

EN32 Energy taxes

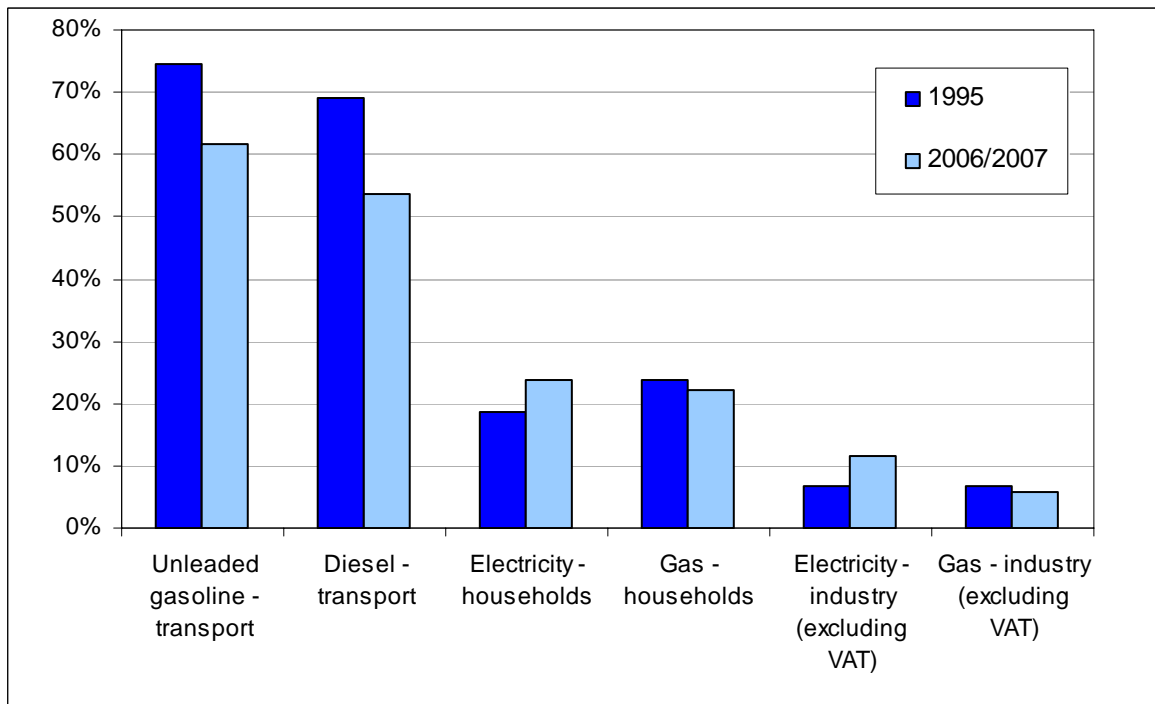
Key message

During the period 1995 to 2006/7, the share of taxes in transport and natural gas prices declined, whilst that for electricity increased, despite rising end-user prices for all fuels. The average share of 'environmental taxes' in total tax revenue in the EU-15 declined from 6.9% in 1995 to 6.4% in 2005, with the share of energy taxes (excluding transport) dropping from 5.3% to 4.7%. Energy tax rates in new member states tend to be lower than the EU-15 although there is substantial variation across all Member States, due to the differing use of taxation to fulfil a range of policy objectives.

Rationale

Although energy taxes are a traditional source of government income, they are also one of the ways in which external costs can be internalised into final energy prices and hence the level of energy taxes can be seen as a method to encourage a particular response. An increase in the tax that raises the final energy price for a fuel may encourage lower use of that fuel. Changes in relative tax levels between substitutable products may also change relative prices and be used to encourage environmentally preferable fuel switching.

