



## **ENVIRONMENTAL TAX REFORM IN EUROPE:**

### **OPPORTUNITIES FOR THE FUTURE**

**Annexes to Final Report**

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**ANNEX 2 – Case studies on the impacts and effectiveness of selected environmental taxes, charges and levies**

# 1 Air pollution charges in Czech Republic

## 1.1 Brief summary of the case

Air pollution charges were among the first economic instruments introduced in Czech Republic in 1967 (Máca, 2013). The current air pollution charges have been in force since 1.1.1992 (ECOTEC, 2001), introduced by the Law No. 389/1991, and amended by the law 212/1994, 86/2002, 472/2005 and 201/2012. These are charged on direct emissions and cover all sources whose total emissions surpass a given threshold (around 16,000 installations) (Máca, 2013).

The air charges aim at reducing emissions of the major pollutants that affect air quality, especially VOCs, and increasing energy efficiency by inducing fuel switching at pollution sources (Máca, 2013). Thus the instrument provides economic incentives for air pollution sources to comply with their emission limits (ECOTEC, 2001).

The recent revision (Clean Air Act, 2012) to the air pollution charges, partly motivated by the seemingly low effectiveness of the charges, are the second part (2010 to 2013) of a comprehensive ETR package that aimed at transforming the air emission charges into environmental taxes and reducing harmful air emissions. The first phase (2008-2010) involved the transposition of the EU Energy Taxation Directive by introducing taxes on natural gas, solid fuels and electricity. In the third phase (2014-2017), ETR should be extended to other natural resources (Vojáček and Klusák, 2007; Eunomia and Aarhus University, 2014).

## 1.2 Brief description of the design and scope

Large sources, which are thermal units above 5 MW, and medium sources, thermal units within the range 0.2 MW to 5 MW and other technologies, pay the charge under a given limit (ECOTEC, 2001). The pollution charge rates have **remained unchanged** since their entry into force in 1992 until 2012. As revised in law 201/2012, they are to **increase until 2021**, as shown in Table 1 (Máca, 2013). Following the changes introduced by the new air pollution law, only four polluting substances are charged (before the reform, instead, nine main pollutants and two pollutant classes were charged). The air pollution charges currently cover emissions of particulate matter (CZK 4200/tonne), sulphur dioxide (CZK 1350/tonne – EUR 53.8), nitrogen oxides (CZK 1100/tonne – EUR 43.8), and volatile organic compounds (excluding methane) (CZK 2700/ tonne – EUR 107.5) (Máca, 2013). The previous rates covered a broader range of substances: solid emissions (particulates); SO<sub>2</sub>; NO<sub>x</sub>; CO; Hydrocarbons); I class pollutants (e.g. asbestos, cadmium, mercury, benzene, etc.); II class pollutants (e.g. arsenic, chlorine, phenol, tin, etc.); III class pollutants (e.g. ammonia, acetone, toluene, etc.); Hard Freon and VOC; and heavy metals (see Table 1) (ECOTEC, 2001).

The 4-fold increase in the charge rates aims at helping the country meet its air quality targets (Eunomia and Aarhus University, 2014). Furthermore, from 2013 onwards, charges are only applied on substances from large emitting sources (e.g. over 0.3 MW of thermal input for heat and power generation). Other exemption conditions were also changed: a pollution source is only charged if the total exceeds CZK 50,000 per year (before this threshold was CZK 500) (Máca, 2013).

Other instruments are in place in Czech Republic and are expected to have impacts on air pollution. **Non-compliance fees** have been in force since 1992: if the initially set emission limit is exceeded, the total amount of standard charges is multiplied by a factor of 1.5. While the air charge can be included in accounting as costs, the non-compliance fees is charged from polluters' profits (ECOTEC, 2001).

**Table 1: Some air pollution charge rates applied (Kc per ton of each main air pollutant)**

	1991-2012	1994	2002	2005	2013-2016	2017	2018	2019	2020	2021-...
<b>SO2</b>	1000	1000	1000	1000	1350	2100	2800	3500	4200	4900
<b>NOx</b>	800	800	800	800	1100	1700	2200	2800	3300	3900
<b>VOC</b>			2000	2000	2700	4200	5600	7000	8400	9800
<b>PM</b>	3000	3000	3000	3000	4200	6300	8400	10500	12600	14700
<b>Carbon monoxide</b>	600	600	600	600						
<b>Hydrocarbons</b>	2000	2000	2000	2000						
<b>Class I</b>	20000	20000	20000	20000						
<b>Class II</b>	10000	10000	10000	10000						
<b>Class III</b>	1000	1000	1000	1000						

Source: Sbirka zakonu (1991), Sbirka zakonu (1994), Sbirka zakonu (2002), Sbirka zakonu (2005), Sbirka zakonu (2012), ECOTEC (2001)

Significant **investment** has been made to control air pollution from power stations (OECD, 1999). From 1990 to 1994, around 40 per cent of environmental expenditures were invested to reduce emissions and to reconstruct power plants. For example, the State Environment Fund allocated soft loans to air pollution projects. Moreover, monitoring systems are in place to measure sulphur dioxides, carbon monoxides and nitrogen oxides concentration in the three most polluted areas (North Bohemia, Prague and Ostrava).<sup>1</sup> This monitoring system is considered to be comprehensive and well-established (OECD, 1999).

### 1.3 Drivers and barriers of the ETR

The current system of environmental taxation in the Czech Republic was introduced in the early 1990s, during the establishment of the country's environmental policy and legislation framework (ECOTEC, 2001). Air pollution fees complement the EU-ETS, but the scope of pollution fees is much broader, covering around 16,000 entities (compared to 430 installations covered by the EU-ETS) (Máca, 2013).

National emission ceilings are set in the Czech Republic for NOx, SO2, VOC and NH3 for 2010, according to Directive 2001/81/EC (CENIA, 2008). Moreover, Directive 2008/50/EC sets several air quality targets with which Member States are obliged to comply and recent revisions should be taken into account considering EU legislation. Air pollution charges create incentives for emitters to invest in abatement technologies, thus improving air quality and health status (Eunomia and Aarhus University, 2014).

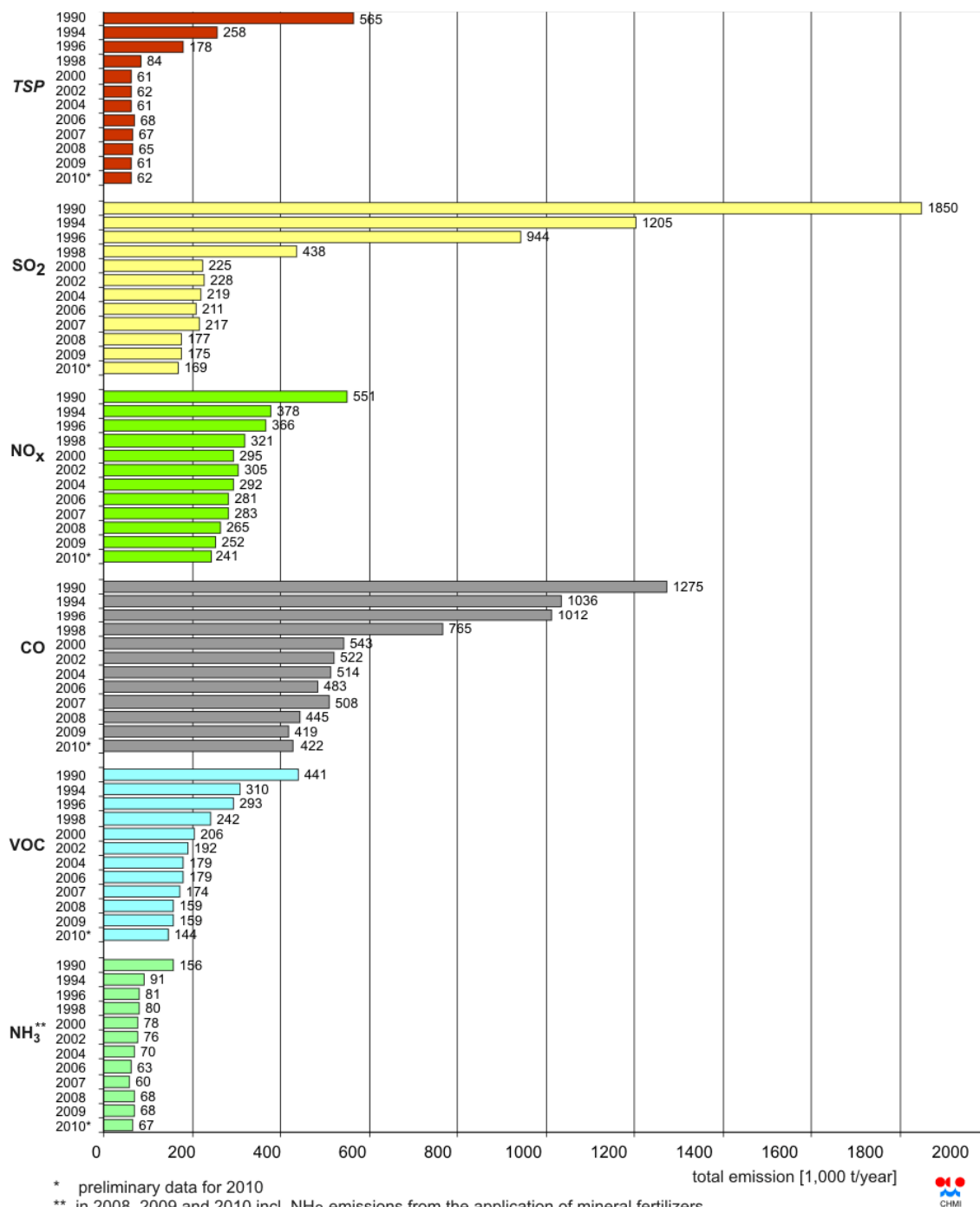
### 1.4 Key environmental impacts and effectiveness

GHG emissions from basic pollutants significantly decreased in the Czech Republic between 1990 and 2007 (CENIA 2008). In the first 8 years of the introduction of the tax, total GHG emissions reduced by 23 per cent.<sup>2</sup>

<sup>1</sup> <http://www.un.org/esa/agenda21/natlinfo/countr/czech/natur.htm> [accessed 27/02/2014]

<sup>2</sup> <http://www.un.org/esa/agenda21/natlinfo/countr/czech/natur.htm> [accessed 27/02/2014]

**Figure 1: Total emissions of basic pollutants between 1990 and 2010**



Source: Czech Hydrometeorological Institute (2011)

Considerable progress was made in reducing air pollution emissions (see Figure 1). In 20 years, air emissions decreased from 441 to 153.9 thousand tonnes for NMVOC, and from 1881 to 169.5 thousand tonnes for SO<sub>2</sub> and SO<sub>x</sub> (in Gg) (EEA 2012). For instance, SO<sub>2</sub> emissions decreased by 68 per cent and NO<sub>x</sub> emissions by 50 per cent between 1987 and 1997. However, around 2000, air emissions levels stagnated, with the same emissions level until 2010 (CENIA 2008). Currently, the main challenge in terms of targeting emissions comes from local furnaces and mobile sources (CENIA 2008).

The Czech Republic met its 2010 **targets** on NOX, NMVOC, SO2 and NH2 set by the NEC Directive, although some issues were expected with compliance with nitrogen oxide targets (CENIA 2008). However, the concentration levels of PM10, PM2.5 and BAP were exceeded on several occasions (EEA 2012).

Before the 2012 revision, air pollution charge rates did not match the external costs of air pollution emissions. An increase of 14 to 40 times the charge rates for NOx, SO2, VOC and PM was found to substantially reduce emissions, with small effects on fuel prices (up to 1 per cent) (IEEP et al, 2013).

The **remaining challenges** in terms of environmental impacts include pollution from suspended (dust) particulate matters, ground-level ozone and polycyclic aromatic hydrocarbons (PAH), especially in industrial and transportation intensive areas and small settlements. Emissions of PM and NOx from mobile and small sources have an increasing trend. An emission ceiling for PM2.5 will likely be established for 2020 (CENIA, 2008).

### 1.5 Key economic impacts

Some effectiveness issues have been found regarding administrative costs (**national level**) of this system (Pavel and Vitek 2007). Jílková et al. (2006) found that the administrative costs of air pollution charges for large emission sources are around 2.5-3 per cent of revenues, but administrative costs from medium-sized sources exceed revenues by more than 40 per cent, with a similar picture for revenues from non-compliance fees (high fixed costs). To improve cost-effectiveness, air pollution fees from medium and small sources were abolished (Máca, 2013). The problem may be also explained by the local level where the charge is assessed, collected and enforced, and received for small and medium sources (see Table 2).

**Table 2: Administration entities**

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

Source: Pavel, J. and Vitek, L. (2007)

A study analysed the effects of environmental charges in the Czech Republic, concluding that, for the **firms** that paid the charge, the share of air pollution fees on total revenues was below 0.5 per cent (IEEP et al, 2013).

### 1.6 Key social impacts

There have been notable improvements in air quality, as indicated in section 4, with some striking differences between regions (IEEP et al, 2013): rural areas have good quality of air, but the same does not apply to urban areas. In 2011, 89 per cent of the urban population was exposed to excessive PM<sub>10</sub> concentrations (greater than the daily limit value of 50 µg/m<sup>3</sup>) for over 35 days (Eunomia and Aarhus University, 2014). The city centre of Prague reported very high levels of NO<sub>x</sub>, expected to increase due to rising traffic density (Government of the Czech Republic, 1997).



Although the charges had very positive immediate environmental impacts, air pollution remains a problem in the Czech Republic. 23 per cent of the population is exposed to air that does not comply with all quality standards. Air pollution affects human health negatively: the average life expectancy decreased by nine months in the EU27 countries in 2007 due to PM10 air concentrations. The most affected areas in the Czech Republic is the eastern part of the Moravia Silesia Region, Prague, Brno and most large cities (CENIA 2008). Moreover, acid deposition causes forest damage while expected traffic growth will make it challenging to control NOx and ozone concentrations (OECD 1999).

## 1.7 Revenue use

In 2011, total revenue raised from this tax amounted to CZK 440 million (around EUR 18 million), equivalent to 0.0048 per cent of GDP (Eunomia and Aarhus University, 2014). The revenues related to sulphur dioxide charges were the highest, followed by PM related revenues (ECOTEC, 2001).

As highlighted in Table 2, most of the revenues are allocated to the State Environmental Fund (SEF) and its purpose is to finance programs related to air pollution (ECOTEC, 2001). The revenues have helped finance the reduction of emissions from smaller emission sources (OECD, 1999). Revenues from non-compliance fees from large and medium sources are also allocated to the SEF, while revenues from small pollution sources remain at local level (ECOTEC, 2001).

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## 2 Water pricing in Denmark

### 2.1 Brief summary of the case

Denmark has the highest water supply and sanitation prices amongst OECD countries, and it is at the forefront in Europe in attempting to cover not only full economic costs but also environmental costs through water prices. This is done through water charges on water consumption and sewage discharges to households and industry, and a water supply tax targeted at households. The revenues of the latter are partly used for mapping, monitoring and protecting water resources (European Commission, 2012). The **water supply tax** has an interesting incentive for water companies to reduce leakage, as they are required to cover part of the supply tax if water delivered to customers is less than 90 per cent of the abstracted water (meaning that more than 10 per cent of water is wasted through leakages). Moreover, a **waste water tax** on both households and industry is based on discharges of nitrogen, phosphorus and organic matter. It has been calculated that the real price of water (including environmental taxes) has increased by 54 per cent from 1994 to 2004, and this has decreased urban water demand from by 24 per cent (from 155 litres to 125 litres per person per day). Urban water consumption in Denmark is one of the lowest in the OECD (OECD 2008, 2010 and 2011; European Environmental Agency, 2013).

### 2.2 Brief description of the design and scope

User charges on public water supply, public sewerage and waste water treatment have been based on the cost recovery principle since 1992.

**Water charges** on water consumption amounted to 0.842 EUR/m<sup>3</sup> in 2011 (6.13 DKK/m<sup>3</sup>) (OECD database, n.d.). Households and industry are all metered and are subject to the same rate per m<sup>3</sup> (OECD, 2008).

In addition, a national **water supply tax** was introduced in 1994 on freshwater abstraction. The tax is only applied to households, it is refunded to industry and not levied on agriculture (irrigation water in Denmark is mostly self-abstracted and does not go through the water supply network) (OECD, 2008). The tax rate has two components: a tax on water consumption, which was 0.7337 EUR/m<sup>3</sup> in 2011 (5.67 DKK/m<sup>3</sup>) and a contribution to drinking water protection, which was 0.09 EUR/m<sup>3</sup> in 2011 (0.67 DKK/m<sup>3</sup>) (OECD database). The tax is imposed on metered water delivered to customers. However, if the metered water amounts to less than 90 per cent of the abstracted water by the water supply company, the latter will be subjected to the remaining tax (ECOTEC et al., 2001). Business registered for VAT are exempted from the tax (with the exception of lawyers, architects, accountants and the like), as are diplomats and exports (OECD database).

Moreover, a **waste water tax** was introduced in 1997 on both households and industry (but not agricultural users), based on the total discharge of nitrogen, phosphorus and organic matter (BOD). Industries with high discharge loads can claim a rate reduction (OECD, 2008). The tax was raised by 50 per cent in 2009 and in 2011 amounted to 2.6875 EUR/kg for nitrate content in waste water, 1.4780/kg for organic material content and 14.78 EUR/kg for phosphate content (respectively 20, 11 and 110 DKK/kg). The following exemptions apply: waste water which is discharged from spillways; direct emissions of remediation wells, groundwater cuts and other self-discharges of groundwater of surface water, when the water is diverted around the waste water treatment plant; surface water, rain water, etc. separately discharged from sewage disposal plants; and process waste water which is discharged from sea-, salt- and freshwater fish farms (OECD database).

