Environment and energy

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# In 2009, EU-27 environmental tax revenue rose to 2.4 % of GDP

## Rebounding from the minimum registered in 2008 after 5 years of decline

**Environmental taxes increase the relative cost and the prices of activities and products harmful for the environment. Consequently, environmental taxes provide incentives to reduce the pressures on the environment. In this way, environmental taxes can help in implementing the 'polluter-pays' principle.**

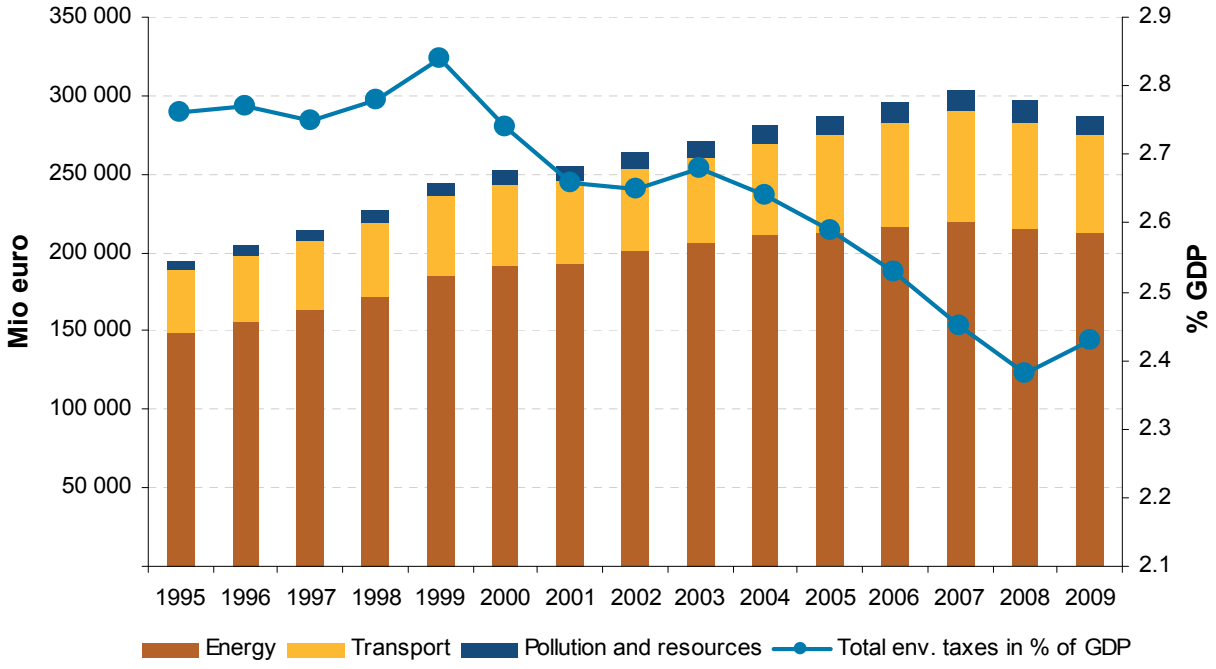
**With resource security, efficiency and related environmental concerns high on the EU's agenda, an environmental tax reform (ETR), which combines an increased application of environmental taxes with the reduction of other taxes, e.g. on labour, income, or investments, has gained increasing support.**

**ETR could stimulate sustainable production and consumption patterns and could help reach social and environmental goals.**

**The EU-27 raised around 287 billion EUR from environmental taxes, corresponding to 6.32% of total revenues from taxes and social contributions (TSC) and 2.43% of GDP in 2009.**

**Since 2003 environmental tax revenue as a share of GDP had fallen, reaching a historical minimum of 2.38% in 2008. EU-27 environmental tax revenue as a share of GDP rebounded from this minimum in 2009.**

**Figure 1: Environmental tax revenue by type, EU-27, 1995 – 2009 (EUR and % GDP)**




*Source:* Eurostat (online data code : env_ac_tax)

## Energy taxes accounted for 74% of EU-27 total environmental tax revenue in 2009

Environmental taxes can be of four types: energy, transport, pollution and resource taxes. Energy taxes include taxes on energy products used for both stationary purposes (e.g. coal, fuel oils, natural gas and electricity) and transport purposes.

By convention, CO2 taxes are also included in this tax category. These taxes are mainly levied on energy products. It is often not possible to identify $CO_2$ taxes separately in tax statistics, because they are integrated with energy taxes, e.g. via differentiation of mineral oil tax rates according to the carbon content of the fuel. In addition, they are partly introduced as a substitute for other energy taxes and the revenue from these taxes is often large compared to the revenue from the pollution taxes. This means that including $CO_2$ taxes with pollution taxes rather than energy taxes would distort international comparisons.

In 2009, 74% of EU-27 total environmental tax revenue was raised by taxes on energy products.

Transport taxes mainly include taxes related to the ownership and use of motor vehicles. In 2009, 22% of EU-27 total environmental tax revenue came from transport taxes.

Resource and pollution taxes cover different types of taxes: taxes on extraction of raw materials; on measured or estimated emissions to air (e.g. NOx and SO2) and water; on noise and on the management of waste. Only 4% of EU-27 total environmental tax revenue was raised by pollution and resource taxes in 2009.

