas fields. For details we refer to the OECD (2013) report.

Poland

Reporting years: 2004 and 2012

Direct budgetary support to consumers/users

Coal Allowances in Coal-Mining Sector	
Final beneficiary	Coal miners Traditional in-kind benefits for miners include free provision of coal which used to serve heating and water-warming purposes. With time, however, most miners have obtained access to distributed heating systems and the benefit in-kind lost its rationale. The in-kind coal support is now being phased out with the introduction of cash equivalents.
Direct beneficiary	Coal companies
Variability	Beneficiaries are entitled to receive 2.5-3 t of coal per year. In average, they receive 2.8 t of coal of cash equivalent.
Objectives	Social welfare measure to favour coal miners.
Conditionality for eligibility	Retired coal miners
Conditionality for magnitude of subsidy	Determined by amount of coal consumed.
Source of funding	The state budget
Fuel	Coal
Total amount	**Table 26.1. Summary of fossil-fuel support to coal - Poland** (Millions of PLN, nominal) Support Element | Jurisdiction | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011p *Consumer Support* Coal Allowances in Coal-Mining Sector | Central | 26 | 24 | 27 | 31 | 37 | 23 | 162 *Notes:* Tax expenditures for any given country are measured with reference to a benchmark tax treatment that is generally specific to that country. Consequently, the estimates contained in the table above are not necessarily comparable with estimates for other countries. In addition, because of the potential interaction between them, the summation of individual measures for a specific country may be problematic. 2004: No information identified 2012: € 3.23 mln (13.5 mln PLN) (planned)
Information sources	Poland: inventory of estimated budgetary support and tax expenditures for fossil fuels www.oecd.org/site/tadffss/ http://ec.europa.eu/competition/state_aid/cases/240638/240638_1421161_116_2.pdf http://www.ekonomia.rp.pl/artykul/1085003.html

Direct budgetary support to producers

Direct budgetary support to primary producers

Initial investment aid for Hard-Coal-Mining Sector	
Final beneficiary	Existing hard coal mines The aid applies to cover initial investment costs, i.e. fixed capital costs directly related to infrastructure work or equipment necessary for the mining of coal resources in existing mines.
Direct beneficiary	Existing hard coal holding companies
Aid category	Restructuring
Objectives	Sectoral development - to support investments ensuring access to coal reserves.
Conditionality for eligibility	The aid was granted to investment projects related to ensuring access to coal reserves and was not granted for covering costs related to the production-process itself.
Conditionality for magnitude of subsidy	The aid for initial investment in coal mining will depend on the financial situation of the state. The Minister responsible for public finance during the drafting of the state budget (each year) will analyse the possibility of granting aid for initial investment. Possible State aid for initial investment will require notification of the European Commission. The state can reimburse up to 30% of the investment costs incurred by coal producers.
Source of funding	The state budget
Fuel	Hard coal
Total amount	2004: € 3,531 mln (15,985 mln PLN) 2012: No information identified
Information sources	Restructuring the hard coal mining sector 2004-2006 and Strategy for 2007 – 2010 (adopted by the Council of Ministers on 27/04/2004) http://www.mg.gov.pl/NR/rdonlyres/1A74D3CD-3B99-4FE8-A991-21EABCAF20EA/2512/gor_restr_2704.pdf Strategy for hard coal mining sector in Poland between 2007 – 2015 (adopted by the Council of Ministers on 31/07/2007) http://www.mg.gov.pl/NR/rdonlyres/EB0B7DB6-8D76-41FE-94B6-50176C2CA721/36302/StrategiaprzyjtaprzezRM.pdf Poland: inventory of estimated budgetary support and tax expenditures for fossil fuels www.oecd.org/site/tadffss/

Direct budgetary support for coal sector

According to the report of the Centre for Social and Economic Analysis[91], Polish coal sector benefited from 22 bn PLN (around 5.3 bn EUR) subsidies in different forms of state aid. Annual support from the state budget and operational programmes is estimated 1.1 bn PLN (around 260 mln EUR). During the four reporting years (2010-2013) 17 bn PNL (around 4.1 bn EUR) have been spent for the pension scheme for coal miners. Overall subsidies for mining and power generation based on coal during 1990-2012 are estimated 170 bn PLN (in 2010 prices, around 41 bn EUR).

Direct budgetary support for R&D purposes

According to the IEA database, government RD&D on fossil fuels amounted to PLN 2.56 mln (€ 0.6 mln) in 2012. No data for 2004 are available.

Public investments in energy infrastructure

Aid to PGNiG for underground gas storage in Poland	
Final beneficiary	The single beneficiary of the aid is the Storage System Operator (SSO) Division which operates all gas storage facilities in Poland and which belongs in 100% to the incumbent gas company – Polskie Gornictwo Naftowe i Gazownictwo S.A. ("PGNiG"). PGNiG which is in 84.75% state-owned, is active and has a quasi-monopolistic position on the markets of production, import, distribution, wholesale and retail sales of gas.
Direct beneficiary	See above
Aid category	Direct grant
Objectives	The measure concerns four investment projects in expansion of existing or in construction of new of underground natural gas storage (UGS) facilities, aimed at improving the security of gas supply in Poland. The completion of the project would increase the natural gas storage capacity in Poland by about one billion m3, from 1.6 billion m3 to 2.6 billion m3.
Conditionality for eligibility	
Conditionality for magnitude of subsidy	Any modification of the aid scheme has

[91] Web article describing the report (not published) accessed on 3 June 2014 http://www.ekonomia.rp.pl/artykul/706193,1113172-Gornictwo-w-latach-2010-2013-dostalo-22-mld-zl-pomocy-publicznej.html

	to be notified to the European Commission.
Source of funding	- State government (national resources) - Operational Programme Infrastructure and Environment (resources transferred to the Polish authorities in the framework of the Cohesion Fund) The EU support is about 63 M PLN (15,77 M EUR)
Fuel	Natural gas
Total amount	The aid duration is from 23.03.2010 to 30.06.2015. The total amount of aid for the period is 1 539 920 200 PLN (390 500 000 EUR), which is about 55% of the total cost of the investment. 2004: 0 € (not existing) 2012: information not identified
Information sources	http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_N660_2009 http://ec.europa.eu/competition/state_aid/cases/234044/234044_1118402_56_1.pdf http://www.globaltradealert.org/measure/poland-aid-pgnig-underground-gas-storage http://www.pois.gov.pl/English/About_Programme/Strony/About_the_Programme.aspx

Regional aid scheme for a construction and reconstruction of the gas distribution network	
Final beneficiary	The scheme applies to beneficiaries who hold a concession for the natural gas distribution. According to the Energy Law (Act of 10 April 1997) granting concessions for gas distribution is open to any company based in the EEA and which fulfils specific for the sector and transparent

	requirements.
Direct beneficiary	The aid granting authority is Instytut Nafty i Gazu (Oil and Gas Institute).
Aid category	Direct grant
Objectives	The scheme consists in construction of gas distribution networks in areas not supplied with gas and for the modernisation of the existing distribution networks. To this end it aims at providing incentives for the investments enabling effective functioning and balanced development of natural gas distribution network in Poland.
Conditionality for eligibility	Aid under the scheme can be granted only for the realisation of an initial investment. The beneficiary have to provide a contribution of at least 25% of the value of the total eligible costs in a form which is free of any public support.
Conditionality for magnitude of subsidy	Any modification of the aid scheme has to be notified to the European Commission.
Source of funding	- State government (national resources) - Operational Programme Infrastructure and Environment (resources transferred to the Polish authorities in the framework of the European Regional Development Fund and Cohesion Fund)
Fuel	Natural gas
Total amount	The aid duration is from 01.09.2007 (date of notification of the EC) to 31.12.2015. The total amount of aid for the period is 666,17 M PLN (199,452 M EUR). 2004: 0 € (not existing) 2012: information not identified
Information sources	http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_N

	435_2008 http://ec.europa.eu/competition/state_aid/cases/227282/227282_983240_56_1.pdf

Tax expenditures

Excises and other specific taxes on energy use

Excise taxes are charged on all fuels (see the Excel files). Certain exemptions apply (see below).			
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	Refund of excise tax on diesel oil for agriculture, exemption of excise tax for coal for certain consumers, free provision of coal for heating for coal miners		
Amount calculated (benchmark: highest excise per unit of energy consumption) year: 2004 year: 2012	total	per unit of energy	per unit of CO2
	€ 21,987 mln € 22,324 mln	€ 6.98 / GJ € 7.19 / GJ	€ 76.38 / ton € 79.04 / ton
Amount calculated (benchmark: highest excise per unit of CO2 emissions) year: 2004 year: 2012	total	per unit of energy	per unit of CO2
	€ 21,987 mln € 22,324 mln	€ 6.98 / GJ € 7.19 / GJ	€ 76.38 / ton € 79.04 / ton
Amount calculated (benchmark: proposal new energy taxation directive) year: 2004 year: 2012	total	per unit of energy	per unit of CO2
	€ 5,407 mln € 3,986 mln	€ 1.72 / GJ € 1.28 / GJ	€ 18.78 / ton € 14.11 / ton
Information sources	Excel files Tax_exp_PL_2004 and 2012		

Value Added Tax

Categories of energy supply to which a reduced VAT rate was applied in one	None

or both of the reporting years	
Standard rate	2004: 22% 2012: 23%
Reduced rate	No reduced rate for energy supplies.
Amount of support calculated (refer to Excel file)	2004: EUR 0 mln 2012: EUR 0 mln
Information sources	http://www.finanse.mf.gov.pl/vat/stawki-podatkowe

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

N.a.

Tax expenditures in royalties

No information identified.

Portugal

Reporting years: 2005 and 2011

Direct budgetary support to consumers/users

N.a.

Direct budgetary support to producers

Direct budgetary support to primary producers

N.a.

Direct budgetary support for R&D purposes

In the IEA Data Services (http://www.iea.org/statistics/RDDonlinedataservice/), the total RD&D budget in Million Euro (nominal prices) is 0.189 in 2005 and 0.052 in 2011. No information on the sources (Federal or Regional governements) and on the beneficiaries of this funding is available.

Public investments in energy infrastructure

The State Aid Register of the European Commission was consulted and no cases of public investments in energy infrastructure were found for the years of 2005 and 2011.

Tax expenditures

Excises and other specific taxes on energy use

ISP - Imposto sobre Produtos Petrolíferos (specific taxes on oil-derived products per unit of fuel consumed) Changes are reported in "tax rates PT_DG TAXUD" data sheets in Excel table	
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	The ISP applies to leaded and unleaded gasoline for transportation; diesel for transportation, industry, agriculture, heating; kerosene for aviation, industry, heating; LPG for transportation ,industry, heating; natural gas for transportation; heavy fuel oil for heating; coal for business heating; coke for business heating. Entities practicing the following activities and consuming the fuels above were exempt of excise taxes: ▪ Using fossil fuel products for non-energetic application ▪ Aviation – except private recreational airplane uses ▪ Coastal navigation and inland shipping, including fishing activities – except private

	recreational navigation ▪ Electricity and heat production ▪ Public transportation ▪ Industries subject to the EU Emission Trading Scheme ▪ Port and waterway dredging operations ▪ Rail transportation ▪ Airplane and ships manufacturing ▪ Using coal, coke and fuel oil for power generation or in CHP plants. Diesel fuel for the same purpose in Açores and Madeira		
Amount calculated (benchmark: highest excise per unit of energy consumption)	total	per unit of energy	per unit of CO2
year: 2005	€ 7056 mln	€ 11.52 / GJ	€ 144.03 / ton
year: 2011	€ 6275 mln	€ 11.51 / GJ	€ 116.54 / ton
Amount calculated (benchmark: highest excise per unit of CO2 emissions)	Total	per unit of energy	per unit of CO2
year: 2005	€ 7056 mln	€ 11.52 / GJ	€ 144.03 / ton
year: 2011	€ 6275 mln	€ 11.51 / GJ	€ 116.54 / ton
Amount calculated (benchmark: proposal new energy taxation directive)	total	per unit of energy	per unit of CO2
year: 2005	€ 580 mln	€ 0.95 / GJ	€ 11.84 / ton
year: 2011	€ 287 mln	€ 0.53 / GJ	€ 5.33 / ton
Information sources	Excel documents: tax_exp_Portugal_2005 and tax_exp_Portugal_2011.		