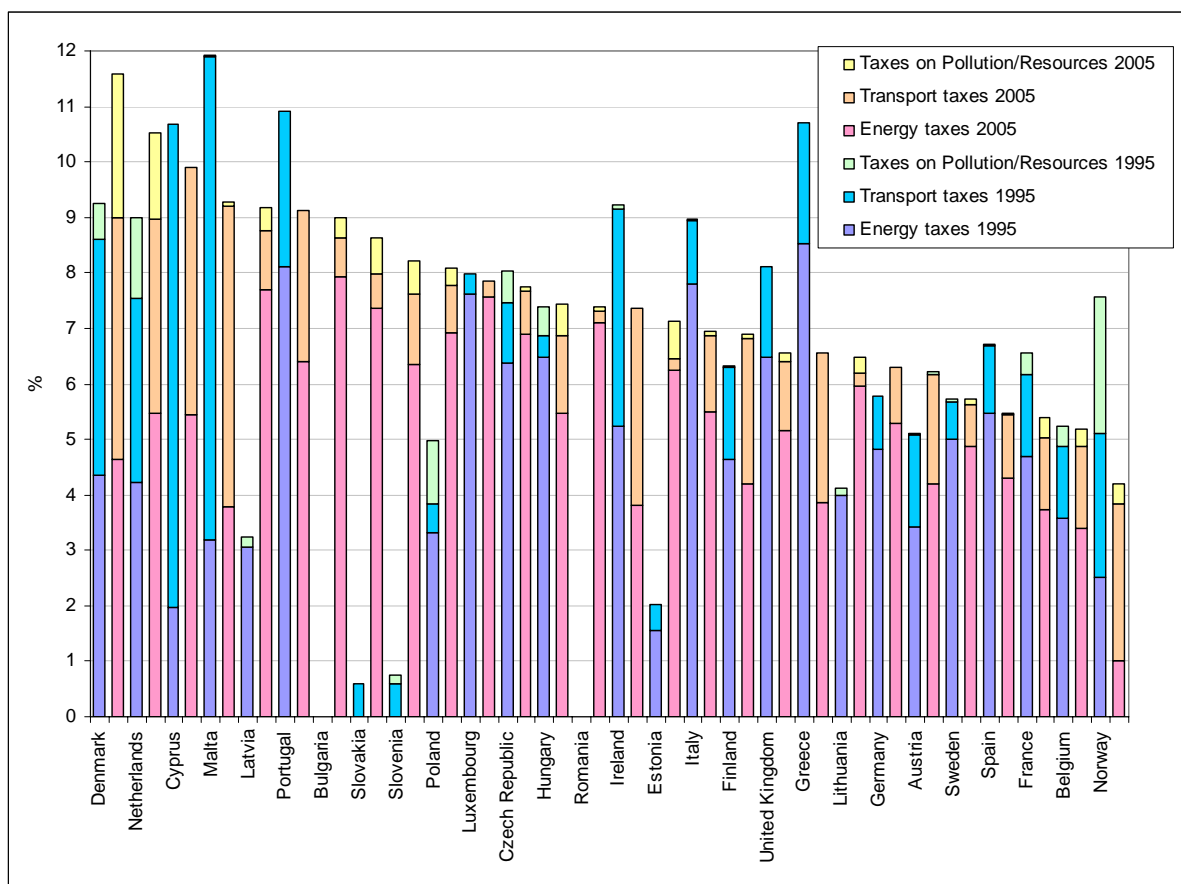
Figure 1: Proportion of tax in energy prices, EU-15, EU-25 for transport



Source: Eurostat, DG TREN Oil Bulletin

Notes: Latest data are for 2006 for gasoline and diesel in EU-25 and for 2007 for electricity and gas in EU-15. Value Added Tax (VAT) is excluded from industry fuel taxes. Taxes are those applicable in January of each year in each Member State and have been weighted by national energy consumption to calculate average values for the EU-15. Eurostat collects price data on gas and electricity for different consumer categories (see metadata) and presents these in three forms: 1) prices without taxes, 2) prices without VAT and 3) prices with all taxes included. The tax component of energy prices for households is calculated by subtracting prices without taxes from prices including all taxes. For industry, it is calculated by subtracting prices without taxes from prices without VAT (as industry can reclaim VAT paid on energy prices). Data for transport fuels is provided by DG TREN in a similar form and the same calculations as for households are applied.