**Table 1: Environmental tax revenue in EU-27, 2009**

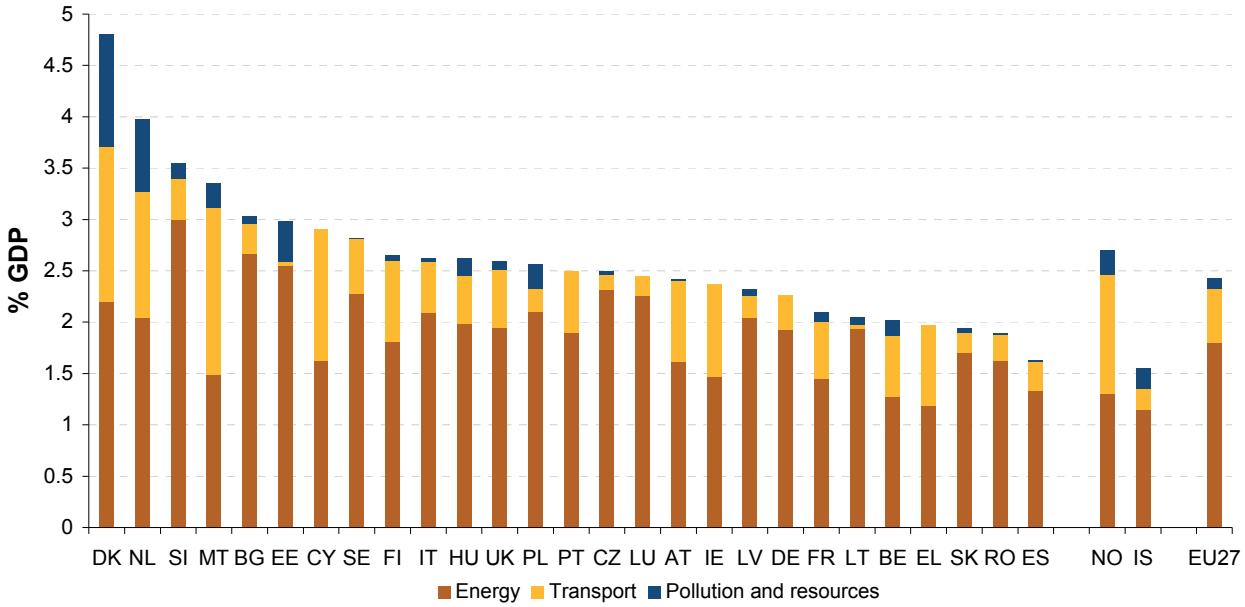
| Environmental taxes | million euro | % of total environmental taxes | % of GDP | % of total revenues from TSC |
|---|---|---|---|---|
| **Energy taxes** | 212 189 | 74 | 1.8 | 4.68 |
| **Pollution/Resource taxes** | 11 915 | 4 | 0.1 | 0.26 |
| **Transport taxes** | 62 499 | 22 | 0.53 | 1.38 |
| **Total environmental taxes** | 286 603 | 100 | 2.43 | 6.32 |

*Source:* Eurostat (online data code : env_ac_tax)

## Environmental tax revenue in European countries in 2009

A vast majority of European countries showed levels of environmental tax revenue in a band ranging from 2 to 3% of GDP in 2009. In only five countries did environmental tax revenue exceed 3% of GDP: Denmark, the Netherlands, Slovenia, Malta and Bulgaria.

**Figure 2: Environmental tax revenue by type, EU Member States, Norway and Iceland, 2009 (% of GDP)**




*Source:* Eurostat (online data code : env_ac_tax)

