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Energy Taxation in Europe:

Current Status – Drivers and Barriers – Future Prospects

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Abstract

The use of energy taxation as an instrument in environmental policy has increased drastically over the past decade or so. Against this backdrop, the objective of this report is to map the use of energy related taxation at the EU level and in cental Member States, and to understand the driving forces and barriers governing the use of these instruments. In so doing, the study focuses on political processes at both the national and supranational level that influence the use and evolution of energy taxation. The report first gives a brief introduction to the negotiations on taxation of energy products in the EU. It then focuses on the levels of taxation in the Member States, esepecially the taxation of electricity production and consumption for industries and households. Country profiles are provided for all Member States, allowing for easy comparison and in-depth studies of domestic energy taxation systems.

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Keywords

energy taxation, EU countries, electricity production, electricity consumption

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Executive summary

The use of energy taxation as an instrument in environmental policy has increased drastically over the past decade or so (OECD 2001). Against this backdrop, the objective of this report is to map the use of energy related taxation at the EU level and in central Member States, and to understand the driving forces and barriers governing the use of these instruments. In so doing, the study focuses on political processes at both the national and supranational level that influence the use and evolution of energy taxation.

The report first gives a brief introduction to the negotiations on taxation of energy products in the EU. It then focuses on the levels of taxation in the Member States, paying special attention to the taxation of electricity production and consumption for industries and households. Country profiles are provided for all Member States, allowing for easy comparison and in-depth studies of domestic energy taxation systems.

The findings from the comparative assessment are then analysed further by looking at the most important political processes governing the European energy market today. Close attention is paid to *inter alia* the ongoing process towards energy market liberalisation; energy security measures; environmental policies including climate change politics, greenhouse gas emissions trading systems and the establishment of a market for renewable energy certificates; and the EU enlargement scheduled for 2004.

The negotiations on a common framework for taxation of energy products in the EU have lasted for more than a decade. The most contentious issues in the negotiations were: the possibilities for setting national tax levels below the EU minimum, tax breaks for certain sectors, and the taxation of diesel road fuel. In the end, these issues were resolved and agreement on the directive was reached in April 2003. The directive is seen as a watered down version of previous proposals, with very low minimum tax rates and a long list of exemptions.

A closer look at the minimum tax rates in relation to current national tax rates result in two important findings: First, a geographical difference in compliance rates is shown. Northern-European countries generally have higher compliance rates in comparison with their southern counterparts. Second, large differences in the compliance rates for the various fuel types are present. This may in some cases be explained by examining the level at which the proposed minimum tax rate is set. In other cases, however, an in-depth study of national taxation rates and the dynamics governing these processes at the domestic level is necessary to understand these differences.

The taxation of electricity production- and consumption is found to vary substantially across the EU. The north-south divide is present also here, although there are some notable exceptions. Greater differences are found when examining the taxation of electricity consumption for industry versus households. In general, industry is subject to both lower

electricity prices and –taxes. The exception here is the UK, where taxation of electricity consumption is placed solely on industries. An understanding of the dynamics behind taxation of industry and households requires a thorough analysis of national policies, focusing in particular on revenues raised from the various tax bases.

Differences in the share of taxes in electricity prices are also identified through historical data. This analysis shows that whereas the relative share of taxation in electricity prices has increased in several countries, and in some cases substantially, it has decreased in other countries over the same period. Further analyses of this process require comparisons to be made on the basis of historical changes in electricity prices and taxation, in combination with a better understanding of national policies in the same period.

Thsecond phase of the project identifies and discusses some of the key driving forces governing the use and evolution of energy taxes in the EU and key Member States. First, the driving forces are identified and briefly explained. Secondly, the interplay between the respective driving forces and the issue of energy taxation in general is discussed, with a special focus on taxation of electricity. The key driving forces identified and discussed are: (i) EU internal market regulations; (ii) Energy liberalisation and deregulation; (iii) Energy security; (iv) Environmental policy; and (v) Other policy processes, including European enlargement.

1. Introduction

Focusing on the polluter pays principle, countries have increasingly sought to internalise the (negative) external costs of current production and consumption patterns. Over the past decade or so, the use of economic instruments within environmental policy has increased drastically (OECD 2001). Environmentally related taxation is an important instrument in this regard, mainly in its potential to facilitate a shift towards more sustainable production and consumption patterns. That said, its function as a revenue raiser should not be overlooked. The revenue from environmentally related taxes[1] average at roughly 2% of GDP (or about € 320 billion[2]) in OECD member countries (OECD 2001). The majority of this revenue is raised from taxation on motor fuels and motor vehicles, although taxes are also increasingly placed on electricity consumption and production, seeking to control the production and use of electricity and limit the emissions of greenhouse gases and air pollutants in general.

The objectives of this report are to map the use of energy related taxation at the EU level and in key central Member States, and to understand the driving forces and barriers governing the use and evolution of these mechanisms. Having provided an overview of key driving forces, we then establish pathways for the future development of energy taxation (in particular taxation of power) in the EU. In order to meet these research objectives, the project seeks to answer the following research questions, with emphasis on questions 1 and 2:

1. What is the status for taxation of energy products (electricity production and – consumption) in the EU and central Member States?
2. What are the drivers and barriers for the use of energy related taxation in the EU and central Member States?
3. What seems to be probable development paths for the use of energy related taxation in the EU?

In answering these questions we will examine some of the most important political processes governing the European energy market today, and their effects on the development and use of energy related taxation instruments. Close attention will be paid to inter alia:

- EU internal market regulations and considerations
- the ongoing process towards energy market liberalisation,
- energy security measures,

[1] OECD defines environmentally related taxes as: 'any compulsory unrequited payment to general government levied on tax-bases deemed to be of particular environmental relevance'.

[2] Estimated from OECD Environmentally Related Taxes database. Numbers calculated from 1995 USD using current exchange rates. More than 90% of the revenues are raised from motor fuels and motor vehicles.

- environmental policies including greenhouse gas emissions trading and renewable energy measures
- the EU enlargement scheduled for 2004, and the possibilities for the use of the enhanced cooperation procedure.

The analytical framework utilised in the project will focus on two levels of political decision-making: national and supranational. More specifically, the project seeks to understand national positions in EU Member States on the basis of several political factors, including environmental objectives, social concerns, fiscal responsibility, and commercial interests. Supranational processes will be studied both at the EU level, focusing on the processes in the European Council, Parliament, Commission, Directorates General (DGs) and interest groups, and at the international level, studying the development and impact of international political processes in general and multilateral environmental agreements in particular.

Having established a clear picture of the political dynamic governing the national and supranational processes, we seek to answer the following question: To what degree has the supranational process(es) influenced the implementation of policies on a national level (and vice versa)? What are the drivers and barriers for the use of energy related taxation in the EU? By providing answers to these questions we then seek to develop scenarios for the energy related taxation in the EU in particular, and taxation of electricity production and – consumption in particular.

The methodology of the project is based on literature studies, available statistics, as well as (semi-structured) in-depth interviews with key actors (e.g., experts and decision makers on political-, organisational, and academic level) in the taxation debate.

The outline of the report is as follows: Chapter 2 presents the current status of energy taxation in the European Union, giving first a brief introduction to the directive for minimum levels of taxation for energy products in the EU in section 2.1, including the history of the negotiations and the final results. Section 2.2 presents the current levels of taxation of energy products in the EU Member States. Section 2.3 focuses on the level of taxation placed on electricity consumption and production, based on the latest available statistics from the OECD and the IEA.

Chapter 3 presents an analysis of the main driving forces governing the use and development of energy taxes in the EU and their interplay with energy taxation. Section 3.1 examines energy taxation in the context of EU internal market regulations. The impact of the European energy liberalisation process on energy taxation is discussed in section 3.2, whereas the implications of EU energy security considerations on energy taxation are in focus in section 3.3. Environmental policies, both at international and Member State level, and their relevance to energy taxation are discussed in section 3.4. Here, special attention is paid to climate change policies, including greenhouse gas emissions trading, and the phasing in of renewable energy sources, including the establishment of a green certificate system. Finally, section 3.5

takes a look at selected political processes, such as the enlargement of the EU and the possibilities for enhanced cooperation, and their relevance for energy taxation considerations.

Chapter 4 explores possible pathways for the future use of energy taxation in the EU in light of the driving forces identified in Chapter 3. (Note: paragraph will be expanded for phase 3)

Annex 1 presents current levels of energy taxation in all EU Member States with a short overview of the latest developments. Annex 2 provides an overview of the EU minimum levels of energy taxation in relation to current national minimum levels for all energy products.

2. Current status of energy taxation in the EU

In its original 1997 proposal for a Directive on taxation of energy products the Commission of the European Communities stated that: '[t]he introduction of environmentally effective and economically efficient policy instruments in order to minimise negative impacts on the environment and ensure rational use of the natural resources is an essential goal of the EU environmental policy'[3]. This chapter seeks to map the current use of such fiscal instruments for the production and consumption of energy products in the EU. An overview of the Directive for minimum levels of energy taxation in the EU is given in Section 2.1 with the history of the negotiations investigated in subsection 2.1.1 and the final shape of the Directive in subsection 2.1.2. Section 2.2 presents the current levels of energy taxation in Member States in relation to the agreed minimum levels. Section 2.3 then pays special attention to the levels of taxation placed on electricity production and consumption, drawing upon recent OECD and IEA statistics.

2.1 The EU Directive on taxation of energy products[4]

2.1.1 Ten years of negotiations

Taxation of energy products has been hotly debated in the EU for more than a decade. As early as 1992, a proposal for a common CO_2/energy tax was introduced, but while all Member States agreed on the principle of taxation as an instrument to combat climate change, the negotiations never resulted in a substantial agreement[5]. Previous to the 2003 energy taxation directive, the only EU legislation setting minimum levels for the taxation of energy products

[3] Communication from the Commission on the proposal for a Council Directive on Restructuring the Community Framework for the Taxation of Energy Products, COM(97)30.

[4] This section builds on Ecological Council (2003), Council of the Europan Union (2002), and authors' interviews.

[5] See Klok (2002) for a full overview of the political and economic driving forces and barriers governing the negotiations on CO_2/energy taxation.

was the Mineral Oils Directive[6] concerning oil products used for transport or heating and natural gas used for heating. Taxation of other energy products, such as coal and electricity, were set at the Member State level. As a result, several national taxation systems for energy products were implemented during the 1990s, often resulting in conflicts with the regulations for the internal market and running the risk of loss of national industrial competitiveness.

These conflicts, and the overall lack of harmonisation of EU taxation, lead to the 1997 proposal for a Directive restructuring the Community framework for the taxation of energy products[7]. The proposal was later dubbed the 'Monti proposal', after Prof. Mario Monti, the then Commissioner for Taxation[8]. The Monti proposal was less ambitious than the 1992 CO_2/energy taxation proposal, but was still met with stiff opposition from several Member States, most notably Spain (Ref: author's interview). Since all taxation and fiscal issues in the EU follow the voting rule of unanimity, single Member States have been able to block progress in the negotiations. The issue has been on the table from 1997 until now, being intensively discussed in the Council, COREPER[9] and in the Working Party on Tax Questions (Energy Taxation).

The first modifications of the proposal were made under the German Presidency in 1999, introducing longer transition periods and more flexibility for Member States, but little progress was made. The issue was then largely untouched until it was reopened by the Swedish Presidency in 2001. This can be seen both as a result of the importance Sweden placed on environmental issues during their presidency, in combination with their relatively high levels of energy taxation in comparison with other Member States and subsequent distortions in competitiveness thought to be experienced by Swedish industry. The negotiations now concerned the structure of the proposal, leaving the actual minimum levels of taxation to be determined at a later point. Once again an agreement was vetoed by Spain, even though the issue was now being linked explicitly to the liberalisation of the energy market, which Spain was very much in favour of, seeking to make France open their energy markets according to the liberalisation directive[10]. The work initiated by the Swedes was continued under the Belgian Presidency in the second half of 2001. The newly agreed Treaty of Nice had introduced the instrument of enhanced cooperation[11], and the EU friendly

[6] Directive 92/82/EEC of 19 October 1992 on the approximation of the rates of excise duty on mineral oils.

[7] Proposal for a Council Directive restructuring the Community framework for the taxation of energy products COM(97)30. Text with EEA relevance.

[8] Currently the Commissioner for Competition.

[9] Committee of Permanent Representatives of the Member States.

[10] Directive 96/92/EC of the European Parliament and of the Council of 19 December 1996 concerning common rules for the internal market in electricity

[11] Under the enhanced cooperation procedure of the Treaty of Nice a minimum of eight Member States can pursue closer integration in certain areas (defence and military excluded), provided the remaining states join them at a later time. The negotiations for the Treaty of Nice also considered whether taxation of energy products could be agreed by qualified majority voting, but this was turned down.

Belgians were eager to push ahead on this path if no agreement was reached. However, negotiating positions were as far apart as ever at this point, and the only agreement reached was the decision to tax electricity at the output- instead of the input end[12].