Value Added Tax

Categories of energy supply to which a reduced VAT rate was applied in one or both of the reporting years	Gasoil (for heating), kerosene, heavy fuel oil (both years); natural gas, electricity (2011 only)
Standard rate	2005: 19 % (first half of 2005); 21% (second half of 2005) 2011: 23%
Reduced rate	2005: 12% (gasoil, kerosene, heavy

	fuel oil) 2011: 13% (gasoil, kerosene, heavy fuel oil) and 6% (natural gas, electricity)
Amount of support calculated (refer to Excel file)	2005: € 0 mln 2011: € 226 mln
Information sources	Excel documents: tax_exp_Portugal_2005 and tax_exp_Portugal_2011. Note: the amount for 2005 is probably not correct. According to the available statistical data, the consumption of gasoil and kerosene for (non-business) heating purposes in 2005 was zero, which is unlikely to be true.

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

Corporate-Revenue Tax Deductions for Oil Exploration and Production	
Type of tax expenditure	Special rates for exploration and production activities
Objectives	Incentives for oil exploration and production
Conditionality for eligibility	The deducted values have to be invested in other exploration and production activities in Portugal in the following 3 fiscal years from the tax deduction
Conditionality for magnitude of subsidy	Article 42 of Portugal's Corporate-Revenue Tax Code (IRC) allows companies undertaking oil exploration and production (E&P) activities to deduct the smallest of the following amounts from their tax base for corporate-revenue-tax purposes: ▪ 30% of the gross value obtained from sales of oil produced in the area of concession in the corresponding fiscal period; ▪ 45 % of the amount that would have been collected were the previous deduction not available.
Fuel	Crude oil

Total amount	No data available
Information sources	Portugal: Inventory of estimated budgetary support and tax expenditure for fossil-fuels (OECD) http://www.oecd.org/site/tadffss/PRT.pdf.

Tax expenditures in royalties

The extraction of crude oil in Portugal is subject to an Oil Production Tax (Imposto sobre a Produção de Petróleo) whose rates vary with annual production volumes and a field's depth. This progressive royalty system also distinguishes between onshore and offshore fields, with the latter benefitting from more favourable rates of tax. The production of oil from offshore fields that are deeper than 200 meters is totally exempt from the Oil Production Tax.

Portugal, however, produces virtually no crude oil or natural gas (http://www.eia.gov/countries/country-data.cfm?fips=po).

Romania

Reporting years: 2001 and 2011

Direct budgetary support to consumers/users

In the IVM (2013) report, fuel subsidies for railways were estimated in 2011 at RON 295 million (EUR 71 million). Most of this is probably related to the exemption from excise taxes, which can be calculated at about EUR 55 million (fuel use 6092 TJ; standard tax rate for diesel EUR 8.98 per GJ; see Excel sheet). The remaining part (EUR 16 million) is assumed to be direct support for fuel costs. Comparable data for 2001 are not available.

Direct budgetary support to producers

Direct budgetary support to primary producers

According to the State Aid Scoreboard, state aid for hard coal mining peaked at EUR 254.6 million in 2004 and gradually decreased since then. In 2011 it was reported to be zero, but in 2012 the amount was positive again. The average annual amount of support over the period 2002-2012 was EUR 98.3 million. Data for 2001 are not available.

In state aid case N239/07 the Commission decided not to raise objections against grants for coal production to Compania Naţională a Huilei S.A. The amount involved was RON 1.29 billion for the period 2007-2010, which equals to an average of EUR 83.8 mln per year. This is the amount reported for 2011 in the main report of this study.

Source: European Commission, DG Competition, State Aid Scoreboard; State Aid Register.

Direct budgetary support for R&D purposes

Government expenditure on energy R&D amounted to EUR 7.3 million in 2007. No data are available on the share of fossil fuel related R&D in this budget.

Source: Eurostat (2010), Science, technology and innovation in Europe. 2010 edition.

Public investments in energy infrastructure

A state aid scheme for investments into expanding and modernising distribution networks for electricity and natural gas amounted to EUR 28.4 million over the period 2009-2013 (state aid case N467/2009). Of this amount, 88% was co-financed by the EFRD. The Romanian part of the state aid therefore amounted to EUR 3.7 mln for 2009-2013, or EUR 0.7 mln per year. Given the fact that 56% of Romania's electricity supply is from fossil fuels, the amount of state support for 2011 can be estimated at EUR 0.5 million.

Tax expenditures

Excises and other specific taxes on energy use

Name of the tax scheme and short description	Excise taxes (accize) In 2001, excise taxes were only levied on oil products. By 2011, excise taxes were also levied on coal, natural gas and electricity.		
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	▪ In 2001, the excise tax rate for diesel was more than 50% lower than for (unleaded) petrol. By 2011, the difference was reduced to 18%. ▪ Excise tax rates for LPG, natural gas, kerosene, coal and electricity are differentiated between use for commercial and non-commercial purposes. ▪ Heating fuels used by individual households and charity institutions are exempted from the excise tax. ▪ Excise taxes on fuels used in agriculture can be refunded. ▪ Public transport is exempted from excise taxes on fuels and electricity.		
Amount calculated (benchmark: highest excise per unit of energy consumption)	Total	per unit of energy	per unit of CO2
	2001: € 1390 mln 2011: € 3075 mln	2001: € 2.01 / GJ 2011: € 4,72 / GJ	2001: € 26.58 / ton 2011: € 60.28 / ton
Amount calculated (benchmark: highest excise per unit of CO2 emissions)	Total	per unit of energy	per unit of CO2
	2001: € 1390 mln 2011: € 3075 mln	2001: € 2.01 / GJ 2011: € 4,72 / GJ	2001: € 26.58 / ton 2011: € 60.28 / ton
Amount calculated (benchmark: proposal new energy taxation directive)	Total	per unit of energy	per unit of CO2
	2001: € 1279 mln 2011: € 614 mln	2001: € 1.85 / GJ 2011: € 0.94 / GJ	2001: € 24.45 / ton 2011: € 12.04 / ton
Information sources	IEA (2014), EWEB database (2010 data used; 2011 not yet available) National Tax Code (2010) http://www.cdep.ro/proiecte/2001/600/70/4/anexe674.pdf http://static.anaf.ro/static/10/Anaf/legislatie/Cod_fiscal_norme_2011.htm#ax1		

	http://www.cfe-eutax.org/taxation/excise-duties/romania IVM (2013), Budgetary support and tax expenditures for fossil fuels An inventory for six non-OECD EU countries. Institute for Environmental Studies, VU University Amsterdam

Value Added Tax

N.a. Both in 2001 and in 2011 the standard VAT rate was levied on fuels and electricity.

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

N.a.

Tax expenditures in royalties

Oil production is taxed at a rate of €4 per ton (2013). Natural gas production is taxed at a rate of €7.40 per 1000 m3. No exemptions or reduced rates are reported for these taxes.

Source:

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.

Slovakia

Reporting years: 2005 and 2011

Direct budgetary support to consumers/users

Refund of the production costs of electricity produced from domestic coal

(*Feed-In Tariff for Domestic Lignite)*

(in place until 2020, with the possibility of extension to 2035)

Since 2005, the electricity produced from domestic coal has been supported through a refund of the production costs of electricity produced from domestic coal. The burden of this refund falls partially on electricity consumers (reflected in higher electricity prices) and partially on the budget chapter of the Ministry of the Economy.

Since producing electricity from lignite is significantly more expensive than electricity production from other energy sources, those power plants that produce electricity from domestic lignite are refunded for this activity (up to 15% of total electricity generation can be subject to such a refund). The amount of the refund is determined annually by RONI that publishes the subsidy amount per every MWh of lignite-fired electricity fed to the network. RONI also sets the annual price of lignite.

Currently, the only power plant benefitting from this scheme is the Nováky thermal power plant. In 2011, the measure was extended until 2020, with the possibility of further extension until 2035.

Final beneficiary	Domestic coal/mining sector
Direct beneficiary	Domestic coal consumers - Electricity producers Only one electricity producer profits of this support measure at the moment: The Novaky thermal power plant. Novaky currently produces about 8% of electricity in the country.
Variability	The refund does not take the form of (possibly periodical) lump sum grant, neither does it vary according to some identifiable parameters (such as reductions in the production capacity, etc).
Objectives	To ensure the coal supply security and general economic interest. Besides renewable energy sources, lignite is the only significant domestic primary energy source, and the government is keen to maintain domestic lignite production and lignitefired electricity generation. The Energy Security Strategy stipulates the maximum use of domestic lignite reserves. It discusses the possibility of resuming or opening lignite extraction at several deposits.
Conditionality for eligibility	The generator has to prove that electricity was produced from domestic coal in thermal power plants which are holders of permission for electricity generation. The thermal plant Novaky (owned by Slovenske elektrarne) is the only company holding such permission.

Conditionality for magnitude of subsidy	Government resolutions adopted in 2005 and 2006 determined the amount of electricity that must be produced from domestic coal in the "general economic interest". A new resolution adopted in January 2010 extended this "general economic interest" by 2020 with the possibility of extension to 2035. The Regulatory Office for Network Industries (RONI) administers the subsidy and annually publishes decisions on prices through which a supplement (additional allowance) to every MWh of lignite-fired electricity supplied to the network is determined. Up to 15% of total electricity generation can be subsidised. The price of domestic lignite is also set by RONI.
Source of funding	▪ The general government budget (the budget chapter of the Ministry of the Economy) ▪ End users (electricity consumers) – burden reflected in higher electricity prices
Fuel	Domestic coal - lignite
Total amount	N/A
Information sources	http://www.iea.org/publications/freepublications/publication/Slovak2012_free.pdf (Energy Policies of IEA Countries – Slovak republic (2012 Review) http://www.oecd.org/site/tadffss/SVK.pdf (Slovak republic: inventory of estimated budgetary support and tax expenditures for fossil-fuels)

Direct budgetary support to producers

Direct budgetary support to primary producers

Raising Accessibility of Lignite Reserves in Hornonitranske Bane, Prievidza, a.s. (data for 2006-2010)

Direct grants for raising accessibility of lignite reserves at the Hornonitranske Bane, Prievidza, a.s., a joint-stock lignite-mining company, were provided by the state in the period between 2006 and 2010. The joint-stock company submitted a plan in which it envisaged extracting 12.2 million tonnes of lignite in three extraction areas: Nováky, Cígel' and Handlová in the period between 2005 and 2010.