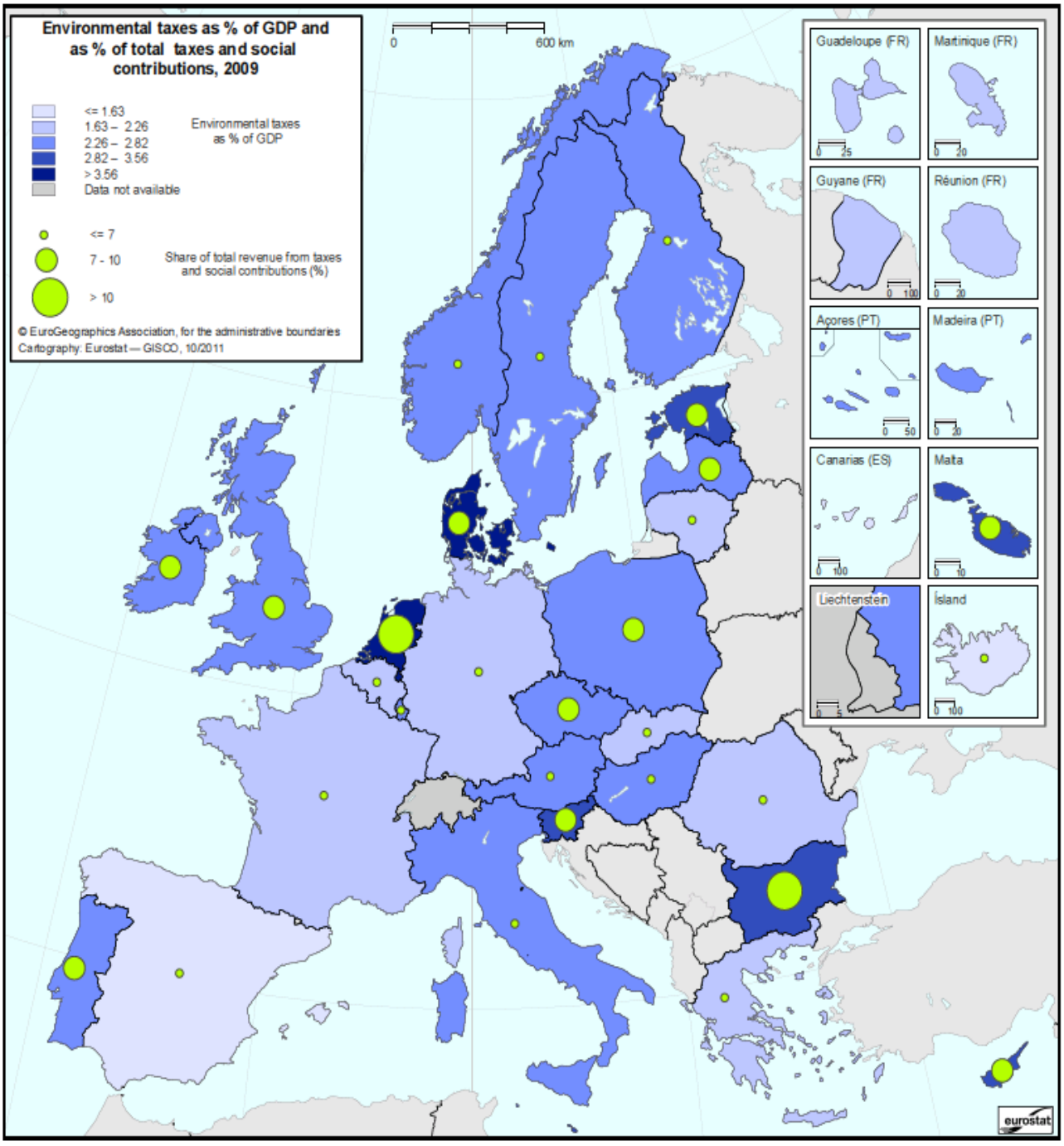
At 4.8%, Denmark registered the highest level of environmental tax revenue. In part this is due to the high revenue from pollution and resource taxes which largely come from a tax on profits from the extraction of hydrocarbons. Greece, Slovakia, Romania and Spain were the only countries to raise less than 2% of GDP in environmental taxes.

Pollution and resource taxes accounted for more than 15 % of total revenue from environmental taxes in Denmark and the Netherlands. Detailed figures by countries are available in Table 2 in Annex.

## Comparing the evolution of environmental tax revenue in European countries

When comparing 2009 revenue from environmental taxes as a share of GDP to the revenue in 1999, all western and southern European countries show a marked reduction (at least -15%). Central and eastern European countries show a smaller decrease and/or an increase in environmental taxes as a share of GDP, with the exception of Romania, Hungary and Lithuania. All northern European countries show a reduction of environmental tax revenue as a share of GDP in the same period.

**Map 1: Environmental taxes as % of GDP and as % of total taxes and social contributions, 2009**




*Source*: Eurostat (env_ac_tax)

*Source*: Eurostat (online data code : env_ac_tax)