The Presidency was then handed over to Spain for the first half of 2002. In spite of their previous opposition to the Monti proposal, the Spaniards made considerable progress, resulting in new proposed minimum rates of taxation and a proposal presented at the Barcelona summit that was to be agreed upon in Copenhagen before the end of the year. In essence, there were three reasons for this turn-around: Firstly, due to fiscal reasons the Spanish rates of taxation on energy products had already been increased. Secondly, the proposed minimum rates of taxation were now so low that the conosumer price indexed 1992 rates were in fact higher. A large number of exemptions for industry and households were also introduced, prompting the Dutch EU internal market commissioner Frits Bolkestein to label the proposal a "Gruyere cheese with too many holes. It's the ambition that we shall get a [holeless] Edam cheese"[13]. And thirdly, Spain saw the opportunity to use the Monti proposal as a lever to make France open their energy market and transmission networks for the benefit of the Spanish northern regions.

The Danes then continued the work to present a final proposal that could be agreed upon by all Member States. It was seen as quintessential that agreement was reached during the Danish Presidency, partly since little attention to the subject was expected from the coming Greek, Italian, and Irish Presidencies, but also because the date of EU enlargement was looming closer. Reaching an agreement between 15 countries have proven nightmarish, and the chances of reaching a unanimous agreement between 25 Member States were seen as slim to none. At this point, however, the proposal was so watered down, with a long list of exemptions, that Germany vetoed the proposal down at the ECOFIN[14] meeting in December, claiming it was not ambitious enough. At this point, three issues remained unresolved: the possibility of setting national tax levels below the EU minimum, tax breaks for certain sectors, and the taxation of diesel road fuel - the crunch issue being Germany's opposition to the reduced rates on the latter. No agreement was reached on the proposal and it was transferred to the subsequent council meeting on 21 January 2003 under the Greek Presidency. At the ECOFIN meeting in Brussels in January 2003 the issue was again postponed until the next council meeting, as the dossier fell victim to extended talk on other issues.

Finally, on 20 March 2003, agreement was reached on the proposed framework for energy taxation, resulting in the directive setting out minimum levels of taxation for energy products

[12] In this context output signals the consumption side and input the producer side. As such, the tax is paid by whoever purchases the energy product in question and not the producer of the product. Also note that the final Directive exempts electricity consumed in the production of electricity, so-called on-site consumption.

[13] ENDS Environment Daily Issue 1211 – 7 May 2002.

[14] The ECOFIN Council is composed of the economic and finance ministers of the EU Member States.

for the next ten years. It was then sent to the European Parliament for consultation, but this is only a formality as the Parliament has no right to veto tax measures. As such, the deal reached is considered final.

2.1.2 Reaching an agreement

The Directive for the restructuring of Community framework for the taxation of energy products was finally agreed on 20 March 2003. The final shape of the Directive is characterised by:

- The Directive enters into force on 1 January 2004. New minimum rates are to be set at the latest by 1 January 2012 for a new period from 2013.
- The final minimumrates are very low.
- Tailor made implementation agreements for some Member States. Long transitional periods.
- Exemptions for some energy-intensive industries. Generally lower tax rates for business and industry.
- Possibilites for return of revenue to companies/industries who enter into energy efficiency agreements (100% return to energy-intensive industries with agreement, 50% return to other industries).
- Discussions on whether some exemptions from the Directive would qualify as illegal state aid was settled by the removal of these industrial sectors from the Directive.

The final tax rates are given in Table 2.1.

Table 2.1 Minimum rates in EU energy taxation directive

Heating fuels and electricity taxation				
		Current min. rate	Min. rate from 1/1/2004 Business	Min. rate from 1/1/2004 Non-business
Diesel	€/1000 l	18	21	21
Heavy Fuel Oil	€/1000 kg	13	15	15
Kerosene	€/1000 l	0	0	0
LPG	€/1000 kg	0	0	0
Natural gas	€/GJ	N/A	0.15	0.3
Coal and coke	€/GJ	N/A	0.15	0.3
Electricity	€/MWh	N/A	0.5	1.0

2.2 Historical development of energy taxation in the EU

The tax rates set out in the Directive for the restructuring of Community framework for the taxation of energy products have varied somewhat over the years that the proposal has been

on the table. The tax is placed on consumption of the energy products and gives minimum rates that apply to both industry and households. In reality, however, the many exemptions for industry (and especially energy intensive industries) mean that different tax rates will be imposed for industries and households. Table 2.2 presents the proposed minimum levels of taxation for heating fuels covering the first minimum rates of the Directive in 1992 up until the rates proposed by the Spanish presidency in May. It should be noted that the minimum levels presented here are given in Euro per GJ to allow for easy comparison of the rates, whereas the minimum rates in the proposal are given in different units[15]. The data are not adjusted for inflation and are given in the Euro value of the year they were proposed. Figures 2.1 and 2.2 give graphical presentations of the same data, both as real and relative values for the proposed minimum rates.

What is initially seen from table 2.2 and figures 2.1 and 2.2 is that the proposed minimum levels for heating fuels have increased throughout the 1990s, both in real and relative terms, only to decrease again in the May 2002 proposal, in many cases actually setting minimum levels lower than the indexed 1992 minimum rates. The development of these proposals raises some interesting questions. For example, why were the tax rates for kerosene and LPG reduced to zero in the May 2002 proposal? What implications did this have on the tax rates for other energy products? What were the national considerations that lead to this development? Some of these questions in relation to the development of taxation on selected energy products will be studied in more detail later[16]

[15] The original minimum rates in the May 2002 proposal are given as: € 21 per 1000 litres light fuel oil, € 15 per 1000 kg light sulphur fuel oil, € 15 per 1000 kg high sulphur fuel oil, € 0 per 1000 litres kerosene, € 0 per 1000 kg LPG, € 0,3 per GJ natural gas, and € 1 per MWh electricity.

[16] Section 2.3 will in its entirety deal with the taxation of electricity.

Table 2.2 Proposed levels of taxation for heating fuels in the EU. In Euro/GJ

Product (Euro/GJ)	Min. rates of Directive 92/82 (EEC)	Minimum rates Commission proposals COM(97)30			Rates proposed May 2002
		Jan 1998	Jan 2000	Jan 2002	
Heating fuels					
Light fuel oil	0,5	0,6	0,6	0,7	0,6
Low sulphur fuel oil	0,3	0,4	0,5	0,7	0,4
High sulphur fuel oil	0,3	0,5	0,7	0,8	0,4
Kerosene	0	0,2	0,5	0,7	0
LPG	0	0,2	0,5	0,7	0
Natural gas	0	0,2	0,45	0,7	0,3
Coal	0	0,2	0,45	0,7	0,3
Electricity	0	0,3	0,6	0,8	0,3

Source: National Environmental Research Institute (NERI), Denmark. Prepared for the Danish Presidency of the European Union, 2002.

Figure 2.1 Proposed minimum rates for the taxation of heating fuels. In Euro per GJ.

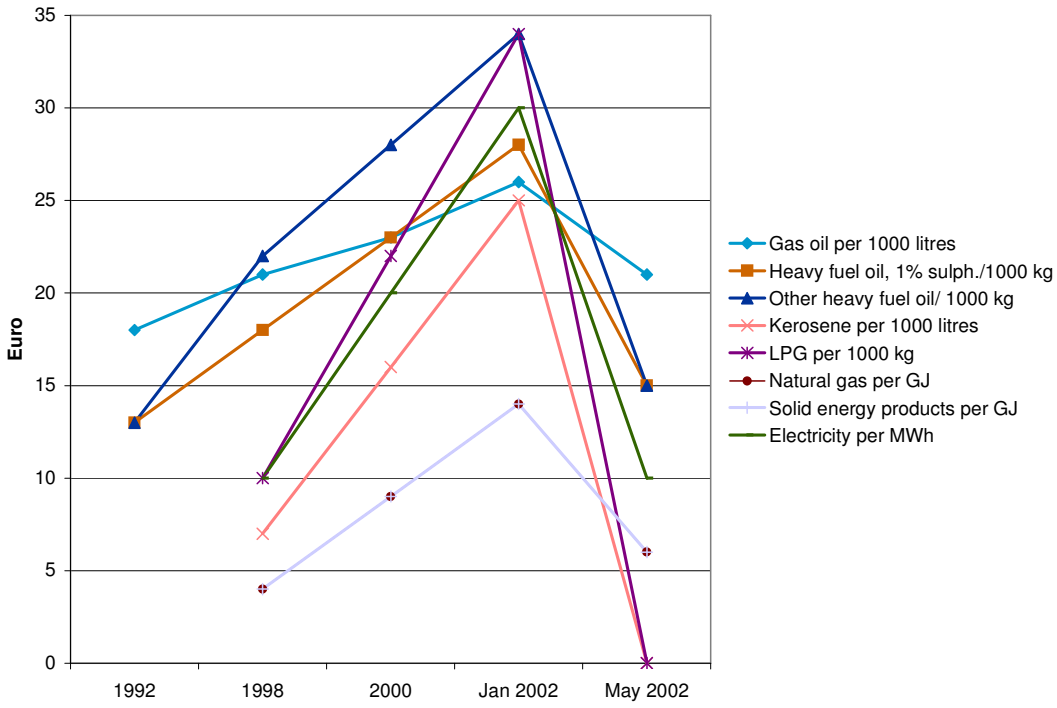


Figure 2.2 Proposed minimum levels for the taxation of heating fuels. Relative values.

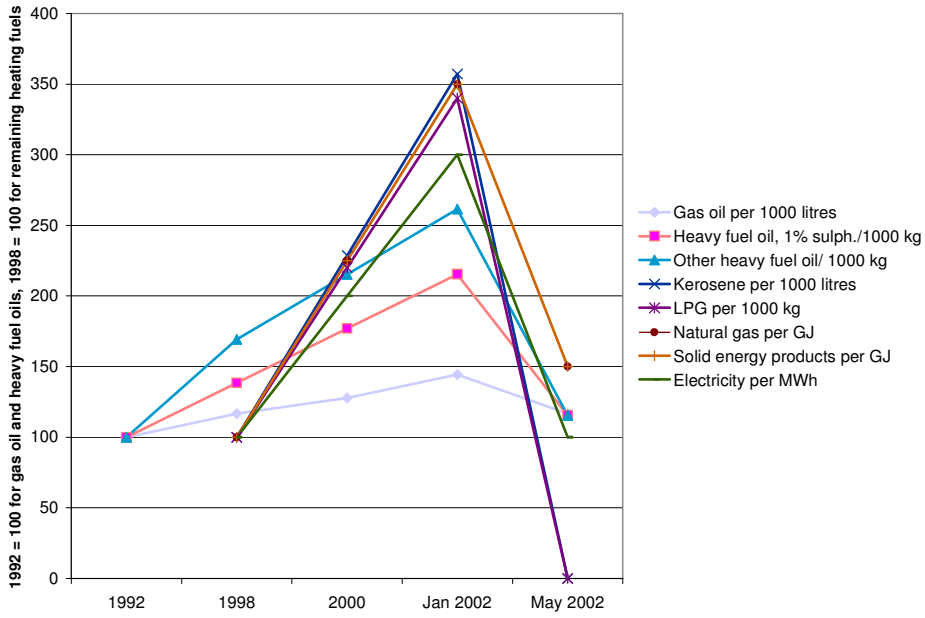


Table 2.3 presents the same data for the proposed minimum levels of taxation for motor fuels. Again we observe the same increase throughout the various proposals, culminating in a substantial decrease of the proposed minimum rates in the Spanish proposal.

Table 2.3 Proposed levels of taxation for motor fuels in the EU. In Euro/GJ[17]

Product (Euro/GJ)	Min. rates of Directive 92/82 (EEC)	Minimum rates Commission proposals COM(97)30			Rates proposed May 2002
		Jan 1998	Jan 2000	Jan 2002	
Motor fuels					
Unleaded petrol	8,7	12,6	13,6	15,1	10,9
Leaded petrol	10,2	12,6	13,6	15,1	12,7
Diesel	6,7	8,4	9,3	10,7	7,8
LPG	2,2	3,1	3,8	4,9	2,7
Kerosene	7,0	8,9	9,8	11,2	8,6
Natural gas	0	2,9	3,5	4,5	2,6

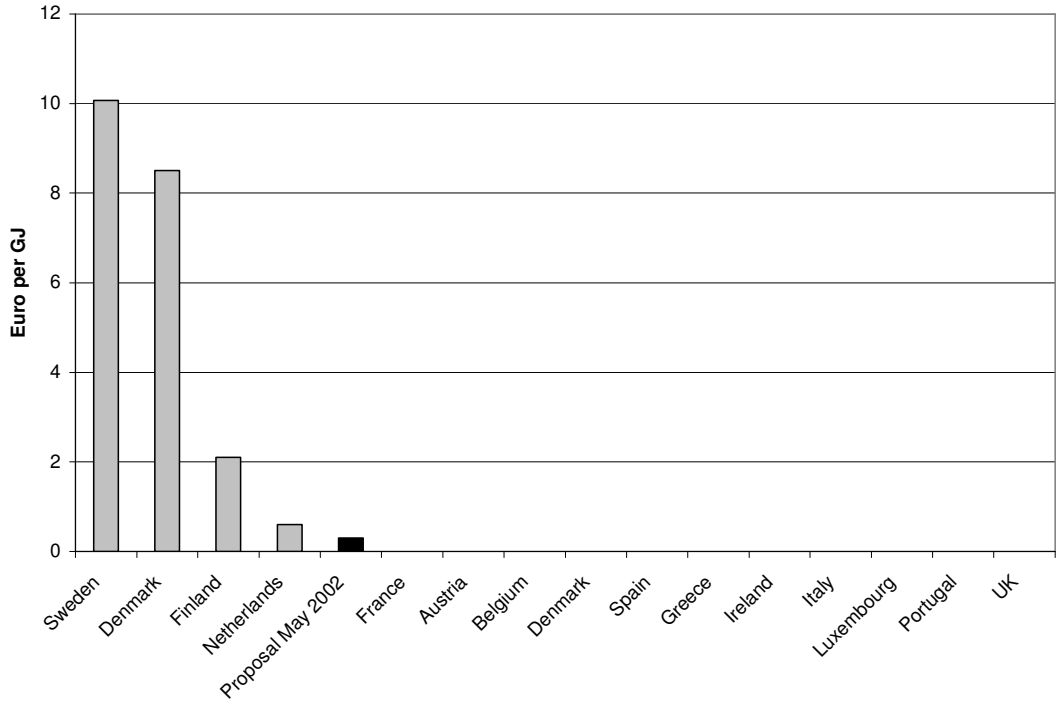
Source: National Environmental Research Institute (NERI), Denmark. Prepared for the Danish Presidency of the European Union, 2002.