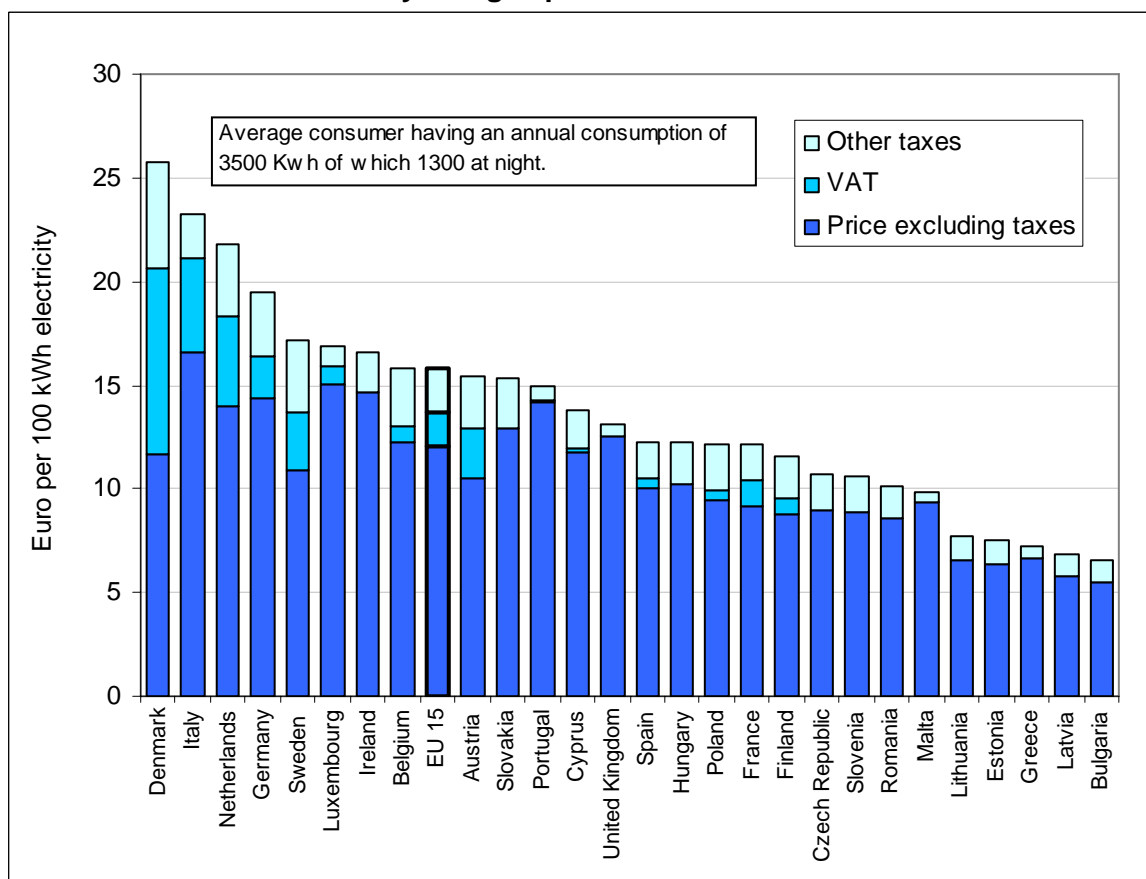
Figure 2: Share of environmental taxes in total tax revenue in 1995 and 2005