### 2.3 Drivers and barriers of the ETR

The water supply tax was included in the green tax reform introduced in 1993, and its amount was increased gradually by 1 DKK per year from 1994 to 1998. The tax was introduced to enable a lowering of the income tax, and also to encourage a reduction in water demand from households (ECOTEC et al., 2001).

The water supply tax was introduced because in the 1980s available groundwater (which provides about 99 per cent of the water supply in Denmark) began to decrease due to the leakage of different pollutants into the groundwater supply. As a result, the water balance in Zealand, the main island, became problematic, as extraction reached a level that affected the flow of water in the most important streams and the level of ground water reserves were considerably reduced in many places (ECOTEC et al., 2001).

### 2.4 Key environmental impacts and effectiveness

It has been calculated that taxes and charges on water supply, together with water saving campaigns, have reduced total drinking water consumption from 605 million m<sup>3</sup> in 1980 to 400 million m<sup>3</sup> in 2005 (Geus, date unknown) and from 155 litres to 125 litres per person per day between 1994 and 2004 (OECD 2008). In addition, the water tax provides a strong incentive to water suppliers to reduce leakages as much as possible, as water supply companies are liable to pay the water tax if metered water amounts to less than 90 per cent of the abstracted water in a given year. As a result, water leakages in Denmark have been reduced to the level of 10 per cent, whereas many EU cities have water leakages of between 30-40 per cent (Eunomia and Aarhus University, 2014).

The water supply tax has also resulted in a behavioural change. A survey performed by ECOTEC et al. (2001) showed that 45 per cent of Danish households have installed water saving taps, 39 per cent have invested in low-flush toilets and 53 per cent have a modern water saving washing machines. Also, 40 per cent of the interviewed consumers state that price is an important reason for their efforts to save water.

According to results from the EU-funded EPI-WATER project, the water tax and its full-cost recovery approach resulted in a decrease of household consumption of drinking water of 40 per cent over the past 20 years in one representative Danish river catchment. This was enabled in part by the introduction of many new and simple water saving installations. The reduction in water consumption has improved water flows, especially in smaller brooks and streams, where many red list species dependent on water are found (Eunomia and Aarhus University, 2014).

The waste water tax has led to a reduction of pollutant discharges of 3 per cent per year for organic matter, 5 per cent per year for nitrogen and 17 per cent per year for phosphorus between 1997 and 2000 (OECD, 2008).

### 2.5 Key economic impacts

The administrative costs of the water supply tax are minor. When the tax was introduced, municipalities were in charge of identifying households without a supply of piped water, by comparing customer registration of the water works with the local building register (ECOTEC et al., 2001).

The water supply tax created employment, in particular for sanitary engineering companies that were asked to renovate water installations. Also, new products have been marketed, such as new types of water saving sanitations, in particular low-flush toilets (ECOTEC et al., 2001).

## 2.6 Key social impacts

There are no social tariffs, as water pricing is based purely on metering; however affordability of water and waste water services is ensured by income support through Danish social policy (OECD, 2008). The advantage of this approach is that the incentive element of water pricing is effective for all water users, irrespectively of their income (European Environmental Agency, 2013). In any case, there has been little debate in Denmark on the possible regressive effect on the water tax (ECOTEC et al., 2001).

## 2.7 Revenue use

Revenues from the charges on water consumption are allocated to municipal water supply companies (OECD database).

Revenues from the water charge on sewage discharges were DKK 174.1 million in 2011 and decreased considerably since the first year of its introduction (2001), when they amounted to DKK 268.9 million. This sharp decrease seems to suggest a reduction in pollution levels. These revenues are used to finance the costs of municipal waste water treatment plants. Investments in and operation of public sewerage and waste water treatment plants are financed by user charges on households and industries, which are based on water metering (there are no public subsidies).

The water supply tax raised DKK 1,333 million in 2011 (0.07 per cent of the GDP), which is well above most other schemes (Eunomia and Aarhus University, 2014). When introduced in 1994, it raised DKK 294.5 million. The waste water tax raised DKK 174 million in 2011 and DKK 164 million in its first year (1997). Part of the increase can be explained by the 50 per cent in the rate that was introduced in 2009. The revenues obtained through both taxes go to the general government budget.

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### 3 Car Registration Tax ('Bonus-Malus' system) in France

#### 3.1 Brief summary of the case

The transport sector accounts for about 26 per cent of CO<sub>2</sub> emissions in France (138 Mt CO<sub>2</sub>e). CO<sub>2</sub> emissions from transport increased between 1990 and 2001 (+22 per cent), and since then remained stable. 95 per cent of CO<sub>2</sub> emissions are due to road transport. (UNFCCC Communication to France, 2009)

The 'Bonus-Malus' system was introduced in France in December 2007 with a twofold objective. First, it is designed to change consumers' behaviour and encourage the purchase of low-emitting cars and discourage the purchase of the high-emitting vehicles. Secondly, it was created to stimulate technological innovation in new vehicles. The tax entails a system of price reductions and fees depending on the level of emissions of each new vehicle. (Mission Ministérielle, 2013)

France, through its commitment to the Kyoto Protocol and to the EU's 2009 Climate and Energy Package, is committed to reduce its GHG emissions by 14 per cent by 2020 compared to 2005. The long term goal is to reduce emissions by 75 per cent by 2050 compared to 2005 levels. In 2007 *le Grenelle de l'Environnement*, an environmental round table initiative which brought different stakeholders together to identify measures to reduce CO<sub>2</sub> emissions, identified 57 measures to deal with climate change. One of the recommendations of the Round Table was the 'Bonus-Malus' system. (French Climate Plan, 2009) France has also received a country-specific recommendation under the European Semester to shift the tax burden from labour to environmental taxation or consumption (Recommendation 5) (Eunomia and Aarhus University, 2014).

As far as environmental impacts are concerned, there is evidence showing that the 'Bonus-Malus' system has contributed to reducing average CO<sub>2</sub> emissions of new registered passenger cars. However, the system has also been criticised for its impacts on overall CO<sub>2</sub> emissions due to the rebound effect – while it has encouraged the purchase of more fuel efficient vehicles, the system has also led to the increased purchase of vehicles and more drivers on the roads who are encouraged to travel more given the fuel efficiency of their new vehicle.

#### 3.2 Brief description of the design and scope

In 2008 the French Government introduced a 'Bonus-Malus' system offering a financial incentive for the purchase of low-emitting cars and a fee for the purchase of high-emission vehicles. The bonus applies to private and company vehicles purchased on or after 5 December 2007 and are deducted from the price of the vehicle. The malus applies to all vehicles registered after 1 January 2008 and is added at time of registration. (Decree Law n. 2007-1873)

In 2014, a premium (bonus) is paid to purchasers of vehicles that emit less than 91g CO<sub>2</sub>/km, while a penalty is applicable for the purchase of vehicles that emit more than 131g CO<sub>2</sub>/km. A neutral class applies to vehicles emitting between 91-130g CO<sub>2</sub>/km. The amount of the bonus/malus varies depending on the class of the vehicle (in accordance with the classification defined by the EU for energy labelling of cars (see Table 1). In addition, a bonus of EUR 1000 is granted to purchasers of a new vehicle emitting less than 160g CO<sub>2</sub>/km, when scrapping a vehicle which is more than 10 years old. Because of a greater than expected response of the 'Bonus-Malus' system resulted in higher rebates than fees (ICCT, 2011), an additional yearly malus of EUR 160 was added in 2009 for vehicles whose CO<sub>2</sub> emissions exceed 240g CO<sub>2</sub>/km. From the same year, every family with more than two children receives a deduction from the malus of 20g/km per child. Vehicles which use biofuels receive a deduction in the malus (40 per cent CO<sub>2</sub> emissions reduction of the initial emissions are



lower than 250 g/km). Hybrid vehicles have a specific bonus of EUR 4,000 if emitting less than 110g/km (WPS, 2013). The different thresholds of the bonus-malus system are strengthened by 5g/km every two years (Ministère de l'écologie, du développement durable et de l'énergie, 2014).

In 2014, the threshold to get the bonus has annually decreased, from 155g CO<sub>2</sub>/km in 2010 to 91g CO<sub>2</sub>/km, whereas the malus for vehicles emitting more than 200g CO<sub>2</sub>/km increased from EUR 6,300 to EUR 8,000 (Ministère de l'écologie, du développement durable et de l'énergie, 2014).

**Table 1: The 'Bonus-Malus' system**

	Emissions in g CO <sub>2</sub> /km	Bonus or Malus in Euro
<b>BONUS</b>	< 20g (electric cars)	+ EUR 6,300
	21/50g	+ EUR 4,000
	51/60g	+ EUR 3,300
	61/90g	+ EUR 150
<b>NEUTRAL</b>	91/130g	0
	131/135g	- EUR 150
<b>MALUS</b>	136/140g	- EUR 250
	141/145g	- EUR 500
	146/150g	- EUR 900
	151/155g	- EUR 1,600
	156/175g	- EUR 2,200
	176/180g	- EUR 3,000
	181/185g	- EUR 3,600
	186/190g	- EUR 4,000
	191/200g	- EUR 6,500
	> 200g	- EUR 8,000

**Source:** Own compilation on the basis of data from the Ministère de l'écologie, du développement durable et de l'énergie, (2014) 'Énergie, Air et Climat'. URL <http://www.developpement-durable.gouv.fr/Bonus-Malus-2014.html>

### 3.3 Drivers and barriers of the ETR

The introduction of the 'Bonus-Malus' vehicle registration system in France was proposed at the environmental roundtable – *le Grenelle de l'Environnement* – organized in 2007 by former French President Nicolas Sarkozy. The objective of the roundtable was to define government policy on environment and sustainable development for the coming years. **It was adopted with cross-party support** and enacted in August 2009. The Bonus-Malus system, among other measures, was presented on 25 October 2007, and applied from December 2007.

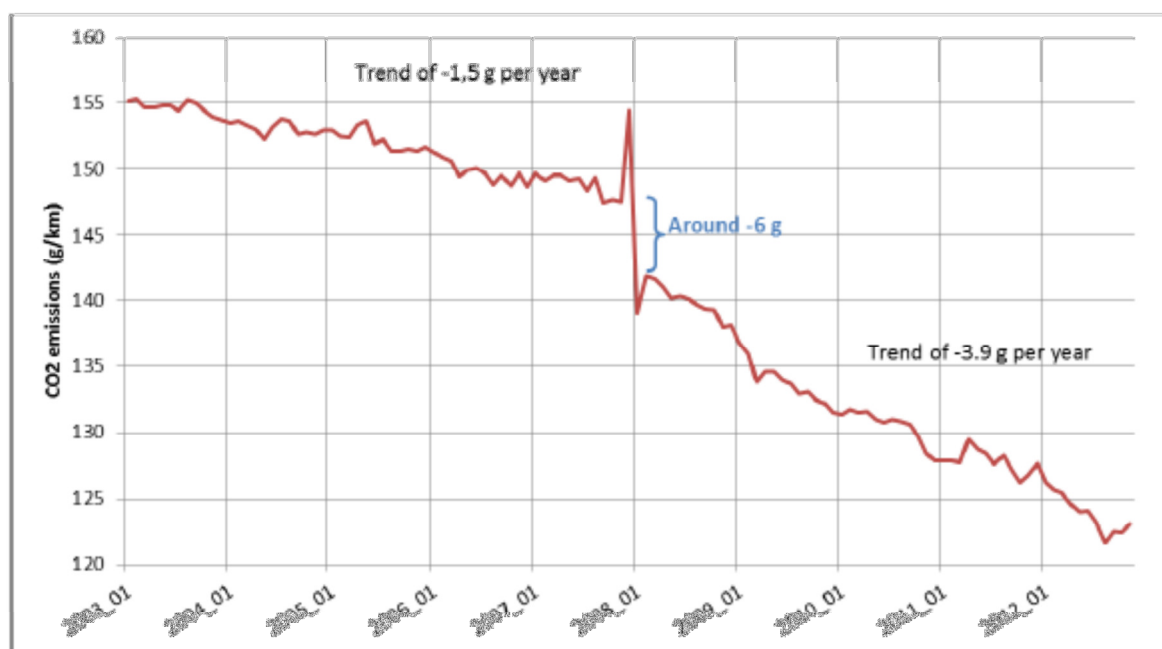
The policy process and subsequent introduction of the Bonus-Malus system were announced during the electoral campaign. As the reform was only announced at the end of 2007 and applied almost immediately thereafter, **manufactures were unable to modify vehicles' characteristics immediately**. However, the French government ensured the gradual lowering of thresholds of the classes in the future, so as to allow manufacturers to adapt their products (D'Haultfoeuille *et al*, 2013).



### 3.4 Key environmental impacts and effectiveness

Since the introduction of the system in 2007, there has been some **evidence of a reduction in CO<sub>2</sub> emissions of vehicles purchased in France**. For instance, the average CO<sub>2</sub> emissions of new registered passenger cars in France decreased from 149.4g CO<sub>2</sub>/km in 2007 to 130.5g CO<sub>2</sub>/km in 2010 (see Figure 1), whereas the EU 27 average of CO<sub>2</sub> emissions of new registered passenger cars in the same year was 140.3g CO<sub>2</sub>/km. (Rubik and Mityorn, 2011)

**Figure 1: Overview of the average CO<sub>2</sub> emissions rate of new passenger cars in France**



**Source:** WPS Analysis and Strategy (2013) 'Rapport: Policies for Reducing GHG-Emissions from Road Transport in France', p 10. URL <http://www.sou.gov.se/content/1/c6/21/33/45/ec60784d.pdf>

Another study estimated that the bonus-malus system led to a **six gram reduction of CO<sub>2</sub> emissions per kilometer of newly registered vehicles**. (WPS, 2013) In addition, the annual reductions of the bonus/neutral/malus intervals are seen as beneficial for a more rapid CO<sub>2</sub> emission reduction trend in newly registered vehicles compared to trends before 2008. The study also finds that in 2011, the average CO<sub>2</sub> emissions of newly registered vehicles in France was below 130g/km. (WSP, 2013) Recent data show that the average of CO<sub>2</sub> emissions further decreased in 2012, reaching 124.2 g/km. (Commissariat Général au Développement Durable, 2014) If the trend continues until 2020, it is likely that the long-term European objective of 95 g/km emissions of new vehicles could be reached in France (WSP, 2013). However, this is only partially explained by the introduction of the 'Bonus-Malus' system. The increase of the oil price and the effects of the economic crisis from mid/late 2008 have contributed to a reduction in the purchasing power of consumers, who have directed their choices to smaller and lower emitting vehicles. (Commissariat Général au Développement Durable, 2010)

The system has however been **strongly criticised for its overall effects and impacts on CO<sub>2</sub> emissions**. For example it has been noted that the system has led to the increased purchase of vehicles, with the consequence of more drivers on the roads who are encouraged to travel more given the fuel efficiency of their new vehicles. A 2013 study concludes that the 'rebound effect' may offset the reduction of CO<sub>2</sub> emissions from the use of lower emission vehicles (D'Haultfoeuille *et al*, 2013). In addition, the system is considered by some as an indirect way of subsidizing fossil fuels, as

it incentivizes the use of private vehicles and has also been related to the poor financing of public transport (Expert input, April 2014). It has been suggested that the success of the ‘Bonus-Malus’ system in increasing the overall number of small vehicles purchased may lead to a **reduction in the use of public transport** (Schott, 2011). It has been estimated that the increased demand for new vehicles has led to over 3 million tons of CO<sub>2</sub> emissions over a business-as-usual scenario (Expert input, April 2014). It has also been noted that bonuses provided for the purchase of low emission vehicles have led to an increase in the number of diesel vehicles in the car fleet given that these vehicles emit less CO<sub>2</sub> compared to gasoline vehicles (Expert input, April 2014). Moreover, the scheme focuses on the **reduction of CO<sub>2</sub> emissions only**. France has one of the lowest rates on CO<sub>2</sub> emissions per capita (PBL and JRC, 2012); thus, the regulation of other emissions produced by vehicles (i.e. particles and NO<sub>x</sub>) would produce increased environmental benefits.

### 3.5 Key economic impacts

Callonnec and Sannie (2009) observe that the French automobile market has grown due to the introduction of the ‘Bonus-Malus’ system. This effect has been further encouraged by the increased scrapping bonus (from EUR 300 to EUR 1000 from the end of 2008) on the purchase of low emission vehicles. Sales of new vehicles have increased by 3.5 per cent in the period from January to September 2008, and reached 500,000 new units sold in 2009 (Commissariat Général au Développement Durable, 2010). French manufacturers have benefitted from the system, increasing their sales by 5.5 per cent of the same period (Callonnec and Sannie, 2009; ICCT, 2011). However, it is difficult to isolate the impact of the ‘Bonus-Malus’ system from the effects of the financial crisis (WSP, 2013).

The Bonus-Malus system has also **encouraged** production of increasingly low emitting vehicles by manufacturers. Since the tax encourages the purchase of low CO<sub>2</sub> emitting and fuel efficient vehicles, this should reflect on manufactures’ market strategies too. This logic seems to be supported by the increasing number of low emitting vehicles registered since the introduction of the tax. For instance, those vehicles emitting less than 130g/km increased from 30 per cent in 2007, to 45 per cent in 2008 and 56 per cent in 2009, while those emitting more than 160g/km decreased from 24 per cent in 2007, to 14 per cent in 2008 and 9 per cent in 2009. These trends reflect a combination of an increase in the market share of smaller and economic vehicles and a decrease in the CO<sub>2</sub> intensity for each range of vehicles (as shown in Table 2). (Commissariat Général au Développement Durable, 2010).