[17] The original minimum rates in the May 2002 proposal are given as: € 359 per 1000 litres unleaded petrol, € 421 per 1000 litres leaded petrol, € 287 per 1000 kg diesel, € 125 per 1000 kg LPG, € 302 per 1000 litres kerosene, and € 2,6 per GJ natural gas.

The negotiation process for harmonised taxation of energy products in the EU has to a large extent been governed by the existing tax rates set at national level. Figures 2.4 and 2.5 show the compliance with the proposed minimum tax rates for all fuel types and all Member States, respectively. Compliance rates (meaning the number of energy products for which the minimum rates are met) are as shown lowest for natural gas (motor) and coal (heating), whereas the highest compliance rates are found for the two heating fuels with proposed zero rates, kerosene and LPG, followed closely by unleaded petrol and light fuel oil. But far from everything can be explained from whether national tax rates meet the minimum rates or not. The most hotly debated energy source, diesel, has a quite high compliance rate, which does not explain its difficult role in the negotiations. This is explained by the debate on diesel mainly concerning exemptions for professional road haulage and not the taxation levels themselves.

On a similar note, one could expect the low compliance rate for coal to result in the taxation of coal being a hot issue in the negotiation. However, the dynamics governing the negotiations on coal are better understood through the relatively low proposed minimum rate on coal and the many exemptions for energy intensive industries. This dynamic is better explained in figure 2.3, showing the national tax rates for coal in relation to the proposed minimum rate. Here we see the Nordic countries and the Netherlands, wishing to phase out the use of coal, imposing tax rates well above the proposed minimum rate, whereas other countries, often with a heavily subsidised coal industry, not imposing any tax on the consumption of coal. In short, compliance rates should not be thought of as direct measures of the negotiation process, but can be used to understand some of the national considerations and positions on certain energy products. To understand the full picture one must of course also see this in connection with other aspects of the negotiations, such as exemption mechanisms or the difference between the proposed minimum levels and national tax rates. A full overview of national tax rates is given in Annex 1, and a more in depth study of national taxation regimes is undertaken in Chapter 3.

Figure 2.3 Tax rates for coal. In Euro per GJ.



The compliance rates for various Member States reflect what is seen by many as a North-South divide within the EU on environmental issues (Ref: Andersen and Lifferink, …). For instance, Denmark and Sweden are in full compliance, followed closely by Germany, the Netherlands and, to a lesser degree, Finland and the UK. The low compliance rates among most of the south-European countries have resulted in long transitional periods for the implementation of the measures in the Directive being proposed for these countries.

Figure 2.4 Compliance with proposed minimum tax rates for all fuel types (May 2002).

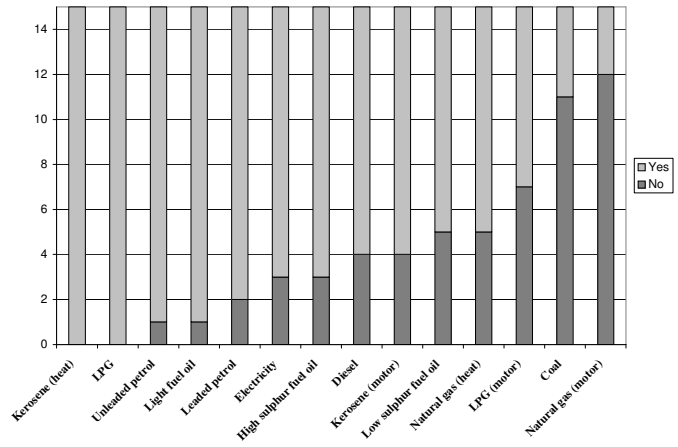
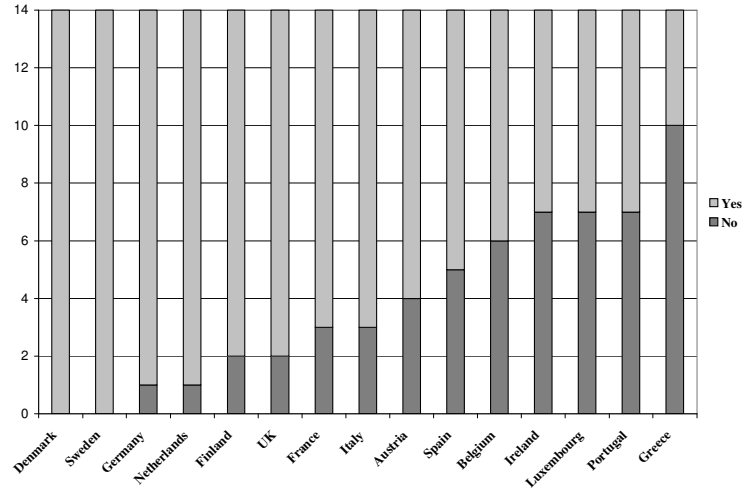


Figure 2.5 Compliance with proposed minimum tax rates for all Member States (May 2002).



2.3 Taxation of electricity consumption and production in the EU

Leaving aside the taxation rates on other energy products this section focuses on the taxation of electricity consumption and production. Table 2.4 presents the current rates in countries that have imposed taxes on electricity consumption, as provided in the OECD database on environmentally related taxes. Figure 2.6 gives a graphical presentation of the same data. The red columns in figure 2.6 indicate electricity taxes for industry and the blue columns show the taxes for households. The figure shows clearly the much higher electricity taxes found in Denmark and the Netherlands, two of the environmental "frontrunners" among the EU Member States. Relatively high electricity taxes are also found in Sweden, and to a lesser degree in Austria, Germany and Norway.

One interesting aspect of figure 2.6 is the lack of taxation on electricity consumed by industry in many countries. It should be noted that the OECD database, from which these data are collected, does not include VAT in their datasets and that VAT is applied in various degrees to electricity consumed by industry in the countries in the dataset[18]. Equally interesting is the lack of taxation on electricity consumed by households in the UK, where we also find the only explicit tax on electricity production, set as a non-fossil fuel obligation levy of 0,7% of the electricity price. This distinction between taxing industry or households is an important factor for identifying drivers and barriers. Why is one tax base chosen over another? Are the

[18] There are some differences in tax rates provided by the IEA and OECD which cannot be fully explained by inclusion of VAT alone. One possible reason for the differences is that IEA data are provided by Energy Ministries and OECD data by Taxation or Financial Ministries. Although all ministries should in theory use the same taxation data it seems that there are some differences in the real world.

reasons purely fiscal, or do other aspects, such as social politics, come into play? These questions will be studied in more detail in Section 4.2.

Table 2.4 National tax rates on electricity consumption. In Euro per kWh.

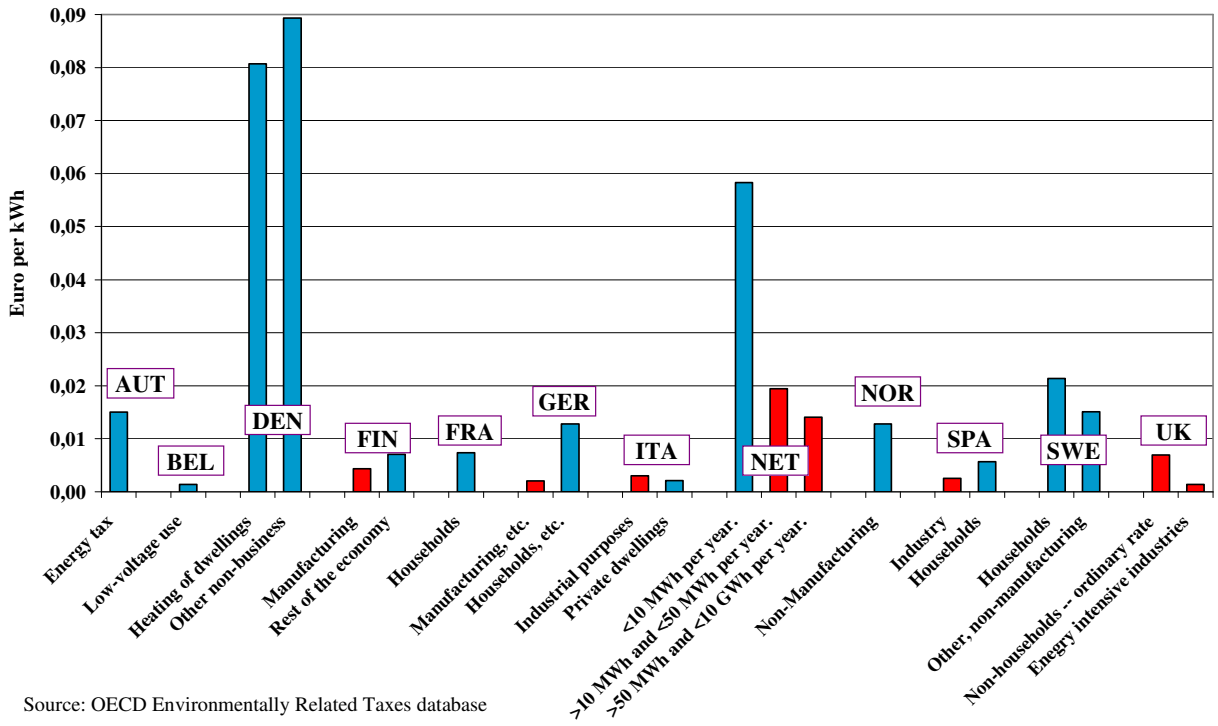
Country	Tax	Specific tax-base	€ per kWh
Austria	Energy tax	*Electricity consumption*	0,015
Belgium	Cotisation sur l'energie	*Électricité basse tension*	0,0013641
Denmark	Duty on CO2	*Electricity*	0,0134
Denmark	Duty on electricity	*Electric consumption for heating of dwellings and other purposes*	0,0673
Denmark	Duty on electricity	*Electric conception for other purposes*	0,076
Finland	Excise on fuels	*Electricity used in the manufacturing sector*	0,0042073
Finland	Excise on fuels	*Electricity used in the rest of the economy*	0,0069
Finland	Strategic stockpile fee	*Electricity consumption*	0,0001262
France	Energy tax	*Households*	0,0074
Germany	Duty on electricity	*Electricity consumption*	0,0128
Italy	Tax on electrical energy – State	*Electricity consumption for private dwellings*	0,0021
Italy	Tax on electrical energy – State	*Electricity consumption for industrial purposes*	0,003
Netherlands	Regulatory Energy Tax	*Electricity consumption up to 10,000 kWh per year*	0,0601
Netherlands	Regulatory Energy Tax	*Electricity consumption between 10,000 kWh and 50,000 kWh per year*	0,02
Netherlands	Regulatory Energy Tax	*Electricity consumption between 50,000 kWh and 10 million kWh per year*	0,0061
Norway	Tax on consumption of electricity	*Electricity consumption*	0,0128
Spain[19]	Tax on electricity	*Households*	0,0025
Spain	Tax on electricity	*Industry*	0,0056
Sweden	Energy tax on electricity	*Electricity consumption – households*	0,0214
Sweden	Energy tax on electricity	*Material permitted for abstraction > 200,000 tons*	0,0151
United Kingdom	Climate Change Levy	*Electricity consumption ordinary rate*	0,0069
United Kingdom	Climate Change Levy	*Electricity consumption reduced rate*	0,0014

Source: OECD Environmentally Related Taxes database.

[19] Using 4,864% of the price and latest available IEA energy price data (2001 3Q).