The scheme was launched by the government decision N 324/2005 of 27 January 2006 and approved by the European Commission's decision K(2006)92.

Final beneficiary	Domestic coal/mining sector
Direct beneficiary	Hornonitranske Bane, Prievidza, a.s., a joint-stock lignite-mining company
Aid category	Direct grants
Variability	The subsidy take the form of (possibly periodical) lump sum grant.

Objectives	Increasing the accessibility of lignite reserves
Conditionality for eligibility	Based on a plan in which it is envisaged extracting 12.2 million tonnes of lignite in three extraction areas.
Conditionality for magnitude of subsidy	Given by the grant
Source of funding	The general government budget
Fuel	Domestic coal - lignite
Total amount	N/A
Information sources	http://www.oecd.org/site/tadffss/SVK.pdf (Slovak republic: inventory of estimated budgetary support and tax expenditures for fossil-fuels)

Note: The direct subsidies for lignite mining in Slovakia are mainly aimed at the reduction and liquidation of mining (for example Subsidy for the phasing-out of the Baňa Dolina mine in accordance with EU regulation)and social inherited liabilities (social payments to coal miners, former coal miners and miners' widows, as well as severance payments for miners laid off). The total amount of subsidy for the period 2005-2010 was approximately EUR 30 million.

Direct budgetary support for R&D purposes

According to the IEA database, the total expenditure on R&D is as follows in the two reporting years is as follows:

2005: € 0 mln

2011: € 0,741 mln

The support provided in 2011 covered R&D on coal and CO_2 capture and storage.

Public investments in energy infrastructure

N.a. Four state aid cases were identified in 2005 and this concerned severance payments for miners laid off and retirement benefits for miners after phasing out mining activity. None of these aids are relevant to infrastructure.

Tax expenditures

Excises and other specific taxes on energy use

Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	The following energy sources benefit from tax exemptions: ▪ electricity, gas (LPG) and coal used by final household customers; ▪ electricity used for some specified purposes (i.e. for industrial production if the electricity costs represent more than 50% of the average own costs of the product manufactured);

	▪ electricity, coal and gas used for the transportation of persons and cargo by public transport (e.g. trains, underground and tramways); ▪ electricity produced from renewable energy sources and CHP; ▪ natural gas and coal used *i)* to produce electricity and combined heat and power as well as heat for domestic use, *ii)* for operational and technological purposes and *iii)* for any purpose other than motor fuel or as heating fuel. Exemptions from the coal tax[92] Exemptions from the natural gas tax[93] Reduced Excise Duty on Red Diesel[94] Reduced Excise Duty on LPG[95]

[92] *As stipulated by § 19 of the Act No. 609/2007*, use of coal is fully exempt from the coal tax, if it is used: (a) for dual use, i.e. as fuel and for other purposes; (b) in mineralogical processes; (c) for a purpose other than that of a motor fuel or fuel for heat generation; (d) in the combined generation of electricity and heat; (e) in electricity generation; (f) for production of coke and semi-coke; (g) in commercial activities directly related to railroad or river transportation of persons or cargo; (h) by households; (i) for operational and technological purposes in a mining and coal processing company; (j) in the generation of heat for households.
Tax exemption for coal used (j) in the generation of heat for households was abolished as of 1 January 2011.

[93] *As stipulated by § 31 of Act No. 609/2007*, use of natural gas is fully exempt from the natural gas tax, if it is used: (a) for dual use, i.e. as fuel and for other purposes; (b) in mineralogical processes; (c) for a purpose other than that of a motor fuel or fuel for heat generation; (d) in the combined generation of electricity and heat; (e) in electricity generation; (f) as a motor fuel; (g) by households; (h) for operational and technological purposes in a gas undertaking, including losses in a technologically justified quantity;2;(i) in the generation of heat for households; (j) in commercial activities directly related to railroad or river transportation of persons or cargo.
Tax exemption for natural gas used (f) as motor fuel and (i) in the generation of heat for households was abolished as of 1 January 2011.

[94] *As stipulated by the Article 7 of the Act No. 98/2004 on the Excise Duty on Mineral Oil,* a reduced excise-tax rate on diesel applies to diesel used for (a) railroad transportation of persons or cargo and for repair and maintenance of the railway network, (b) machines used in agriculture, and (c) stationary engines and equipment for electricity production. Diesel used for such purposes is dyed red, hence the name "red diesel" ("*červena nafta*"). The scheme was introduced on 1 May 2004 was abolished as of 1 January 2011.

[95] *As stipulated by the File 253 of the Amendments to Act No. 98/2004 on the Excise Duty on Mineral Oil*, an excise tax exemption applies to LPG used as fuel. The scheme was introduced on 1 July 2008 and it was abolished as of 1 January 2011.

Amount calculated (benchmark: highest excise per unit of energy consumption)	total	per unit of energy	per unit of CO2
year: 2005	€ 5,471 mln	€ 9.67 / GJ	€ 171.18 / ton
year: 2011	€ 6,602 mln	€ 11.53 / GJ	€ 198.93 / ton
Amount calculated (benchmark: highest excise per unit of CO2 emissions)	total	per unit of energy	per unit of CO2
year: 2005	€ 5,454 mln	€ 9.64/ GJ	€ 170.63 / ton
year: 2011	€ 6,602 mln	€ 11.53 / GJ	€ 198.93 / ton
Amount calculated (benchmark: proposal new energy taxation directive)	total	per unit of energy	per unit of CO2
year: 2005	€ 1,216 mln	€ 2.15 / GJ	€ 38.03 / ton
year: 2011	€ 1,251 mln	€ 2.19 / GJ	€ 37.70 / ton
Information sources	IEA (2013) Energy Statistics of OECD Countries. DG TAXUD (2005) Excise duty tables. (Incorporates all amendments received up to 27 November 2000) DG TAXUD (2011) Excise duty tables. Part II - Energy products and electricity. European Commission. (Shows the situation as at 1 July 2011) Eurostat IEA Review of the Energy Policies of Slovakia 2010, Preliminary Findings and Recommendations, International Energy Agency, Bratislava, 26 November 2010. Act No. 609/2007 on the Excise Duty on Electricity, Coal, and Natural Gas supplementing Act No. 98/2004 on the Excise Duty on Mineral Oil, Ministry of Finance of the Slovak Republic, Available at: www.mfsr.sk/en/Documents/Material/2009/7/73/Sobot190209/Electricity/Electricity_Coal_Natural_Gas_609_2007.pdf. IFP (2011), Inštitút finančnej politiky Ministerstvo financií SR, Ministry of Finance of the Slovak Republic. Ministry of Finance (2011), State aid granted to beneficiaries in all sectors except agriculture, Ministry of Finance of the Slovak Republic.		

Value Added Tax

Categories of energy supply to which a reduced VAT rate was applied in one or both of the reporting years	None
Standard rate	2005: 19% 2011: 20%
Reduced rate	No reduced rates apply.
Amount of support calculated (refer to Excel file)	n.a.
Information sources	Assumptions made in calculation: No prices for LPG could be found for heating use (residential), so LPG transport prices were used. Sources of information: Statistical office of the Slovak republic: http://slovak.statistics.sk/ DG Taxud, Excise duty tables: https://circabc.europa.eu/sd/a/5d907b3b-52ee-4808-9de5-8e2b2647ac0f/EDT%202011%20Jan%20Energy.pdf IEA statistics - Energy prices and taxes (first quarter 2013)

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

N.a.

Tax expenditures in royalties

N.a.

Slovenia

Reporting years: 2004 and 2012

Direct budgetary support to consumers/users

Name of the scheme and short description	*Feed-In Tariffs / operational support for electricity produced in CHP Plants (ongoing)*
Final beneficiary	Investors in said plants
Direct beneficiary	CHP plants
Variability	Variable, according to electricity production
Objectives	To encourage high-efficiency production
Conditionality for eligibility	Combined heat and electricity production
Conditionality for magnitude of subsidy	n/a
Source of funding	Tax on electricity consumption for renewables and CHP
Fuel	Various fossil fuels
Total amount	EUR 18.4 mln (2012)
Information sources	http://lab.fs.uni-lj.si/kes/gospodarjenje_z_energijo/Poslovanje_EGP_2012.pdf

Direct budgetary support to producers

Direct budgetary support to primary producers

N.a.

Direct budgetary support for R&D purposes

N.a.

Public investments in energy infrastructure

As most fossil fuels distributors and producers are state-owned and the infrastructure is built by these companies, there is no direct impact on the state budget. The cost of investments is amortised by those companies. Thus, no scheme exists to quantify the expenditures for such investments.

Tax expenditures

Excises and other specific taxes on energy use

Name of the tax scheme and short description	Excise duty		
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	Exemptions applied: use of fuel for Diplomatic Missions. Partial refund is levied on:fuel used in stationary working machinery in construction and engineering use, trains, zip lines, motor fuel used in agricultural and forestry machinery. Full refund is allowed for diesel used as fuel for commercial purposes (shipping, flight, transformation, processing).		
Amount calculated (benchmark: highest excise per unit of energy consumption)	total	per unit of energy	per unit of CO2
	2004: € 658 mln 2012: € 1517 mln	2004: € 1.34 / GJ 2012: € 3.14 / GJ	2004: € 15.29/ ton 2012: € 36.24 / ton
Amount calculated (benchmark: highest excise per unit of CO2 emissions)	total	per unit of energy	per unit of CO2
	2004: € 658 mln 2012: € 1517 mln	2004: € 1.34 / GJ 2012: € 3.14 / GJ	2004: € 15.29 / ton 2012: € 36.24 / ton
Amount calculated (benchmark: proposal new energy taxation directive)	total	per unit of energy	per unit of CO2
	2004: € 734 mln 2012: € 678 mln	2004: € 1.50 / GJ 2012: € 1.40 / GJ	2004: € 17.08 / ton 2012: € 16.20 / ton
Information sources	Excel documents: tax_exp_Slovenia_2004 and tax_exp_Slovenia_2012		

Value Added Tax

N.a.

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

N.a.

Tax expenditures in royalties

The Slovenian system of royalties is the following: the fee amount that the Government charges is set by the specific regulation on extrapolation of mineral resources. The basis for the calculation of the fee is the size of the extraction site and the average unit price of certain types of mineral resources in the Republic of Slovenia. No other specific aspects of taxation regime or similar conditions apply to the system (e.g. specific tax provisions, accelerated depreciation, etc.).