**Table 2: Vehicles registration trends and average CO<sub>2</sub> emissions**

Gamme	Exemple	Part des immatriculations neuves (%)				Emission moyenne (gCO <sub>2</sub> /km)				Taux de diésélisation (%)			
		2006	2007	2008	2009	2006	2007	2008	2009	2006	2007	2008	2009
Economique	<i>Peugeot 107</i>	5,3	5,8	8,4	11,6	120	120	117	114	11	18	24	13
Inférieure	<i>Renault Clio</i>	40,6	38,9	42,1	45,3	135	134	129	127	60	61	71	65
Moyenne-inf	<i>Fiat Bravo</i>	32,5	33,6	31,5	28,1	148	148	142	136	85	88	93	92
Moyenne-sup	<i>Ford Mondeo</i>	13,0	13,1	12,2	10,2	171	172	164	157	88	90	92	92
Supérieure	<i>Mercedes Classe E</i>	5,6	5,6	4,0	3,3	197	192	179	175	91	91	92	92
Luxe	<i>Porsche 911</i>	2,9	3,0	1,8	1,4	241	239	227	214	83	84	83	81
Total	-	100,0	100,0	100,0	100,0	150	149	140	134	71	74	77	70

**Source:** Commissariat Général au Développement Durable (2010) Une évaluation du bonus-malus automobile écologique, p 2. URL <http://www.developpement-durable.gouv.fr/IMG/pdf/LPS53.pdf>

**Administrative costs** of the ‘Bonus-Malus’ system are estimated to be approximately EUR 2.3 million per year. These costs include the processing of applications (on average 450,000 per year), management of online databases, and control operations (WSP, 2013).

Data from 2008 and 2009 (presented in Table 3) indicate a positive balance from the bonus-malus system to society of EUR 158 million in 2008 and EUR 276 million in 2009 (Commissariat Général au Développement Durable, 2010).

**Table 3: Socio-economic balance of the ‘Bonus-Malus’ system (million Euro)**

		Coûts		Avantages		Bilan	
		2008	2009	2008	2009	2008	2009
<b>Economie</b>	Consommation de carburant			296	453		
	Bonus-Malus	71	184				
	Coût d'opportunité des fonds publics	76	122				
	TIPP	29	47				
	Perte de satisfaction des consommateurs	29	47				
	<i>Sous-total</i>	176	353	296	453	120	100
<b>Environnement</b>	Pollution locale	31			68		
	Emissions de CO2			69	108		
	<i>Sous-total</i>	31		69	176	38	176
	Total	207	353	365	629	158	276

**Source:** Commissariat Général au Développement Durable (2010) Une évaluation du bonus-malus automobile écologique, p 3. URL <http://www.developpement-durable.gouv.fr/IMG/pdf/LPS53.pdf>

### 3.6 Key social impacts

The design of the ‘Bonus-Malus’ system, combining subsidies and fees, can be seen as **beneficial for low-income households**, who can benefit from governmental support when purchasing low-carbon emitting vehicles. A negative effect of the system has not been envisaged on the purchasing power of low-income households (Callonec and Blanc, 2009).

However it is worth noting that due to the rebound effect, the system also leads to an **increased number of cars** on the road. Moreover, drivers are encouraged to drive further due to the decreased fuel consumption of their vehicles. It has also been noted that bonuses provided for the purchase of low emission vehicles have led to an increase in the number of diesel vehicles in the car fleet given that these vehicles emit less CO<sub>2</sub> compared to gasoline vehicles, even though these vehicles have more of a negative impact on human health given impacts on PM etc. (Expert input, April 2014).

The **cost of the increased circulation of vehicles** is estimated to be around 9 EUR /km, summing up to a total of 108 and 178 million euro, respectively, in 2008 and 2009. An increase in the taxation on road traffic (i.e. tolls on urban congestion, climate contribution for GHG emissions, etc.) could limit the induced increase in traffic and, in general, reduce the cost of the community. (Commissariat Général au Développement Durable, 2010) In addition, Schott has suggested that the success of the ‘Bonus-Malus’ system in increasing the overall number of small vehicles purchased may lead to a **reduction in the use of public transport**. (Schott, 2011)

### 3.7 Revenue use

The system is **supposed to be neutral on public finances**. However, due to the success of the system, it **caused a financial deficit** of EUR 1.46 billion between 2008 and 2011 (WSP, 2013). Recent estimates indicate a loss to around EUR 2 billion. (Expert input, April 2014). Another study however reports that the ‘Bonus-Malus’ system raised about EUR 0.8 million in 2012. (WSP, 2013)

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## 4 General Tax on Polluting Activities in France

### 4.1 Brief summary of the case

The French *General tax on polluting activities* (“Taxe générale sur les activités polluantes” TGAP) was introduced in 1999. It is composed of several environmental taxes and is meant to replace all direct and indirect taxation in the area of the environment (on atmospheric pollution, waste storage, etc.). The tax is levied on polluting activities in proportion to the level of pollution generated from these activities. It aims to implement the polluter-pays principle and provide a price signal to discourage polluting activities. The original tax, enacted in 1999, covered the disposal of waste, atmospheric industrial pollution and air traffic noise. It was extended in 2000 to cover washing products and insecticide products for agricultural use, among others. As regards waste, the tax on storage was introduced in 2000 and the tax on incineration in 2009. Since 2014 it also applies to single use plastic bags. The tax is paid by those carrying out activities generating the above mentioned types of pollution, such as waste storage, waste incineration, the selling of lubricants that may produce used oils, laundry detergent preparations etc. Since 2004 the tax no longer applies to noise from airplanes, for which a specific tax was introduced.

### 4.2 Brief description of the design and scope

The TGAP taxation regime is inspired by the methods applying to excise or excise taxes. Table 1 below sets out the TGAP rates for 2014. The tax is usually levied per ton of polluting substance produced or processed. It is applicable to any operator of an industrial or commercial facility or public institution of industrial and commercial nature for which certain installations require a permit as per Book V Title 1 of the environmental code. If the tax is lower than EUR 450 it is not due. Since early 2014, the tax has also been levied on single use plastic bags and is to be paid both by those who, in the context of their economic activity deliver/use plastic bags and for the first use of single-use plastic bags in shops.

**Table 1: TGAP rates in 2014**

TGAP component	Unit	Tax in Euros (in 2014)
<b>TGAP on wastes</b>		
Wastes delivered to a non-authorized storage installation for non-hazardous wastes (or exported to such an installation in another country)	Tonne	100
Wastes delivered to an authorised waste storage installation for non-hazardous wastes	Tonne	24 (standard rate – reduced rates ranging from EUR 9.10 to EUR 23.10 are available for specific types of facilities)
Wastes delivered to a thermic waste treatment installation for non-hazardous wastes (or exported to such an installation in another country)	Tonne	8.15 (standard rate – reduced rates ranging from 3.07 to 7.14 are available for specific types of facilities)
Dangerous wastes delivered to a thermic waste treatment installation or other waste treatment installations (or exported to such an installation in another country)	Tonne	10.94
Wastes delivered to a storage installation for hazardous wastes (or exported to such an installation in another country)	Tonne	21.83
<b>TGAP on emissions of pollutants</b>		
Sulphur oxide and other sulphured components (« composés soufrés »)	Tonne	138.60
Hydrochloric acid	Tonne	47.17

Nitrous oxide	Tonne	70.77
Nitrogen oxide and other oxygenated components of nitrogen (« et autres composés oxygénés de l'azote »), except for nitrous oxide	Tonne	167.30
Non-methane hydrocarbons, solvents and other volatile organic compounds (VOCs)	Tonne	138.60
Total Suspended Particulates (TSP)	Tonne	264.80
Arsenic	Kg	509.50
Selenium	Kg	509.50
Mercury	Kg	1019
Benzene	Kg	5.10
Polycyclic aromatic hydrocarbons (PAHs)	Kg	50.95
Lead	Kg	10
Zinc	Kg	5
Chromium	Kg	20
Copper	Kg	5
Nickel	Kg	100
Cadmium	Kg	500
Vanadium	kg	5
<b>TGAP on lubricants, oils and lubricant preparations</b>		
Lubricants, oils and lubricant preparations	Tonne	48.03
<b>TGAP on laundry detergents</b>		
With a phosphate content below 5 per cent of the weight	Tonne	43.10
With a phosphate content between 5 per cent and 30 per cent of the weight	Tonne	185.688
With a phosphate content above 30 per cent of the weight	Tonne	309.47
<b>TGAP on material extraction</b>		
On extracted materials	Tonne	0,20
<b>TGAP on plastic bags</b>		
Plastic bags	Kg	10

Source: Taxe Generale sur les activités polluantes taux 2014, URL: <http://www.actu-environnement.com/media/pdf/TGAP-2014.pdf>

### 4.3 Drivers and barriers of the ETR

The general tax on polluting activities (Taxe Générale sur les Activités Polluantes or TGAP) was introduced in the 1999 Finance Act by pooling five former taxes and other mandatory levies earmarked to the environment and energy-mastering agency (ADEME).

The tax aims to support both environmental (fight against pollution) and social (supporting the fund for financing employers' social security contributions) objectives. The tax also plays an important role in meeting objectives of waste prevention and recycling with some of the revenues used to support improvements in waste management (i.e. prevention and recycling). Supporters of the TGAP consider it a modernisation and simplification of environmental taxation in France. It is mentioned quite frequently in the context of the government's future ETR plans.

### 4.4 Key environmental impacts and effectiveness

In 2009, the TGAP underwent an important reform in anticipation of implementation of the Waste Framework Directive which aimed to provide incentives to economic actors to invest in sectors whose importance is expected to grow in the 21st century with expected growth in demand of primary materials. The 2009 reform led to an increase in the TGAP tax rate applied on landfilling of waste and the introduction of a tax on the incineration of waste with the aim of shifting towards more environmentally friendly waste management methods. All recent assessments of the TGAP focus primarily on the impacts of the TGAP in the area of waste management.



The originally envisioned reforms of the TGAP were not fully implemented, resulting in relatively modest rates overall (Eunomia and Aarhus University, 2014). In addition, lower rates applied to a range of waste collection and treatment facilities (according to set criteria) have reduced the effective rates applied and thus weakened the price signal of the tax. Reduced rates applied to about 90 per cent of wastes landfilled and 97 per cent of wastes incinerated. As a result, in 2010, the effective average rate for storage was EUR 14.6/t (compared to a full rate of EUR 20/t) and of EUR 2.9/t (compared to a full rate of EUR 11.2/t) for incinerated waste.

While, the tax rates applied to certain facilities contributed to improving the energy and environmental performance of waste storage and incineration installations, recent analysis suggests that a range of these reduced rates may no longer be justified. The rates applied appear to have been too low to incentivise waste prevention or recycling and have not led to a significant reduction in the flows of waste being landfilled or incinerated (CGDD, 2013). The per capita amount of waste in France has increased with about 10 per cent over the last decade, suggesting that higher rates would be required to provide real incentives for recycling and resource efficiency (Eunomia and Aarhus University, 2014).

The TGAP also seems to have been used to prepare the ground for a ban on phosphates in detergents. In 2000, the TGAP on detergents was introduced, with three different bands applied depending on the phosphate content of the detergent. In 2006, the TGAP on detergents was revised in order to increase incentives to reduce phosphate content in detergents as shown in Table 2 below.

**Table 2: TGAP rates applied on detergents according to phosphate content**

Phosphate content (as percentage of total weight)	Taxation in EUR/tonne		
	2000	2007	2012
Below 5 per cent	71.65	39	42.3
Between 5 and 30 per cent	79.27	168	182.22
Above 30 per cent	86.9	280	303.7

Source: Tardivo, 2013

In mid-2007, a decree came into force which banned the use of phosphates in household laundry detergents (with an extension granted for dishwasher detergents and industrial laundry detergents to leave some time for substitutes to emerge). Following this ban, there has been a decrease in the occurrence of eutrophication events by between 20 to 25 per cent (Tardivo, 2013). The TGAP continued to play a role for non-domestic (i.e. industrial) detergents. A full ban for phosphates in detergents (including those used in industry) was meant to enter into force in 2012 but, as of early 2013, discussions with industry were still ongoing and consideration was given to a new revision of the TGAP rates applying to detergents. It should be noted that the development of EU detergent legislation, which was revised in 2012, likely had implications on how the French approach has evolved in recent years and will evolve in the years to come.

#### 4.5 Key economic impacts

Before the 2009 reforms, about 44 per cent of the revenues from the waste related component of the TGAP were paid by local authorities. In 2008 this amounted to EUR 83 million from a total of 189 million (CGDD, 2011). The remaining amount was paid by private companies.



The 2009 reform of the TGAP on waste has resulted in an additional taxation of local authorities amounting ERU 222 million, on average EUR 74 million/year. Compared to the recurrent costs associated with the management of household waste for local authorities (about EUR 7.80 billion in 2010) this represents an increase in the fiscal burden by about 1 per cent. (CGDD, 2011).

#### 4.6 Key social impacts

The study team did not come across an assessment of the social impacts of the tax.

#### 4.7 Revenue use

Originally, the introduction of TGAP was expected to create revenues of EUR 2 billion annually and more in the longer run (Eunomia and Aarhus University, 2014). Actual revenues have however been lower than initial estimates. For example, annual revenue in 2011 from the taxes under the TGAP was EUR 624 million according to the reporting to Eurostat (excl. EUR 150 million fuel-related TGAP).

As regards the specific area of waste, between 2000 and 2008, the tax revenues of the TGAP increased from EUR 114 to EUR 185 million, peaking in 2002 at EUR 297 million. This is primarily because the TGAP paid by waste storage installations for non-hazardous waste progressively went down (due both to a reduction in this waste stream and an increased number of facilities benefitting from reduced rates) (CGDD, 2013). Since the 2009 reforms, the revenues of the TGAP generated in the areas of waste decreased by 5 per cent in 2010 and increased again by 11 per cent in 2011.

According to the 2009 legislation, all additional income generated from the increase in the TGAP on landfilling and the introduction of the TGAP on incineration is entirely earmarked to waste management policy until 2015. The money is allocated to the ADEME Agency which is responsible for the development and management of plans and programmes for waste prevention and to support investments necessary to implement the new waste management policy.

Between 2008 and 2009, the amount of money dedicated to waste management policy by the Agency doubled from EUR 57 million to EUR 107 million and continued to increase to reach EUR 229 million in 2012. Thus, the 2009 reform of the TGAP has allowed additional spending of EUR 515 million on the Agency's waste programme.

From a budgetary perspective, the balance between the increase in the waste related revenues from the TGAP and the support to public authorities is within reach as the increase of the TGAP represents about EUR 340 million and the measures of ADEME amount to about EUR 514 million (of which EUR 343 million is additional budget compared to the budget before 2009). Local authorities are the primary beneficiaries of the support from ADEME with about 71 per cent of the projects relating to the wastes they are responsible for (i.e. municipal waste) (CGDD, 2013).

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## 5 Air passenger duty in Germany

### 5.1 Brief summary of the case

The air passenger duty (also known as the aviation tax) was introduced by the German government as a departure tax in late 2010 and came into force on 1 January 2011. The duty is levied on airlines for all passengers departing from German airports. Rates vary depending on which of three zones the final destination falls within, rates for the three zones currently range from EUR 7.50 to EUR 42.18. The main purpose of the duty can be considered to be revenue raising, given its adoption as part of a wider package for fiscal consolidation; other objectives include incentivising more environmentally-friendly behaviour. Recent plans to end the duty in the context of the coalition negotiations after the German general elections in autumn 2013 have not materialised, thus the duty remains in place as of April 2014.

The introduction of the duty was accompanied with significant concerns by the aviation sector, in particular about reducing air passenger numbers as well as potential adverse regional effects in areas close to borders (and hence foreign airports). In 2012, the German government published a detailed evaluation of the duty presenting figures that largely counter these concerns. In terms of environmental impacts of the duty, a small net reduction of GHG emissions of 0.21 million tonnes of CO<sub>2</sub> (or 0.6 per cent of total emissions from the German aviation sector in 2011) has been estimated.

The tax has an interesting cross-border dimension given concerns around passengers diverting to airports in neighbouring countries which do not apply such taxes/duties. Such effects were observed in the Netherlands which introduced a similar duty in 2008 (before the adoption of the duty in Germany). The duty was practically abolished in 2009 due to concerns about economic impacts partly due to passengers diverting to airports in neighbouring Germany. On the other hand, Austria introduced a similar passenger duty in early 2011 shortly after the German duty was introduced<sup>3</sup>. Given cross-border issues, there is a case for a more coordinated approach to the introduction of air passenger duties, especially in continental Europe.

### 5.2 Brief description of the design and scope

The objective of the duty is to include aviation in wider transport taxation and to incentivise more environmentally-friendly behaviour as well as to raise revenues and contribute to fiscal consolidation. The duty is levied on airlines for all passengers departing from German airports. The scope of the German air passenger duty only extends to passenger transport; freight transport is excluded, which according to the Ministry is to avoid negative competition impacts on the German freight industry in the absence of European harmonisation (BMF, 2011).

The **rate** is differentiated according to the destination of the flight, which are categorised according to three zones (§ 11 of the *Luftverkehrsteuergesetz* as well as annexes 1 and 2). The total duty per flight is determined by the rate applied and the number of passengers in each flight.