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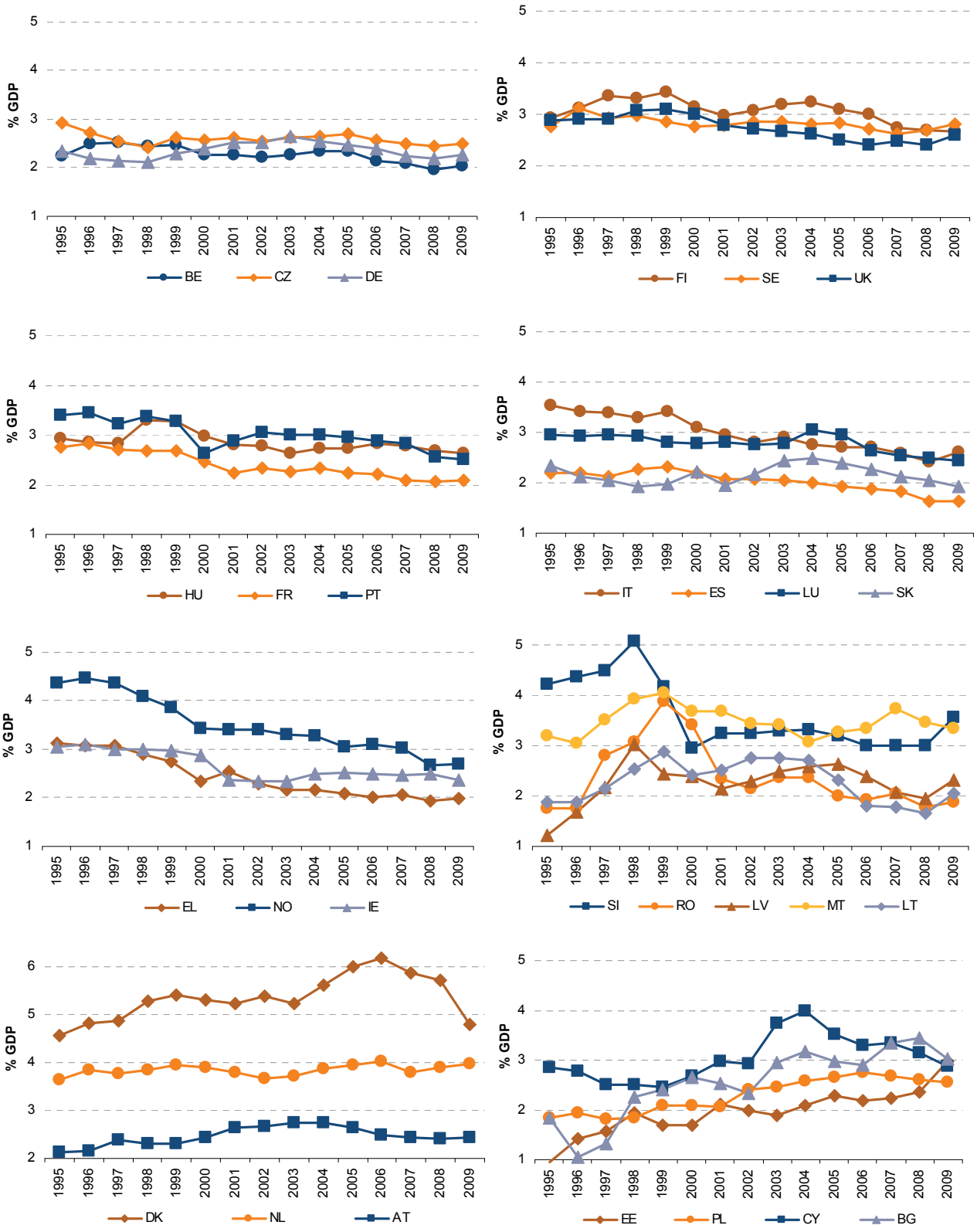
**Figure 4: Environmental tax revenue in EU-27 Member States and Norway, 1995 - 2009 (% of GDP)**




*Source:* Eurostat (online data code : env_ac_tax)

Looking at the evolution of environmental tax revenue over time in each country, a large majority of the European countries converged towards a ratio of environmental tax revenue to GDP between 2 and 3%.

Most of the European countries showed a downward trend for their environmental tax revenue as a share of GDP throughout the period 1995 to 2009.

Figure 4 shows that Belgium, the Czech Republic and Germany had a stable trend of environmental tax revenue as a share of GDP.

Slovenia, Romania, Latvia, Malta and Lithuania had all an increase in the environmental tax revenue as a share of GDP in the period 1995 to 1999 followed by a decrease and stabilisation at levels comparable to those of 1995.

Only a few countries showed increasing revenue from environmental taxes as a share of GDP.

Estonia, Poland, Cyprus and Bulgaria all increased their environmental tax revenue to GDP ratio throughout the period. The Netherlands and Austria showed a slower increasing trend in environmental taxes. Denmark had a clear upward trend from 1995 to 2006 and then a fall in environmental tax revenue which was due mainly to a decrease in revenue from transport taxes.

## Main drivers for the evolution of environmental tax revenue

EU-wide, the share of environmental taxes in GDP has fallen in recent years, mainly due to a reduced importance of energy tax revenues.

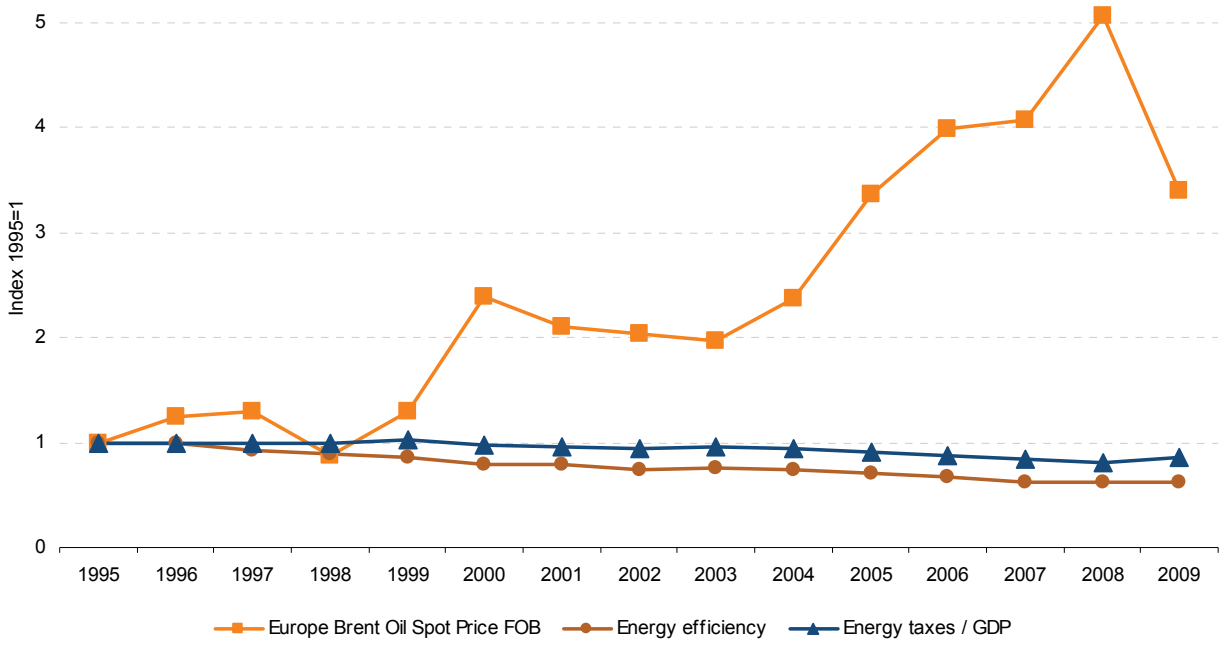
There are several possible reasons for the reduction of environmental tax revenue as a share of GDP in EU-27.