Spain

Reporting years: 2002 and 2011

Direct budgetary support to consumers/users

State Aid N 684 / 09: Aid scheme for coal workers The subsidy refers to an historical measure put in place since 1973, where the workers of the coal-mining companies where entitled to obtain a fixed quantity of coal until the end of their life. From November to March, the miners freely received 300 kg of coal and between April and October were authorized to obtain 250kg of coal from their mining-coal companies.[96] This system has been restructured following an agreement between trade unions, companies and government, which took into consideration the amount of coal equivalent converted in Euro was around € 216, 36 (or € 18, 03 per month). Following the approval of Real Decree 808/2006, which pointed out some measures for the reorganization of the mining industry, the issue raised again for the old workers who were under a previous scheme for retirement. Therefore, the State decided to introduce a financial compensation for certain workers which were under the previous scheme.	
Final beneficiary	Coal-miners under the scheme
Direct beneficiary	Coal-Mining companies which employed miners which where under the scheme
Variability	N/A
Objectives	To ensure an equitable reorganization of the coal miners' benefits.
Conditionality for eligibility	N/A
Conditionality for magnitude of subsidy	N/A
Source of funding	Central government
Fuel	Coal
Total amount	2010: € 2,75 Million (only in 2010)
Information sources	National Legislation: ▪ Order 29/1973, 'Orden de 29 de enero de 1973 por la que se aprueba la Ordenanza de Trabajo para la Minería del Carbón', URL : https://www.boe.es/diario_boe/txt.php?id=BOE-A-1977-30602 [07/04/2014] ▪ Royal Decree 808/2002, 'Real Decreto 808/2006, de 30 de junio,

[96] For an overall value of approximately 3250 kg of coal per year.

	por el que se establece el régimen de ayudas por costes laborales mediante prejubilaciones, destinadas a cubrir cargas excepcionales vinculadas a planes de acionalización y reestructuración de la actividad de las empresas mineras del carbón'. URL: http://www.boe.es/boe/dias/2006/07/01/pdfs/A24783-24789.pdf [06/04/2014] European Commission (2010), 'Ayuda estatal N 684/2009 – España. Ayuda en sustitución del suministro gratuito de carbón', URL:http://ec.europa.eu/competition/state_aid/cases/234259/234259_1085863_21_2.pdf [06/04/2014] Official Journal of the European Union (2010) , 'Authorisation for State aid pursuant to Articles 107 and 108 TFEU. Cases where the Commission raises no objections', 2010/C 93/01, URL:http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.C_.2010.093.01.0001.01.ENG [07/04/2014]

Direct budgetary support to producers

Direct budgetary support to primary producers

State Aid NN 80/2006 State aid to the coal sector for 2006 & State Aid NN 81/2006 (ex N286/2006) National Strategic Coal Reserve Plan for 2006-2012	
Following the decision of restructuring the coal-mining sector in 2006 and the publication of the National Strategic Coal Reserve Plan for 2006-2012, the Spanish authorities decided to organize gradual closure of economically unsustainable mines while maintaining at the same time a certain level of indigenous coal production for the national security of supplies. The subsidy come into the form of subsides for mine-closure and for coal production, and it also had encompassed a substantial reduction for the State-owned company HUNOSA (*Hulleras del Norte S. A.*). The subsidies considered in this case are relative for the period 2005 – 2006.	
Final beneficiary	The following mines have been indicated as the Coto Minero Jove S.A., Mina La Camocha S.A., Minas del Principado S.A., Minas de Valdeloso S.L., Virgilio Riesco S.A., Carbones de Pedraforca S.A., Mina La Sierra S.L. y Unión Minera Ebro-Segre S.A. Además, el pozo Figaredo de HUNOSA.
Direct beneficiary	The following mines have been indicated as the Coto Minero Jove S.A., Mina La Camocha S.A., Minas del Principado S.A., Minas de Valdeloso S.L., Virgilio Riesco S.A., Carbones de Pedraforca S.A., Mina La Sierra S.L. y Unión Minera Ebro-Segre S.A. Además, el pozo Figaredo de HUNOSA.
Aid category	Free Grant
Variability	A progressive reduction of the amount of aid given to the coal-mining industry over the years

Objectives	The stated objectives of the mechanism are: 1) Ensuring a correct "re-adjustment" of the subsidies given to the industry over the previous years 2) Maintaining an adequate level of security of supplies through a fixed quota level for coal production.
Conditionality for eligibility	In case of "large" companies (with an estimated capacity above 200.000 tonnes of coal) the conditionality to access the subsidy was to have a substantial level of coal reserves and the potential for reducing production. Regarding "small" enterprises (with a capacity less than 200.000 tonnes of coal)
Conditionality for magnitude of subsidy	N/A
Source of funding	Central government
Fuel	Coal
Total amount	Between 2005 and 2007 the total amount spend was around: € 1.421 mln
Information sources	European Commission (2008), 'Ayuda de Estado NN 80/2006 (ex N 301/2006, N 307/2006) - Ayuda estatal al sector del carbón para el ejercicio 2006 & Ayuda de Estado NN 81/2006 (ex N 286/2006) - Plan nacional de reserva estratégica del carbón 2006-2012', URL: http://ec.europa.eu/competition/state_aid/cases/217744/217744_886116_30_2.pdf [04/04/2014] Official Journal of the European Union (2008), 'Authorisation for State aid pursuant to Articles 87 and 88 of the EC Treaty Cases where the Commission raises no objections', '2008/C 297/01', URL: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.C_.2008.297.01.0001.01.ENG [04/04/2014]

State Aid N 178 / 2010: Compensation service linked to a preferential dispatch mechanism for domestic coal power stations

The subsidy provided a financial support of some selected (10) coal power plants, which are be obliged to produce a specific amount of electricity through the use of indigenous-made coal. (Under the conditions described in the Royal Decree 134/2010). Within the mechanism, [97] the selected power stations will have priority over other power plants for the delivery of electricity to the national grid. As the selected coal power plants are in the proximity of important coal mines district, the coal nationally

[97] "Preferential dispatch mecahnism"

produced would be immediately used to burn electricity, as the possibility to export coal at the moment is not economically viable.[98] As some of the thermal plant (if not all) would be closed down under without taking any measures, the Spanish government decided to intervene and financially help the coal-fired stations. The subsidy was enacted in 2010 and is due to be phased-out by the end of 2014.	
Final beneficiary	The following companies which directly owns or have stakes in the selected coal-fired stations: Hidrocantabrico (HC Energia), Gas Natural Fenosa, Endesa, Iberdola, E-On, EDF and EDP-HC Energia
Direct beneficiary	The following coal-fired power stations: Soto de Ribera 3, Narcea 3, Anllares, La Roble 2, Compostilla, Teruel, Guardo 2, Puentenuevo 3, Escucha and Elcogas.
Aid category	Financial compensation is given for the power plants that are burning domestic ca. In this way, a minimum level of activity will be provided and a coverture of production costs will be put in place for the above mentioned coal-fired power plants.
Variability	The variability of the subsidy is connected to the changes in the price of the Spanish wholesale electricity market.
Objectives	The stated objectives of the mechanism are: 1) To reinforce the Spanish electricity market which has been particularly affected by the rapid surge of renewable energy. According to the Spanish government, the development of coal-fired capacity is needed under extreme weather conditions in order to provide the stability of the electricity system.[99] 2) To ensure the security of electricity supplies in Spain through an economic stimulus for the indigenous coal sources present on the mainland territory of Spain. 3) Declining electricity demand in the coupled with a fall in wholesale electricity prices in 2009 increased the financial pressure on the coal-powered plants, which under business-as-usual scenario would be forced to close. This event would consequently affect the coal-mining activity in several regions across Spain and force several mines to shut down activities.
Conditionality for eligibility	To burn indigenously produced coal for the production of electricity for the power plants that are eligible under the scheme.
Conditionality for	The volumes of indigenous coal to be acquired from domestic coal mines for each of the producers have been decided according to the

[98] Given the low-quality of the Spanish coal, it would prove uneconomical to sell the domestic quantities of coal to the international markets.

[99] As pointed out by the Spainsh authorities, even If gas-fired gas stations are better conceived for the typical intermittency of the renewable letricity sector, the financial provisions laid down for the construction of new gas-fired power capacity in the country would be more expensive than the current measures in place for this compensation service. Moreover, the substantial lack of adequate electricity interconnections between Spain and the two European neighbouring countries (France and Portugal) reduced the possibility to fill the gap in case of declining renewable energy production and rising demand.

magnitude of subsidy	previous procurement contracts in place and taking into account the provision of the National Strategic Coal Reserve Plan for 2006-2012. Over the years between 2011 and 2014, the volumes of electricity concerned will not exceed 23,4 TWh per year (which is around 9% of the national consumption of the nation).
Source of funding	Public service compensation, which comes in the measure of a levy imposed on electricity retail suppliers and to final electricity consumers.
Fuel	Coal
Total amount	2002: N/A 2011: € 400 Million
Information sources	National Legislation: - Law 54/1997, '*Ley 54/1997, de 27 de noviembre, del Sector Eléctrico*' URL:http://www.boe.es/diario_boe/txt.php?id=BOE-A-1997-25340 [06/04/2010] - Royal Decree 134/2010, '*Real Decreto 134/2010, de 12 de febrero, por el que se establece el procedimiento de resolución de restricciones por garantía de suministro y se modifica el Real Decreto 2019/1997, de 26 de diciembre, por el que se organiza y regula el mercado de producción de energía eléctrica'*, URL: https://www.boe.es/diario_boe/txt.php?id=BOE-A-2010-15121 [06/04/2010] - National Strategic Coal Reserves Plan for 2002-2012, '*Plan Nacional de reserva estrategica de carbon 2006-2012 y nuevo modelo de desarrollo integral y sostenible de la comarcas mineras*', URL: http://www.irmc.es/common/plan_carbon.pdf [01/04/2014] European Commission (2010), 'Ayuda estatal nº N 178/2010 – España Compensación por servicio público asociada a un mecanismo de entrada en funcionamiento preferente para las centrales de carbón autóctono' URL: http://ec.europa.eu/competition/state_aid/cases/236267/236267_1151628_152_2.pdf [22/03/2014] European Commission (2010), 'State Aid N 178/2010 – Spain Public service compensation linked to a preferential dispatch mechanism for indigenous coal power plant', URL: http://ec.europa.eu/competition/state_aid/cases/236267/236267_1150043_151_1.pdf [05/04/2014] European Commission (2010), 'State aid: Commission clears public service compensation to electricity generators in Spain', IP/10/1198, URL: http://europa.eu/rapid/press-release_IP-10-1198_en.htm [01/04/2014] OECD (2013) 'Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels', OECD Publishing Official Journal of the European Union (2010), 'Authorisation for State

	aid pursuant to Articles 107 and 108 of the TFEU Cases where the Commission raises no objections', 2010/C 312/02, URL: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.C_.2010.312.01.0005.01.ENG [06/04/2014] Oosterhuis, F. & Ten Brink, P. (eds.), (2014), 'Paying the Polluter – Environmentally Harmful Subsidies and their Reform', Edward Elgar Publishing.