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<sup>3</sup> Other European countries with similar air passenger duty schemes are the UK, Ireland (abolished in 2014) and France (e.g. Bundesregierung, 2012a).

**Table 1: Overview of rates per passenger for the German air passenger duty**

Zone	Rates 2011	Rates as of 2012	Geographic range
1	8 EUR	7.50 EUR	Short-haul (incl. Germany, Europe, some Maghreb and Middle East; see annex 1 of the <i>Luftverkehrsteuergesetz</i> )
2	25 EUR	23.43 EUR	Medium-haul (incl. North and Middle Africa, near Asia, see annex 2)
3	45 EUR	42.18 EUR	Long-haul (rest of the world)

**Source:** Own compilation based on *Luftverkehrsteuergesetz*

According to the law, the **rates are scheduled to be reduced over time** by the German Ministry of Finance in consultation with some other ministries by a certain percentage annually. The percentage reduction is to be calculated by taking into account the income generated in the previous year from including aviation in the EU Emission Trading Scheme (ETS), so that the combined tax burden from the air passenger duty and inclusion in the EU ETS is in the order to EUR 1 billion (BMF, 2011). As seen from the above table, tax rates have been decreased slightly in 2012 compared to 2011, but remained unchanged (i.e. at their 2012 level) in 2013 and 2014 (IHK, 2014).

**Exemptions** from the duty apply *inter alia* to (as per § 5 of the *Luftverkehrsteuergesetz*):

- Flights for pure military or other sovereign purposes as well as medicinal purposes;
- Sightseeing flights with identical points of departure and arrival;
- Passengers flying to and from inner-German (as well as Danish and Dutch) North Sea islands where no tidal-independent road or rail access exists (i.e. which do not have access via land (road or rail) that can be used at all times, regardless of the tides in the North Sea where such land access disappears for certain times of the day) and under certain further conditions;
- Passengers less than two years old and not occupying their own seat.

The duty is not levied on flights in transit and on stop-over flights passing through Germany (the latter according to certain conditions)<sup>4</sup>.

There were some discussions following the German general elections in autumn 2013 of phasing out the duty. However and contrary to some draft agreements, the coalition agreement that was finally adopted did not contain any clauses to this end and the duty remains in place as of April 2014.

### 5.3 Drivers and barriers of the ETR

It is difficult to perceive particular drivers or opportunities in the case of the German air passenger duty. Its introduction was driven as part of a wider package aimed at fiscal consolidation proposed by the Germany government and backed by a parliamentary majority. Green groups seem to have been generally supportive of the introduction of the duty (see, for example, BUND 2010 and 2012). The voices of those opposing the duty have been much louder, however. In particular airlines, airports but also trade unions active in the sector<sup>5</sup> have raised major concerns on potential negative effects on the German aviation industry due to a competitive disadvantage ensuing from the duty.

<sup>4</sup> Transit flights are those flights with a short stopover in German and for which the passenger holds a so-called 'via-ticket' and does not change aircraft. Stopover flights are flights with a longer stopover in Germany usually with aircraft change but where the passenger holds a single ticket from the departure to the ultimate destination airport (BMF, 2011).

<sup>5</sup> STERN online edition, 9 April 2013, 'Gewerkschaften reichen Petition gegen Ticketabgabe ein' <http://www.stern.de/politik/deutschland/umstrittene-luftverkehrssteuer-gewerkschaften-reichen-petition-gegen-ticketabgabe-ein-1994756.html> [accessed 11/04/2014]

Concerns about regional impacts have been voiced with particular vehemence as several airports served by low-cost airlines, in particular Ryanair. Such airports represent important local and regional opportunities for employment. With a limited number of (low-cost) airlines serving such airports, these airlines have a powerful market position and have reacted aggressively in the past to legislative changes (DIHK, 2010).

An interesting aspect is the cross-border effect of the duty. It has been pointed out that the lack of coordination between neighbouring countries Germany and Netherlands on the introduction of the duty has led to a sub-optimal situation (Expert input, 2014). The Netherlands introduced a similar duty on 1 July 2008 which was removed again after one year<sup>6</sup> due to concerns about negative economic impacts partly due to passengers diverting to airports in neighbouring Germany. After the introduction of the German tax, there has been some (anecdotal) evidence of German passengers increasingly booking flights which depart from Dutch or Belgian airports<sup>7</sup>. Austria introduced a similar duty in April 2011, allegedly due to 'pressure' from Germany according to the International Air Transport Association (IATA)<sup>8</sup>. There is consequently no discussion around passengers diverting to Austrian airports as a result of the German duty. This experience shows that enhanced cross-border coordination is an important aspect in the context of air passenger duties (see also BUND, 2012).

#### 5.4 Key environmental impacts and effectiveness

Another objective of the air passenger duty next to the revenue raising objective was to integrate aviation into wider transport taxation and to incentivise behavioural change. There has been some upfront criticism that internal German flights are more heavily taxed due to the fact that the passenger duty has to be paid on both out- and inbound flights whereas for international flights, some of which might be considerably longer but fall within the same tax bracket (e.g. flights to Russia), the duty only applies to the outbound flight (given its design as a departure tax) (Berster *et al*, 2010). At the same time, this is not entirely unreasonable given the usually higher emissions per kilometre and passenger of short-haul versus longer-haul flights due to the high emissions from take-off and landing operations (Carbon Planet, 2009).

The BUND has criticised the lack of earmarking revenues from the duty and the revenue limit of EUR 1 billion which it argues reflects a compromise in light of the opposition from the aviation sector and prevents better ecological effects of the duty (BUND, 2012).

Observed environmental impacts are closely related to **impacts of the duty on airline passenger numbers** which have been estimated to be two million less in 2011 with the duty introduction compared to a reference scenario without the duty (further discussed in section on economic impacts). A significant share of this reduction is explained by either a withdrawal from travelling or a switch to a different domestic mode of transport (Bundesregierung, 2012a). This implies switching to less polluting road and rail travel. INFRAS (2012a) translated the reduction in passengers into reduced CO<sub>2</sub> emissions of around 0.38 million tonnes, or 1.2 per cent of emissions from the German aviation sector in 2011. Taking into account the emissions from alternative travel arrangements, this

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<sup>6</sup> The tax was first set to zero and thus effectively phased out as of 1 July 2009 and then ultimately abolished as of 1 January 2010 (PWC, 2013).

<sup>7</sup> STERN online edition, 20 July 2011, 'Steuer treibt Fluggäste ins Ausland', <http://www.stern.de/reise/service/luftverkehrsabgabe-steuer-treibt-fluggaeste-ins-ausland-1708071.html> [accessed 11/04/2014]

<sup>8</sup> <https://www.iata.org/publications/airlines-international/june-2011/Pages/taxation.aspx> [accessed 11/04/2014]

represents a net reduction of 0.21 million tonnes of CO<sub>2</sub> or 0.6 per cent of total emissions from the German aviation sector in 2011.

There is some evidence that the air passenger duty along with other cost drivers (such as kerosene price increases) contributed to a higher capacity utilisation in the German aviation market (i.e. greater number of seats occupied by passengers), with associated benefits of reduced emissions and noise pollution (Bundesregierung, 2012a). Based on analysis by CE Delft (2011), the German government further concludes that the introduction of the duty led to a **reduction of the negative external costs of aviation to the environment from EUR 35 to EUR 25 per passenger**. Based on a reduction of two million passengers this would translate into welfare gains from internalising these costs of around EUR 30 to 60 million (Bundesregierung, 2012a).

## 5.5 Key economic impacts

Key concerns relating to the introduction of the air passenger duty have focused on effects on air passenger volumes in Germany. According to the German government an economy-wide assessment is not feasible with the limited data available since the introduction of the duty, (Bundesregierung, 2012a). The German government<sup>9</sup> comes to the clear conclusion that absolute passenger numbers have not been negatively affected in the sense that no reduction in passenger numbers was observed from one year to the next. This assessment is based on a study using 2011 data but is confirmed by a follow-up analysis based on 2012 flight and passenger data (INFRAS, 2012b).

Two studies, by consultancies INFRAS and Intraplan Consult GmbH, conclude that passenger numbers in 2011 increased by around nine million passengers, leading to passenger growth rates in 2011 compared to 2010 of 4.8 per cent or 4.6 per cent, respectively. Adjusting these numbers for 'catch-up effects' in 2011 following events in 2010/2011 that depressed passenger numbers (such as the volcanic eruption in Iceland and the political turmoil of the Arab Spring), yields an adjusted or net growth of passengers of 4.0 per cent and 2.1 per cent, respectively (Bundesregierung, 2012a). Considering what potential passenger numbers could have been without the duty, INFRAS (2012a) modelled that the duty led to a reduction of around two million passengers compared to a reference scenario with no duty which represents around 1.1 per cent of all passengers departing from/arriving in Germany<sup>10</sup>. It is estimated that 1.25 million of those passengers have either abandoned travel or switched to another domestic mode of transport, while 0.75 million of those passengers were diverted to foreign airports (Bundesregierung, 2012a). These figures demonstrate that domestic (inner-German) flights, for which alternatives such as road or rail travel are more readily available, were more affected than international flights. The government further reports that airports with a higher share of low-cost carriers and flights and some regional airports have suffered greater reductions in passengers than bigger airports and those functioning as hubs. Greater reductions for low-cost carriers are explained by the higher price elasticities of their customers.

A follow-up study for the German government (INFRAS, 2012b; contained in Bundesregierung 2012b) took into consideration flight and passenger data for the first half of 2012 and extrapolated this to the end of that year. The study found that passenger numbers in 2012 continued to increase by 2.7 per cent (which is a lower rate compared to 2011). The number of passengers on flights within Germany however decreased by 1.7 per cent, confirming the trend found in 2011 that domestic

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<sup>9</sup> in a report for the German parliament whose preparation was led by the Ministry of Finance

<sup>10</sup> A larger number of five million passengers 'lost' is reported by Intraplan Consult GmbH (2012) in a study for the German aviation industry. According to both INFRAS (2012a) and Thießen *et al* (2012) this figure is an overestimate, amongst others because of unrealistically high assumptions about growth in the aviation sector in the reference scenario.

flights are more affected by the duty. Finally, the number of total flights from and to Germany decreased by 1.2 per cent in 2012 compared to 2011. Increased passenger numbers on the one hand and a reduced number of flights on the other are explained by reduced freight flights (which are part of the statistics but which are exempted from the duty) and a trend towards bigger aircrafts and better capacity utilisation. Based on modelling what passenger numbers would have been without the duty (taking into account wider economic conditions including the development of kerosene prices), INFRAS (2012b) concludes that the duty has had no impact on passenger growth rates, meaning that developments in passenger numbers from 2011 to 2012 were the results of wider economic factors rather than the duty.

No estimates on the **administrative costs** of the tax were found through the literature review. In this respect it is worth noting the concern expressed by BUND (2012) on the EUR 1 billion revenue target stipulated in § 11(2) of the *Luftverkehrsteuergesetz*, for which EU ETS auction revenues are also to be taken into account. BUND (2012) advocates for removing this ceiling given that this would in practice reduce tax rates and hence revenues from the tax over time (in line with increasing EU ETS revenues) until the administrative costs of raising the tax would become prohibitive - with ever increasing revenue from EU ETS auctions, duty rates will have to decrease in order to remain below the EUR 1 billion ceiling, thus the administrative burden per Euro of revenue raised of the duty will increase over time.

## 5.6 Key social impacts

The study by Intraplan Consult (2012) for the German aviation industry calculates employment effects based on: estimates of economic added value lost due to the introduction of the duty; and secondly on their estimated passenger losses from the duty of five million. Depending on the calculation basis, estimated employment losses are 13,500 or 14,500 jobs (including direct, indirect and induced effects as well as accounting for 'incoming tourism'). The modelling results of the Intraplan Consult study are dismissed as overestimated and flawed by other studies as mentioned above, so figures reported here should be treated with a great deal of caution.

One aspect worth noting are the regional impacts mentioned above, with airports primarily served by low-cost airlines more affected by the duty. These airports are often located away from major cities in less economically active regions. Thus the airports are seen to offer important local and regional opportunities including for employment (both direct and indirect).

## 5.7 Revenue use

**Revenues raised** since the adoption of the duty have been as follows (Destatis, 2013):

- 2011: EUR 965.4 million;
- 2012: EUR 941.5 million;
- 2013: EUR 949.6 million.

Revenues from the duty go into the federal budget **without any earmarking**.

As explained above, the § 11(2) of the *Luftverkehrsteuergesetz* stipulates a revenue target of EUR 1 billion which is to be calculated by taking into account the revenues raised through the air passenger duty and the revenues from auctioning EU ETS allowances to the aviation sector. Rates are to be reduced following increases in auctioning revenues over time so as to meet the EUR 1 billion threshold and contain the burden on the aviation sector; at the same time a side effect is that this **ensures a stable duty income** over time.



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## 6 Fisheries resource tax and system of tradable fishing quotas in Iceland

### 6.1 Brief summary of the case

This case study covers the resource tax imposed on fisheries operations in Iceland, which forms part of a broader fisheries management system characterised by individual transferable quotas (ITQs). ITQs are a market-based instrument for fisheries management that enable managers to assign property rights to certain individuals, limiting the total amount of fish they may harvest but allowing them to trade freely, ensuring that the most efficient allocation of rights is achieved. The Icelandic fisheries management system has developed over time, with limits on total catches and ITQs introduced to the herring and other pelagic fisheries in the mid-seventies to early eighties (Arnason, 1993). These were then gradually applied to the demersal (bottom dwelling) stocks and in 1990 Total Allowable Catches (TACs) and ITQs were obligatory for all commercial fisheries (Arnason, 1993).

The resource tax or fishing fee was introduced in 2002. This tax was introduced to attempt to allay criticisms that the public was not accruing any benefits from the privatisation of the resource. The tax is not corrective (i.e. it does not serve to internalise an externality) because the ITQ system has already accomplished the necessary correction, but rather it is redistributive. Thus the tax has a social rather than an environmental objective, although the revenue was used to facilitate a reduction in the fishing fleet and to cover the costs of managing the fisheries (Haraldsson and Carey, 2011). The tax was levied as of 1 September 2004 and applied to all species. In 2012 the tax was reformed, to place a significantly higher levy on fishing companies (Davidsson, 2013). It is now comprised of two elements: the standard fee collected to finance the cost of running the fishery (imposed since 2004), and a special fee designed to capture part of the natural resource rent in fisheries (Davidsson, 2013).

### 6.2 Brief description of the design and scope

The tax is levied on fishing rights for the entire Icelandic fleet operating within and outside the Exclusive Economic Zone and thereby covers all species and catches. The standard fee is calculated so that it depends both on the amount of quota held by the fishing firm as well as its economic performance (Haraldsson and Carey, 2011). The reference period is the 12 months to 30 April in the preceding calendar year. The total catch value for that year is calculated, and fuel, wages and other operating costs are then deducted (to provide net revenue). The total tax revenue for that fishing year is set at 9.5 per cent of this amount (Haraldsson and Carey, 2011). In order to obtain a tax per cod-equivalent kilo (ISK/kg) that is levied for the ensuing fishing year (allotted quota in species other than cod are converted into cod equivalents by a conversion factor), the total tax revenue is divided by the catch in cod-equivalent kilos. For example, supposing net revenue in May 2010 - April 2011 was ISK 26.2 billion (EUR 163.6 million), and total catch in cod equivalents is 450 million kg: 9.5 per cent of net revenue is ISK 2.49 billion (EUR 15.5 million), divided by 450 million kg equals a tax of 5.53 ISK/kg (equating to approximately to EUR 0.035 /kg) (Haraldsson and Carey, 2011)<sup>11</sup>. The fee was set at 6 per cent from 1 September 2004, but gradually increased to 9.5 per cent by 1 September 2009 (Icelandic Ministry of Fisheries and Agriculture, no date).

Calculating the fee this way takes account of fluctuations in the profitability of the industry as well as the amount of quota issued the year before, so that if the quotas are increased from the previous year, firms pay the tax per kilo on the increase as well (Haraldsson & Carey, 2011). In the same way,

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<sup>11</sup> Currency conversions were calculated by taking the mean of 2010 (158.694594 ISK/EUR) and 2011 (161.475116 ISK/EUR) average exchange rates (equating to 160.0849 ISK/EUR). Source: OzForex Currency Converter <http://www.ozforex.com.au/forex-tools/historical-rate-tools/yearly-average-rates>

if quotas are reduced, firms pay the tax on fewer kilos. In this way the taxation takes into account fluctuations in the catch between fishing years.

The new fee is based on an estimate of the natural resource rent, where the rent is defined as the difference between the sales value of the output and its extraction and production costs (Davidsson, 2013). The tax is then set at 65 per cent of the resource rent (determined in cod-equivalents). This tax is determined separately for pelagic and demersal species. There are exemptions: the first 30 cod-equivalent tons have no special tax, and the next 70 tons are subject to half the fee, on order to protect the interests of smaller companies (Davidsson, 2013). The new fee is being introduced gradually until the full rate is levied in 2016/2017 (Davidsson, 2013).