In general, as many environmental taxes are per unit taxes and not ad valorem taxes, their real value with respect to GDP tends to fall.

Governments could be reluctant to increase the tax rate or introduce new taxes on energy products, because of the impact on the main payers of these taxes, households and the business sector.

Furthermore, as environmental taxes should act as disincentives for the use of environmentally harmful products, they could reduce over time the use of such goods, thus eroding their tax base.

**Figure 5: Energy taxes (share of GDP), energy price, energy efficiency (final energy demand to GDP ratio), EU-27, 1995-2009 (index 1995=1)**




*Source:* Eurostat (online data codes: env_ac_tax; nama_gdp_c; nrg_100a and Thomson Reuters for Brent price

In the case of energy taxes, the tax base (the different energy products which make up energy consumption) had been growing slower than GDP, thus eroding the energy tax base. This could be the result of energy efficiency policies (and thus also of higher taxation on energy products) and of the switch towards renewable energy - see Figure 5.

Another significant contributor to the reduction of energy tax revenues might have been the oil price which significantly increased over the last 10 years in real terms. The high prices might have resulted in lower use of oil products thus eroding the tax base.

At the same time governments have started to put in place other mechanisms for curbing energy demand than fiscal instruments (e.g. emission permits, quotas, etc.).

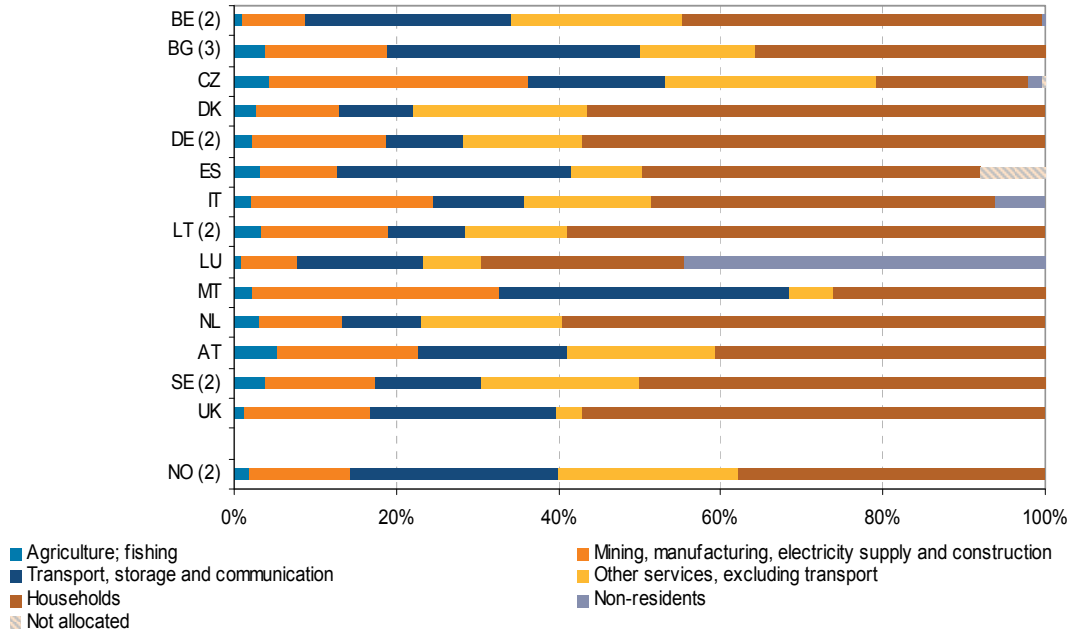
In the case of transport taxes, which are levied mainly on vehicles (e.g. sales and circulation tax), their revenue tends to follow the dynamics of the vehicle market. In the period 2007-2009 the growth of the stock of passenger cars in the EU-27 had slowed down. This could partly explain the reduction in transport tax revenue. In countries with high car sales taxes, an economic downturn can have a big impact on car sales and therefore on revenues from such taxes.