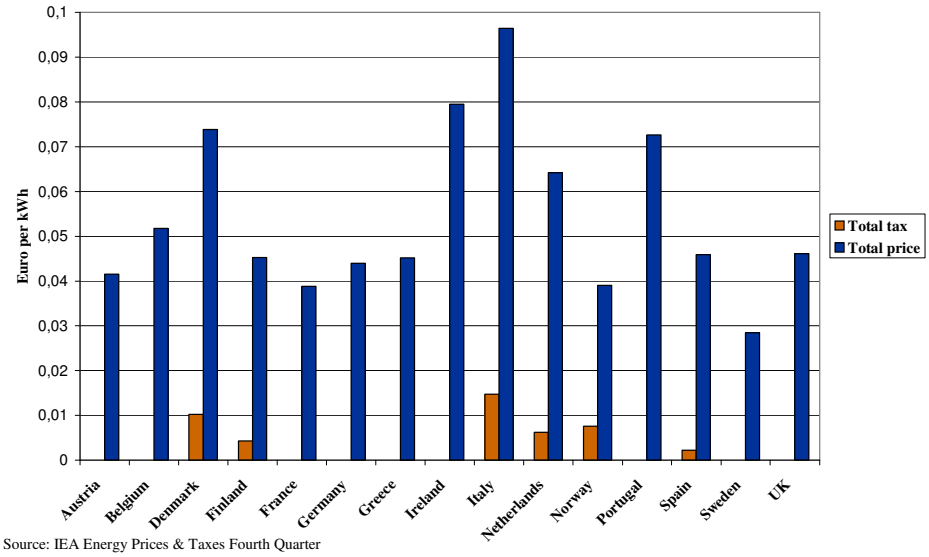
Of course, tax rates are set at a level relative to the domestic electricity prices. To illustrate this relationship figure 2.7 presents the electricity prices and taxes for industry, and figure 2.8 the tax rates for industry as a percentage of the electricity price. The highest tax share is found in Norway, followed by Italy, Denmark, Finland and the Netherlands. It is interesting to note that whereas Italy has overall low tax rates for electricity consumption in comparison with other countries (as shown in figure 2.6) they have very high electricity prices for industry, with a high relative tax share. Looking at these findings several questions arise: How will the energy market in Europe be governed by political (and physical) constraints in a liberalised European energy market? How will these constraints affect the domestic electricity prices for industry? To what degree will exemptions from taxation for industry be deemed state aid? A closer investigation of this question is undertaken in Section 4.1.

Figure 2.6 Taxation on electricity consumption. In Euro per kWh.



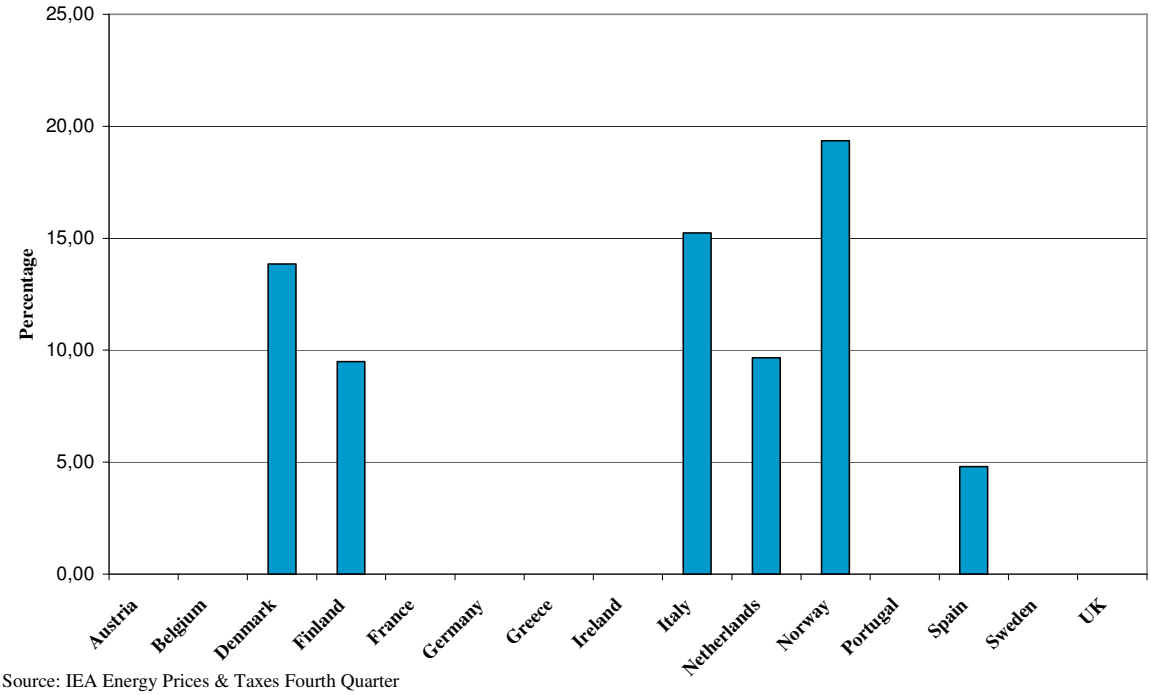
Source: OECD Environmentally Related Taxes database

Figure 2.7 Electricity prices and taxes for industry. In Euro per kWh.



Source: IEA Energy Prices & Taxes Fourth Quarter

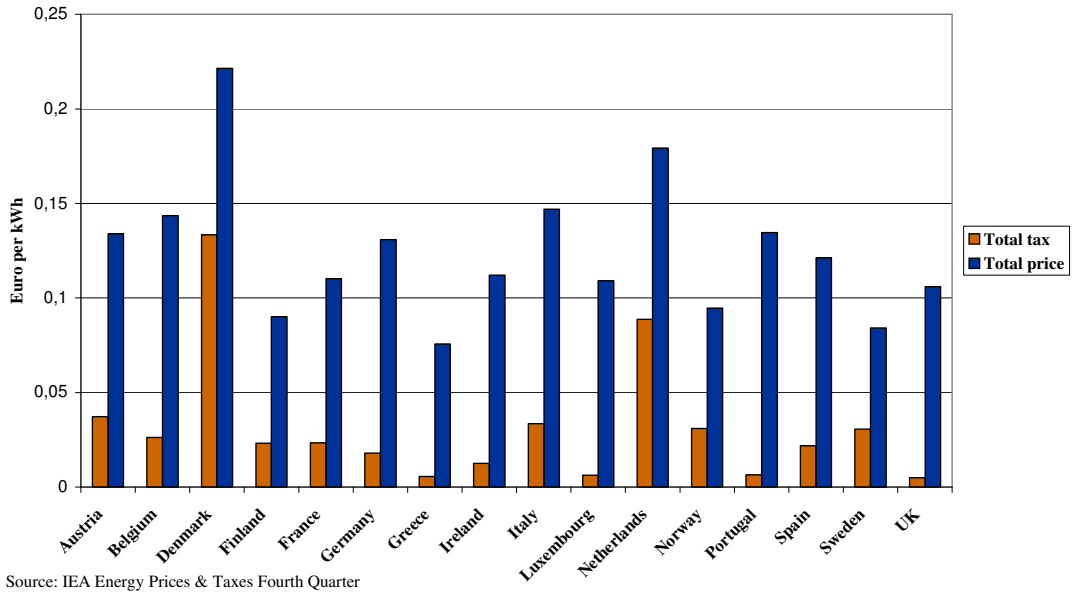
Figure 2.8 Percentage of taxes in electricity prices for industry.



Source: IEA Energy Prices & Taxes Fourth Quarter

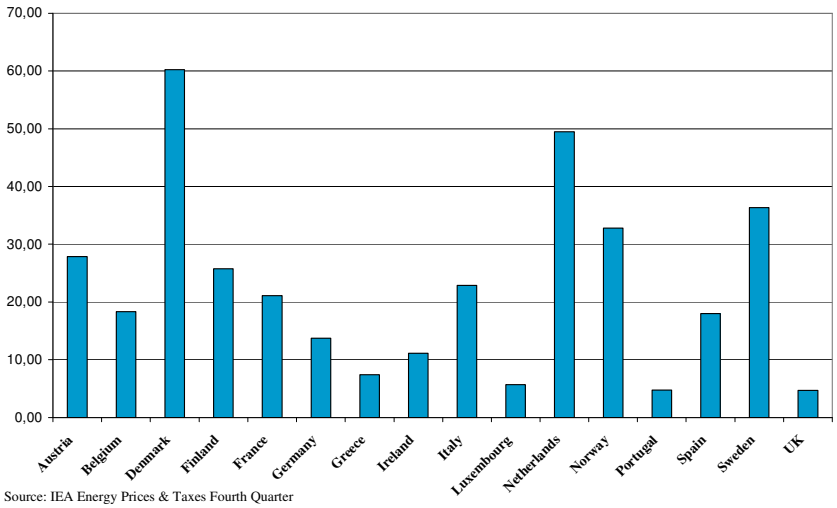
Whereas industry's electricity consumption is often both subject to low tax rates and subsidies, households are subject to both higher prices and higher tax rates, the exception being the UK where the VAT is the only tax placed on households. The electricity prices and tax rates for household electricity consumption are shown in figure 2.9, and the relative tax shares in figure 2.10. Electricity prices are shown to vary somewhat across Europe, but the major differences are best expressed in the share of taxes in the price. Once again we see the north-south divide, with Denmark, the Netherlands, Sweden and Norway having the highest relative tax rates, Danish taxes accounting for a total of 60% of the price. To fully understand this geographical division it will be necessary to look closer at the tax bases, and other economic factors, in the different countries.

Figure 2.9 Electricity prices and taxes for households. In Euro per kWh.



Source: IEA Energy Prices & Taxes Fourth Quarter

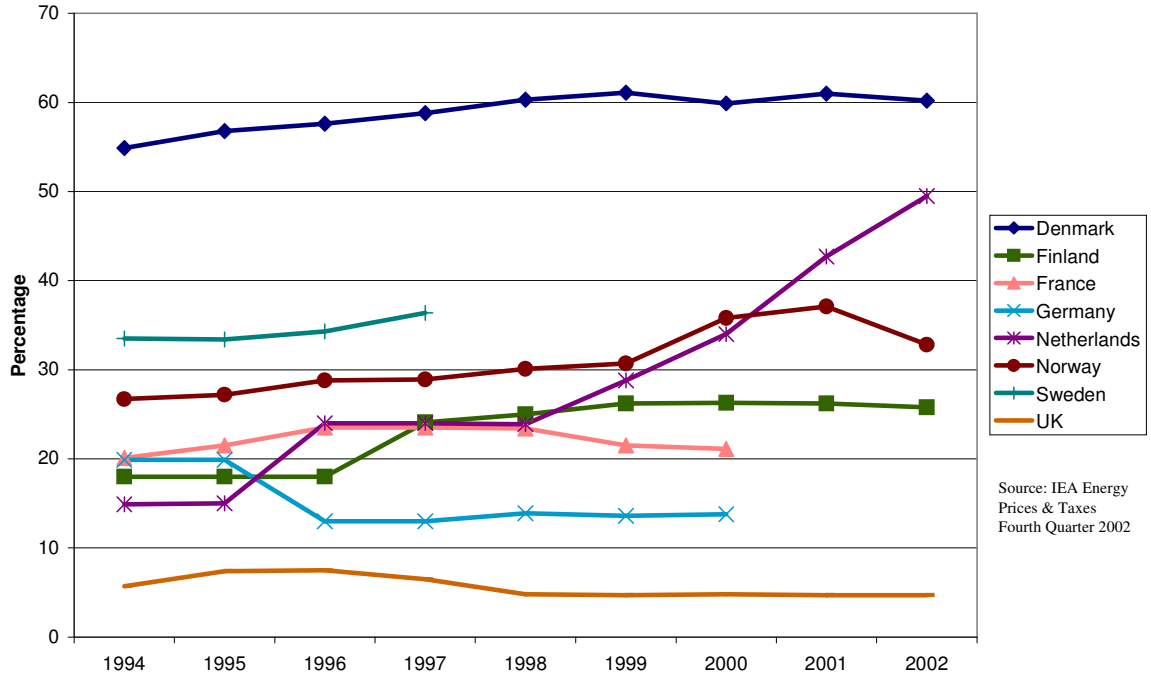
Figure 2.10 Percentage of taxes in electricity prices for households.



Source: IEA Energy Prices & Taxes Fourth Quarter

This divide, with some northern European countries taxing the consumption of electricity higher than their southern counterparts is clearly present in historical data. Figure 2.11 shows the development of relative tax rates on electricity consumption by households for the period 1994 to 2002 for selected countries. The most drastic change is found in the Netherlands, where the step wise increase in energy taxation has resulted in the share of taxes in electricity prices rising from 15% to 50% over the past 8 years. Increases are also shown for Denmark, Finland and Norway[20], whereas Germany is the only country with a notable decrease in the tax share. Why has this figure increased in some countries and not in others? To what degree is this a result of taxes being raised and prices lowered, or vice versa? Chapter 3 will seek interpretations of this and other questions, through the establishment of the main driving forces for the setting of national levels of energy taxation and minimum levels for the taxation of energy products at EU level.

Figure 2.11 Percentage of taxes in electricity prices for households in selected countries. Development over time from 1994 to 2002. [21]



[20] Norway has an overall increase. However, the relative tax share decreased by about 5% from 2001 to 2002.

[21] Data are not available post 1997 for Sweden or post 2000 for France and Germany.

3. Driving forces

This chapter aims to identify and discuss some of the key driving forces governing the use and evolution of energy taxes in the EU and key Member States. First, the driving forces will be identified and briefly explained. Secondly, the interplay between the respective driving forces and the issue of energy taxation in general will be discussed, with a special focus on taxation of electricity.

The key driving forces identified and discussed are:

- EU internal market regulations (section 3.1)
- Energy liberalisation and deregulation (section 3.2)
- Energy security (section 3.3)
- Environmental policy (section 3.4)
- Other policy processes (section 3.5)

3.1 Internal market

The internal market is an essential cornerstone of the EU, seeking to prevent competitive distortions through regulation and legislation. This section will look at the impact of the internal market considerations for energy taxation, and examine in what ways internal market regulations have guided the development of Member States' energy tax regulations in general, and the EU energy tax directive in particular.