### 6.3 Drivers and barriers of the ETR

The driving force behind the introduction of the resource tax was social equity concerns. The manner in which the access rights were initially assigned during the introduction of the ITQ system was considered by many as unfair, because the rights were distributed for free to existing vessel owners (Haraldsson, 2008). The two main arguments in favour of the introduction of a tax were that:

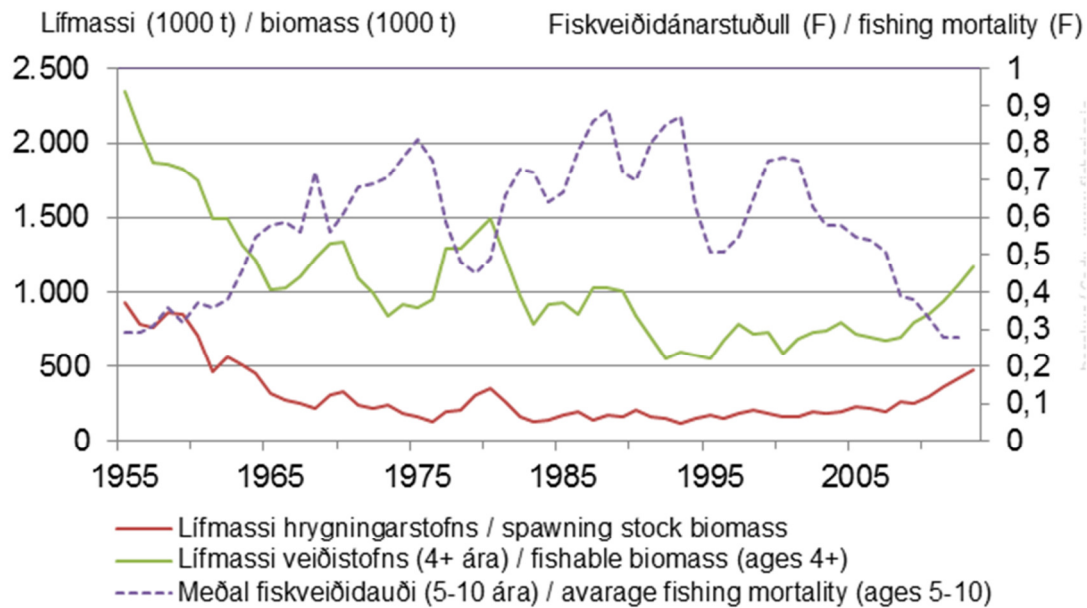
- A tax would lower the value of fishing rights (quotas) which would make it easier for young entrepreneurs to enter the industry by reducing the capital requirements for new entrants (Matthiasson, 2008). In this way it would make the fishing industry more accessible and attractive to outsiders.
- A tax would capture some of the profit derived from the exploitation of the resource (known as resource rent) which could go to the Icelandic public purse (Matthiasson, 2008).

The introduction of the ITQ system for the bottom-dwelling stocks was only possible given the strong coalition between the conservative Independence Party (Iceland's conservative party) and the Progressive (centre-right, agrarian) Party. The influence of the Social Democrat Party was to push for the introduction of the resource tax.

### 6.4 Key environmental impacts and effectiveness

The effect of the resource tax on the environment is difficult to assess given that it was introduced into the Fisheries Management Act alongside a suite of other fisheries management measures, most importantly the ITQs. Indeed, it is argued by some that the resource tax could have a negative impact on the state of fish stocks, because it reduces the value of fishing rights and thereby lessens the incentives on fishers to manage and exploit the resource responsibly (Research Centre for Innovation and Economic Growth, 2013). Nevertheless, the tax is a popular measure and has enabled the ITQ system, which was controversial since its introduction, to become more politically palatable. This indirect, political effect should be acknowledged, as the ITQ system has been highly successful in improving the state of fish stocks, and if it were to be abolished it could jeopardise the positive trends in stock biomass (see Figure 1 for trends in cod biomass, note rise in spawning stock biomass since 2000). The 2013 ICES advice states that the spawning stock of Icelandic cod is increasing and 'is higher than has been observed over the last five decades' (ICES, 2013). In addition, the percentage of the fish stock removed each year by fishing (i.e. fishing mortality) has declined significantly since the early 2000's and is presently at a historical low (ICES, 2013; and Figure 1). The herring stock has also rebuilt steadily since the collapse in the late 1960's which preceded the introduction of ITQs.

**Figure 1 Trends in cod spawning and fishable biomass at spawning time and average fishing mortality**



Source: [Icelandic Ministry of Fisheries and Agriculture](#)

## 6.5 Key economic impacts

Again, the effect of the resource tax is difficult to disentangle from other factors. The high yields that have resulted from improved stock management (a result of the ITQ system primarily) were arguably less important to the sector economically than the high prices obtained for their catches on the export market. Following the crisis in 2008, the depreciation of the Icelandic krona led to great increases in profits from exports, and so even though landings were being kept under control the prices obtained were very competitive. In addition to increases in productivity and prices, technological innovations in the sector were also responsible for increasing profits.

## 6.6 Key social impacts

Since the introduction of the ITQ system, employment in the Icelandic fisheries sector has declined (from around 16 thousand in the 1980's to about 8 thousand currently). It is very likely that this decline would have been more drastic had the fish stocks continued to be unrestricted, and much of this decrease was due to technological development in the processing sector. Indeed, when the Icelandic economy crashed in 2008 the fishing companies remained stable. The national stock market lost 97 per cent of its value and more than 780 companies were bankrupted, but the largest fishing company in Iceland, HB Grandi hf, kept all 650 employees on the payroll during the financial crisis and some even received a raise (Bonzon, 2010). There is also evidence to suggest that the ITQ system has helped to slow migration from rural villages to Reykjavik and adjacent municipalities, and in fact has managed to provide people in the fishing villages with improved economic opportunities (Gissurarson, 2000). In contrast, the ITQ system has attracted criticism for allowing quotas to be concentrated in a small number of hands, leading to social inequities (Pálsson and Helgason, 2000).

In theory, the resource tax should lower the value of fishing quotas, which should increase the opportunities for outsiders to enter the sector by reducing their capital costs, and thereby increase competition. It is also supposed to redress the imbalance in wealth distribution. Whether this has

materialised in practice is not clear. The effectiveness of the tax would depend on the level at which the tax has been set, and there are suggestions that until the recent reform the tax rate was not high enough (Matthiasson, 2008). It is too early to determine whether the new tax rate has been pitched the right level.

## 6.7 Revenue use

The original resource tax revenues raised roughly 4.5 billion ISK per year (approximately equivalent to EUR 52.5 million prior to the financial crisis and EUR 28.6 million after the crisis)<sup>12</sup>, and it was estimated that the new special fee would raise roughly ISK 9 billion in 2013 (equivalent to approximately EUR 55.5 million) (Davidsson, 2013)<sup>13</sup>. As the full rate of taxation will not be levied until 2016/2017, the revenues will be even greater than this. The revenues from the original tax went towards the costs of managing the fishery, such as monitoring and surveillance costs for example, and also towards the Icelandic fisheries fund used to support the sector and rebalance the fleet to bring it in line with available resources (Davidsson, 2013). The revenues generated from the new tax are to go towards reducing the national deficit (Iceland Ocean Cluster, 2012).

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<sup>12</sup> The currency conversions were calculated by applying a pre-crisis rate (the mean of 2002 to 2007 yearly average exchange rates, equating to 85.60664 ISK/EUR) and a post-crisis rate (the mean of 2008 to 2013 yearly average exchange rates, equating to 157.3406 ISK/EUR), given that Davidsson (2013) does not provide a precise date for the tax revenue estimate. Source: OzForex Currency Converter <http://www.ozforex.com.au/forex-tools/historical-rate-tools/yearly-average-rates>

<sup>13</sup> Currency conversions were calculated using the 2013 average exchange rate (162.206675 ISK/EUR). Source: OzForex Currency Converter <http://www.ozforex.com.au/forex-tools/historical-rate-tools/yearly-average-rates>

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## **7 Plastic bag levy in Ireland**

### **7.1 Brief summary of the case**

The Irish plastic bag levy was introduced in 2002 through the Waste Management (Environmental Levy) (Plastic Bags) Regulations. The aim was to reduce consumption of disposable plastic bags by influencing consumer behaviour (Ministry of Environment, Community and Local Government, 2014), so as to reduce the visual presence of plastic bags in the landscape and increase public awareness of littering (Convery et al, 2007).

The revenues are earmarked to an environment fund which is used to cover the administrative costs of the levy and to support waste management, recycling centres, litter clean-up and other environmental initiatives (Lyons, 2013; Convery et al, 2007). Annual revenues were approximately EUR 23.4 million in 2009, and by 2012, a total of EUR 196 million of revenue had been collected from the levy (Doyle and O'Hagan, 2013). Collection and associated administration costs represent about 3 per cent of revenues.

### **7.2 Brief description of the design and scope**

The plastic bag levy was introduced at a rate of EUR 0.15 per bag in March 2002 and increased to EUR 0.22 from July 2007. In 2011 a provision was made in national legislation that sets a ceiling for the tax at EUR 0.70 and enables the levy to be amended once in any financial year (Lyons, 2013). It is applied at the point of sale via the existing Value Added Tax (VAT) system. Failure to implement the Levy Regulations correctly can lead to a fine, to imprisonment, or both (ACR and ACR+MED, 2013). Before it was introduced, the levy was widely advertised through a national information campaign.

The Regulations do not distinguish between biodegradable plastic bags and other plastic bags, but exemptions from the levy are applied to plastic bags used with fresh meat, fresh fish and fresh poultry, if not exceeding 225 mm width, 345 mm depth, and 450 mm length. The exemption also applies to plastic bags for fruits, nuts, sweets, ice cream, cooked items, milk products on board an aeroplane or ship, and to reusable bags charged at a minimum of EUR 0.70 (Lyons, 2013; Department of the Environment, Community and Local Government, 2014).

### **7.3 Drivers and barriers of the levy**

The government undertook extensive advance consultation on the design and implementation of the scheme with the general public, the Irish Business and Employers' Confederation, and leading retailers. This helped to increase support for the levy (GIZ, 2013). Moreover, a national publicity campaign reiterated the message that revenues from the levy would be used for environmental purposes, this helped to address concern among retailers that they would be blamed for 'profiteering' from the levy (Convery et al, 2007). The levy was introduced at the end of the winter, when littered plastic bags are especially visible, as there is little vegetation (Ibid).

Following criticism by, among others, butchers that various purchases including meat would need to be wrapped separately for hygiene reasons, an exemption from the levy was granted to plastic bags below a certain size when used for separating food stuffs and other products for hygiene and food safety purposes (Convery et al, 2007). Another concern was that the introduction of the levy would facilitate shoplifting as a result of shoppers coming into stores with their own bags. However, Convery et al (2007) report that the costs saved in purchase and storage of plastic bags more than offset both the additional administrative and shoplifting costs.

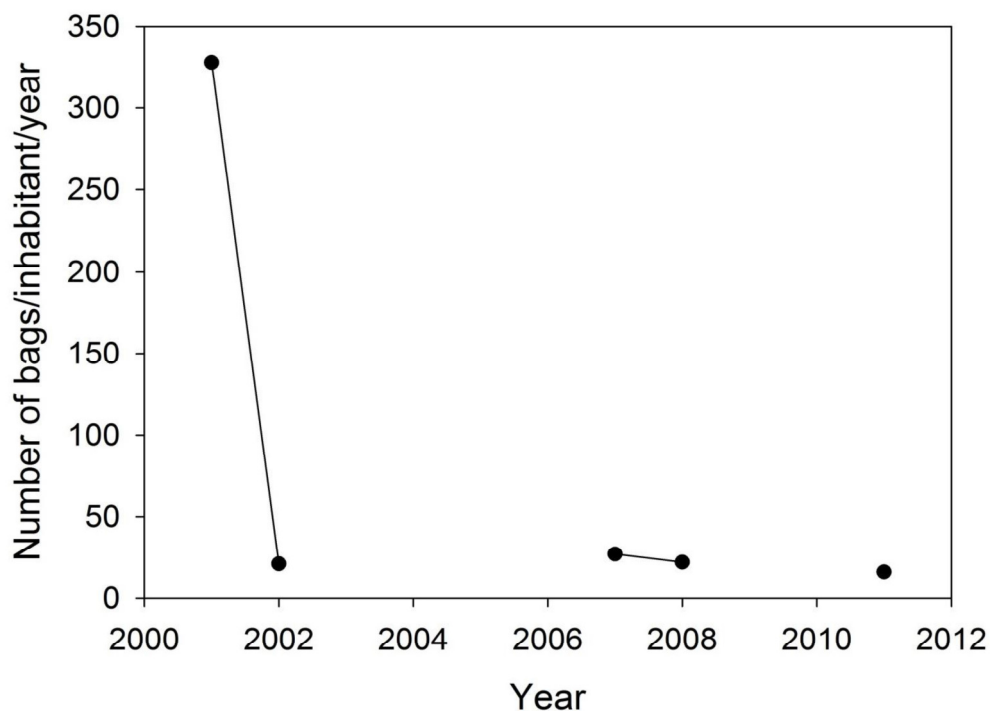


In preparing the legislation for the levy, the then Irish Environment Minister ensured collaboration between the various arms of government. He was also influential in ensuring a robust legislative and regulatory base for the levy that involved amending the Waste Management Act. Without his support the voluntary scheme initially preferred by industry may have been selected over the mandatory approach. In 1999 the then Minister for Environment and Local Government commissioned a report to explore different options, and in 2000 he proposed a levy. This had to be accepted by the Ministry of finance, local authorities, and the revenue commissioners (the Irish Government agency responsible for customs, excise, taxation and related matters). The final acceptance by the Revenue Commissioners of a special environment fund may also have helped to increase consumer acceptance of the levy (Convery et al, 2007).

#### 7.4 Key environmental impacts and effectiveness

Ireland’s plastic bag levy has been very successful at reducing both consumption and littering of plastic bags – see Figure 1. Following the introduction of the levy, plastic bag use fell from an estimated 328 bags per capita before the introduction of the levy in 2002 to 21 bags per capita at the end of 2002. Following this reduction, however, there was a slight increase in plastic bag usage to 33 bags in 2007. This was countered by an increase in the levy in July 2007 which aimed to reduce usage of plastic bags per capita to 21 or less (Department of the Environment, Community and Local Government, 2014). Following this increase usage dropped to 26 bags per capita, and eventually to 14 bags per capita in 2012 (Lyons, 2013; O’Connell, 2013).

**Figure 1: Plastic bag usage per capita in Ireland, 2001-2002, 2007-2008, and 2011**



Source: Doyle and O’Hagan (2013)

The results of a litter survey conducted between January 2002 and April 2003 show that within one year of the introduction of the levy, the number of areas in which there was no evidence of plastic bag litter increased by 21 per cent, while the number of areas without “traces” of plastic bags increased by 56 per cent (An Taisce in Convery et al, 2007). The share of plastic bag litter in national litter composition dropped from 5 per cent before the introduction of the levy to 0.25 per cent in



2010 (Hogg et al, 2011). The annual litter survey carried out by the Coast Watch observed a reduction from 10 to 5 plastic bags on beaches after the first year the levy was in place (Doyle and O'Hagan, 2013).

It has been suggested that since the introduction of the levy, paper shopping bags have become more prevalent due to a possible 'displacement effect', and that this may have more damaging environmental impacts in a number of key areas (IBGE, 2011; Friends of the Irish Environment, 2010). Moreover, critics state that plastic bags are frequently reused (e.g. as bin liners or for shopping), implying that paper and cotton reusable bags would have to be used several times before their higher global warming potential had been offset (IBGE, 2011). According to survey findings, however, up to 90 per cent of shoppers used long-life bags in 2003, compared with 36 percent in 1999, suggesting that the switch to paper bags has been a far from universal switch (Department of the Environment, Community and Local Government, 2011). Currently, 90 per cent of shoppers use reusable/long life bags, 6 per cent use cardboard boxes, 4 per cent plastic bags and 1 per cent other means (Clarke, 2014).

### **7.5 Key economic impacts**

The costs of implementing the levy have been modest. One-off set up costs included EUR 1.2 million (for the purchase of new computer systems and other resources needed to administer the levy). Advertising costs arising from the information campaign amounted to EUR 358,000. Administrative costs for the levy represent approximately 3 per cent of revenues (Convery et al, 2007).

In Ireland, in 1999, it was estimated that 79 per cent of bags consumed were imported. The remaining share was produced by four domestic firms. One firm subsequently went out of business but it is not certain if this was caused by the levy (Fehily *et al.* in Convery et al., 2007). Retailers describe the effects of the levy as neutral or positive. The additional costs of implementation were generally less than the savings resulting from not having to purchase plastic bags, and implementation costs were low because book-keeping was integrated with VAT returns (Convery et al, 2007). Consumers indicated that, while the levy caused them some expense, they felt the impact on the environment was positive (Ibid).

The levy is relatively high in order to discourage the use of plastic bags all together. The initial charge (EUR 0.15) was set at more than six times the average maximum willingness to pay, which was about EUR 0.024 (Convery et al, 2007).

### **7.6 Key social impacts**

Low income earners may be unevenly impacted by a levy because they have less disposable income. According to Scott (2002), however, the plastic bag levy did not have strong implications for income distribution. Specific information on the effects of the levy on employment in Ireland was not identified in the literature review.

### **7.7 Revenue use**

By 2012, a total of EUR 196 million of revenue had been collected from the levy (Doyle and O'Hagan, 2013). Receipts from the levy for each year are published in the Environment Fund Annual Accounts – see Table 1.

**Table 1: Revenue returns from the plastic bag levy, 2002-2007**

Year	Revenue Returns €	
2002	7,188,973.48	from 07/02     to 08/07
2003	12,750,954.31	
2004	13,536,752.62	
2005	17,544,295.77	
2006	18,701,367.23	
2007	15,565,283.88	
<b>Total:</b>	<b>85,287,627.29</b>	

Source: McDonnell et al (2008)

In 2008 revenues were approximately EUR 27 million, which can be seen to indicate that the higher rate in 2007 has led to increased revenues. In 2009 revenues were EUR 23 million, in 2010 EUR 17 million, and in 2011 they went down even further, to EUR 16 million (Department of the Environment, Community and Local Government, 2012).