## Who pays energy taxes?

In 2008 most of the revenue governments raised from environmental taxes came from the transport sector and households. In a few cases a significant part of the environmental taxes were paid by services other than transport (mainly education, public administration and defense).

Whenever the taxes can not be attributed to one of the tax payer categories mentioned above, they fall into the category 'not-allocated'.

**Figure 6: Energy taxes by paying economic activities in European countries, 2008 (¹), (%)**




(¹) no information for those Member states that are not shown

(²) 2005

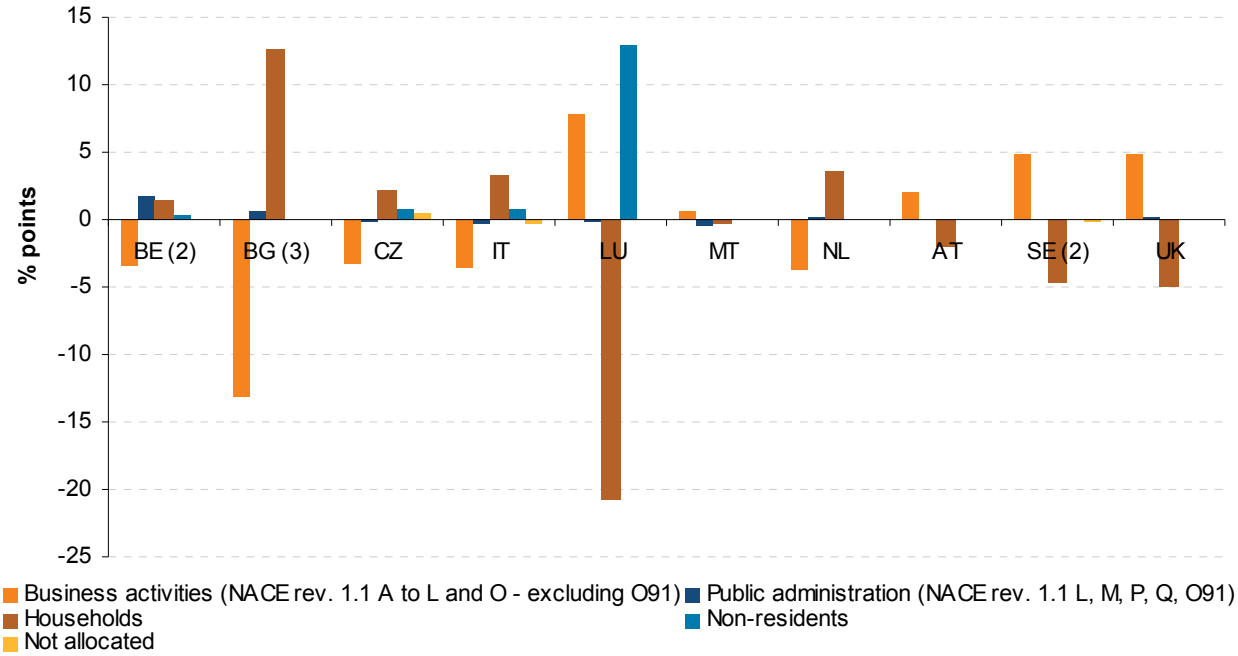
(³) 2007

*Source:* Eurostat (online data code : env_ac_taxind)

Households paid an average of just over half (50.9 %) of the energy tax revenues collected by governments, while 46.9 % of the total was paid by enterprises and 1.4 % by non-residents.

Non-residents' share of energy tax revenue accounted for more than 40% in Luxembourg, due to the large amount of transport fuels sold to foreigners.

**Figure 7: Energy taxes by economic activities in European countries, 1999-2008 (¹), (change in the share of different activities, % points)**




(¹) no information for those Member states that are not shown

(²)1999-2007

(³)2000-2005

*Source:* Eurostat (online data code : env_ac_tax)

From 1999 to 2008, Figure 7 shows how the energy tax burden has changed amongst the different users in several countries. For example in Luxembourg, the share of the energy tax revenue paid by households was reduced, compensated by an increase in the tax burden paid by the business sector and non-residents

In Bulgaria, an inverse trend can be observed: the share paid by the business sector decreased while that for households increased. This can be due to changes in the taxation system (including in neighbouring countries), the price level of energy products and change in the structure of the economy.