Direct budgetary support for R&D purposes

R&D Schemes for fossil fuels The data provided by the International Energy Agency highlighted that in the period 2002-2006 more than € 42 million were spent in RD&D for fossil fuels RD&D (mainly coal). According to the *Energy Policies of IEA Countries: Spain 2009 Review*, in 2005 the CIEMAT, a public research body with a special focus on energy and environment, allocated 9% of its energy research expenditure for fossil fuels technologies. This part of the RD&D spending until 2005 was diverted into research for coal-related activities and after that, the state started to divert an increasingly part of the funding in Oil & Gas RD&D. Then, as it was reported in the IEA's 2009 revision, combustion and gasification technologies accounted for 5% of the CIEMAT budget. According to the database, public RD&D support for fossil fuel was stopped after 2009.	
Final beneficiary	Several private-owned coal mining companies located in coal-producing regions (e.g. the autonomous community of Castilla y Leon)
Direct beneficiary	N/A
Aid category	N/A
Variability	N/A
Objectives	Until 2005, mainly the bulk of the RD&D spending for fossil fuels was focused on the development of Integrated gasification combined cycle technologies and from 2006 CCS technologies absorbed a substantial part of the funding.
Conditionality for eligibility	N/A
Conditionality for magnitude of subsidy	N/A
Source of funding	Central Administration (Government)
Fuel	RD&D spending was mainly focused on coal, and after 2005 on oil and natural gas

Total amount	The following are for Government R&D in million EUR. Sum of categories "oil and gas" and "coal" and separate figures reported for "CO2 capture and storage" (IEA Energy RD&D statistics 2014). **Fossil Fuels (overall):** **2002**: € 3.2 mln **2011**: € 0 mln (latest data available is for 2009 and it corresponds to € 2.3 mln) **Total** amount in the period 2002-2011: € 32.8 mln **CO_2 Carbon Capture and Storage** **2007 (earliest):** € 1,2 mln **2009 (latest):** € 307,000 As already observed for the Austrian case, figures reported appear to be quite low. In facts, reports from the OECD indicates that between 2006 and 2008, € 72 million were allocated through the CIUDEN Foundation (established in 2006 by the Ministry of Science and Innovation) for the construction of a demonstration plant for the capture of CO2 in the mining district of El Bierzo.
Information sources	IEA (2014) IEA Energy Technology RD&D Statistics, DOI: 10.1787/enetech-data-en [Accessed: 06/04/2014] Official Journal of the European Union (2005), 'Authorisation for State aid pursuant to Articles 87 and 88 of the EC Treaty. Cases where the Commission raises no objections', 2005/C 125/03 URL:http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2005:125:0006:0008:EN:PDF [06/04/2014] European Commission (2004), '*Ayuda estatal N 104/ 2003 – España Régimen de incentivos mineros a empresas para los programas de investigación y desarrollo, medio ambiente y formación minera para los años 2003 – 2006 en la Comunidad Autónoma de Castilla y León*' URL: http://ec.europa.eu/competition/state_aid/cases/138066/138066_471887_3_2.pdf [05/04/2014] European Commission (2008),'Ayuda estatal nº N 131/08 – España Régimen de ayudas estatales a la investigación, desarrollo tecnológico e innovación y programas medioambientales en el sector del carbón para 2008-2012 - Prolongación de N 245/07' URL:http://ec.europa.eu/competition/state_aid/cases/224720/224720_869933_22_2.pdf [04/04/2014] European Commission (2008) 'Ayuda estatal nº N 131/08 – España Régimen de ayudas estatales a la investigación, desarrollo tecnológico e innovación y programas medioambientales en el sector del carbón para 2008-2012 - Prolongación de N 245/07' URL: http://ec.europa.eu/competition/state_aid/cases/224720/224720_869933_22_2.pdf [06/04/2014] Official Journal of the European Union (2008), 'Authorisation for State aid pursuant to Articles 87 and 88 of the EC Treaty. Cases where the Commission raises no objections', 2008/C 15/02, URL:http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.C_.2008.015.01.0005.01.ENG [06/04/2014] Official Journal of the European Union (2008) 'Authorisation for State aid pursuant to Articles 87 and 88 of the EC Treaty Cases where the Commission raises no objections', 2008/C 329/02, URL:http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.C_.2008.329.01.0003.01.ENG

	[06/04/2014] IEA (2009), 'Energy Policies of IEA Countries: Spain 2009 Review', OECD Publishing. IEA (2005), 'Energy Policies of IEA Countries: Spain 2005 Review', OECD Publishing. CIUDEN (2013), 'Official Website', URL: http://www.ciuden.es/index.php/en/fundacion [07/04/2014]

Public investments in energy infrastructure

State Aid N 414/2000 & State Aid N 609/2007 – Gasification Plan for the Valencian autonomous community These two State Aids were conceived as way to extend the gas grid coverage also to some disadvantaged parts of the *Comunidad Valenciana.* This project was implemented also taking into account the difficult economic situation of the region and the high level of unemployment. The first State aid (N 414/2000), covered the period 2000 – 2006 and a budget of around € 16,60 million. The State aid N 609/2007, is a prosecution of the previous plan (as the application of the State aid N 414/2000 expired on December 2006) and it is planned to extend the project for the period 2007 – 2013, with an extimate budget expenditure of € 17.000.000.	
Final beneficiary	Companies specialized in the development and construction of gas infrastructures (such as transport, distribution and final dispatchment)
Direct beneficiary	Companies specialized in the development and construction of gas infrastructures (such as transport, distribution and final dispatchment)
Aid category	Free (non reboursable) grants
Objectives	Foster the regional development of disadvantaged parts of the Valencian Community through the expansion of the natural gas network
Conditionality for eligibility	There is a "geographical scope" in the subsidy as the State aid is only applicable to companies which are operating in the *Comunidad Valenciana*.
Conditionality for magnitude of subsidy	N/A
Source of funding	Regional government (*Generalitat Valenciana*)
Fuel	Natural Gas
Total amount	2002: N/A 2011: € 3,6 mln (annual amount)
Information sources	National Legislation - Royal Decree 887/2006, 'Real Decreto 887/2006, de 21 de julio, por el que se aprueba el Reglamento de la Ley 38/2003, de 17 de noviembre, General de Subvenciones' URL:

	http://www.boe.es/boe/dias/2006/07/25/pdfs/A27744-27775.pdf [07/04/2014] European Commission (2000), 'Ayuda de Estado n° N 414/2000 - ESPAÑA Plan de Gasificación de la Comunidad Valenciana', URL: http://ec.europa.eu/competition/state_aid/cases/136830/136830_1153364_6_2.pdf [07/04/2014] European Commission (2008), 'State aid nº N 609/2007 - ESPAÑA Plan de Gasificación de la Comunidad Valenciana' URL: http://ec.europa.eu/competition/state_aid/cases/222460/222460_788966_2_1.pdf [02/04/2014] European Commission (2008), 'Ayuda de Estado nº N 609/2007 - ESPAÑA Plan de Gasificación de la Comunidad Valenciana', URL: http://ec.europa.eu/competition/state_aid/cases/222460/222460_788964_24_2.pdf [02/04/2014] Official Journal of the European Communities (2008), 'Authorisation for State aid pursuant to Articles 87 and 88 of the EC Treaty Cases where the Commission raises no objections', 2008/C 124/01, URL: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.C_.2008.124.01.0001.01.ENG [07/04/2014] Official Journal of the European Communities (2001), 'Authorisation for State aid pursuant to Articles 87 and 88 of the EC Treaty Cases where the Commission raises no objections', 2001/C 71/05, URL: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:C2001/071/05&from=EN [07/04/2014]

Tax expenditures

Excises and other specific taxes on energy use

Excise taxes

An excise tax is in place for gasoline, kerosene, diesel, LPG, Natural Gas and Fuel Oil used in the transportation sector. Exice taxes are published by the: *Dirección General de Tributos* (Subdirección General de Impuestos Especiales y Tributos sobre Comercio Exterior) of the Ministry of Economy (*Ministerio de Economía y Hacienda*).[100] Spain also applies a sale tax in volume terms (*Impuesto sobre las Ventas Minoristas de Determinados Hidrocarburos*) but abolished the system of additional regional taxes applied for motor fuels in 2008. Natural gas and LPG are exempt from any excises if used for heating purposes (also between the two reference years 2002 and 2011). Electricity since January 1998 has a Special Tax equivalent to 4,864% of the price

[100] In Spain, an special sale tax expressed in volume terms (*Impuesto sobre las Ventas Minoristas de Determinados Hidrocarburos*) is also put in place at national level.

supplied directly to the consumer.	
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	▪ A differentiated tax rate has been put in place between diesel, gasoline and LPG used for transportation. A lower tax rate applies to Heavy Fuel oil used for heating/process fuel purposes. ▪ Domestic and International Aviation fuels are exempt from excise duties ▪ Domestic and International Navigation fuels (Diesel and Heavy oil) are exempt ▪ A refund scheme is applied for diesel used for agriculture. Temporary fuel tax exemptions were put in place in 2008 for fisheries[101] ▪ Rail fuel (diesel) is exempt from excises ▪ Since 2006, a partial refund scheme is in place for diesel fuel used for farming activities and livestock[102] ▪ There is a reduced tax rate for LPG, Heavy fuel oil and diesel used in mining and farming sectors. ▪ Natural Gas used for heating purposes for households and businesses does not have excise rate (2002 and 2011) ▪ Liquid Petroleum Gas used for heating (business and households) is exempt from excises.

Amount calculated (benchmark: highest excise per unit of energy consumption)	Total	€ per unit of energy	€ per unit of CO2
	2002: € 29,568 mln 2011: € 14,152 mln	2002: € 7.98 / GJ 2011: € 3.84 / GJ	2002: € 104.53 / ton 2011: € 50.09 / ton
Amount calculated (benchmark: highest excise per unit of CO2	total	per unit of energy	per unit of CO2
	2002: € 19,897 mln 2011: € 14,152 mln	2002: € 5.37 / GJ 2011: € 3.84 / GJ	2002: € 70.34 / ton 2011: € 50.09 / ton

[101] The aids for the fisheries sector were addressed for fuel consumptions registered between 1/11/2004 and 131/10/2005

[102] The total amount of the refund scheme is equivalent to 78,71 €/1000 litres

emissions)			
Amount calculated (benchmark: proposal new energy taxation directive)	total	per unit of energy	per unit of CO2
	2002: € 4477 mln 2011: € 3632 mln	2002: € 1.21 / GJ 2011: € 0.99 / GJ	2002: € 15.83 / ton 2011: € 12.86 / ton
Information sources	**Sources of Information – Excise tax rates:** National Legislation: ▪ Law 24/2001 (*Ley 24/2001, de 27 de diciembre, de Medidas Fiscales, Administrativas y del Orden Social).URL:* http://www.boe.es/boe/dias/2001/12/31/pdfs/A50493-50619.pdf [26/05/2014] ▪ Law 49/1998 (*Ley 49/1998*, de 30 de diciembre, de Presupuestos Generales del Estado para 1999) URL: http://www.boe.es/diario_boe/txt.php?id=BOE-A-1998-30154 [06/04/2014] ▪ Law 23/2001 (*Ley 23/2001, de 27 de diciembre, de Presupuestos Generales del Estado para el año 2002*). URL:http://www.boe.es/boe/dias/2001/12/31/pdfs/A50423-50492.pdf [06/04/2014] ▪ Law 39/2010 (*Ley 39/2010, de 22 de diciembre, de Presupuestos Generales del Estado para el año 2011*). URL: https://www.boe.es/diario_boe/txt.php?id=BOE-A-2010-19703 [06/04/2014] ▪ Royal Decree 1517/2007 (*Real Decreto 1517/2007, de 16 de noviembre, por el que se establece un régimen temporal de ayudas al sector pesquero, para el mantenimiento de la competitividad de la actividad pesquera, acogidas al régimen deminimis*) URL:http://www.boe.es/boe/dias/2007/12/03/pdfs/A49815-49816.pdf [31/03/2014] ▪ National Plan for Strategic Coal Reserves 2006-2012 (2006), '*Plan Nacional de Resrva Estrategica de Carbon 2006-2012 y Nuevo modelo de desarrollo integral y sostenibile de las comarcas mineras*' URL: http://www.irmc.es/common/plan_carbon.pdf [04/04/2014] OECD (2013), 'Energy Prices and Taxes, Volume 2013 Issue 3. Third Quarter 2013', OECD Publishing. OECD (2013), 'Taxing Energy Use: A graphical Analysis', OECD Publishing. OECD (2013) 'Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels', OECD Publishing IEA (2009), 'Energy Policies of IEA Countries: Spain 2009 Review', OECD Publishing		