The current definition of the internal market came as a result of the Treaty of Rome, aiming to remove physical, bureaucratic and commercial barriers that tended to confine people, goods, services and money[22].

Considerations for the EU internal market are seen as the overall driving force for the establishment of minimum tax levels for energy products. The harmonisation of energy taxes is seen as a means of establishing similar (harmonised) framework conditions for the production and consumption of energy throughout Europe. This would in principle prevent competitive distortions arising from differentiated levels of energy taxation in Member States, especially taking into consideration the establishment of a liberalised European energy market (see also section 3.2).

[22] European Union (2002): Consolidated versions of the Treaty on European Union and of the Treaty Establishing the European Community. 2002/C325/01.

All European Union legislation contains mention of the relevance of the issue in question to the internal market. The text of the final agreement on energy taxation states specifically that: "[t]he proper functioning of the internal market and the achievement of other objectives of other Community policies require minimum levels of taxation to be laid down at Community level for most energy products, including electricity, natural gas and coal"[23]. It is also stated that the Council will take the proper functioning of the internal market into consideration when they periodically examine exemptions and reductions of taxation, as well as the minimum taxation levels themselves.

In effect, however, the Directive for energy taxation agreed upon in March 2003 does very little to change the current situation, and as such does not induce major changes to the functioning of the internal market. Rather, the agreement is seen as a codification of status quo, putting the current minimum tax levels into legal text, resulting only in minor changes of energy taxation levels in Member States. Nevertheless, the introduction of minimum levels ensures that energy taxes will at least be above a certain "floor", which can then be gradually increased in future revisions of the directive, hoping to finally arrive at a harmonised European energy taxation regime. In this context, the establishment of the emerging European energy taxation regime can be seen as a parallel to the development of the European VAT regime. Establishing a single harmonised EU VAT regime[24] through "one size fits all" legislation has so far proved futile[25]. Instead, the Commission has opted to recommend the introduction of certain common rules and regulations, including establishing bands or thresholds for taxation, aiming to arrive at common VAT regulations through a step-by-step approach. On a similar note, now that minimum levels of energy taxation have finally been agreed upon, this can serve as the first stepping-stone towards higher, and eventually harmonised, levels of energy taxation. Harmonising national energy tax levels in one single operation must be seen as neither possible nor practical.

3.2 Towards a common energy market

The processes of liberalisation and deregulation of the European electricity and gas markets stem from an aspiration to enhance competition and efficiency in these markets (i.e. internal market considerations)[26]. This section will examine the ways in which these processes have affected the development of Member States' energy tax regulations and the evolution of the EU energy tax directive.

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[23] Council of the European Union (2003): Draft directive as agreed by the Working Party on Tax Questions – Indirect Taxation (Energy Taxation) on 1 April 2003.

[24] Harmonisation of when and how VAT obligations will have to be fulfilled.

[25] Pricewaterhouse Coopers (2002). Descriptive report on the simplification and modernisation of VAT obligations for the European Commission. TAXUD/2001/DE/307.

In concordance with achieving the aims of the liberalisation strategy, countries in Northern Europe have sought to harmonise tax-rates across Europe for reasons of competitiveness (i.e., they are currently subject to the higher tax rates than other Member States, see figure). Countries in Southern Europe are generally opposed to raising their energy taxes, largely for political reasons and fears of impairing their industries' competitiveness. Partly as a consequence of liberalisation and enhanced competition in the European energy markets, electricity prices, as measured by the OECD index of energy prices for end-users, have decreased in most EU Member States since the early 1990s (IEA 2002). This, in turn, has provided an opportunity for governments to increase tax rates without increasing the price for end users (and thus alerting the electorate), and has as such been an attractive political manouver[27]. The rationale behind this tax increase was partly environmental concerns, and the objective to avoid increasing consumption of energy products, but the importance of added revenue should not be overlooked. This development is illustrated both through the increased levels of energy taxation in Member States throughout the 1990s, and the corresponding increases in the proposed minimum rates of the EU energy tax directive. During this period a number of Member States increased their domestic energy taxation levels, whilst the proposed European minimum rates increased steadily from 1992 until peaking in 2001.

Liberalisation has in itself been used as a bargaining chip in the negotiations for the energy tax directive. The Spanish turnaround towards the more positive attitude directive in 2001 was explicitly linked to liberalisation of the energy market. By changing their stance on the energy taxation issue, Spain sought to make France open their energy markets according to the liberalisation directive, thus increasing the transmissional capacity in northern Spain, enabling greater flexibility for cross-border power exchange. However, such clear links between taxation and liberalisation have not been common throughout the energy taxation negotiations, and the issue must be seen as more complex and interrelated than this.

A clearer connection between energy liberalisation and –taxation is found in the dynamics behind the finally agreed minimum rates. Here, the northern Member States, pushing hard for accelerated liberalisation of the European energy market realised that southern Member States could easily veto the directive if the minimum rates were seen as excessive. In order to secure a deal that could, in time, arrive at a harmonised energy taxation regime, seen as a necessity for a fully liberalised energy market, the proposed "high" minimum rates were abandoned, settling instead for a deal which everyone could agree upon.

[26] The EU energy liberalisation strategy is laid down in two directives: 96/92/EC concerning common rules for the internal market in electricity, 98/30/EC concerning common rules for the internal market in gas. The regulations on cross-border trade in electricity are also relevant.

[27] Authors' interviews Brüssels, March 2003.

3.3 Energy security

To what extent has EU energy security considerations guided the development of Member States' energy tax regulations and the EU energy tax directive? The EU green paper on energy security[28], states that the long-term strategy for energy security in the EU must be focused on: "the uninterrupted physical availability of energy products on the market, at a price which is affordable for all consumers (private and industrial) while respecting environmental concerns and looking towards sustainable development". This section will explore some of the linkages between energy security and energy taxation.

Over 70% of the EU's oil consumption and 40% of its natural gas consumption is at present imported. Projections indicate that these figures could rise to 90% and 70% respectively in 2020[29], resulting from increased consumption, exhaustion of internal resources, and a changed energy supply situation as a result of enlargement (see also section 3.5.2). In its Green Paper on Energy Security (European Commission 2001) the Directorate for Transport and Energy (DG Tren) states the Union's specific aim is to ensure: "the uninterrupted physical availability of energy products on the market, at a price which is affordable for all consumers (private and industrial". Through its reliance of imported oil and gas, the EU is increasingly exposed to the risk of both economic- and physical energy supply disruptions as a result of the volatility both of oil prices and of gas prices. As a response, the EU seeks to increase the diversification of its energy supply system, hoping to increase its internal energy production and decreasing its reliance on oil and gas.

The EU energy security strategy states specifically that energy taxes will be used to steer consumption towards more environmentally friendly energy sources, thus simultaneously aiding the environment and securing supply. However, the two aims of this dual strategy are not necessarily mutually supporting. The EU is to some extent caught between commitments pertaining to emission reductions (e.g., Kyoto) and that of securing ample and affordable energy supplies. This leads to the EU seeking to secure internally available energy products through applying lower levels of taxation on these compared to energy products that will have to be imported from outside the union. The same logic applies at Member State level. This resulted in a two-level negotiation logic for the energy tax directive with respect to energy security considerations: the Commission (DG Tren) seeking to secure EU internal energy products through lenient tax rates for European energy sources, while Member States bargained for their own domestic sources of supply.

[28] EU Green Paper COM(2000)769 final. Towards a European strategy for the security of energy supply.

[29] Commission press release 11 September 2002. Internal energy market: Commission proposes strengthening security of oil and gas supplies.

However, the importance of energy security consideration with respect to energy taxation has not been uniformly shared throughout the Community during the 1990s, or even before that. Community responses to remedy supply problems have existed since the Treaty of Rome[30] in 1957. In fact, both the European Coal and Steel Community Treaty and the Euratom Treaty, two of the three treaties establishing the European Communities, were about energy. Nevertheless, whilst agreement on energy security measures previously required qualified majority, after the Maastricht treaty such decisions can now only be reached through unanimity. Still, even with the possibility of adopting such measures, the Union did not have a common energy policy (Commission 2001). In fact, the Amsterdam Treaty, signed in 1997 with entry into force in 1999, only gives a brief mention of energy in the preamble. Facing this lack of a common European energy policy, the Union opted instead to approach its energy dependence problems through market mechanisms, efforts of harmonisation, environmental policy or taxation.

A truly common approach to energy security was only realised with the release of the Green Paper on Energy Security in 2000. Here, the Commission asks the question: "Given the failure of attempts to harmonise indirect taxation, should not the whole issue of energy taxatin be re-examined taking account of energy and environmental objectives?" The Commission answers this question in the same paper, calling for a "real change" in consumer behaviour, highlighting the value of taxation for achieving better-controlled consumption. Perhaps as a result of this, the decision to tax electricity at the consumption- and not the production side was taken the subsequent year. Also, the Green Paper on Energy Security stresses the need to use taxation or fiscal instruments in order to penalise the environmentally harmful impacts of energy products. The energy tax directive does not do much to change consumption behaviour in Member States, and as such it lacks "teeth" when it comes to environmental protection. Here once again, it is obvious that a rational, or driving force, originally behind the energy taxation directive has been sacrifised in order to finally reach an agreement on the directive.

3.4 Environmental policies

To what extent has EU environmental policies guided the development of Member States' energy tax regulations and the EU energy tax directive? EU environmental policies for the product CONS include both regional targets (e.g., for renewable energy) and international commitments (e.g., the Kyoto Protocol). These targets constrain the scope for domestic policies, including energy taxation. This section will discuss the interplay of energy taxation and EU environmental policies. Attention will be paid to the EU's climate change strategy and renewable energy plans, as well as the Union's approach towards selecting a portfolio of policy instruments for (largely climate related) environmental policies.

[30] Article 103 in the Treaty of Rome deals specifically with the decision on oil stocks.

3.4.1 EU climate change policies

The EU has in later years emerged as a leader in international climate change policy. From the emergence of climate change as a topic on the international political scene in the late 1980s until today, there have been major changes and substantial development of EU climate policy in general, and the choice of climate instruments in particular.

With regard to the EU's approach to specific climate policy instruments Christiansen and Wettestad (2003) states that the Commission initially favoured an approach to mitigating GHG emissions based on common and coordinated policies and measures. An EU carbon/energy tax was thus proposed in the early 1990s as the cornerstone of EU climate policy (e.g., Wettestad, 2001). However, as a financial measure, a tax has to be adopted unanimously in the Council of Financial Ministers. Owing to strong opposition from industry and key Member States, it has so far proved impossible to achieve such a consensus. In fact, at the end of 2001, the Commission formally withdrew the original tax proposal, leaving only the Energy Products Tax Directive on the Council's table. An increasing understanding has also emerged that other and traditional policy approaches have taken the EU as far as possible in terms of achieving emission reductions in a cost effective manner. Hence, the lessons learned in formulating a common and coordinated climate change strategy at the EU level, most notably the poor experience with the carbon tax proposal, have served to reinforce the search for stronger and more suitable policy instruments.

Even though the EU's climate commitments will have played some role in the setting of minimum rates for energy taxation, in particular through enabling the Union some control over the energy consumption side, the final minimum levels will have little or no impact on Member States' ability to comply with their commitments under the Kyoto Protocol or the EU Emissions Trading System (EU EUTS). The European Environmental Bureau (EEB) went so far as to brand the directive ineffective, claiming it would have "very little effect in terms of sutainability" (ENDS Issue 1464 – June 2003). This hypotehesis is substantiated first and foremost by the minimal, or in some cases non-existent, changes in national energy tax levels induced by the Directive. Secondly, the many exemptions and long transitional periods granted in the Directive ensures that the countries that will in fact have to increase their national energy taxes will not have to do so for a number of years, in some cases not until 2012, the end of the first Kyoto period. Nevertheless, even though the actual outcome of the directive will have little impact on EU's environmental record, the concerns for the environment must be considered a substantial driving force in establishing the framework for energy taxation in the first place.

However, as Member States are allowed to set taxation levels above the minimum levels, certain countries have signalled that they might seek to raise energy taxes, or replace their energy taxation system, in the near future to be able to meet their Kyoto commitments (e.g.

Ireland and Italy[31]), and might use the agreed minimum taxation levels as a stepping-stone towards such taxation schemes. At the same time, the Directive on EU ETS states clearly that double taxation of emission sources must be avoided. Thus, countries cannot impose additional emission related taxes on installations already covered by the emissions trading directive. Also, the Directive on energy taxation is set at the consumer level, whereas the ETS covers the producer level. As such, the two Directives will not be in competition with each other, but will be mutually enforcing at their own respective levels, although emissions trading is certainly more enforcing than energy taxation in this respect.

3.4.2 EU renewable energy strategy

The EU renewable energy strategy aims to increase the share of renewable energies to 12% of gross inland energy production by 2010 (European Commission 1997). The White Paper on renewable energies also establishes sub-targets in various sectors, with indicative estimated contributions from each renewable energy sources (RES) as well as each market sector outlined in the strategy. The main contribution of RES growth is set to come from biomass and wind energy, with smaller contributions foreseen from photovoltaics, geothermal energy and heat pumps. Hydropower is thought to remain the second most important RES overall, but with a relatively small future increase it contribution is thought to remain at todays level. For the market sectors, a doubling of the current heat and electricity production from RES is seen as an important element in meeting the overall Union objective.