## Who pays transport taxes?

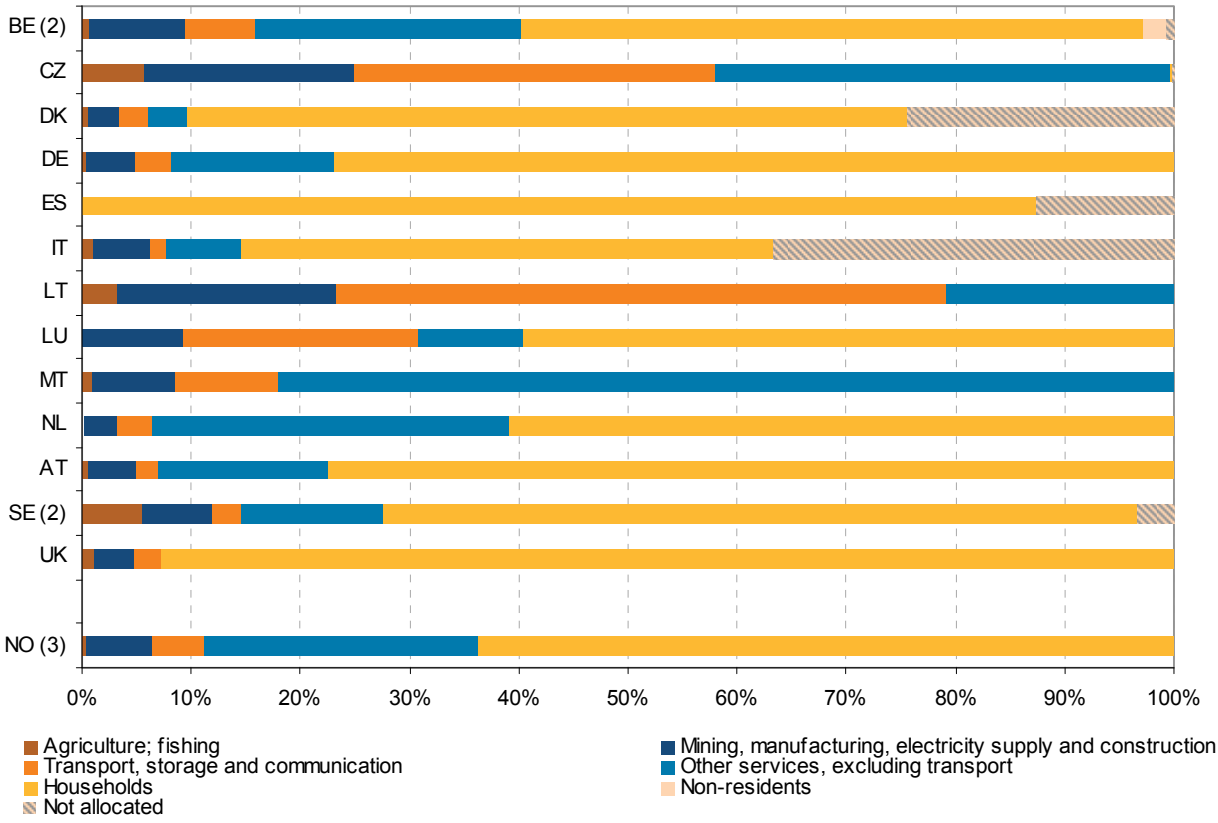
In 2008 the main contributors to transport tax revenue were households and services other than transport.

In 2008, on average 69.4 % of the transport tax revenues collected by governments were paid by households.

Households accounted for more than half of total transport tax revenues in most of the Member States for which data are available. Their share of the total was 48.8 % in Italy and only 0.2 % in the Czech Republic.

In the majority of European countries, services other than transport paid a share between 15% and 40% of total transport taxes.

**Figure 8: Transport taxes by the paying economic activities in European countries (1), 2008, (%)**




(1) no information for those Member states that are not shown

(2)2007

(3)2006

*Source: Eurostat* (online code : env_ac_taxind)

## Annex

**Table 2 : Environmental taxes by countries and by type of tax, 2009 (EUR)**

| | Energy taxes | | Transport taxes | | Taxes on Pollution/Resources | | Total environmental taxes |
|---|---|---|---|---|---|---|---|
| | Mio euro | Share in environmental taxes | Mio euro | Share in environmental taxes | Mio euro | Share in environmental taxes | Mio euro |
| **EU27** | 212 189 | 74% | 62 499 | 22% | 11 915 | 4% | 286 603 |
| **BE** | 4 323 | 63% | 2 046 | 30% | 505 | 7% | 6 874 |
| **BG** | 932 | 88% | 101 | 10% | 28 | 3% | 1 061 |
| **CZ** | 3 183 | 93% | 188 | 5% | 47 | 1% | 3 418 |
| **DK** | 4 882 | 46% | 3 351 | 31% | 2 430 | 23% | 10 663 |
| **DE** | 45 944 | 85% | 8 200 | 15% | 20 | 0% | 54 164 |
| **EE** | 353 | 85% | 6 | 1% | 54 | 13% | 413 |
| **IE** | 2 341 | 62% | 1 438 | 38% | 2 | 0% | 3 781 |
| **EL** | 2 784 | 60% | 1 827 | 40% | | 0% | 4 611 |
| **ES** | 14 014 | 82% | 3 006 | 18% | 143 | 1% | 17 163 |
| **FR** | 27 718 | 69% | 10 576 | 26% | 1 633 | 4% | 39 927 |
| **IT** | 31 756 | 80% | 7 617 | 19% | 492 | 1% | 39 865 |
| **CY** | 274 | 56% | 216 | 44% | | 0% | 490 |
| **LV** | 377 | 88% | 41 | 9% | 11 | 3% | 429 |
| **LT** | 514 | 95% | 12 | 2% | 18 | 3% | 543 |
| **LU** | 858 | 92% | 73 | 8% | | 0% | 931 |
| **HU** | 1 847 | 76% | 432 | 18% | 157 | 6% | 2 436 |
| **MT** | 87 | 44% | 94 | 48% | 14 | 7% | 195 |
| **NL** | 11 676 | 51% | 7 024 | 31% | 4 064 | 18% | 22 764 |
| **AT** | 4 456 | 67% | 2 135 | 32% | 67 | 1% | 6 658 |
| **PL** | 6 505 | 82% | 706 | 9% | 733 | 9% | 7 944 |
| **PT** | 3 192 | 76% | 1 010 | 24% | 1 | 0% | 4 203 |
| **RO** | 1 904 | 86% | 302 | 14% | 7 | 0% | 2 214 |
| **SI** | 1 060 | 84% | 147 | 12% | 54 | 4% | 1 261 |
| **SK** | 1 073 | 88% | 125 | 10% | 28 | 2% | 1 225 |
| **FI** | 3 102 | 68% | 1 359 | 30% | 92 | 2% | 4 553 |
| **SE** | 6 635 | 81% | 1 542 | 19% | 36 | 0% | 8 213 |
| **UK** | 30 401 | 75% | 8 925 | 22% | 1 278 | 3% | 40 603 |
| **IS** | 100 | 74% | 17 | 13% | 18 | 13% | 135 |
| **NO** | 3 558 | 48% | 3 155 | 43% | 658 | 9% | 7 371 |