Revenues from the plastic bag levy are earmarked to cover administration costs and for an environmental fund. The fund has supported, amongst other things, schemes to prevent/reduce waste, waste recovery activities, research & development into waste management, development of producer initiatives to prevent/reduce waste arising from their activities, implementation of waste management plans, enforcement of the provisions of any enactment relating to waste management, prevention of litter or protection of the environment, partnership projects, that involve local authorities, to improve the quality of the environment for particular local communities, promotion of awareness of the need to protect the environment and education and training to support this; and initiatives undertaken by community groups and others for protection of the environment (Department of the Environment, Community and Local Government, 2014).

Due to the success of the levy in reducing the use of plastic carrier bags, annual revenues from the levy were around one tenth of the amount initially expected (Lyons, 2013). In 2011 a provision was made in national legislation that sets a ceiling for the levy at EUR 0.70 and enables the levy to be amended once in any financial year.

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## 8 Natural Resource Tax in Latvia

### 8.1 Brief summary of the case

The Natural Resources Tax in Latvia is the main instrument of environmental taxation, which covers, inter alia, extraction of natural resources, waste disposal, environmental hazardous goods, emissions to air, products, fuels and water. The Law determines the methodology to issue licenses for potentially environmentally harmful activities and sets the tax rates on these activities and tax exemptions (LV CR, 2013). The tax covers natural resources with a production focus (whether extracted, distributed or imported) and it is applied at national level. The Ministry of Environmental Protection and Regional Development implements and changes the law if necessary. This case study focuses on extraction of mineral resources of the Natural Resources Tax (e.g. stone, soil, sand, gravel, peat, soil and other materials).

The objectives of the Natural Resources Tax Law are to promote resource efficiency and restrict negative impacts on the environment (e.g. pollution), reduce pollutant substances related to the economic activity, promote the use of environmental friendly technologies, support sustainable development and raise tax revenues.

The recent National Sustainable Development Strategy in Latvia defines the long-term sustainable development strategies until 2030. It may further serve as a strategic document to incentivize the implementation of other environmental related taxes initiatives. Environmental taxes should be further reformed to attain the objectives set by this law, as this case highlights the modest developments due to a low tax rates below the social and environmental costs of resource utilisation in Latvia (Rademaekers et al. 2011).

### 8.2 Brief description of the design and scope

The main policy is the law on Natural Resources Tax and the related Regulations of the Cabinet of Ministers (Fedrigo-Fazio et al. 2013; The Parliament of the Republic of Latvia, 2013). The natural resources tax was first adopted in 1991, with amendments in 1996, 2000 and several times after 2006. **Payment of the tax entitles a company to get a permit that can be traded (hence operating under a trading system). Moreover, fines may be attributed to firms with late payments or who conceal information** (The Parliament of the Republic of Latvia, 2000).

The Natural Resource Tax is a very comprehensive instrument. It covers extraction of natural resources (curative mud, dolomite, lime, cement, stone, soil, sand, gravel, and loam and other materials), waste disposal (e.g. household, hazardous, industrial and construction and demolition waste), environmental hazardous goods (e.g. oils, batteries and ozone depleting products, WEEE, end of life vehicles and packaging), a number of emissions to air (CO<sub>2</sub>, PM<sub>10</sub>, CO, NH<sub>3</sub>, H<sub>2</sub>S, SO<sub>2</sub>, NO<sub>x</sub>, NO<sub>2</sub>, CnHm, and heavy metals), single-use dinnerware, radioactive substances, and coal, coke and lignite, and water (e.g. water pollution and extraction) (Fedrigo-Fazio et al 2013, EU Summary report; OECD Database)<sup>14</sup>.

The Natural resources tax rates are differentiated depending on the natural resources and its environmental implications (GIZ 2013). Tax rates for mineral products remained unchanged from 1996 to 2009: soil at LVL 0.2 per m<sup>3</sup> (EUR 0.28); Sand clay, clay sand, aleirite at LVL 0.01 per m<sup>3</sup> (EUR

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[http://www.vid.gov.lv/dokumenti/anglu%20valoda/taxes/2013/nodoklu%20likmes%20latvijas%20republika%202013.gads%20en\\_27.03.2013.pdf](http://www.vid.gov.lv/dokumenti/anglu%20valoda/taxes/2013/nodoklu%20likmes%20latvijas%20republika%202013.gads%20en_27.03.2013.pdf) [accessed 24<sup>th</sup> February 2014]

0.014); quartz sand at LVL 0.2 per m<sup>3</sup> (EUR 0.28); sand at LVL 0.05 per m<sup>3</sup> (EUR 0.07); dolomite at LVL 0.06 per m<sup>3</sup> (EUR 0.08); Limestone at LVL 0.1 per m<sup>3</sup> (EUR 0.14); peat LVL 0.13 per m<sup>3</sup> (EUR 0.18); curative mud LVL 0.5 per m<sup>3</sup> (EUR 0.71), a total of 18 different categories. Tax rates were increased by law revisions for 2010, 2011, 2012 and 2014: sand tax rate raised to LVL 0.08 (2010), 0.12 (2011), 0.15 (2012-2013) and 0.21 (2014- ), for example. More tax rate changes are described in Table 1. The tax creates an incentive towards resource efficiency. Moreover, the existence of non-compliance fees implies the payment of the taxable amount up to 10 times the tax amount in case of non-compliance (Rademaekers et al. 2011).

**Table 1: Tax Rate Evolution (EUR/m<sup>3</sup>)**

	2009	2010	2011	2012	2013	2014
Soil	0.28	0.36	0.43	0.43	0.43	0.43
Sand clay, clay sand, aleirite	0.01	0.06	0.10	0.14	0.14	0.14
Quartz sand	0.28	0.28	0.28	0.36	0.36	0.45
Sand	0.07	0.11	0.17	0.21	0.21	0.21
Sand-gravel (fraction less than 2 mm, contents	0.14	0.21	0.28	0.36	0.36	0.36
Clay, other clayey minerals for production of construction materials	0.14	0.14	0.17	0.21	0.21	0.21
Decorative (decoration) dolomite	0.36	0.36	0.36	0.36	0.36	0.36
Dolomite	0.09	0.13	0.17	0.21	0.21	0.21
Limestone	0.14	0.18	0.23	0.28	0.28	0.28
Freshwater lime minerals (mealy and chunky)	0.14	0.14	0.14	0.14	0.14	0.14
Calcareous tufa (travertine)	1.42	1.42	1.42	1.42	1.42	1.42
Gypsite	0.31	0.36	0.43	0.50	0.50	0.54
Rock stone	0.21	0.28	0.43	0.57	0.57	0.57
Coloured ground	0.14	0.14	0.14	0.14	0.14	0.14
Peat (moisture – 40 per cent)	0.18	0.28	0.36	0.43	0.43	0.55
Sapropel of organic origin (alga and zoo gene alga) and organic lime with ash less than 30 per cent	0.71	0.71	0.71	0.71	0.71	0.71
Other sapropel (moisture – 60 per cent)	0.14	0.14	0.14	0.14	0.14	0.14
All types of curative mud	0.71	0.71	0.71	0.71	0.71	0.71

Source: State Revenue Service (2013) The Parliament of the Republic of Latvia (2000)

In 2014 Natural Resource Tax rates increased: the gypsum tax rate rose to EUR 0.54 per m<sup>3</sup> (currently LVL EUR 0.22 or EUR 0.31), the quartz sand tax rate rose EUR 0.45 per m<sup>3</sup> (currently LVL EUR 0.20 or EUR 0.29) and the turf tax rate increased to EUR 0.55 per tonne (currently LVL EUR 0.13 or EUR 0.19).

Firms that participate in environmental beneficial activities are given tax exemptions. Thus firms are given incentives to recycle, in accordance with the tax's objective of promoting environmental protection (Rademaekers et al. 2011).

### 8.3 Drivers and barriers of the ETR

In 1991, after its independence from the Soviet Union, Latvia aimed at applying for EU membership. The existing EU environmental regulations in 1991 required Latvia to promote higher environmental protection standards, change waste management practices and decrease carbon intensive energy

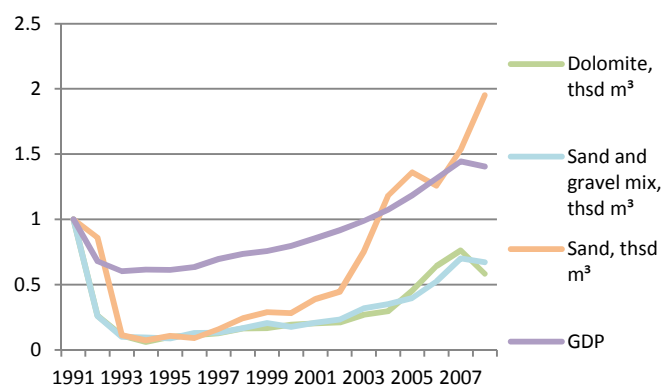
generation, for example through the implementation of a natural resource tax. Another driver of the tax introduction was the pollution challenge after the Soviet era (Rademaekers et al. 2011).

Latvia's economy is more dependent on the extractive industries than the EU27 average: in 2009, extractive industries accounted for 3.8 per cent of the national GVA, higher than the EU's 2.4 per cent (Rademaekers et al. 2011).

### 8.4 Key environmental impacts and effectiveness

Following the introduction of the natural resources tax in 1991, the domestic production of dolomite, sand and gravel mix and sand decreased, as illustrated in the figure. The evolution of production of other materials is not shown due to a lack of data for the period. This reduction is mostly explained by the reduction in GDP, also evidenced during the financial crisis of 2008 since production seems to follow the same trend as economic output. Even with introduction of the tax, GDP and mineral resource extraction are still coupled, hinting at relative decoupling at best of dolomite and sand and gravel mix from economic growth.<sup>15</sup>

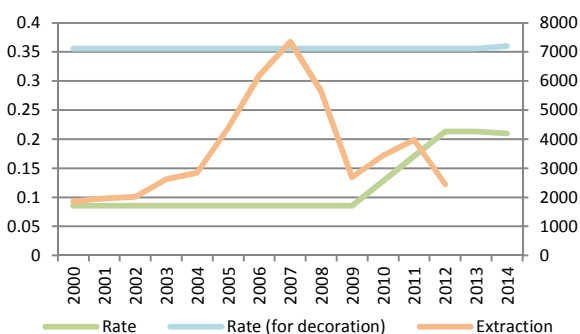
**Figure 1: Evolution of GDP and materials**



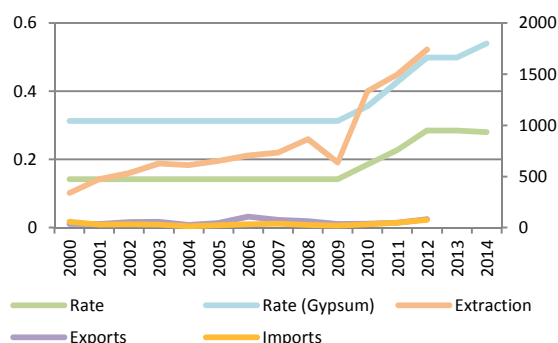
**Source:** Statistics of Latvia on Production of Principal Mineral Resources (<http://data.csb.gov.lv/>)

The unchanged tax rate from 1996 until 2009 may explain its ineffectiveness in decreasing mineral resource use. The introduction of higher tax rates in 2010, 2011, 2012 and 2014 coincided with the recovery from the financial crisis. Therefore, the effect of an increased tax rate on resource extraction shows no clear or consistent causal effect, as illustrated in the figures below. The tax rate changes (in the left axis, in EUR units) in 2010 and 2011 do not appear to have had a visible reduction effect in resource extraction, imports or exports (in the right axis, in thousand tonnes) of the 5 resources represented. Only peat and dolomite extraction decreased in the last observed year (2012).

**Figure 2: Dolomite**

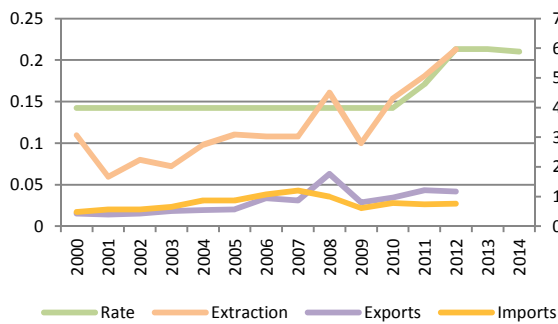


**Figure 3: Limestone and Gypsum**

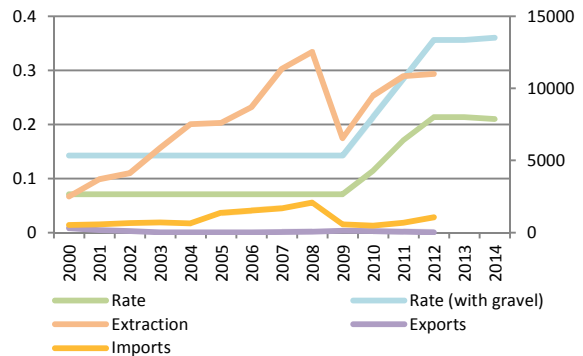


<sup>15</sup> Central Statistical Bureau, Environment Statistics (<http://www.csb.gov.lv/en/dati/statistics-database-30501.html>) [accessed 24/02/2014]

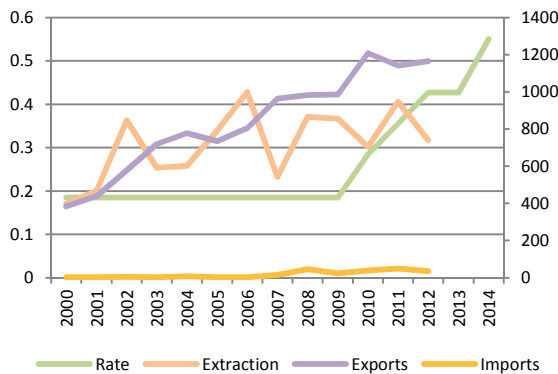
**Figure 4: Clays and Kaolin**



**Figure 5: Sand and gravel**



**Figure 6: Peat**



**Source:** Statistics of Latvia on Production of Principal Mineral Resources (<http://data.csb.gov.lv/>)

Domestic material consumption (DMC) in Latvia increased by around 50 per cent from 2000 to 2007. Moreover, DMC of chalk and dolomite, sand and gravel and limestone and gypsum, grew at a faster rate. The initial tax rates seem to have been too low to have any mineral resource reductions. However, during the same period, resource productivity improved from EUR 0.24 per kg of DMC (2000), to EUR 0.31 per kg (2007), one of the fastest EU improvements. At this level, the natural resource tax appears to have improved resource efficiency in Latvia (Rademaekers et al. 2011).

Overall, in Latvia, resource efficiency has increased and significant revenues have been raised, so the tax seems to have partly attained its objectives. Despite successful implementation, the tax appears to have had limited impacts. The tax rate seems to be too low to have significant positive environmental impacts (Rademaekers et al. 2011). Compared to other EU countries, the natural resources tax rates in Latvia are below the level that reflects the true environmental cost (GIZ 2013).

## 8.5 Key economic impacts

One of the tax's objectives is to raise revenues. As seen in the table, the financial targets for Natural Resource Tax Revenues were reached in 2005, 2009, 2010 and 2011.

The **administrative cost** of the tax for firms are considered to be low, with exemptions granted for already well performing firms (Rademaekers et al. 2011).

## 8.6 Key social impacts



No data found on social impacts of the tax in examined literature and studies. Potential impacts could for example include health impacts from reduced pollution however no information on this was found in the literature.

**Table 2: Total Revenues Raised by the Natural Resource Tax (in thousand LVL)**

Revenue s	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
<b>Total</b>	10553	9634	8195	10344	10955	10382	9369	7404	8758	10379	12275	13411
<b>Target</b>	11280	11513	8495	8454	11388	11336	10338	7000	6900	10340	13612	14136

**Source:** Annual reports from Customs office (<http://www.vid.gov.lv/default.aspx?tabid=11&id=6743&hl=1>)

## 8.7 Revenue use

Environmental taxes in Latvia accounted for around EUR 450 million in 2008, EUR 430 in 2009, and EUR 436 in 2010, increasing to EUR 500 million in 2011.<sup>16</sup> Between 1995 and 2011, Latvia's environmental tax revenues as a percentage of GDP has increased by 1.3 per cent, one of the highest increases within the EU Member States (Fedrigo-Fazio et al. 2013). Natural resource tax revenue equalled 0.11 per cent of GDP in 2004 (GIZ 2013), LVL 8,195,000 in absolute terms, and revenues reached LVL 13,411,000 in 2013, with an increasing trend since 2009, as illustrated in Table 2.

40 per cent of the tax revenues are currently transferred to the general budget, for state environmental protection (until 2003) and for Latvian Environment Protection Fund (from 2004 onwards). The latter is an entity under the direct control of the Environment Ministry. The remaining 60 per cent of the revenues are forwarded to the municipalities' special environment protection budget (GIZ 2013; BNN 2013). The revenues have been reallocated to environmentally-friendly investments and have helped ease compliance with EU environmental targets upon Latvia's accession to the EU (Rademaekers et al. 2011).

**Environment Protection and Regional Development Minister Edmunds Sprudz** has argued in favour of full application of these revenues to restoring **environment quality, instead of covering for general government expenses** (BNN 2013).