	Martini, R. (2012), "Fuel Tax Concessions in the Fisheries Sector", OECD Food, Agriculture and Fisheries Papers, No. 56, OECD Publishing. EC (2014) VAT Rates applied in the Member States of the European Union, Situation as of 13 January 2014, URL:http://ec.europa.eu/taxation_customs/resources /documents/taxation/vat/how_vat_works/rates/vat_rates_en.pdf [02/04/2014]. EC DG TAXUD (2002) Excise duty tables – April 2002, Ref 1.014, April 2002. EC DG TAXUD (2011) Excise duty tables, Part II – Energy products and electricity, Ref 1032, January 2011 **Sources of Information – energy balances:** IEA (2004), 'Energy Statistics of OECD Countries 2004', OECD Publishing. IEA (2013), 'Energy Statistics of OECD Countries 2013', IEA. IEA (2004), 'Energy Balances of OECD Countries: 2004', OECD Publishing. IEA (2013), 'Energy Balances of OECD Countries: 2013 Edition', IEA. **Sources of Information – energy prices:** IEA (2004), 'Energy Prices and Taxes, Vol. 2003/4', OECD Publishing. OECD (2013), 'Energy Prices and Taxes, Volume 2013 Issue 3. Third Quarter 2013', OECD Publishing. Eurostat (2014), Energy statistics – gas and electricity prices' URL: http://epp.eurostat.ec.europa.eu/portal/page/portal/energy/data/database, [Accessed: 18/03/2014]

Value Added Tax

Categories of energy supply to which a reduced VAT rate was applied in one or both of the reporting years	**VAT Rates** In 2002: A standard VAT (*Impuesto sobre el Valor Añadido*) rate of 16% was applied to all the energy products which are under the scope of the study (Fuel oil, Diesel, Natural Gas, Kerosene, Gasoline and Electricity) 2011: The 1st July 2010, the Standard VAT rate was increased from 16% to 18%. Automatically, the VAT rate for all the energy products was increased at 18% (no reductions for fossil fuels in the VAT rates were applied by the Spanish government).[103]
Standard rate	2002: 16% 2011: 18%

[103] In 2009, the Canary Islands (*Islas Canarias*) applied a special Indirect Tax of 5% instead of the 16% which was in place on the mainland.

Reduced rate[104]	2002: 7% 2011: 8%
Amount of support calculated (refer to Excel file)	2002: EUR 0 mln 2011: EUR 0 mln
Information sources	**Sources of Information for VAT Rates:** National Legislation: ▪ Law 37/1992 (*Ley del Impuesto sobre el Valor Añadido* – Ley 37/1992), URL: https://www.boe.es/buscar/act.php?id=BOE-A-1992-28740 [06/04/2014] ▪ Law 26/2009 (*Ley 26/2009 – de Presupuestos Generales del Estado para el año 2010*), URL: https://www.boe.es/diario_boe/txt.php?id=BOE-A-2009-20765 [6/04/2014] OECD (2013), 'Energy Prices and Taxes, Volume 2013 Issue 3. Third Quarter 2013', OECD Publishing. OECD (2013), 'Taxing Energy Use: A graphical Analysis', OECD Publishing. OECD (2013) 'Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels', OECD Publishing. IEA (2009), 'Energy Policies of IEA Countries: Spain 2009 Review', OECD Publishing EC (2014) VAT Rates applied in the Member States of the European Union, Situation as of 13 January 2014, URL:http://ec.europa.eu/taxation_customs/resources /documents/taxation/vat/how_vat_works/rates/vat_rates_en.pdf [02/04/2014]. EC DG TAXUD (2002) Excise duty tables – April 2002, Ref 1.014, April 2002. EC DG TAXUD (2011) Excise duty tables, Part II – Energy products and electricity, Ref 1032, January 2011 **Sources of Information – energy balances:** IEA (2004), 'Energy Statistics of OECD Countries 2004', OECD Publishing. IEA (2013), 'Energy Statistics of OECD Countries 2013', IEA. IEA (2004), 'Energy Balances of OECD Countries: 2004', OECD Publishing. IEA (2013), 'Energy Balances of OECD Countries: 2013 Edition', IEA.

[104] No reduced tax rate is applied for energy products under the scope of the study

	Sources of Information – energy prices: IEA (2004), 'Energy Prices and Taxes, Vol. 2003/4', OECD Publishing. OECD (2013), 'Energy Prices and Taxes, Volume 2013 Issue 3. Third Quarter 2013', OECD Publishing. Eurostat (2014), Energy statistics – gas and electricity prices' URL: http://epp.eurostat.ec.europa.eu/portal/page/portal/energy/data/database [Accessed: 18/03/2014] **Assumptions taken into account during the calculations:** - The calculation did not take into account of the differentiated VAT regime for fossil fuels in place for the autonomous community of the Canary Islands due to lack of data - Belgian conversion factors were used for almost all the sources taken into account (National conversion factors could not be found). - As no emission factors were found for sub-bitumen coal products, over the calculations the emission factor for bitumen were used

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

Special Corporate Income Tax Regime There is a special Corporate Income Tax rate in Spain which applies only for companies engaged in exploration and investigation of potential hydrocarbon reserves. This fiscal regime has been put in place in order to stimulate the discovery of potential or yet-to-find oil and gas fields within the country.	
Type of tax expenditure	▪ Advantageous tax regime for intangible assets, such as geological seismic work and test drilling evaluation (Annual rate equivalent to 50%) ▪ Possible reduction of the tax rate, according to the 'depletion factor reserve' (to a limit of 50% of the tax base) ▪ Favourable compensation regime for offsetting tax-losses
Objectives	The stated objectives of this tax regime are to encourage the exploration of hydrocarbon reserves in the country.
Conditionality for eligibility	The beneficiary of this subsidy must be an oil & gas company driven only by investigation and exploration of hydrocarbons.
Conditionality for magnitude of subsidy	N/A

Fuel	Oil and Gas (Hydrocarbons)
Total amount	N/A
Information sources	Ernst & Young (2011), 'Global Oil and Gas Tax Guide 2011', URL: http://www.eisourcebook.org/cms/Global%20Oil%20and%20Gas%20Tax%20Guide%202011.pdf [31/03/2014]

Tax expenditures in royalties

The royalties system put in place in Spain consists of a special corporate tax regime (which is described above) and by a set of special rules which could be applicable to Oil & Gas Companies.

The **depletion factor reserve**[105] could be used only for companies which are involved only into exploration and exploitation of hydrocarbons. These companies could be eligible for a reduction of their tax base, and according to the Spanish law could be equivalent to a reduction of 40% of the amount of the original tax base, or up to 50% of the tax base. The total amount of the depletion factor is **also conditional** to investments oriented at dismantling old fields or dismantling inactive marine rigs.

An advantageous tax losses compensation regime is also in place for companies involved in exploration and production activities and operators do not have a time limit for offsetting the tax losses[106]

The companies have also a **special regime for intangible assets**,[107] which could be amortized at a maximum annual rate of 50%. Also, there is no maximum amortization period for intangible assets.

A **surface tax** is applicable for oil and gas companies and it is calculated on a yearly basis on the amount of land hectares used for exploration and/or exploitation purposes. However, in case of research licences, the surface tax is considered as a part of an **intangible asset** and could **depreciated** according to the special regime described above.

Source:
Ernst & Young (2011), 'Global Oil and Gas Tax Guide 2011', URL: http://www.eisourcebook.org/cms/Global%20Oil%20and%20Gas%20Tax%20Guide%202011.pdf [31/03/2014]

[105] The depletion factor reserve, is an accounting concept used in the mining and petroleum industries. It is mainly used as a deduction which allows an operator to account when product's reserves are declining.
[106] The companies are not subject to the normal 15-years maximum timeframe.
[107] Itangible assets could be exploration expenses, exploration evaluation and restoration of wells.

Sweden

Reporting years: 2005 and 2010

Direct budgetary support to consumers/users

N.a.

Direct budgetary support to producers

Direct budgetary support to primary producers

N.a.

Direct budgetary support for R&D purposes

According to the IEA Database, Sweden spent 0.800 million SEK (90,000 EUR) on *government* R&D for fossil fuels in 2004, and nothing in 2010. The modalities of these expenditures are not reported.

Public investments in energy infrastructure

N.a.

Tax expenditures

Excises and other specific taxes on energy use

Excise rates applicable in Sweden can be found in the "Calculus conventions 2014", http://www.regeringen.se/sb/d/16894/a/225482	
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	Excise duties in Sweden are differentiated according to the following criteria: ▪ Fuel type: gasoline, diesel, LPG, coal, fuel oil, natural gas ▪ Application: higher rates apply to transport applications than to heating applications; ▪ Sectors participating in the ETS are only subject to the "energy taxation" component of the tax, not to the "CO2 component" ▪ Industry (non-ETS), agriculture, forestry and aquaculture are subject to reduced rates (30% of standard rate) ▪ Diesel for agriculture and forestry is subject to a refund ▪ Some energy intensive sectors enjoy a reduced tax on diesel

<table>
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Until 2015, there is a special rebate for energy intensive companies if the CO2 tax paid on heating or stationary applications exceeds 1.2% of their turnover
Households in northern Sweden enjoy a reduced tariff on electricity
Companies participating in the "energy efficiency programme" are exempted for the energy tax on electricity for a 5-year period
There is a specific tax on sulfur for peat, coal, petroleum coal and other solid or gaseous fossil fuels
In CHP plants that do not participate in the ETS, the share of the fuel corresponding to electricity production is exempted from taxation; the tax rate applying to the share corresponding to heating is 30% of the standard tariff
CHP plants that do participate in the ETS are exempted from the CO2 tax; the energy tax only applies to heating, with a tariff equal to 30% of the standard tariff

Due to data limitations, there are several taxes and rebates for which we have not been able to estimate the corresponding tax expenditures: the rebates for CHP plants, the specific exemptions for energy intensive companies, the sulfur tax.
</td></tr>
<tr><td rowspan="2">Amount calculated (benchmark: highest excise per unit of energy consumption)</td><td>total</td><td>per unit of energy</td><td>per unit of CO2</td></tr>
<tr><td>year: 2005
€ 4279 mln
year: 2010
€ 5439 mln</td><td>€ 3.94 / GJ
€ 5.10 / GJ</td><td>€ 89.39 / ton
€ 118.16 / ton</td></tr>
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€ 118.16 / ton</td></tr>
<tr><td rowspan="2">Amount calculated (benchmark: proposal new energy taxation directive)</td><td>total</td><td>per unit of energy</td><td>per unit of CO2</td></tr>
<tr><td>year: 2005
€ 406 mln
€ 155 mln</td><td>€ 0.37 / GJ
€ 0.15 / GJ</td><td>€ 8.47 / ton
€ 3.37 / ton</td></tr>
</table>

year: 2010			
Information sources	http://www.regeringen.se/sb/d/16894/a/225482 Taxing Energy Use e-mail correspondence with Swedish tax administration		

Value Added Tax

N.a.

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

N.a.