*Source:* Eurostat (online code : env_ac_taxind)

## METHODOLOGICAL NOTES

An environmentally related tax (called for convenience an environmental tax) is defined as a tax whose tax base is a physical unit (or a proxy of it) of something that has a proven specific negative impact on the environment.

Environmental taxes are identified as taxes in National accounts – ESA95 and consist of compulsory, unrequited payments, in cash or in kind, which are levied by general government or by the institutions of the European Union. They fall within the following ESA 95 categories: taxes on production and imports (D.2), current taxes on income, wealth, etc. (D.5), capital taxes (D.91).

Statistics on environmental taxes are produced according to the following categories: energy taxes, transport taxes, pollution taxes, resource taxes.

The Eurostat publication 'Environmental taxes - A statistical guide' includes detailed methodological guidance for environmental taxes.

To supplement the definition of environmental taxes, a list of environmental tax bases was agreed upon in 1997.

CO2-taxes are included under energy taxes rather than under pollution taxes. There are several reasons for this. First, it is often not possible to identify CO2-taxes separately in tax statistics, because they are integrated with energy taxes, e.g via differentiation of mineral oil tax rates. In addition, they are partly introduced as a substitute for other energy taxes and the revenue from these taxes is often large compared to the revenue from the pollution taxes. Including CO2-taxes with pollution taxes rather than energy taxes would distort international comparisons. If they are identifiable, CO2-taxes should be reported as a separate category to energy taxes.

Taxes on extraction of oil and gas are often designed to capture the resource rent, and do not influence prices in the way that other environmental taxes do. For international comparison purposes all taxes on oil and natural gas extraction should be excluded from environmental tax statistics. All other taxes on resource extraction (e.g. mining taxes) should be included.

Value added type taxes (VAT) are excluded from the definition of environmental taxes. This is mainly because of the special characteristics of this type of tax. VAT is a tax levied on all products (with few exceptions), and it is deductible for many producers, but not for households. Because of this, it does not influence relative prices in the same way that other taxes on environmental tax bases do.

DG Taxation and Customs Union, using Table 9 from the ESA 95 transmission programme, gathers data on environmental taxes for the four categories of environmental taxes. Eurostat validates and disseminate these data on its database, in the table 'env_ac_tax'.

Eurostat collects data on environmental taxes in a breakdown by economic activities. Eurostat validates and disseminate these data on its database, in the table 'env_ac_taxind'. This annual data collection has been based so far on a Gentlemen's Agreement.

Starting from 2013, Members States shall transmit data on environmental taxes according to the instructions set down in the Regulation 691/2011 on European environmental economic accounts, adopted on 6 July 2011.

**Country codes**: European Union (27 countries) is written as EU-27 and consists of Belgium (BE), Bulgaria (BG), the Czech Republic (CZ), Denmark (DK), Germany (DE), Estonia (EE), Ireland (IE), Greece (EL), Spain (ES), France (FR), Italy (IT), Cyprus (CY), Latvia (LV), Lithuania (LT), Luxembourg (LU), Hungary (HU), Malta (MT), the Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Slovenia (SI), Slovakia (SK), Finland (FI), Sweden (SE) and the United Kingdom (UK).

We have data only from Iceland (IS) and Norway (NO) from EFTA countries.

# Further information

Eurostat Website: http://ec.europa.eu/eurostat

Data on 'environmental tax revenue'
http://epp.eurostat.ec.europa.eu/portal/page/portal/environment/data/database
Select 'environmental accounts'

Further information about 'environment'
http://epp.eurostat.ec.europa.eu/portal/page/portal/environment/introduction

More information about 'environmental taxes'

Eurostat, (2001), Environmental taxes - A statistical guide
Eurostat, (2010), Distribution of environmental taxes in Europe by tax payers in 2007, SiF 67/2010
Eurostat, (2011), Key figures on Europe - 2011 edition, Pocketbook
Eurostat, (2011), Taxation trends in the European Union: Data for the EU Member States, Iceland and Norway

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