The White Paper on RES also clearly set out the importance of exemption or reduction of taxes on RES energy products in the energy tax directive. It also opened for Member States to provide additional financial incentives for RES through: flexible depreciation of RES investments, favourable tax treatment for third party financing of RES, start up subsidies for new production plants, as well as incentives for consumers to purchase renewable energy equipment and services.

The Commission followed up on its plans from the White Paper on RES, and renewable energy has been exempted from energy tax directive. As such, the directive presents an incentive to move towards renewable energy sources. At the same time, the low minimum levels and excemptions for conventional energy sources do not induce great changes. In this respect, energy taxation is still seen as a tool to move towards the EU renewable energy targets, but only in combination with other policy instruments. The conclusion is once again that energy taxation does not do much in its current form at EU level, although it might have a limited effect in some Member States as it allows for the setting of national tax levels above the minimum rate. However, in combination with other policy instruments it will form part of package that might lead to EU's long-term energy- and environmental targets.

[31] ENDS issue 1335, November 2002: "Italy's draft energy law axes carbon tax". ENDS issue 1345, December 2002: "Ireland confirms plan for national carbon tax".

3.4.3 EU's portfolio of energy related environmental policy instruments

In meeting its energy related environmental protection targets, both on a national and international level, the EU has utilised a number of policy instruments. Different instruments have been used for different sectors, acknowledging the importance of selecting instruments that are both implementable and effective in each unique setting. In effect, the EU has opted for a three-pronged approach towards selecting a viable portfolio of policy instruments for energy (and climate) related environmental protection:

- **EU emissions trading.** Sets a cap on emissions from large point sources (energy production and energy-intensive industries). Its main objective is climate change related, aiming to get rid of the most polluting energy producers, i.e. coal. At the same time, removing coal and other high intensity greenhouse gas emitters from the energy supply market will create an energy security problem. Thus, the EU needs to stimulate the introduction of new renewable energy sources.

- **RES directive**. Supports the development of less carbon-intensive technology in the medium to long-term, through a number of instruments and support programs. Its main objectives are environmental protection (climate) and energy security. With (at least partly) control over the supply side in the energy market, considering both energy security and environmental obligations, the Union needs to establish an instrument that will enable control of the energy consumptions side.

- **Energy taxation**. Sets minimum levels for taxation of energy products, aiming at gaining control over the energy consumption in the Member States. With instruments for both the supply and demand side in the European energy market in place, the EU's three pronged approach towards assembling a portfolio of energy related ennvironmental policy instruments is evident.

3.5 Other political processes in the EU

To what extent have other political processes in the EU influenced the development of Member States' energy tax regulations and the EU energy tax directive? This section will discuss two issues of particular relevance to energy taxation: the enlargement process and the enhanced co-operation procedure.

3.5.1 Enlargement

Following the Copenhagen European Council in December 2002, the formal accession negotiations with the 10 enlargement countries[32] were concluded. In addition, Bulgaria and

[32] The accession countries are: Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, the Slovak Republic and Slovenia.

Romania were provided with detailed roadmaps and increased pre-accession aid to assist their possible future inclusion in the EU. A date was also set for a review of Turkey's compliance with the criteria required to start accession negotiations was also set. Formal accession of the new Member States will take place on 1 May 2004, resulting in a 25 nation EU from that date. EU-27, with Bulgaria and Romania included in the ranks, is scheduled for 2007.

Having had repeated problems of reaching unanimity between 15 nations on the issue of energy taxation, the daunting prospects of 25 countries seeking unanimity on the same issue was most certainly a driver for reaching an agreement on the directive. It should be noted that the accession countries were allowed to sit in on the negotiations on the directive as observers from March 2003, the meetings that finally led to an agreement.

As the Directive on energy taxation will come into effect from January 2004, it is expected that the new Member States will implement the agreement as part of the *aquis de communitaire*[33]. However, as the Directive already allows for long transitional periods for exisiting Member States, it is doubtful whether actual implementation will be required by the accession countries before 2012. Given the current low, or in some cases non-existing, levels of energy taxation in these countries, compliance with the Directive will have substantially larger impacts than in the existing EU.

The EU enlargement, bringing with it a new energy supply profile, will also have major repurcussions for both energy market liberalisation and energy security. With regard to energy security, the Commission feels that with measures in place to secure oil supplies to the EU, the attention should now be turned to the issue of gas supplies[34]. This focus resulted in the Commission's adoption of a proposal for a Directive on security of gas supply in September 2002[35], seeking to establish a package for a common and joint management of oil and gas stocks. This new emphasis on gas for energy security considerations, and the prospect of increased dependency on imports, would have had some impact on the Commission's approach to energy taxation, providing an incentive to further protect European energy sources through lenient tax levels, whilst at the same time seeking to ensure some environmental integrity through promoting cleaner energy sources.

3.5.2 Enhanced Co-operation Procedure

The enhanced co-operation procedure was originally set forth in the Amsterdam Treaty and subsequently modified in the Nice Treaty. In effect, this clause allows for Member States to implement legislation using EU institutions and procedures even in the absence of majority

[33] The entire set of EU directives, regulations and guidelines to be implemented by each Member State.

[34] EU Energy 47/48 December 2002

[35] Proposal for a Directive of the European Parliament and the Council concerning measures to safeguard security of natural gas supply. 2002/0220 (COD).

agreement on proposed legislation. At least 8 Member States[36] must agree to co-operate on the legislation, and it can then be formally agreed to implement the legislation, allowing for other Member States to join the "coalition" at a later stage[37].

There were some discussions on the use of enhanced co-operation during the negotiations on energy taxation[38], but these were never realised through any official procedures. Enhanced co-operation on energy taxation would in effect only have codified the existing differences between current high levels of energy taxation in the north and corresponding low levels in the south. Formalising this divide would not have brought forward any further harmonisation on the issue. As such, enhanced co-operation would have gone against the driving forces of the common market and energy liberalisation, and it can be thought that unanimity was reached as the alternative of enhanced co-operation on energy taxation, leading to a further acceleration of a "two-speed" Europe, was seen as unattractive.

3.6 Concluding remarks

This chapter has identified a number of driving forces influencing the development and final outcome of energy taxation in the EU. These driving forces have played different roles at different times throughout the past decade. For example, the efforts to introduce a carbon tax was important in the early 1990s, while the issue of an enlarged EU has played an important role in later years. Table 3.1 presents an overview of the functioning of the different driving forces from 1992 until today. The changes in the internal market have not been included, as this driving force is seen as all encompassing, governing the changes in all other driving forces.

[36] The procedure calls for a majority of Member States. In an enlarged EU-25 this will increase to 13 countries.

[37] In effect, both the European Monetary Union (EMU) and the Schengen treaty on border control function as enhanced co-operation procedures, although not in name.

[38] Authors' interviews in Brüssels, March 2003.

Table 3.1 Driving forces and their impacts on energy taxation, 1992-2003

Energy liberalisation	------ National and regional energy markets-------				Directive on elect. liberalisation		Directive on gas liberalisation	----Slow process towards a single European energy market----				
Energy security	---------- Energy secutiry governed by national policies. No common EU position. ----------								Green Paper on Energy Security	-------- Some common policies-------		
Environmental politics	Proposal for carbon tax	-------- No agreement on a CO2 tax. Shift of attention towards emissions trading ----------							Green Paper on EU ETS	Proposal for EU ETS, tax proposal withdrawn		Final agreement on EU ETS.
Other political processes		Negotiations on enlargement begins				Amsterdam treaty introduces enhanced coop.			Nice treaty modifies enhanced coop.		Enlargement agreed	
Energy taxation	CO2/energy tax proposal	---------- Issue remains untouched----------				Monti proposal. New attention.		Introduction of transition periods		Decision to tax electr. at output	Spanish proposal. Much lower rates	Final agreement
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003

4. Future prospects

This chapter will look at the future prospect for the use of energy taxes in the EU and key Member States, based on an analysis of the driving forces identified in phase 2 and their impacts on energy taxation. The main focus of the study will be on the Nordic countries, but also includes countries where changes in the energy taxation framework will have direct impacts on the Nordic power market. The main research questions asked in the final phase are:

- What characterises the interplay between energy taxation systems in the Nordic countries?
- What changes can we expect in the use of energy taxes in these countries?
- How will these changes impact on the Nordic power market?

4.1 Moving towards a common energy market

- How is the process of market liberalisation progressing, and how may this affect the use of energy taxation? To what extent will energy taxation be used to further the energy market liberalisation processes in the Nordic countries?

4.2 Long term environmental policies

- How will the implementation of the EU emissions trading system influence the future use of energy taxation? To what extent will the imposed limitations of emission credits acquired through JI or CDM influence the emerging European emissions trading market? What policy instruments will be used to address sectors not covered by the trading scheme?

4.3 Energy security in the future

- What are the main challenges for the EU energy security strategy? What are the options pursued by EU Member States to ensure energy security? In what way does this influence the future use of energy taxes? What will the impacts be for the Nordic countries?

4.4 European challenges

- How will the enlargement process affect energy taxation? What will be the impact on the use of energy taxation from possible splits or multi-speed approaches within the new EU? What are the possibilities for utilising the enhanced cooperation procedure for energy taxation? Is a move towards QMV for energy taxation a possibility? How,

and to what degree, might the forthcoming European convent impact on the use of energy taxation?

4.5 Conclusions

- Drawing upon the answers to the questions posed in the previous sub-chapters the main research questions for phase 3 are answered:
    - What characterises the interplay between energy taxation in the Nordic countries?
    - What changes can we expect in the use of energy taxes in the countries studied?
    - How will these changes influence the European energy market in general, and the Nordic countries in particular?

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Annex 1: Country Profiles

A1.1 Austria

Table A1.1 Tax rates on energy products in Austria, in Euro per GJ.

Heating fuels		Motor fuels	
Light fuel oil	1,9	Unleaded petrol	12,3
Low sulphur fuel oil	0,8	Leaded petrol	14,5
High sulphur fuel oil	0,9	Diesel	7,7
Kerosene	7,9	LPG	5,7
LPG	0,9	Kerosene	8,1
Natural gas	1,1	Natural gas	1,1
Coal	0		
Electricity	4,2		

Note: Shaded areas imply compliance with latest proposal on EU energy taxation.

The revenue from environmentally related taxes in Austria represented 4.9 billion euros in 1999, up 5% from 1997, with energy and transport constituting around 90%. The current tax on natural gas and electricity consumption was introduced in 1996 and subsequently increased in 2000 to € 0,015 per kWh. VAT of 20% is applied to electricity consumption on top of the existing tax. The revenue of the tax is earmarked for environmental measures. Industrial sectors are covered by the energy tax compensation law, ensuring that new taxes on electricity and gas are refunded to large energy users if the taxes go over 0.35% of added value.

Austria has also experienced problems with fuel tourism resulting from the introduction of new taxes on motor fuels. The expected revenues from the 1995 mineral oil tax was reduced by 28% as a result of Austrians purchasing their fuel across the borders.

A new ecotax was rejected by the European Court of Justice in November 2001 as the exemptions for industry were deemed to be state aids. The tax was to be re-designed for the Commission by the end of 2002, coinciding with the planned introduction of a tax reform for the beginning of 2003. The tax reform would comprise cuts in labour taxes, which have been proposed financed by increased taxes on environmentally damaging products and activities.

The Austrian government confirmed its climate strategy on June 18th, aimed at enabling the country to meet its Kyoto protocol greenhouse gas reduction target of 13% by 2008-12. The government is in favour of the EU Emissions Trading proposal and is currently looking at ways to implement it.

A1.2 Belgium

Table A1.2 Tax rates on energy products in Belgium, in Euro per GJ.

Heating fuels		Motor fuels	
Light fuel oil	0,4	Unleaded petrol	15,3
Low sulphur fuel oil	0,1	Leaded petrol	17,1
High sulphur fuel oil	0,4	Diesel	7,9
Kerosene	0,4	LPG	0
LPG	0,4	Kerosene	16,2
Natural gas	0,3	Natural gas	0,3
Coal	0		
Electricity	0,4		

Note: Shaded areas imply compliance with latest proposal on EU energy taxation.

Total 1997 revenues from environmentally related taxes in Belgium were amongst the lowest in Europe at only 5,5%. The revenues are unevenly spread within the country as Regions have their own taxes and charges within specific domains such as water, waste and contaminated land. Fiscal policy in general, including energy taxation, is a federal responsibility. Electricity consumption (low voltage use) is currently taxed at € 0,0014 per kWh.

The Federal Plan on Sustainable Development (2000-2003) included a chapter on fiscal instruments for sustainable development, introducing *inter alia* action plans to study the possibilities of introducing a CO2/energy tax, and VAT differentiation on products according to their environmental impacts. These plans were brought forward in the National Climate Plan of 2002, where the CO_2/energy tax was taken up as a "measure in the conceptual and study phase", not as a "planned measure". In this study phase a national evaluation of energy taxation was undertaken, looking at different scenarios: raising energy taxes to the level of the country's neighbours and most important trading partners (Germany, Netherlands and France), tripling the existing excise duties on energy, implementing the EU proposal. The results of the study are due for March 2003, or when agreement is reached on the EU proposal for harmonised energy taxes. An increase of Belgian energy taxes to the level of the main neighbours was found to increase government revenue by 1.4 billion euros and lead to CO2 emissions reductions of 3 to 3.5 % (the Kyoto target for Belgium is 7.5%).