Tax expenditures in royalties

N.a.

United Kingdom

Reporting years: 2000 and 2011

The UK has progressively reduced subsidies to fossil fuels over the past 30 years in line with EU and OECD guidelines. There are no end-user price controls, with all prices being set by the market (Blyth et al., 2013)[108].

Direct budgetary support to consumers/users

Schemes such as winter fuel payments for the elderly or cold-weather payments do not depend on the price of fuels and are provided in-cash to eligible households. Most of the remaining measures target consumption technologies such as low-carbon vehicles and hydrogen refuelling equipment rather than energy use per se (OECD, 2013).

Direct budgetary support to producers

Direct budgetary support to primary producers

Name of the scheme and short description	From 2004 to 2009, the **government subsidised maintaining access to viable coal reserves at twelve deep mines**.
Final beneficiary	Mine operators.
Direct beneficiary	
Aid category	
Variability	
Objectives	They were required to ensure investments under unfavourable global market price conditions.
Conditionality for eligibility	
Conditionality for magnitude of subsidy	
Source of funding	Central government.
Fuel	Coal.
Total amount	The total subsidies amounted to **GBP 52.8 million** over the five years (which are outside the scope of the present study). Today the selling price of domestic coal in the United Kingdom is freely negotiated. Domestic coal prices are competitive with imports. Since 2002, no state aid is given to support coal mine operating

[108] House of Commons Environmental Audit Committee – Energy subsidies in the UK – Written Evidence, URL: http://www.publications.parliament.uk/pa/cm201314/cmselect/cmenvaud/writev/61/energy.pdf

	costs and since 2008 none to maintain access to already exploited coal reserves.
Information sources	IEA (2012) Energy Policies of IEA Countries – The United Kingdom, URL: http://www.oecd-ilibrary.org/energy/energy-policies-of-iea-countries-united-kingdom-2012_9789264170988-en;jsessionid=ejp6733p48qjk.x-oecd-live-01

Name of the scheme and short description	**UK Coal Operating Aid Scheme (data for 2000-2002)** The UK Coal Operating Aid Scheme (UKCOAS) was a temporary programme designed to provide short-term financial support to otherwise viable coal producers. It was introduced in 2000 for a period of three years over which a total amount of GBP 162 million was to be spent in four tranches. The programme was approved by the European Commission under the rules of the former European Coal and Steel Community. Applications were closed after 31 December 2002.
Final beneficiary	Mine operators.
Direct beneficiary	
Aid category	
Variability	
Objectives	They were required to ensure investments under unfavourable global market price conditions.
Conditionality for eligibility	
Conditionality for magnitude of subsidy	
Source of funding	Central government.
Fuel	Coal.
Total amount	It was introduced in 2000 for a period of three years over which a total amount of **GBP 162 million was to be spent in four tranches**. For the purpose of the present study, one third of this amount, equivalent to € 66 million, is allocated to the year 2000.
Information sources	OECD (2013) Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels

Direct budgetary support for R&D purposes

Name of the scheme and short	No specific scheme – IEA estimates presented

description	
Final beneficiary	
Direct beneficiary	
Aid category	
Variability	
Objectives	A Spending Review undertaken in late 2010 concluded that energy RD&D continues to be a political priority. DECC has been allocated more than GBP 150 million over four years to support the development and demonstration of low carbon energy technologies. The government has also committed GBP 1 billion for early demonstration of CCS-related technologies for coal-fired power plants and potentially for gas-fired ones (IEA, 2012).
Conditionality for eligibility	
Conditionality for magnitude of subsidy	
Source of funding	IEA figures below refer to government R&D, not clear whether this includes lower level government funding or only federal level.
Fuel	Oil, gas and coal as well as CCS reported below.
Total amount	The following are for Government R&D in million EUR (nominal). Sum of categories "oil and gas" and "coal" and separate figures reported for "CO2 capture and storage". **Oil, gas and coal**: 2000: € 7.25 mln 2011: € 13.4 mln **CO_2 capture and storage**: 2000: € 0 mln 2011: € 39.28 mln (2010: € 68.65 mln – year also included due to important fluctuation between across the years).
Information sources	IEA (2014), *IEA Energy Technology RD&D Statistics*, DOI: 10.1787/enetech-data-en [accessed: 27/05/2014]. IEA (2012) Energy Policies in IEA Countries – The United Kingdom 2012 Review, URL: www.iea.org/publications/freepublications/publication/UK2012_free.pdf

Public investments in energy infrastructure

The United Kingdom has a network of 4 800 km of private and government-owned oil pipelines of which 2400 are privately owned. The government also operates a separate oil pipeline system – the Government Pipeline and Storage System (GPSS) – supplying a number of military airfields and with connections to some commercial airports, i.e. Stansted and Manchester (IEA, 2012).

Tax expenditures

Excises and other specific taxes on energy use

Energy sales are subject to **excise taxes** which **are levied on oil products used for both commercial and non-commercial purposes**.

Name of the tax scheme and short description	**Absence of excise duties on specific fuel types/for specific purposes**		
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	No excise duties on fuel (kerosine, diesel, heavy fuel oil) used in the categories: ▪ international bunkers ▪ international marine bunkers. Absence of excise duty on LPG, natural cas, coal and electricity used for heating purposes (both business and non-business). Tax rate for LPG used for agriculture, horticulture, pisciculture and forestry is zero in 2011.		
Amount calculated (benchmark: highest excise per unit of energy consumption)	total	per unit of energy	per unit of CO2
	2000: € 19,735 mln 2011: € 23,187 mln	2000: € 3.26/ GJ 2011: € 3.95 / GJ	2000:€ 42.25 / ton 2011: € 48.33 / ton
Amount calculated (benchmark: highest excise per unit of CO2 emissions)	total	per unit of energy	per unit of CO2
	2000: € 19,735 mln 2011: € 23,187 mln	2000: € 3.26/ GJ 2011: € 3.95 / GJ	2000:€ 42.25 / ton 2011: € 48.33 / ton
Amount calculated (benchmark: proposal new energy taxation directive)	total	per unit of energy	per unit of CO2
	2000: € 4411 mln 2011: € 3704 mln	2000: € 0.73 / GJ 2011: € 0.63 / GJ	2000: € 9.44 / ton 2011: € 7.72 / ton
Information sources	OECD (2013) Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels IEA (2004), 'Energy Statistics of OECD Countries 2000-2001', OECD Publishing. IEA (2013), 'Energy Statistics of OECD Countries 2013', IEA. IEA (2002), 'Energy Prices & Taxes – Quarterly Statistics, Fourth Quarter 2001', OECD/IEA IEA (2013), 'Energy Prices and Taxes – Quarterly Statistics, Third Quarter 2013', OECD/IEA IEA, Energy Balances of OECD Countries EC DG TAXUD (2002), 'Excise duty tables – 2000', Ref 1010, November 2000 EC DG TAXUD (2011), 'Excise duty tables, Part II – Energy products and electricity', Ref 1032, January 2011 EC (2014) VAT Rates applied in the Member States of the		

	European Union, Situation as of 13 January 2014, URL:http://ec.europa.eu/taxation_customs/resources/documents/taxation/vat/how_vat_works/rates/vat_rates_en.pdf [02/04/2014].

In addition, the literature mentions excise related subsidies that could not yet be verified but that are most probably already included in the data that was used for the calculation and therefore can be assumed to be included in the information provided above. These include:

Name of the tax scheme and short description	**Reduced Rate of Excise for Red Diesel (no data available)**
Summary of fuels and use(r)s to which reduced rates or exemptions applied in the reporting years	The use of "red diesel" (i.e. dyed diesel) and other such petroleum products in the United Kingdom is subject to a reduced rate of excise duty. Eligible uses include off-road vehicles such as those used for agriculture, road construction or clearing snow.
Information sources	OECD (2013) Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels

Energy sales are also subject to a **Climate Change Levy (CCL).** Businesses users pay the CCL on purchases of oil products (excluding transport fuels), natural gas, coal and electricity. There are certain discounts and exemptions from the CCL, depending on the source and use of the fuel (power generators are exempt, for example).

Value Added Tax

Categories of energy supply to which a reduced VAT rate was applied in one or both of the reporting years	The domestic consumption of both heating fuel and power in the UK is subject to a much lower rate of VAT than that applied to regular products. **Reduced VAT rate applies to:** ▪ Different types of fuels that can be used when used for heating non-business purposes (e.g. natural gas, coal, electricity). ▪ A reduced VAT rate of 5% is applied for LPG used for heating both business and non-business sectors in 2000, only for heating non-business in 2011 ▪ A reduced VAT rate of 5% is applied for Diesel used for heating purposes (business and non business) in 2000 and and only for heating business use in 2011 ▪ Fuel Oil and Kerosene used for heating (domestic uses) had a VAT rate of 5% since 2000. In 2011, Kerosene's VAT rate was equal to the standard VAT rate

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A discounted VAT rate of 17,50% (instead of 20%) is applied for Gas Oil/Diesel used for heating (business sector) in 2011. The VAT rate for Diesel used for heating purposes (with deliveries of less than 2300 liters) in 2000 was 5%
A reduced VAT rate of 5% is applied for LPG used for heating for non-business purposes (2011)
A reduced VAT rate of 5% is applied for Coal and Coke products used for domestic heating purposes (2011)
The VAT rate for applied for LPG and Methane in 2000 was 5% (for domestic uses and deliveries of less than 2300 liters)

Standard VAT rate applies to:

The above mentioned energy sources/fuels when not used for heating purposes
Other fuels, i.e.

Petrol
Kerosene
Heavy fuel oil

</td></tr>
<tr><td>Standard rate</td><td colspan="3">2000: 17.5%
2011: 20%</td></tr>
<tr><td>Reduced rate</td><td colspan="3">2000: 5%
2011: 5%</td></tr>
<tr><td rowspan="2">Amount of support calculated</td><td>total</td><td>per unit of energy</td><td>per unit of CO2</td></tr>
<tr><td>2000: € 2677 mln
2011: € 4361 mln</td><td>2000: € 1.56 / GJ
2011: € 2.82 / GJ</td><td>2000: € 20.03 / ton
2011: € 37.12 / ton</td></tr>
<tr><td>Information sources</td><td colspan="3">OECD (2013), ‘Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels’, OECD Publishing
IEA (2004), ‘Energy Statistics of OECD Countries 2000-2001’, OECD Publishing.
IEA (2013), ‘Energy Statistics of OECD Countries 2013’, IEA.
IEA (2002), ‘Energy Prices & Taxes – Quarterly Statistics, Fourth Quarter 2001’, OECD/IEA
IEA (2013), ‘Energy Prices and Taxes – Quarterly Statistics, Third Quarter 2013’, OECD/IEA</td></tr>
</table>

According to the OCED, the UK "subsidizes the use of fossil fuels by households by almost £4 billion per year (OECD, 2013) by charging them 5 per cent VAT instead of the standard 20 per cent rate". According to Blyth et al (2013) by far the largest subsidy for fossil fuels in the UK relates to the lower VAT rate of 5% for domestic energy supplies (compared to 20% for the economy as a whole). Since VAT is a general economy-wide tax, any reduction from the general national rate is considered by the OECD to be a subsidy. Domestic energy supplies have always been taxed at a lower rate in the UK, since being raised from zero to 5% in 1994, but this practice is unusual, as most countries tax energy at the prevailing rate of VAT (see Section 3.1). In 2011, this tax was worth £81m for coal, £380m for oil and £3,510m for gas (Blyth et al, 2013).