Tax rates are changed through amendments to the natural resources law. While tax rates remained unchanged, between 1995 and 2000, the inflation rate in the country grew 36 per cent, reducing the incentive effect of the tax.<sup>17</sup>

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<sup>16</sup> Statistics of Latvia on Production of Principal Mineral Resources. <http://data.csb.gov.lv/> [accessed 24/02/2014]

<sup>17</sup> <http://enrin.grida.no/htmls/latvia/resursi/zemes/kudra.htm> [accessed 24/02/2014]



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## 9 Energy taxation in the Netherlands

### 9.1 Brief summary of the case

The Dutch 'energy tax', formerly known as the 'regulatory energy tax', was introduced in 1996 and was the centrepiece of the environmental tax reform in the Netherlands. The tax was designed with an explicit environmental purpose of reducing energy consumption and revenues raised under the tax are entirely recycled back to the economy. The main purpose of the energy tax today is to raise revenue for the government. The secondary purpose is to reduce energy consumption.

The wider Dutch energy taxation regime has seen some changes over the last two decades and developed into an "output style" system, whereby fuels used in electricity generation have been exempted from fuel taxes, matched by increasing rates levied on electricity under the energy tax. The Dutch energy taxation regime is an interesting case due to its comprehensiveness, given that 'most energy products that contribute to climate change emissions are taxed either directly or indirectly' (Vollebergh, 2008).

Other interesting elements relate to the design of the tax. Competitiveness concerns have been high on the agenda ever since and are reflected in exemptions to large industrial users, including in the horticulture industry. At the same time however, exemptions have been made conditional upon entering into voluntary long-term agreements with the Dutch government on improving energy efficiency. Comparative studies have presented the Dutch energy tax as a good example of preventing potential negative social impacts of increased energy taxation, in particular the use of exemptions and recycling of revenues to households (Peter *et al*, 2007; EEA, 2011). Regarding the environmental effectiveness of the tax, past studies have found evidence for reduced consumption of both electricity and natural gas at household level and an increase in energy efficiency in industry and the economy overall. No evidence for negative economic or social consequences could be found, pointing at a successful design of the tax including its exemptions and recycling measures.

### 9.2 Brief description of the design and scope

The **(regulatory) energy tax (RET)** which has been introduced in 1996 represents the cornerstone of environmental tax reform in the Netherlands. It is designed as a 'downstream' tax that applies to energy products used for heating and electricity generation by households and small businesses, covering mineral oil products for non-transport applications, natural gas and electricity. Since its introduction, the tax base was broadened to include consumption by intermediate firms. With a change of the Dutch energy taxation regime towards an 'output' style system in 2001, tax rates levied on electricity under the regulatory energy tax were increased in response to the exemption from the then fuel tax of all fuels used in electricity generation. The rates are partly based on the carbon content of the fuels (but have been raised in line with inflation since) (Vollebergh, 2008). The rate structure has subsequently been changed and the basis on energy content/CO<sub>2</sub> emissions was abolished due to purchasing power effects for lower income groups (Ministry of Finance, 2013c).

In 2004, the tax was renamed '**energy tax (Energiebelasting)**' and took over some elements of the fuel tax. The tax has different rate schedules for electricity and natural gas, with regressive rate structures for both, so that rates decline with the level of consumption, as shown in **Error! Reference source not found.1** at the example of taxes levied on electricity. Tax rates applied on natural gas are shown in Table 2.

**Table 1: Development of (regulatory) energy tax rates on electricity over time (EUR cent per kWh)**

	1998	2001	2007	2013
0 - 800 kWh	-	5.83	7.16	11.65
800 - 10,000 kWh	1.34	5.83	7.16	11.65
10,000 – 50,000 kWh	1.34	1.94	3.69	4.24
50,000 – 10,000,000 kWh	-	0.59	1.02	1.13
> 10,000,000 kWh non-commercial	-	-	0.10	0.10
> 10,000,000 kWh commercial	-	-	0.05	0.05
<i>Tax credit (EUR/year/connection)</i>	0	142	197	319

Source: Vollebergh (2013) based on Dutch Ministry of Finance.

**Table 2: Regular energy tax applied on natural gas 1996–2013 (eurocent/m<sup>3</sup>)**

	1996	1998	2001	2004	2007	2010	2012	2013
0-800 m <sup>3</sup>	-	-	12,03	14,29	15,31	16,29	16,67	18,62
800-5 000 m <sup>3</sup>	1,45	4,32						
5 000-170 000 m <sup>3</sup>			5,62	7,27	13,42	14,11	14,43	
170 000-1 mln m <sup>3</sup>	-		1,04	2,27	3,72	3,91	4,00	4,39
1-10 mln m <sup>3</sup>		-	-	1,13	1,18	1,24	1,27	1,60
>10 mln m <sup>3</sup> non-business use	-	-	-	1,06	1,10	1,16	1,19	1,5
> 10 mln m <sup>3</sup> business use	-	-	-	0,75	0,78	0,82	0,83	

Source: Ministry of Finance (2013c)

The Dutch energy tax is characterised by a **range of exemptions that address competitiveness concerns** associated with the introduction of ETR in the Netherlands. These include the following:

- In order not to harm their international competitiveness, large industrial electricity consumers (>10 million kWh/year per electricity connection) receive a refund from the energy tax if they have entered long-term agreements on energy efficiency with the Dutch Government (OECD, 2013) and as long as they pay on average more than the European minimum rate.
- The horticulture sector (greenhouses) benefits from reduced natural gas tax rates, again on the condition of participating in energy efficiency agreements (OECD, 2012).
- Refunds exist for religious and non-profit organisations (OECD, 2012).
- Rebates and subsidies exist for energy distribution firms for deployment of CHP, energy-saving technologies, and renewable electricity. Electricity from renewable sources used to be exempted from the tax, giving it an additional regulatory purpose to promote the sourcing of renewable energy (Vollebergh, 2008).

### 9.3 Drivers and barriers of the ETR

The Netherlands have been widely regarded as one of the frontrunners at the end of the 20<sup>th</sup> century for both using market based instruments as part of national environmental policy and pushing for their adoption in international fora. According to an observer, the attitude towards fiscal reform changed subsequently and towards the end of the 2000s a renewed discussion on the role of the tax system in greening the economy and reducing GHG emissions emerged in the Netherlands. Newly proposed measures were put under increased scrutiny and competitiveness concerns have been overriding (Vos, 2012). As a result of these discussions (and amidst budgetary and political turbulences in spring 2012 leading to the stepping down of the coalition government), the Ministry of Finance, as part of the 2012 Fiscal Plan, proposed to abolish five environmental taxes including on water use, waste and packaging, with an overall small tax revenue (around EUR 700 million). Importantly, no major changes have been implemented regarding energy and transport taxes, accounting for 90 per cent of revenue from all environmental taxes (Vos, 2012). Some of the proposed changes have been revoked since or were not implemented after all, such as the abolition of the landfill and water use taxes (Ministerie van Financiën, 2013b).

Competitiveness concerns are noted to have played a major role throughout. Most notably, this has led to the exemption of large energy consumers subject to international competition in exchange for voluntary agreements as part of the wider ETR context. These take the form of long-term agreements between the Dutch government and large energy consuming industries, whereby these industries commit themselves to energy efficiency improvements. Until the end of 2012 this was organised under the 'Energy Efficiency Benchmarking Covenant' (Speck and Jilkova, 2009; Speck, 2008).

#### 9.4 Key environmental impacts and effectiveness

With regard to the environmental impacts of the (regulatory) energy tax, an important evaluation study dates from the year 2004 (Berkhout *et al*, 2004). Using household-level data, this study finds a **reduction in the residential use of natural gas and electricity** following the introduction of the RET. Specifically the study concludes that, in the short term, the energy tax led to a yearly average demand reduction of 8 per cent for electricity (over the years 1994-99) and 4.4 per cent for natural gas (over the years 1992-99). As to industry as well as economy-wide impacts, Enevoldsen (2005) highlights **energy intensity improvement in the Dutch industry** over 1990 to 2000 of 10-15 per cent to which energy taxation might have contributed, concurrent with findings from the COMETR study noting significant efficiency improvements in a range of sectors over 1994-2002 (Andersen *et al*, 2007). Also Peter *et al* (2007) find important energy efficiency improvements in the Netherlands, noting at the same time, however that the country started from a relatively high initial level of intensity; this points at other factors at work such as technological catch-up effects. According to Ministry of Finance information from 2007, the energy tax led to **3.5 per cent lower emissions** than would have otherwise been the case over 1999-2007 (cited in Green Fiscal Commission, 2009).

Yet there is also **criticism as to the design of the tax in terms of emission sources covered**. Vollebergh notes that upstream versus downstream taxation is not clear cut in the Dutch system, implying that CO<sub>2</sub> emissions from the production of most final energy products are 'exempted either implicitly, as in the case of crude oil or [natural gas], or explicitly, as in the case of electricity production'. This is considered an inefficient outcome for CO<sub>2</sub> abatement as it results in low or zero energy taxes for those sectors with the cheapest abatement options (2008, p668).

#### 9.5 Key economic impacts

**No evidence on significant negative impacts on competitiveness could be found.** As mentioned above, competitiveness concerns were at the forefront when ETR in the Netherlands was

introduced. Exemptions for large consumers and energy-intensive industries and alternative voluntary long-term agreements between these industries and the government bear witness to that fact. Reducing emissions in the energy-intensive industries is to be achieved through the ETS primarily. The COMETR study found that among a set of sectors examined, carbon-energy taxation only caused additional economic burden in the meat and meat products, a relatively low energy-intensive sector (Andersen *et al*, 2007). As to innovation impacts, Peter *et al* (2007) found **some evidence for positive impacts on investments** in clean technologies as part of ETR. It is not clear, however, whether this has led to measurably more innovative activities by Dutch firms that would give them a competitive advantage.

No detailed information on the **administrative costs** associated with the energy tax in particular was found. It is mentioned in a Dutch government report that the additional levy or ‘surcharge’ on electricity to finance renewable energy subsidies (the Sustainable Energy Incentive Scheme, SDE+) in force since 1 January 2013 (OECD, 2013) will be collected from energy suppliers in line with rules applying to the energy tax to reduce the overall administrative burden (Ministry of Economic Affairs, Agriculture and Innovation, 2011).

## 9.6 Key social impacts

**No evidence for negative social impacts could be found.** This is despite the fact that regressive tax rates are applied, placing a higher burden on small consumers while large consumers are being sheltered due to competitiveness concerns. Peter *et al* (2007) found that in the Netherlands, as in Sweden, the regressive design of the tax rates is nearly neutralised given the recycling measures and exemptions applied. The refund on electricity bills applied in the Netherlands are also put forward in an EU wide review of ETR by the EEA as good examples of policy options that avoid negative distributional effects of ETR on private households (EEA, 2011). In terms of **employment impacts**, Peter *et al* (2007) found that recycling of tax revenues to the economy as part of the Dutch ETR has led to a small, positive employment impact of 9000 new jobs (or ~0.1 per cent of the Dutch workforce).

## 9.7 Revenue use

Environmental taxes in the Netherlands are among the highest in the EU, second only to Denmark (EC, 2013). In 2011, **total revenues from environmental taxes** amounted to 3.9 per cent of GDP, with **total revenues from energy taxes amounting to 2 per cent of GDP** – see Table 3 (EC, 2013). The (regulatory) energy tax alone makes up over 20 per cent of total revenue from environmental taxes; its revenue increased from EUR 400 million when it was introduced to EUR 4.2 billion in 2010 (Vollebergh, 2013, *personal communication*).

**Table 3: Tax revenue over time in the Netherlands**

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2011
	Per cent of GDP									EUR bn
Total tax revenue	37.4	37.5	37.6	39.0	38.7	39.2	38.2	38.8	38.4	231.0
Environmental taxes	3.7	3.9	3.9	4.0	3.8	3.9	4.0	4.0	3.9	23.4
<b>of which energy tax</b>	<b>1.8</b>	<b>1.9</b>	<b>2.0</b>	<b>2.0</b>	<b>1.8</b>	<b>1.9</b>	<b>2.0</b>	<b>2.0</b>	<b>2.0</b>	<b>12.0</b>

Source: EC (2013), p120

**Energy tax revenues are recycled back to the economy**, i.e. the tax was designed to be revenue neutral. Specifically, households benefit from lower income tax rates and higher tax free allowances

(especially for pensioners). Industry benefits from a reduction in the employers' social security contributions, an increase in tax free allowances for SMEs, and a reduction of corporate tax rates (Speck and Jilkova, 2009). There is also a tax credit in the form of a lump sum refund on households' electricity bills of currently around EUR 319 (Ministerie van Financiën, 2013b). In the past (until 2003), a smaller share of RET revenues of around 15 per cent used to be earmarked for an energy premium system rewarding the purchase of energy-efficient appliances (Duscha *et al*, 2005).

In order to ensure a **stable tax income** over time, tax rates for all energy taxes in the Netherlands have been indexed to inflation since 1999 (Speck and Jilkova, 2009), a relatively rare feature of energy tax design in the EU (EC, 2012).

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## 10 Pesticide Tax in Norway

### 10.1 Brief summary of the case

Norway has a long history of environmental taxes and in the late 1980's and early 1990's a wide-spread use of environmental taxes could be seen. In 1988, taxes on pesticides, mineral fertilisers and lubricant oils were introduced, while in 1991 a CO<sub>2</sub> tax on petrol, auto diesel oil, mineral oil and the petroleum sector was implemented (Ministry of Finance, 2007). In 1999, a new banded pesticide tax system was created, replacing the tax based on import value. The new system differentiates the pesticides based on their impact on the environment and human health and thus aims to reduce the usage of pesticide, especially the harmful ones. This innovative system together with an area-based approach is considered to be effective in encouraging a more conservative use of pesticides and reducing the use of harmful products.

### 10.2 Brief description of the design and scope

The Norwegian pesticide tax was introduced first in 1988, based on a percentage of the import value of the pesticides (Spikkerud, 2006). The tax was in the form of a value-added tax and originally constituted 2 per cent of the wholesale price. This percentage has increased to 15.5 per cent in 1998 (Andersen et al, 2000). In addition to the pesticide tax a regulatory fee was also introduced in 1988, which was used to provide revenues for regulatory procedures and approval of the pesticides (Andersen et al, 2000). In the current system the pesticide tax consists of three components: a registration fee, a levy to fund the efficacy and residue trials, inspections and the registration processes and the banded tax system (Spikkerud, 2006) which is further detailed below. In 2004, the levy was set at NOK 16 per hectare for all pesticides sold (Rorstad, 2005).

As a follow-up of the Norwegian Action Plan for Pesticide Risk Reduction (1998-2002) a new taxation system was developed and was implemented in 1999 (Spikkerud, 2006). The new system is area-based and consists of seven tax bands based on the environmental and health related risks linked to the pesticides. The human health criteria is based on the intrinsic properties of the pesticide and the exposure during mixing, while the environmental criteria takes into account amongst others the toxicity of the pesticide in aquatic and terrestrial ecosystems and the leaching potential. In addition, tax bands are differentiated between pesticides used by the industry and domestic users, i.e. home gardens. Until 2004 there was also a separate category for microbiological and seed treatment products. The tax per kg or litre is calculated as follows:  $(\text{base rate} \times \text{factor}) \times 1000 / \text{standard area dose}$ . The base rate is the same for all products and was initially fixed at NOK 20 (around EUR 2.4) per hectare and was increased to NOK 25 (around EUR 3.4) from January 2005. The factors correspond to the seven tax bands as shown in Table 2. The standard area dose is determined by the maximum application rate (in grams or millilitres per hectare) for the main crops for which the pesticide is used.

**Table 2: The different tax bands of the Norwegian pesticide tax since 2004**

Tax band	Factor	Product type
1	0.5	Products with low human health risk and low environmental risk
2	3	Products with low human health risk and medium environmental risk, or products with medium human health risk and low environmental risk
3	5	Products with low human health risk and high environmental risk, or products with medium human health risk and medium environmental risk, or products with high human health risk and low environmental risk
4	7	Products with medium human health risk and high environmental risk, or



		products with high human health risk and medium environmental risk
5	9	Products with high human health risk and high environmental risk
6	50	Concentrated home garden products
7	150	Ready-to-use home garden products

Source: OECD, 2010

The tax system was evaluated in 2003 and the system was revised to reflect the results of the evaluation with adjustments applied from October 2004. A second evaluation of the tax system was launched in 2012 (Spikkerud, 2012). The results of this evaluation exercise were published in December 2013 (Mattylysynet, 2013) and one of the main conclusions was that the banded tax system is an important tool to incentivise farmers to use less pesticides and alternative methods. In order to ensure further risk reduction the evaluation concluded that further research and education of pesticide users is needed (Expert input, May 2014).