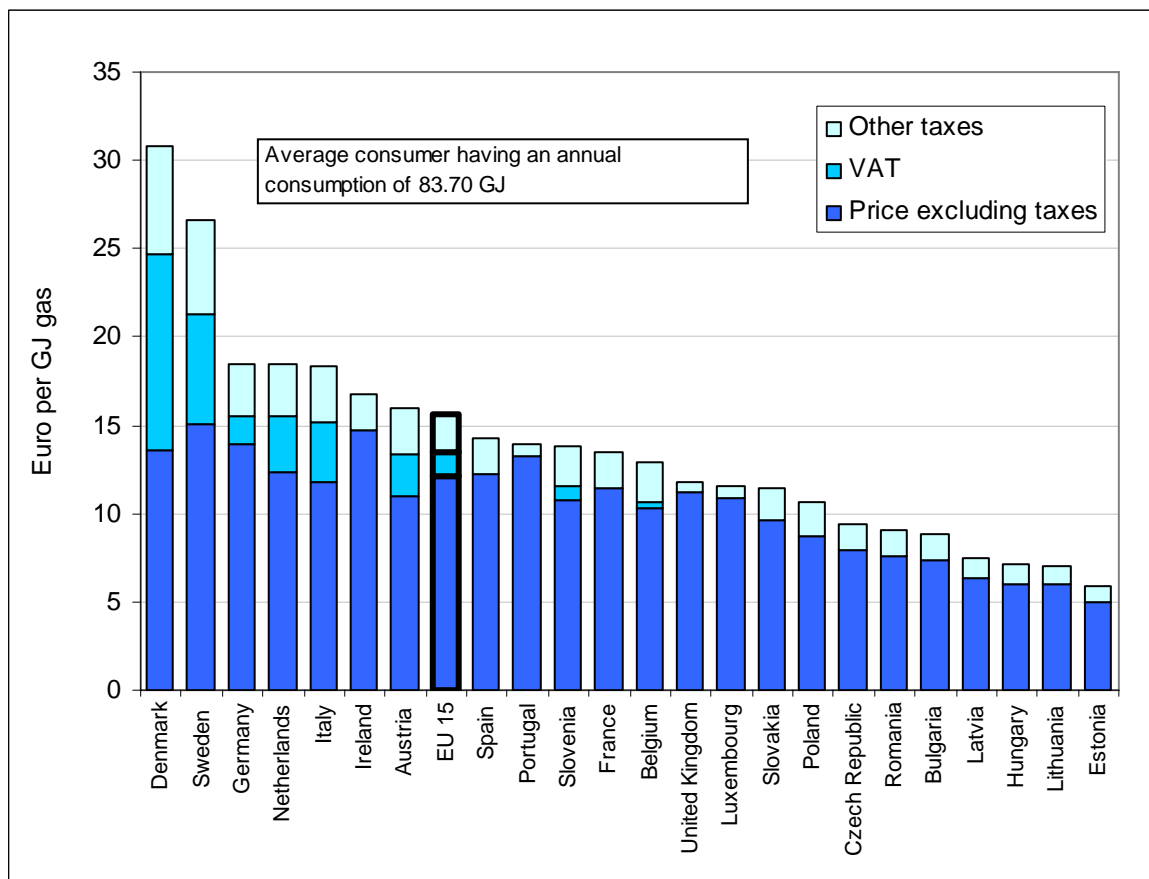


Data source: Eurostat

Note: Note: 2004 data is only available for Portugal and Malta. 1995 data is not available for Bulgaria and Romania.

Figure 3: Share of taxes in electricity and gas prices for households in 2007





Data source: Eurostat

1. Indicator assessment

The **proportion of tax in final energy prices** decreased for transport fuels and natural gas between 1995 and 2006/7 in the EU-15, whilst it increased for electricity, despite rising end-user prices for all fuels (see EN31). Member States are increasingly looking towards environmental taxes to raise prices and to encourage consumers to reduce demand and thus reduce the environmental impacts of energy use. However, it is difficult to define the optimal levels of tax required to meet multiple energy policy objectives: ensuring security of supply; affordable energy; and reducing environmental impacts. Member States have therefore tended to set taxes and adjust levels based on their own experience of fiscal needs and environmental effectiveness.

Changes in the share of taxation in energy prices are dependent on the form of taxation applied. For example, Value Added Tax (VAT) applied as a % of end-user prices ensures that the share remains unchanged, whilst the share of taxation from an excise duty applied per litre of fuel will decrease as the price of energy increases. Hence the decrease in the share of transport fuels has been driven primarily by an increasing global price for oil (see EN31) which has risen faster than any tax changes. For example, the fuel duty escalator in the UK, aimed at keeping fuel tax rising ahead of inflation to curb pollution and congestion, was stopped in 2000.

Details of specific tax rates for each Member State are contained in DG TAXUD's (2008) Taxes in Europe Database. For further details of transport fuels and prices see EEA transport indicator TERM21.

The proportion of energy taxes in final energy prices is generally lower for industry compared with household and transport users. This reflects concerns for industrial competitiveness. Voluntary agreements and the provision of tax reductions for energy intensive industries are common throughout all Member States. For example, the Danish CO₂ tax system offers significantly reduced tax rates to firms that agree to energy conservation measures.

The share of taxes in household electricity prices in 2007 varied across member states from a high of 55% in Denmark to 5 % in the case of Malta. The average for the EU-15 is 24%. Similarly, the share in gas prices ranges from 56 % (in Denmark) to 5 % (in the UK) with an EU-15 average of 22 %. The wider differences in taxation in this sector tend to reflect different priorities. Whilst most taxation in the household sector provides some revenue raising, high taxes in Denmark are part of deliberate policy to encourage energy efficiency (following from the earlier oil crises in 1973 and 1979). By contrast, the rate of VAT in the United Kingdom is set at a much lower level as the emphasis is primarily on affordable supplies of energy for all consumers, particularly those with lower incomes.