Following the agreement on EU emissions trading in December 2000 there have been scant news on the future of Belgian energy politics. General elections will be held in July 2003 and a continued green government will most likely include energy taxation as part of the coalition negotiations, whereas the liberals will only pursue the matter at EU level.

A1.3 Denmark

Table A1.3 Tax rates on energy products in Denmark, in Euro per GJ.

Heating fuels		Motor fuels	
Light fuel oil	7,6	Unleaded petrol	16,4
Low sulphur fuel oil	7,5	Leaded petrol	19,1
High sulphur fuel oil	7,7	Diesel	11,0
Kerosene	7,9	LPG	10,2
LPG	10,2	Kerosene	11,6
Natural gas	7,9	Natural gas	10,8
Coal	8,5		
Electricity	24,9		

Note: Shaded areas imply compliance with latest proposal on EU energy taxation.

Denmark has taxed energy since 1977 (although taxes on petrol were introduced as early as 1917, albeit without an environmental agenda at the time). A CO_2/energy tax was introduced in 1992 together with an environmental/energy tax on households that was to increase gradually. The 1996 environmental tax reform resulted in a gradual transfer of tax revenue from income and labour to pollution and natural resource use, including the CO_2/energy tax and an SO_2 tax. CO_2 tax rebates were granted for the industry according to energy intensity. The tax reform also introduced voluntary agreements with industry and grants for energy saving projects. The duty for CO_2 for electricity consumption is currently set at € 0,0134 per kWh, in addition to the tax on electricity consumption set at € 0,0673 per kWh for households and € 0,076 per kWh for other non-business.

The internal political process governing the development of environmentally related taxes in Denmark has traditionally been met with strong opposition from industry (and some political parties), arguing that the high taxes would damage their industrial competitiveness. To reach a consensus on the taxation issues numerous exemptions and complicated structures have been introduced, all of which may reduce the effectiveness of the charges. Nevertheless, industrial sector energy consumption would have been 10% higher in 97 without the tax, exemptions included (Bjørner and Jensen, 2000).

Following the elections of 2001 the new conservative-liberal government pledged an overall tax freeze, stopping any further environmental tax reform and thus reducing energy- and green taxes in real terms. The government did instead push for the completion of the negotiations on the EU proposal for harmonisation of energy taxation, although an agreement on the proposal was not reached during the Danish Presidency.

In 2001 the CO_2 Quota Act was passed, establishing a domestic cap and trade scheme for greenhouse gas emission rights. The system trades only in CO2, covers the electricity sector as a whole and excludes power companies that produce less than 100.000 tonnes of CO_2 per year. This leaves the total number of companies in the market at 8 (see Table 3.4 below). More than 90 % of the total CO2 emissions from electricity - that is about 30 % of total Danish greenhouse gas emissions - are covered by the scheme.

Emission allowances are grandfathered based on the average historical emissions in 1994-1998 of the participating companies (30.3 Mt CO2 on annual average for the period). Allowances are issued per company, and not per unit or plant. New producers on the Danish market will be allocated allowances based on objective and non-discriminatory objectives. Table A1.4 shows the allocations for the compliance period. Note that the allocation for 2003 is preliminary.

Table A1.4 Allocation for participants in the Danish CO_2 trading scheme, in Mt CO_2e.

Producer	2001	2002	2003
Elsam A/S	10,533	9,873	9,420
Energi E2 A/S	8,221	7,577	7,135
EON/PreussenElektra	0,965	0,838	0,751
Energi Randers Prod. A/S	0,198	0,198	0,198
Dansk Shell A/S	0,102	0,102	0,102
I/S Avedorevaerket 2	0,094	0,527	0,510
Ostkraft Produktion A/S	0,062	0,060	0,058
NRGI Amba (Anholt)	0,001	0,001	0,001
Without permits	1,825	1,825	1,825
Total cap	22,000	21,000	20,000

Source: IETA Emission Trading Schemes Database

The penalty for non-compliance is set at € 5,4 (40 DKK) per tonne CO2 emitted in excess of the company's allowance. The revenue from any non-compliance fines is to be invested in energy savings initiatives. The system for the period after 2003 is to be renegotiated, building on the experiences with the current system and the agreed framework directive for community wide greenhouse gas emissions trading in the EU.

A1.4 Finland

Table A1.5 Tax rates on energy products in Denmark, in Euro per GJ.

Heating fuels		Motor fuels	
Light fuel oil	1,8	Unleaded petrol	17,2
Low sulphur fuel oil	1,3	Leaded petrol	19,5
High sulphur fuel oil	1,4	Diesel	8,9
Kerosene	1,6	LPG	0
LPG	0	Kerosene	8,7
Natural gas	0,7	Natural gas	0
Coal	2,1		
Electricity	1,9		

Note: Shaded areas imply compliance with latest proposal on EU energy taxation.

Revenues from environmentally related taxes in Finland represented 4,1 billion Euro in 2000, equalling 7% of total tax revenues, of which fuel- and vehicle related taxes amounted to 82% and other energy taxes 16%. Finland introduced a general CO_2 tax on fossil fuels as early as 1990, modifying it in 1994 to apply to all primary energy sources[39] according to a fixed carbon/energy ratio (60% on CO_2 and 40% on energy).

Following Finland's entry into the EU and the opening of the Nordic electricity markets the present energy tax system came into force. The carbon/energy ratio was abandoned and electricity was taxed as consumption rather than primary energy. Tax rebates were made available for small-scale electricity production based on renewable and combined heat and power production. The excise on electricity stands currently at € 0,0043 per kWh for the manufacturing sector and € 0,0069 per kWh for the rest of the economy. In addition to this comes a strategic stockpile fee on electricity consumption of € 0,1262 per MWh. Energy intensive industries can claim a rebate from these taxes through an exemptions and rebate system.

Current political debate on energy taxation is at a standstill, focusing instead on the political development at EU level. The government voted for the construction of a 5th nuclear power plant in May 2002, but details surrounding this are still unclear. The future energy and taxation policies of Finland, and then especially their approach to the EU emissions trading system, will be clearer after the parliamentary elections in March 2003.

[39] Biomass, wind power and waste fuel exempted.

A1.5 France

Table A1.6 Tax rates on energy products in France, in Euro per GJ.

Heating fuels		Motor fuels	
Light fuel oil	1,8	Unleaded petrol	17,4
Low sulphur fuel oil	1,3	Leaded petrol	18,9
High sulphur fuel oil	1,4	Diesel	10,2
Kerosene	1,6	LPG	2,3
LPG	0	Kerosene	16,4
Natural gas	0,7	Natural gas	2,2
Coal	0		
Electricity	1,8		

Note: Shaded areas imply compliance with latest proposal on EU energy taxation.

Energy taxation was first introduced in France in 1997 through the *Taxe Générale sur les Activités Polluantes* (TGAP), which unified and simplified five existing taxes[40] in preparation for a general energy tax to be introduced in 2000. The revenue from the TGAP was used to decrease employers' social contributions. Much controversy surrounded the second text of TGAP concerning energy taxation, especially on industrial consumption. A main concern was that exemptions from the tax resulted in some less energy intensive industries paying more than very energy intensive ones. In addition, the decision to use the revenues from TGAP2 towards the financing of the 35hr week social programme was deemed unconstitutional. In the end the *Conseil Constitutionnel* rejected the text. Very little attention has been paid to energy taxation after the rejection of TGAP2, and the current situation focuses on voluntary agreements (including some trading aspects) with industry for the reduction of greenhouse gas emissions. Currently, the only taxation on electricity consumption in France is placed on households at a rate of € 0,0074 per kWh.

The most recent initiative towards the management of greenhouse gas emissions reductions from the industry is the establishment of the organisation AERES (*Association des Entreprises pour la Réduction de l'Effet de Serre*). The organisation will focus on voluntary commitments and a possible trading scheme from 2003 to limit greenhouse gas emissions from French industry.

[40] Air pollution, mineral oils, treatment and storage of special industrial wastes, domestic wastes and noise nuisance.

A1.6 Germany

Table A1.7 Tax rates on energy products in Germany, in Euro per GJ.

Heating fuels		Motor fuels	
Light fuel oil	1,7	Unleaded petrol	19,3
Low sulphur fuel oil	0,4	Leaded petrol	20,9
High sulphur fuel oil	0,4	Diesel	12,4
Kerosene	17,6	LPG	3,3
LPG	0,8	Kerosene	17,8
Natural gas	1,0	Natural gas	3,3
Coal	0		
Electricity	5,0		

Note: Shaded areas imply compliance with latest proposal on EU energy taxation.

Energy taxation in Germany is governed by the Ecological Tax Reform (Ökosteuer) with an explicit tax shift from labour to pollution in steps from 1999 to 2003. The current electricity tax was introduced in 1999 as part of the reform, and stood at € 0,0128 per kWh for households and € 0,0020 per kWh for manufacturing and industry in 2002. Tax reductions are available for energy intensive industries and environmental programmes focusing on renewables and energy efficiency have also been introduced.

There have been some problems with the tax reform, most notably with the tax reductions for industry, which have been criticised by the Commission for being contrary to competition legislation. The German government was granted the right to keep the 80% rebates until 2012, but the 90% rebates will have to be phased out in 2004. Energy-intensive industries were granted a five-year tax cap, pending CO_2 emissions figures for 2004. This was the first time that ten-year exemptions were allowed under the new guidelines for environmental state aid adopted in January 2001. Other problems remain, with electricity produced from mineral oil and natural gas being taxed twice, while electricity from nuclear and coal is taxed only once. In addition, coal is still subsidised, although the subsidies are declining.

In the run-up to the 2002 elections Chancellor Schroeder promised no more energy tax increases after 2003, opting instead to focus on harmonisation of energy taxation at the EU level. The coalition government formed after the elections opted instead to continue the reform, implementing the fifth step of the reform in January 2003. The reform will be evaluated in 2004 and its future is now highly uncertain. Of special relevance to the tax reform are the voluntary agreements between industry and government for reductions of greenhouse gas emissions by 28% by 2005 from 1990 levels, and the prospects for EU wide emissions trading.

A1.7 Greece

Table A1.8 Tax rates on energy products in Greece, in Euro per GJ.

Heating fuels		Motor fuels	
Light fuel oil	0,5	Unleaded petrol	9,6
Low sulphur fuel oil	0,4	Leaded petrol	10,2
High sulphur fuel oil	0,5	Diesel	6,7
Kerosene	0,5	LPG	2,2
LPG	0,3	Kerosene	7,0
Natural gas	0	Natural gas	0,0
Coal	0		
Electricity	0		

Note: Shaded areas imply compliance with latest proposal on EU energy taxation.

Environmental taxation in Greece is mostly put on petroleum products, representing 6,7 % of total tax revenues in 2000. Among these taxes, those that are really intended as environmental represent a negligible fraction. There is no Environmental Tax Reform (ETR).

A1.8 Ireland

Table A1.9 Tax rates on energy products in Ireland, in Euro per GJ.

Heating fuels		Motor fuels	
Light fuel oil	1,3	Unleaded petrol	15,3
Low sulphur fuel oil	0,3	Leaded petrol	15,5
High sulphur fuel oil	0,3	Diesel	9,6
Kerosene	0,9	LPG	2,2
LPG	0,8	Kerosene	8,6
Natural gas	0	Natural gas	0
Coal	0		
Electricity	0		

Note: Shaded areas imply compliance with latest proposal on EU energy taxation.

Electricity is not taxed in Ireland and there is little focus on environmental taxation apart from on fuels and transportation. The national climate strategy of 2000 proposed the introduction of a CO_2 tax by 2002. However, the proposal was thrown out by the Finance Minister Charlie McCreevy in the 2002 budget, only to be reintroduced in December 2002, now as a 'carbon energy tax' planned for the end of 2004.

A1.9 Italy

Table A1.10 Tax rates on energy products in Italy, in Euro per GJ.

Heating fuels		Motor fuels	
Light fuel oil	10,8	Unleaded petrol	16,3
Low sulphur fuel oil	3,1	Leaded petrol	n.a
High sulphur fuel oil	3,1	Diesel	10,9
Kerosene	9,5	LPG	6,2
LPG	4,1	Kerosene	9,6
Natural gas	2,1	Natural gas	0,3
Coal	0		
Electricity	0,6		

Note: Shaded areas imply compliance with latest proposal on EU energy taxation.

Energy prices in Italy have historically been high for both households and industry. Adding to these high prices the 1998-2003 general fiscal reform in Italy included a stepwise environmental tax reform with energy/CO_2 taxes, with the revenues used for decreases in employer's social contributions, tax reductions for severely hit social groups, as well as environmental programmes. Annual tax increases were placed on all fuels for households and transport, according to carbon content. Any tax increases for industry were made dependent on harmonisation of energy taxation at the EU level. Following the increase in world oil prices in 2000 the tax levels were frozen, and the government pledged that it would not increase the taxes but that it might broaden the tax base. The tax on electricity consumption currently stands at € 0,0030 per kWh for industry and € 0,0021 per kWh for private dwellings.

New legislative proposals in November 2002 introduced a new energy law, under which the carbon tax would be gradually replaced by what was referred to as 'an advanced taxation system'. No further information of the taxation system has been made public. In addition to introducing a new taxation system, the draft energy law proposes an annual increase in the quota of electricity to be produced by renewables by 0,35% between 2005 and 2012.