Tax expenditures in social contributions and personal income taxes

N.a.

Tax expenditures in corporate income taxes

Name of the scheme and short description	**Tax breaks for North Sea oil and gas production**. Most new oil and gas fields in the North Sea pay as little as 30 per cent tax because of tax breaks. 80 per cent (32 out of 40) of oil and gas projects started in the North Sea since Budget 2009 have done so benefitting from a **'field allowance'**. This allowance was first introduced in 2009 and later extended to encourage the development of small or technically-challenging fields. The field allowance provides companies with a partial exemption from the Supplementary Charge. Relief is calculated at the level of the field but is provided at the company-level. Unclaimed allowances can be carried forward.
Type of tax expenditure	In theory, oil and gas production in the UK is subject to a high rate of taxation: ▪ a higher corporation tax rate of 30% on profits from oil and gas production ▪ an extra 'supplementary charge' of another 32%, taking the tax rate to 62%. In some fields, this charge is reduced by 'field allowances' In addition, profits from older fields (before 1993) must pay the old Petroleum Revenue Tax (PRT) of 50%, which can be deducted from their corporation tax base. In practice this means profits from around 30 such fields will pay a marginal tax rate of 81 per cent (DECC, 2013). In practice, profits from most newer fields are not subject to anything close to the 62% tax rate because of the rapid expansion of tax breaks called field allowances.
Objectives	Field allowances were introduced by Alistair Darling in Budget 2009 and have since been expanded by George Osborne. Field allowances give tax breaks to encourage production from "small or technically

	challenging new fields". In 2012 new field allowances have been created, and an existing one has been expanded: "to increase investment and production in fields and projects that are economic but - for tax reasons - are considered to be commercially marginal. They support the Government's overall aim of maximising the economic production of the UK's hydrocarbon resources" (HMRC, 2013).
Conditionality for eligibility	Before 2012, qualifying fields had to be small in size, feature ultra-high pressure or temperature, possess ultra-heavy oil reserves, or be remote deep-water gas fields. In March 2012 and July 2012 the Government announced further categories of qualifying field in respect of particularly deep fields with sizeable reserves, and large shallow-water gas fields. These changes came into force on 21 December 2012. This extension is expected to generate revenue losses of about GBP 20 million per year (OECD, 2013). The field allowance is available for a company that is a licensee in an eligible oil field, being an oil field which is an additionally-developed oil field or a new oil field. A new oil field is a qualifying oil field and one which receives its first authorisation of development (in whole or part) on or after 22 April 2009. The field allowance applies to accounting periods ending on or after that date. However, a field that has been decommissioned and is then redeveloped can qualify for the field allowance if certain conditions are fulfilled, see OT21407 below. A qualifying field is a field that on the authorisation day is a small field, an ultra heavy oil field, an ultra high pressure/high temperature oil field or a deep water gas field, as defined in the legislation. Fields continue to be determined by DECC on geological grounds. Data published by DECC shows that since field allowances were introduced in 2009, 80 per cent of newly-approved oil and gas fields have benefitted from one of these tax breaks (DECC, 2013a)
Conditionality for magnitude of subsidy	The field allowance provides companies with a partial exemption from the Supplementary Charge. Relief is calculated at the level of the field but is provided at the company-level.
Fuel	Oil and gas.
Total amount	Allowances have been given since Budget 2012 that are worth over £800 million in direct subsidy to the oil and gas industry (FoE, 2013). The total estimated or reported amount of tax expenditure in 2012 was estimated to be € 1 billion (FoE, 2013). The 2012 extension of the field allowances to very deep fields with sizeable reserves, and large shallow-water gas fields was expected to generate revenue losses of about GBP 20 million per year (HM Treasury, 2012).
Government's position	It must be noted that the governments position is that this is not a fossil fuel subsidy.

	The government argues that "Oil and gas produced in the UK is subject to a tax on profits of 62% for new fields and 81% for older fields—significantly higher than the mainstream corporation tax rate. This ensures the taxpayer benefits from highly profitable fields." "The Government has introduced field allowances for more challenging categories of field that are economic, but commercially marginal at the high rate of tax. Allowances support projects which would not have gone ahead at 62% or 81% tax rates. Such fields are relieved of the 32% supplementary charge for a portion of their profits—but they still pay ring fence corporation tax at 30% for this portion, higher than the mainstream corporation tax rate." "The Government does not accept the assertion that the oil and gas tax regime represents a subsidy in any form. Even taking into account the allowances, oil and gas companies pay a higher rate than other companies on their ring fence profits. The tax rates and associated allowances are designed in such a way to maximise the economic production of oil and gas, while ensuring a fair return for the taxpayer." (House of Commons Environemntal Audit Committee, 2014)
Information sources	FoE (2013) Briefing: Fossil fuel tax breaks in the UK DECC (2013) DECC, 'Government Revenues from UK oil and gas production', https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/15756/4579-og-revenue-table.pdf DECC (2013a) 'Full Field Approvals', URL: www.gov.uk/government/uploads/system/uploads/attachment_data/file/49932/Full_List_of_Approvals__January_2013_.xls HMRC (2013) OT21405 - Field allowance: what is the field allowance?, URL: http://www.hmrc.gov.uk/manuals/otmanual/ot21405.htm House of Commons Environmental Audit Committee (2014) Energy subsidies: Government Resonse to the Committee's Ninth Report of Session 2013-14, URL: http://www.publications.parliament.uk/pa/cm201314/cmselect/cmenvaud/1103/1103.pdf

Tax expenditures in royalties

Taxation of the oil and gas sector in the United Kingdom occurs through a variety of taxes. Fields approved for development prior to 16 March 1993 remain subject to the old Petroleum Revenue Tax (PRT), which was instituted in 1975. The PRT is a project-based tax that is levied at a rate of 50% of the profits from a given field. It allows for the full deduction of both operating and capital expenditures. The PRT does not,

however, allow the deduction of interest costs and other financing charges from taxable profits (OECD, 2013).

Subsidy	**Amount involved**
Petroleum Revenue Tax (PRT)-related breaks/exemptions	Petroleum: estimated 196 million EUR (159 million GBP) in 2011; Natural gas: estimated 149 million EUR (121 million GBP) in 2011 (OECD, 2013)

Meanwhile, oil and gas corporations are also subject to a modified version of the regular corporation tax, namely the Ring-Fence Corporation Tax (RFCT). The imposition of a "ring fence" around upstream oil and gas activities means that these particular activities are to be treated separately for tax purposes from any other trade in which oil and gas companies may be engaged. This therefore allows upstream oil and gas activities to be taxed differently at the company-level. Differences in taxation include, for instance, the impossibility for companies to use losses in other activities as deductions against the income arising from oil and gas extraction (OECD, 2013).

While all fields are subject to the RFCT, those that were approved for development prior to 16 March 1993 can deduct the amount of PRT taxes paid from their RFCT tax base. This ensures that the fields that are still subject to the old PRT regime are not taxed twice on the same profits. In addition, all types of fields are liable to the so-called Supplementary Charge (SC), which was introduced in the Finance Act of 2002. The SC is a 32% tax on profits from oil and gas production that is levied on top of the RFCT (OECD, 2013).

The immediate write-off of both capital and exploration-and-development expenditures is normally considered under the systems in many countries to amount to a preferential tax treatment. The reason is that in calculating taxable profits in most income-tax systems, capital expenses are allocated over the period to which they contribute to earnings.

Allowing the immediate writing-off these types of expenditure therefore provides companies with something akin to a zero-interest loan from the government since it delays the collection of taxes. A present-value calculation would indeed show a positive transfer from the government to the companies benefiting from such provisions (OECD, 2013).

However, when combined with impossibility for companies to deduct interest costs and other financing charges, the immediate write-off of both capital and exploration-and development expenditures may not be considered a preferential tax treatment. This is due to the fact that this particular combination of tax provisions may approximate what is known as a "cash-flow" tax system. Cash-flow tax systems can be theoretically equivalent to the more common imputed-income tax systems where the objective is to levy a neutral business tax (Boadway and Bruce, 1984). For that reason, provisions such as the expensing of exploration and development costs may not be preferential tax provisions in the particular case of the United Kingdom (OECD, 2013).

Reference:

OECD (2013). Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels 2013, http://www.oecd-ilibrary.org/environment/inventory-of-estimated-budgetary-support-and-tax-expenditures-for-fossil-fuels-2013_9789264187610-en, accessed 11/02/13.

Annex B: List of Member State experts

Member State	Partner	Expert
Austria	IEEP	Bettina Kretschmer
Belgium	VITO	Hans Michiels
Bulgaria	IEEP	Keti Medarova-Bergstrom
Croatia	BIO (Deloitte)	Martina Aleksic
Cyprus	BIO	Andreas Mitsios
Czech Republic	BIO	Andreas Mitsios
Denmark	BIO	Adrian Tan
Estonia	BIO	Marie Kutser
Finland	VITO	Caroline Lemeire
France	BIO	Benoît Tinetti
Germany	IEEP	Bettina Kretschmer
Greece	BIO	Andreas Mitsios
Hungary	IEEP	Andrea Illes
Ireland	IEEP	Sirini Withana
Italy	IEEP	Daniela Russi
Latvia	subcontractor	Andra Blumberga
Lithuania	subcontractor	Viktorija Bobinaite
Luxembourg	VITO	Hans Michiels
Malta	subcontractor	Jonathan Cauchi
Netherlands	IVM	Frans Oosterhuis
Poland	BIO	Lidia Wisniewska
Portugal	BIO	Fabio Menten
Romania	subcontractor	Raluca Alexandru
Slovakia	BIO	Martina Solska
Slovenia	BIO (Deloitte)	Martina Aleksic
Spain	IEEP	Daniela Russi
Sweden	VITO	Caroline Lemeire
United Kingdom	IEEP	Leonardo Mazza

Annex C: Share of fossil fuels in electricity production by Member State

	reporting year in period 2000-2005	most recent reporting year
Austria	26,6%	31,4%
Belgium	38,4%	39,7%
Bulgaria	58,7%	53,5%
Croatia	40,4%	40,4%
Cyprus	100,0%	98,1%
Czech Rep.	76,0%	59,8%
Denmark	82,8%	66,2%
Estonia	99,0%	91,5%
Finland	43,4%	41,0%
France	9,2%	9,8%
Germany	62,7%	58,6%
Greece	93,1%	81,4%
Hungary	55,9%	49,2%
Ireland	92,9%	86,4%
Italy	79,8%	72,4%
Latvia	30,6%	45,5%
Lithuania	17,7%	66,7%
Luxembourg	0,0%	0,0%
Malta	100,0%	100,0%
Netherlands	90,7%	85,8%
Poland	96,7%	92,6%
Portugal	80,7%	46,2%
Romania	61,6%	47,4%
Slovakia	27,9%	24,8%
Slovenia	36,6%	35,4%
Spain	58,6%	46,0%
Sweden	2,5%	5,0%
United Kingdom	73,9%	75,8%

Source: Eurostat data, except Croatia. The figure for Croatia is the capacity of power plants in that country in 2010 (source: http://www.eihp.hr/hrvatski/projekti/unece/pdf/bibilioteka/Energy%20profile%20-%202010.pdf).