Tax rates in the new Member States are typically lower, although many have significantly increased tax rates, particularly on transport fuels, during recent years (EEA, 2005). In addition, rises have occurred due to the expiration of a number of temporary derogations from the minimum levels set in the Energy Taxation Directive 2003/96/EC (see COM/2006/0342 final).

The share of **'environmental' taxes** in total tax revenue varied significantly across EU member states in 2005, from around 11.6 % in Denmark to 5.2 % in Belgium. However, the average share for the EU-15 decreased from 6.9% to 6.4%, with the share of energy taxes (excluding transport) dropping from 5.3% to 4.7%. The change in the percentage of taxation also varied considerably over the period 1995 to 2005, with six member states increasing their share by more than 25%, whilst more than nine member states reduced their share by over 10%. The share of taxes applied directly to pollution/resources is much smaller, with the exception of Denmark and the Netherlands where it accounted for around 2.6% and 1.6% of total revenue, respectively, in 2005.

A number of countries (such as Slovakia, Estonia, Latvia, Poland and Lithuania) have seen increases in the share of 'environmental taxes' in total tax revenue of over 50% from 1995 to 2005. This has been driven largely by an increase in energy taxes (via a combination of broadening the tax base, increasing existing taxes and introducing new taxes). Whilst growth in taxes on pollution/resources has been more rapid in a number of cases this has been from a very low base. A notable exception is Denmark where the share of pollution/resource taxes in total revenue increased from 0.7% in 1995 to 2.6% in 2005 from the introduction of excise duty on a number of polluting substances (such as nitrogen or certain pesticides).

The use of environmental taxes is linked to the issue of Environmental Tax Reform (ETR). This aims to shift the tax burden from welfare-negative taxes (e.g. on labour) to welfare-positive taxes (e.g. on environmentally damaging activities, such as resource use or pollution) as this can lead to a win-win in terms of addressing both environmental and employment issues (European Commission, 2007). Analysis of 6 countries (Denmark, Netherlands, UK, Sweden, Finland, Germany) that implemented ETR (in relation to energy/CO₂ taxes) over the period up to 2004 indicated a reduction in greenhouse gas emissions of around 2-6% (COMETR, 2007).

2. Indicator rationale

2.1 Environmental context

Energy taxes are one of the ways in which external costs can be internalised into final energy prices (see EN35) and hence energy taxes can be seen as a method for encouraging a particular response. An increase in the level of tax that raises the final energy price for a fuel may encourage lower use of that fuel. Changes in relative tax levels between substitutable products may also change relative prices and be used to encourage environmentally preferable fuel switching. The extent to which the tax level influences energy consumption depends on the base fuel price (the price without tax) and the price elasticity of fuel consumption in response to the final end-user price (see EN31).

Energy taxes are also used to raise revenue for national exchequers (traditionally their primary purpose) and to promote policy action to protect national energy interests. The objective behind fuel tax policies is not always clear and can be difficult to apportion between environmental, fiscal and other (e.g. social) concerns. The way in which governments spend the tax revenue can also influence the overall economic and environmental effect of a tax policy package. Some Member States have adopted a 'carrot and stick' approach, combining energy taxation with the option for significant rebates if energy efficiency targets are met (e.g. in the UK companies are eligible for a rebate on the Climate Change Levy if they meet their energy efficiency targets under the Climate Change Agreements).

It is difficult, however, to draw conclusions about the ‘environmental friendliness’ of the tax system in each country without examining their specific system. For example, a low share of total revenue may indicate little use of environmental taxes, or conversely it may indicate successful use, whereby the tax has shifted behaviour away from the polluting goods, thus eroding the tax base. In addition, some of these taxes are not necessarily related directly to the internalisation of external costs and may be implemented primarily to fulfil a range of other policy objectives, such as general revenue raising (OECD, 2001).

2.2 Policy context

The EU has increasingly favoured economic or market-based instruments (“MBI”) – such as indirect taxation, targeted subsidies or tradable emission rights – for environmentally related policy purposes because they provide a flexible and cost-effective means for reaching given policy objectives (European Commission, 2007).