A1.10 Luxembourg

Table A1.11 Tax rates on energy products in Luxembourg, in Euro per GJ.

Heating fuels		Motor fuels	
Light fuel oil	0,1	Unleaded petrol	11,3
Low sulphur fuel oil	0,1	Leaded petrol	12,8
High sulphur fuel oil	0,4	Diesel	6,9

Kerosene	0	LPG	2,2
LPG	0	Kerosene	8,4
Natural gas	0	Natural gas	0
Coal	0		
Electricity	0,7		

Note: Shaded areas imply compliance with latest proposal on EU energy taxation.

There have been some recent energy tax increases in Luxembourg, but a tax system with low taxes on low energy and fuel prices remains.

A1.11 Netherlands

Table A1.12 Tax rates on energy products in the Netherlands, in Euro per GJ.

Heating fuels		**Motor fuels**	
Light fuel oil	5,3	Unleaded petrol	19,0
Low sulphur fuel oil	0,7	Leaded petrol	21,1
High sulphur fuel oil	0,8	Diesel	9,7
Kerosene	5,5	LPG	2,7
LPG	3,9	Kerosene	10,3
Natural gas	3,5	Natural gas	0,3
Coal	0,6		
Electricity	16,7		

Note: Shaded areas imply compliance with latest proposal on EU energy taxation.

The Netherlands have one of the most advanced environmental taxation systems in the EU, with green taxes on energy, groundwater, landfill waste, aviation noise and manure, as well as positive fiscal incentives rewarding environmentally friendly behaviour. The Regulatory Energy Tax of 1996 to 2001 applied to households, transport and small to medium enterprises, drawing 60% of its revenue from households and the remainder from industry. Energy intensive industries were almost totally exempted, as was natural gas. The tax rates were doubled in three steps over four years, compensated by cuts in income tax and employer's social contributions. The high tax increases, with household electricity bills increasing by as much as 70%, resulted in a 15% reduction in the consumption of electricity. The tax increases have now stopped, due to a lack of EU harmonisation of energy taxation. Consumers of electricity using less than 10 MWh per year are now taxed at € 0,0583 per kWh, whereas consumers using between 10 and 50 MWh per year are taxed € 0,0194 per kWh and consumers using between 50 MWh and 10 GWh per year are taxed € 0,0141 per kWh. The revenue from energy taxes account for 1,5% of total tax revenues.

Following the May 2002 elections a coalition government was formed which later imploded due to internal bickering in the LPF party and a general lack of cooperation within the Balkenende cabinet. The recently held elections in the Netherlands have not yet resulted in a coalition government (this process normally takes some time in the Netherlands), but a cabinet dominated by the christian democrats and the labour party can be expected. It is still unclear what signals any new government will send out on energy taxation, but the past years policy debate in the Netherlands has focused on emissions trading rather than taxation.

A1.12 Portugal

Table A1.13 Tax rates on energy products in Portugal, in Euro per GJ.

Heating fuels		Motor fuels	
Light fuel oil	0,9	Unleaded petrol	14,5
Low sulphur fuel oil	0,3	Leaded petrol	16,6
High sulphur fuel oil	0,7	Diesel	7,4
Kerosene	2,9	LPG	2,2
LPG	0,2	Kerosene	7,4
Natural gas	0,1	Natural gas	1,9
Coal	0		
Electricity	1,4		

Note: Shaded areas imply compliance with latest proposal on EU energy taxation.

The national climate change plan for Portugal was released in December 2001, focusing on the restructuring of the taxation system for the transport sector. Very little attention has been paid to the electricity system, the only environmentally related instrument being a feed-in premium granted to renewable energy sources to on-grid electricity purchases. The implementation of the climate change plan is uncertain following the March 2002 elections.

A1.13 Spain

Table A1.14 Tax rates on energy products in Spain, in Euro per GJ.

Heating fuels		Motor fuels	
Light fuel oil	2,1	Unleaded petrol	12,9
Low sulphur fuel oil	0,3	Leaded petrol	13,0
High sulphur fuel oil	0,3	Diesel	8,0
Kerosene	4,1	LPG	17,2
LPG	0	Kerosene	9,0

Natural gas	0	Natural gas	0
Coal	0		
Electricity	0,6		

Note: Shaded areas imply compliance with latest proposal on EU energy taxation.

Electricity consumption in Spain is taxed at € 0,0025 per kWh for industry and € 0,0056 per kWh for households, but there is no overall plan for environmentally related taxation. The government has so far been quite hostile towards the subject and there has been little or no public debate. In addition, Spain regularly blocked the EU proposal for harmonisation of energy taxation before the Spanish presidency in 2002. The latest change in Spanish attitudes to the proposal can be interpreted as a desire to push for energy market liberalisation.

A1.14 Sweden

Table A1.15 Tax rates on energy products in Sweden, in Euro per GJ.

Heating fuels		**Motor fuels**	
Light fuel oil	10,7	Unleaded petrol	15,2
Low sulphur fuel oil	9,3	Leaded petrol	17,3
High sulphur fuel oil	9,5	Diesel	5,5
Kerosene	11,1	LPG	3,0
LPG	4,8	Kerosene	11,3
Natural gas	4,5	Natural gas	3,0
Coal	10,1		
Electricity	5,9		

Note: Shaded areas imply compliance with latest proposal on EU energy taxation.

The 1991 ecological tax reform introduced an energy/CO_2 tax with strict fiscal neutrality. The current energy tax on electricity stands at € 0,0214 per kWh for households and € 0,0151 per kWh for industry. Exemptions and rebates are available for industry. Following the failure of EU to harmonise taxation levels in the early 1990s the tax rates for industry went down to 25% of the tax rates for industry, but rose to 50% again in 1997. In addition to the energy/CO_2 tax there were also increased levels of SO_2 and N_2O taxes. In the 2002 budget an additional tax shift of 2 billion SEK from labour to energy was approved, the aim being a total shift of 30 billion in 10 years. Up to now, the tax shift in Sweden is already at 6% of total tax revenues. Currently, the debate on energy taxation is at a standstill, focusing instead on the implications of EU wide emissions trading.

A1.15 United Kingdom

Table A1.16 Tax rates on energy products in the UK, in Euro per GJ.

Heating fuels		Motor fuels	
Light fuel oil	1,4	Unleaded petrol	23,8
Low sulphur fuel oil	1,0	Leaded petrol	26,7
High sulphur fuel oil	1,1	Diesel	13,7
Kerosene	0,4	LPG	3,1
LPG	0	Kerosene	23,8
Natural gas	0,7	Natural gas	0,7
Coal	0		
Electricity	1,9		

Note: Shaded areas imply compliance with latest proposal on EU energy taxation.

Energy taxation in the UK is set by the Climate Change Levy, applying to gas, coal and electricity (oil products are covered by separate mineral oil taxes) used by end-users in business and the public sector (households are not covered). Current rates are set at the ordinary rate of € 0,0069 per kWh for non-households and at the reduced rate of € 0,0014 per kWh for energy intensive industries (identified on the basis of IPPC directive). In addition, a non-fossil fuel obligation levy of 0,7% of the price is placed on electricity production.

Energy intensive industries can claim an 80% tax refund in exchange for entering into Climate Change Agreements targeting energy use and emissions cuts, and energy efficiency programmes. 20% of the tax still remains. Firms who have entered into these agreements can also participate in the UK emissions trading scheme within their sector to meet their targets. All sectors have already signed voluntary agreements

The Climate Change Levy is revenue neutral, with revenue around 1 billion pounds a year, approximately 0,5 % of total tax revenue, and it is estimated to increase by 10-20% of the typical energy costs of business. The revenue goes into decreases of employers' social contributions, into tax breaks for energy efficiency investments and new programmes for energy efficiency and renewables. Compensation measures for business also include enhanced capital allowances, allowing investments to be written off tax in year one, rather than being depreciated over time. The 2002 budget froze both the Climate Change Levy and the Fuel Duty, and any further tax increases have not been announced.

The Climate Change Levy has come under some criticism as of late, environmental organisations attacking it for being based on energy and not carbon, and industries claiming that it is destroying British competitiveness. There also remain several uncertainties over the impact of the EU emissions trading scheme on the UK emissions trading system and what

role the current system of energy taxation will have in this policy interplay. In particular, the incompatibilities between UK and EU trading rules stem from the British government's decision to shield households from the Climate Change Levy (Sorrell 2003). The transition to EU trading will also have to avoid double regulation on industries that are liable both to pay energy taxes and obliged to take on emission caps. However, recent debate on the forthcoming energy white paper has ruled out any radical changes to the wholesale energy market pricing and tax regimes.

The UK emissions trading scheme was launched on 14 August 2001, the rules for the scheme were in place in early 2002, and the auction of incentive money was held in March 2002. Trading in the system commenced in April 2002. Emissions reductions in the scheme will be made against a 1998-2000 baseline. The targets were set through the auction for UK£ 215 million in incentive money and the overall target is set at 4,03 million tonnes CO2e reduction from baseline in 2006. Due to linear reductions from baseline this results in a total overall reduction target of 12,09 million tonnes CO2e for the five-year period.

A1.16 New Member States

The level of environmentally related taxation in general, and energy taxation in particular, is low in the central- and eastern European countries scheduled to join the EU from May 2004. Still, the fiscal instruments and taxation systems for environmental purposes in some of the larger accession countries are worth a closer look:

In the Czech Republic there are emission charges on several air pollutants (SO_2, NO_X, CO, particulates, hydrocarbons and others) as well as a levy on nuclear energy use. Energy taxation levels for other energy products are in line with the proposed levels (May 2002) of the EU Energy Taxation directive proposal. Environmental taxation in general is viewed as a possible element of a broader fiscal reform.

In Hungary the set of fiscal instruments consists mostly of fines covering a wide variety of pollutions, such as air pollution, hazardous waste, sewage, etc. Some of the revenue goes towards environmental programmes, but there is no explicit tax shift from labour to pollution. The problem in Hungary is that taxes and prices in general are in a strong upwards trend and any further increase might be inflationary.

Poland has taxation on NOx and SOx, as well as some other pollutants but limited taxation on energy products. It should also be mentioned that Slovenia has a CO_2 tax on motor fuels.

Annex 2. Proposals for minimum tax rates for energy products and national tax rates in EU

Product (Euro/GJ)	Min. rates Dir 92/82	Min. rates Comm. Prop COM(97)30			Rates proposed	Existing rates in EU member states 2002 or latest available													
Motor fuels		1/1/98	1/1/00	1/1/02	05/02	AT	BE	DK	FI	FR	DE	GR	IE	IT	LU	NL	PT	ES	SE	UK
Unleaded petrol	8,7	12,6	13,6	15,1	10,9	12,3	15,3	16,4	17,2	17,4	19,3	9,6	15,3	16,3	11,3	19,0	14,5	12,9	15,2	23,8
Leaded petrol	10,2	12,6	13,6	15,1	12,7	14,5	17,1	19,1	19,5	18,9	20,9	10,2	15,5	n.a	12,8	21,1	16,6	13,0	17,3	26,7
Diesel	6,7	8,4	9,3	10,7	7,8	7,7	7,9	11,0	8,9	10,2	12,4	6,7	9,6	10,9	6,9	9,7	7,4	8,0	5,5	13,7
LPG	2,2	3,1	3,8	4,9	2,7	5,7	0,0	10,2	0,0	2,3	3,3	2,2	2,2	6,2	2,2	2,7	2,2	17,2	3,0	3,1
Kerosene	7,0	8,9	9,8	11,2	8,6	8,1	16,2	11,6	8,7	16,4	17,8	7,0	8,6	9,6	8,4	10,3	7,4	9,0	11,3	23,8
Natural gas		2,9	3,5	4,5	2,6	1,1	0,3	10,8	0,7	2,2	3,3	0,0	0,0	0,3	0,0	0,3	1,9	0,0	3,0	0,7
Heating fuels																				
Light fuel oil	0,5	0,6	0,6	0,7	0,6	1,9	0,4	7,6	1,8	1,1	1,7	0,5	1,3	10,8	0,1	5,3	0,9	2,1	10,7	1,4
Low sulphur fuel oil	0,3	0,4	0,5	0,7	0,4	0,8	0,1	7,5	1,3	0,4	0,4	0,4	0,3	3,1	0,1	0,7	0,3	0,3	9,3	1,0
High sulphur fuel oil	0,3	0,5	0,7	0,8	0,4	0,9	0,4	7,7	1,4	0,6	0,4	0,5	0,3	3,1	0,4	0,8	0,7	0,3	9,5	1,1
Kerosene	0,0	0,2	0,5	0,7	0,0	7,9	0,4	7,9	1,6	0,0	17,6	0,5	0,9	9,5	0,0	5,5	2,9	4,1	11,1	0,4
LPG	0,0	0,2	0,5	0,7	0,0	0,9	0,4	10,2	0,0	0,0	0,8	0,3	0,8	4,1	0,0	3,9	0,2	0,0	4,8	0,0
Natural gas	0	0,2	0,45	0,7	0,3	1,1	0,3	7,9	0,7	0,7	1,0	0,0	0,0	2,1	0,0	3,5	0,1	0,0	4,5	0,7
Coal	0	0,2	0,45	0,7	0,3	0,0	0,0	8,5	2,1	0,0	0,0	0,0	0,0	0,0	0,0	0,6	0,0	0,0	10,1	0,0