This approach was previously advocated in the EU’s 6th Environment Action Programme (Decision No 1600/2002/EC) and the renewed EU Sustainable Development Strategy (EC, 2006) as well as the renewed Lisbon Strategy for Growth and Jobs (European Commission, 2008).

The earlier Action Plan for Energy Efficiency (COM(2006)545 final) also highlighted the need to improve taxation, to ensure that the polluter really pays, but without increasing overall tax levels. It suggested that one option would be to bring excise rates on energy products and electricity consumed in production activities closer together, but at the higher end of the scale, and introduces automatic indexing of all excise rates in order to avoid erosion by inflation.

In addition, the European Commission has a long-term objective to harmonise further minimum levels of tax rates, including those for energy products, across the EU. This is seen as an important step in ensuring full competition and fair trade within the EU. As part of this process Member States are required to implement Directive 2003/96/EC on restructuring the Community framework for the taxation of energy products and electricity. This increases existing minimum tax rates on energy products and extends minimum tax rates to all energy products. Some Member States, in particular more recent accession countries, can apply for partial or total exemption on certain products, but these exemptions generally expired in 2006. It also aims to make it possible to restructure national taxation systems and achieve objectives in the environment, transport and energy fields while complying with the rules governing the single market.

The European Council (EC, 2008) has recommended that this be reviewed to bring it more closely in line with environmental and climate change related policies. The Commission Green Paper on market-based instruments for environment and related policies (COM(2007) 140 final) outlines some of the proposed changes to the Energy Taxation Directive in more detail.

In addition to EU-wide initiatives, many Member States have set higher national taxes on energy products than the ones prescribed by the European Community in the Directive, for example (EEA, 2005 and DG TAXUD, 2008):

- CO₂ or energy taxes have been introduced by Estonia, Denmark, Finland, Germany, Ireland, Italy, the Netherlands, Poland, Slovenia, Sweden, the United Kingdom and Norway.
- A sulphur tax on motor fuels is being levied by Belgium, Denmark, Finland, Germany, Netherlands, Sweden, the United Kingdom, Bulgaria, Romania and Norway.

References

COMETR (2007) Competitiveness Effects of Environmental Tax Reforms, Final Report for the European Commission, DG Research and DG Taxation and Customs Union

http://www2.dmu.dk/Cometr/COMETR_Final_Report.pdf

DG TAXUD (2008) Taxes in Europe Database

http://ec.europa.eu/taxation_customs/taxation/gen_info/info_docs/tax_inventory/index_en.htm

EC (2006) European Council Review of the EU Sustainable Development Strategy (EU SDS), 10917/06

<http://register.consilium.europa.eu/pdf/en/06/st10/st10917.en06.pdf>

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EEA (2005) Market-based instruments for Environmental Policy in Europe – EEA Technical report 8/2005.

European Commission (2007) GREEN PAPER on market-based instruments for environment and related policy purposes COM(2007) 140 final and supporting staff working paper SEC (2007) 388 http://eur-lex.europa.eu/LexUriServ/site/en/com/2007/com2007_0140en01.pdf

http://ec.europa.eu/environment/enveco/pdf/sec_2007_388_en.pdf

European Commission (2008) Lisbon Strategy for Growth and Jobs

http://ec.europa.eu/growthandjobs/index_en.htm

OECD, 2001, Environmentally Related Taxes in OECD Countries: Issues and Strategies, Organisation for Economic Co-operation and Development

Meta data

Technical information

1. Data source (incl. data of most recent update)

Electricity and gas taxes and share of environmental taxes: Eurostat data for structural indicator

<http://europa.eu.int/comm/eurostat/>

Transport fuel taxes: DG TREN (Oil bulletin) http://ec.europa.eu/energy/oil/bulletin/index_en.htm

2. Description of data/Indicator definition

Eurostat collects price data on gas and electricity for different consumer categories and presents these in three forms: 1) prices without taxes, 2) prices without VAT and 3) prices with all taxes included (see 6). Current fuel prices in Euros per 100 kWh, per GJ or per 1000 litres applicable in January each year. The data on the prices for electricity and natural gas for industry and households are for reference (or standard) consumers. Reference consumers are defined in the Council Directive 90/377/EEC of 29 June 1990 concerning a Community procedure to improve the transparency of gas and electricity prices charged to industrial end-users and on a gentleman's agreement for households (N.B. these categories will be updated for 2008 data according 2007/394/EC: Commission Decision of 7 June 2007 amending Council Directive 90/377/EEC with regard to the methodology to be applied for the collection of gas and electricity prices charged to industrial end-users). The reference consumers are those used in the structural indicators and are characterised by a selected annual consumption, maximum demand and annual utilisation, as follows:

Electricity for households: Households - Dc (Annual consumption: 3 500 kWh of which night 1 300)

Electricity for industry: Industry - Ie (Annual consumption: 2 000 MWh; maximum demand: 500 kW; annual load: 4 000 hours) (for Luxembourg: 50 % power reduction during hours of heavy loading)

Gas for households: Households - D3 (Annual consumption: 83.70 GJ)

Gas for industry: Industry - I3-1 (Annual consumption: 41 860 GJ; load factor: 200 days, 1 600 hours) (for Belgium: fixed supply (non-erasable) for non-specific applications that can easily be substituted by residual fuel oils (CNE 1 P 1))

Information on gasoline and diesel fuel prices (with and without taxes) are available from DG TREN (Oil bulletin), European Commission http://www.eu.int/comm/energy/oil/bulletin/index_en.htm

Environmental Taxes: table env_ac_tax Environmental tax revenue

et_cat et1000 Total environmental taxes - Percentage of total revenues from taxes and social contributions

et_cat et1100 Energy taxes - Percentage of total revenues from taxes and social contributions

et_cat et1400 Transport taxes - Percentage of total revenues from taxes and social contributions

et_cat et1500 Taxes on Pollution/Resources - Percentage of total revenues from taxes and social contributions

3. Geographical coverage: EU-15 for electricity and gas, EU-25 for transport, EU-27 (with some gaps) for share of environmental taxes and household taxes.



4. Temporal coverage: 1995 – 2007 (2006 for transport fuels, 2005 for share of environmental taxes)
5. Methodology and frequency of data collection:
 Data is collected by Eurostat. Some countries provide national prices, either as an arithmetical average from the regional prices, or weighted average using the annual consumption as a weight-factor. Price changes are, among other things, compared with the previous period. No price estimations are undertaken. The prices are not seasonally adjusted.
 Gas and electricity prices correspond to prices applicable on 1st January each year. Prices are originally collected in national currencies per kWh (electricity) and per GigaJoule (natural gas). For countries outside the euro-zone, they are converted into EUR per kWh using the monthly average exchange rates (for January)
 Eurostat Metadata for prices/taxes in the network industries (electricity and gas) can be found at:
http://epp.eurostat.ec.europa.eu/portal/page?_pageid=0,1136239,0_45571447&_dad=portal&_schema=PORTAL
 Price data for gasoline and diesel fuel (with and without taxes) can be obtained from DG TREN (Oil bulletin), European Commission http://www.eu.int/comm/energy/oil/bulletin/index_en.htm
6. Methodology of data manipulation:
 Eurostat collects price data on gas and electricity for different consumer categories as described above and presents these in three forms: 1) prices without taxes, 2) prices without VAT and 3) prices with all taxes included. The tax component of energy prices for households is calculated by subtracting prices without taxes from prices including all taxes. For industry, it is calculated by subtracting prices without taxes from prices without VAT. For the transport fuels data is provided by DG Tren (European Commission) in a similar form and the same calculations as for households are applied.
- Qualitative information
7. Strengths and weaknesses (at data level)
 See Eurostat's metadata for prices in the network industries (electricity and gas)
http://epp.eurostat.ec.europa.eu/portal/page?_pageid=0,1136239,0_45571447&_dad=portal&_schema=PORTAL
8. Reliability, accuracy, robustness, uncertainty (at data level):
 The main document is Council Directive of 29 June 1990 concerning a Community procedure to improve the transparency of gas and electricity prices charged to industrial end-users (N.B. these categories will be updated for 2008 data according 2007/394/EC: Commission Decision of 7 June 2007 amending Council Directive 90/377/EEC with regard to the methodology to be applied for the collection of gas and electricity prices charged to industrial end-users).
 Quality profiles are produced by Eurostat in close co-operation with the National Statistical Institutes of the EU-Member States covering, so far, the structural indicators that have been added to the database in 2004 and the structural indicators on the short list.
9. Overall scoring – historical data (1 = no major problems, 3 = major reservations):
 Relevance: 1
 Accuracy: 1
 Comparability over time: 2
 Comparability over space: 2