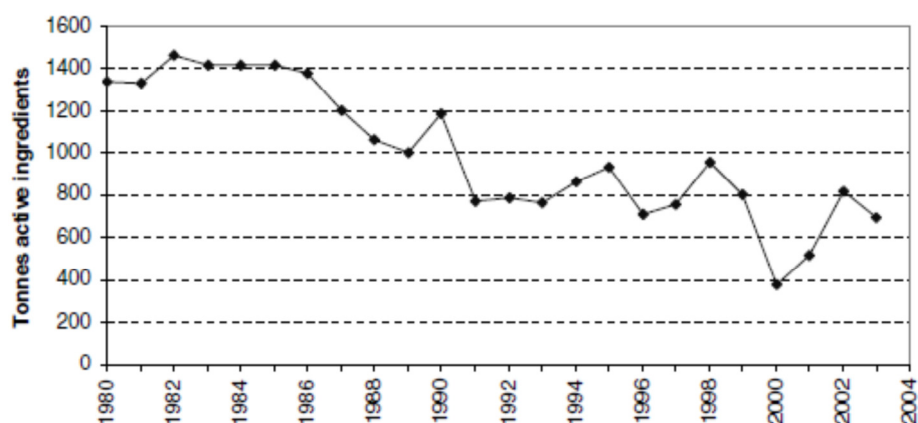
### 10.3 Drivers and barriers of the ETR

It is assumed that the tax was initially introduced in 1988 not to influence the usage of pesticides but to raise revenues to finance a number of environmental initiatives (Andersen et al, 2000). However, the change to the tax in 1999 via the introduction of the banded tax system reflected a stronger objective to reduce the application of pesticide products, especially the most harmful ones which pose the highest risk to the environment and human health (PAN Europe, 2005). In addition, the application of an area-based approach helped to link the pesticide tax more directly to pesticide use (Spikkerud, 2006). The Norwegian Action Plan for Pesticide Risk Reduction (1998-2002) indicated as its main targets to reduce the various risks related to pesticide use by 25 per cent and to promote the usage of biological pest management measures instead of chemical pest management (Ministry of Agriculture, 1998 as indicated in Andersen et al, 2000 and Rorstad, 2005).

### 10.4 Key environmental impacts and effectiveness

The environmental impact and the effectiveness of Norway's pesticide tax are measured by the sales of pesticide products (Figure 2). Since the 1980's the main trend shows a decrease in the sale of the pesticides however there has been significant variations throughout the years. The bumps in the curve are explained to be an effect of advanced warning of tax increase which leads to stockpiling. After the introduction of the pesticide tax in 1988 there has been an overall decrease in the pesticide sales until 1994 but this was attributed to the transition to more concentrated pesticides and better spraying techniques (Andersen et al, 2000). The increase in 1994-1995 is explained by the hoarding effect. When the new banded tax system was announced in 1998 farmers and importers hoarded large amounts of pesticides. In addition, as a tax increase was announced later in 1999 the hoarding effect increased (Spikkerud, 2006). As a result of the large stockpiling sales in 2000 and 2001 were significantly lower. Even though 2002 was expected to be a year when the impacts of the new pesticide tax would have been seen due to an early fall and sowing of winter wheat the use of glyphosate was significantly increased and thus pesticide sales went up again (Rorstad, 2005). Without this climatic condition it was estimated that sales would have been about 650 tonnes (Spikkerude, 2006). In summary, it is very hard to estimate the impact of the pesticide tax on the environment as many variables can influence the amount of pesticide sales but overall the banded tax system is considered to be effective as it not only encourages the more conservative use of pesticides but also provides an incentive to use less harmful products (OECD, 2010).

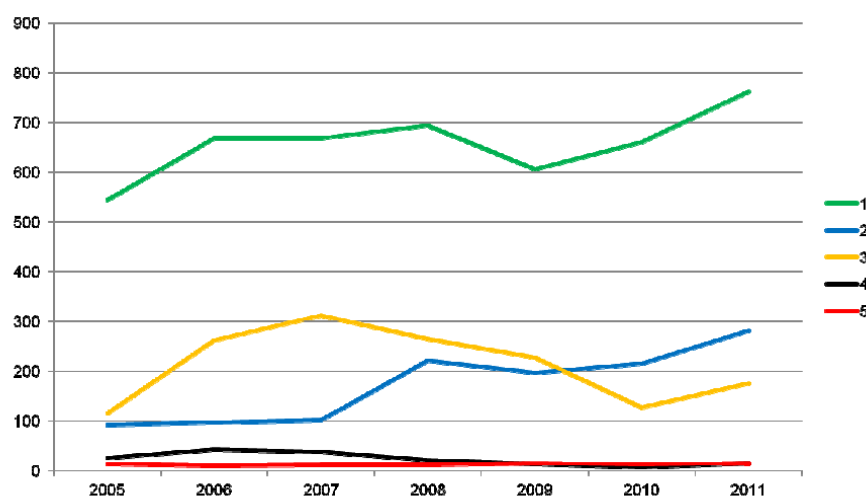
**Figure 2: Pesticide sales in Norway between 1980 and 2003**



Source: Spikkerude, 2006 (p. 287)

It is also interesting to look at the trends of the theoretic value of area treated with the pesticides in the different tax bands, which is calculated by dividing the sales volumes (in kg or litres) by the standard area dose. Figure 3 indicates the changes in the area treated with pesticides after the adjustment in the tax system in 2004. The trends clearly show that pesticides under tax band 1 (products with low human health risk and low environmental risk) were used in more than five times larger areas than other pesticides and products with the highest environmental and human health risk (tax band 4 and 5) were used in very small areas.

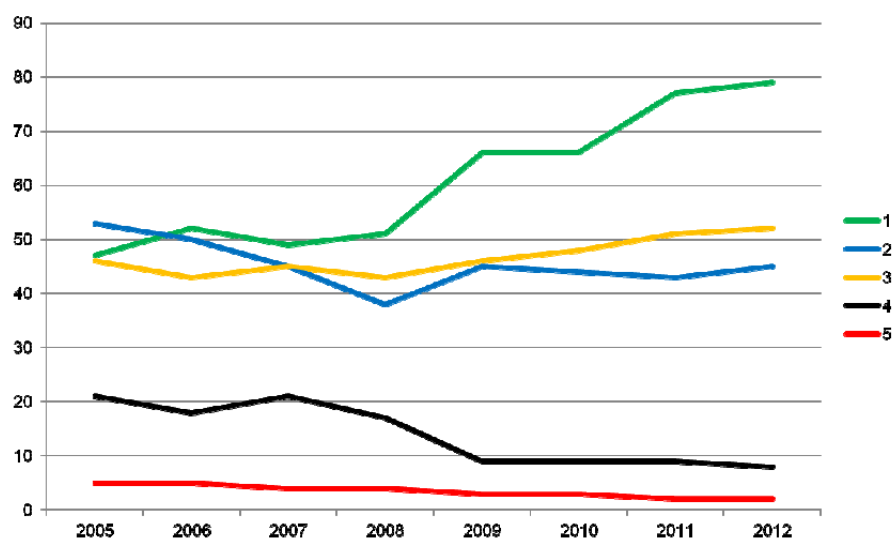
**Figure 3: Trends in area treated for pesticides with different tax bands between 2005 and 2011 (1000 ha)**



Source: Spikkerud, 2012 (p.19)

The number of pesticide products under the different tax bands also shows a similar trend (Figure 4). Pesticides with low risk were much more abundant than products which have a high environmental and human health risk. This trend was also confirmed by the latest evaluation exercise carried out in 2013 (Expert input, May 2014).

**Figure 4: Trends of number of products in different tax bands between 2005 and 2011**



Source: Spikkerud, 2012 (p.19)

Finally, about 40 per cent of farmers replied to a farmer survey conducted in 2002 as part of the evaluation taken place in 2003 indicated that the banded tax system incentivised them to use pesticides in the lower tax bands, i.e. which are less harmful for the environment and human health (PAN Europe, 2005). Nevertheless, the 2013 evaluation concluded that pesticide users are more concerned with efficacy of the pesticide products than their price but when alternative products are available in the different tax classes they also take price into consideration (Expert input, May 2014).

### 10.5 Key economic impacts

Calculations by Spikkerude (2006) showed that the new tax system introduced in 1999 generally made harmful pesticides more expensive per hectare than other pesticides with lower risks to the environment and human health. Nevertheless, there are examples where the costs of the pesticides under different tax bands are similar. In addition, according to a farmer survey in 2002, more than 70 per cent of farmers said that the new pesticide tax scheme has resulted in higher costs (Spikkerude, 2006). Nevertheless, when the new banded tax system was introduced, one of the main preconditions was that the total tax burden should be the same as with the old system. This means that the new system should not have a negative impact on farmers' competitiveness and lead to higher costs in general, however this could be the case for some products (Expert input, May 2014). Pesticide companies in their responses indicated that they do not want a tax at all and that there are too few pesticides in Norway to effectively implement a banded tax system (Spikkerude, 2006).

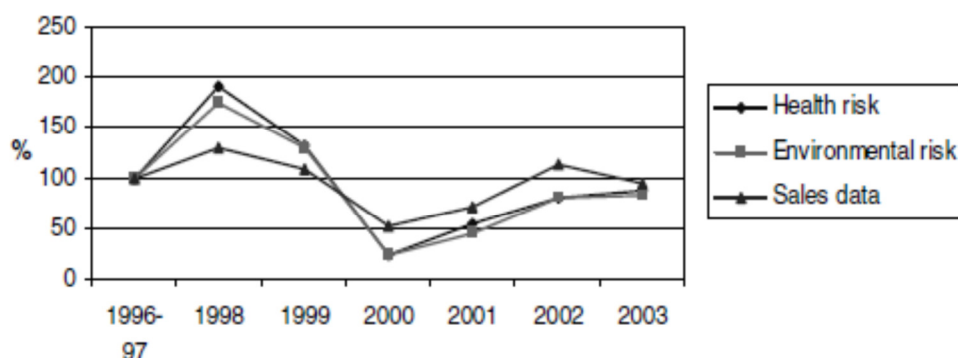
It is also interesting to note that it was estimated that the **administrative cost** of running the new banded tax system is very low counting for about 1 per cent of the tax revenue (Valborg Kakkerstad and Rorstad, 2002). Nevertheless, Norway does not have as many pesticide products as some other European countries and this might be the reason that the administrative costs of the banded tax system are not significant (OECD, 2010).

### 10.6 Key social impacts

As part of the evaluation procedure the development in health and environmental risks were also assessed based on trade of pesticides and not on use. Figure 5 shows that the average health and environmental risks for 2001-2002 have been reduced by approximately 35 per cent compared to

the baseline years of 1996-1997 (Rorsatd, 2005). Nevertheless, the trend is not that clear when data from 2003 is included and it is also important to note that other policy measures also took place during the same time period thus the positive effects cannot be attributed solely to the new tax system.

**Figure 5: Relative development of health and environmental risk and trade<sup>18</sup>**



Source: Spikkerude, 2006, p.289

## 10.7 Revenue use

In 1997-98 the annual income from the pesticide tax was around NOK 20 million (Rorstad, 2005). In recent years this has increased to about NOK 60 million (around EUR 7.2 million) a year (PAN Europe, 2005). Even though the revenues collected were not earmarked for environmental actions, the proportion of reimbursement between 1989 and 1994 was still around 90 per cent (Andersen et al, 2000).

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<sup>18</sup> The average of the years 1996-1997 is the baseline set at 100 per cent.

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## 11 CO<sub>2</sub> Tax in Sweden

### 11.1 Brief summary of the case

Carbon dioxide emissions account for 80 per cent of the total GHG emissions released into the atmosphere in Sweden, with 93 per cent of carbon emissions arising from fossil fuels combustion (Johansson, 2000). Operating within a comprehensive system of energy taxation, the CO<sub>2</sub> tax is the main fiscal instrument in Sweden which aims to reduce fossil fuel consumption and decrease CO<sub>2</sub> emissions from sectors outside the EU European Trading Scheme (ETS) (Hammar and Åkerfeldt, 2013). Since its introduction in 1991, the overall objective of the CO<sub>2</sub> tax has changed over time from its initial tax shifting focus towards more environmental protection (Withana et al, 2013).

**The Swedish experience with CO<sub>2</sub> taxation was pioneering** as Sweden was one of the first countries to introduce a CO<sub>2</sub> tax (Speck and Jilkova, 2009). The rate at which the CO<sub>2</sub> tax is set is relatively high; however this has been partially compensated by various exemptions (which are due to be phased out in 2015) (Government Bill 2009/10:41). The tax was reformed in 2009, with a view of reducing exemptions and favouring the participation of non-EU ETS sectors. Sweden is on track to achieve the national interim target on energy-saving of 9 per cent by 2016 from 2001-2005 levels, and potentially closer to the objective of a 20 per cent energy intensity reduction below 2008 levels by 2020. (International Energy Agency, 2013)

Sweden introduced two major fiscal reforms in the last two decades, both of which have included ETR elements. The reform in the 1990s saw a reduction in personal income taxation by SEK 71 billion (EUR 9.5 billion) which was partially offset by the introduction of a CO<sub>2</sub> tax, a SO<sub>2</sub> tax (1991), and a NO<sub>x</sub> charge (1992) raising in total SEK 18 billion (EUR 2.4 billion). This was followed by a ten-year green tax shift programme launched in 2001 (which ran until 2010). The first four years of the programme saw a lowering of low and medium income taxes and a SEK 10 billion (EUR 1.6 billion) tax shift. Between 2005 and 2010, further reductions on labour taxes were introduced (amounting to a reduction in tax revenues of EUR 1.3 billion), while some environmental taxes were increased (leading to additional revenue of EUR 0,5 billion) (Speck and Jilkova, 2009).

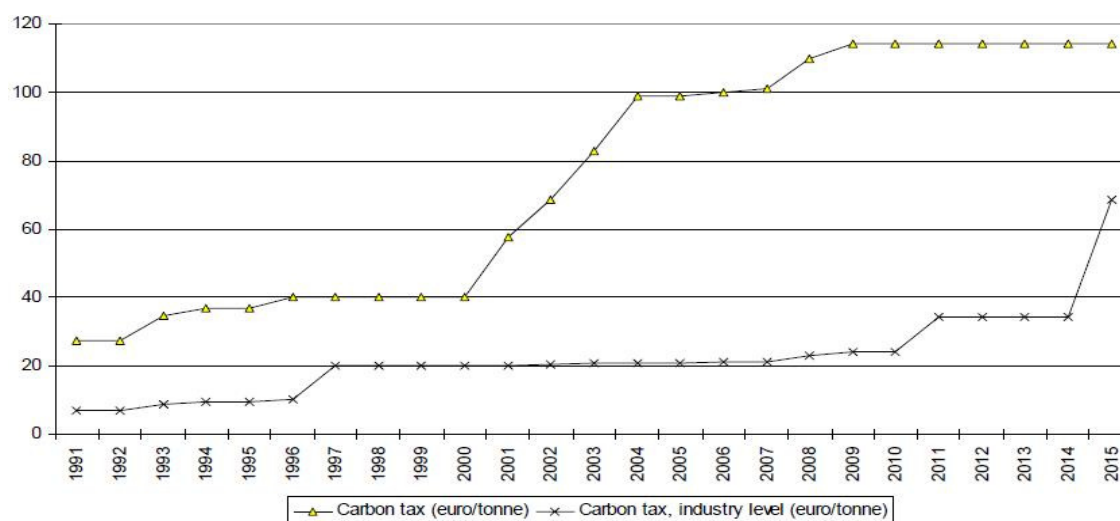
### 11.2 Brief description of the design and scope

The Swedish CO<sub>2</sub> tax was introduced in 1991, in the context of a wider fiscal reform package including SO<sub>2</sub> and NO<sub>x</sub> taxes, and complemented the extensive set of energy taxes already in place. Both energy and CO<sub>2</sub> taxes are levied on all fossil fuels for heating purposes, motor fuels and electricity use (OECD, 2013). National producers and importers are subject to the tax. No energy or CO<sub>2</sub> taxes are applied to electricity production.

The CO<sub>2</sub> tax rate has consistently increased over time from SEK 25 /t CO<sub>2</sub> (EUR 27 /t CO<sub>2</sub> at the time of its introduction) to SEK 1.080 /t CO<sub>2</sub> (EUR 118 /t CO<sub>2</sub>) in 2012. This makes it the highest CO<sub>2</sub> tax rate currently applied in Europe (Speck, 2013). The development of the CO<sub>2</sub> tax rate is shown in Figure 1 above.

The energy and carbon taxation system in Sweden is characterized by a complex **system of exemptions** granted to several industry sectors, in order to protect national competitiveness. From 2009, a distinction between industry within the EU ETS or non-EU ETS has been made. Since the introduction of the tax in 1991 until 1993, 50 per cent of the general CO<sub>2</sub> tax and a complete exemption from the energy tax were granted to energy intensive industry. In 1993, the CO<sub>2</sub> was reduced to 25 percent and raised again to 50 per cent in 1997 (Johansson, 2000).

**Figure 1: Development of the Swedish CO2 tax rate – general level and industry level**



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

After the last reform in 2009, a number of carbon tax exemptions for energy-intensive industries and other cases outside the EU ETS were agreed to be decrease or abolished between 2011 and 2015. (Government Bill 2009/10:41) Energy intensive industries and other cases outside the EU ETS could apply for a CO2 tax reduction for the share of taxes that exceed 0.8 per cent of the sales value. This value was further increased to 1.2 per cent in 2011, and will be completely abolished in 2015 (International Energy Agency, 2013; Stigson, 2007) In addition, from 2009 these industries saw the introduction of a 30 per cent energy tax and an increase in the CO2 tax by 30 per cent (this will be increased by 60 per cent in 2015). Industry within the EU ETS is due to pay a 30 per cent energy tax, but a 0 per cent CO<sub>2</sub> tax. Heat production in CHP (within the EU ETS) saw the introduction of a 30 per cent energy tax and a 7 per cent CO<sub>2</sub> tax, while other heat plants are subject to a 100 per cent energy tax and a 94 per cent CO<sub>2</sub> tax (International Energy Agency, 2013).

**Table 1: Reforms of energy and CO<sub>2</sub> taxes in Sweden**

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

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



### 11.3 Drivers and barriers of the ETR

Sweden has successfully implemented two major ETRs in the last two decades. The success of these programmes has largely been attributed to the continued support of all political parties to environmental taxation. Support for ETR was at least partially helped by the tax reductions and/or exemptions provided to industrial consumers, as explained above. (Johansson, 2000)

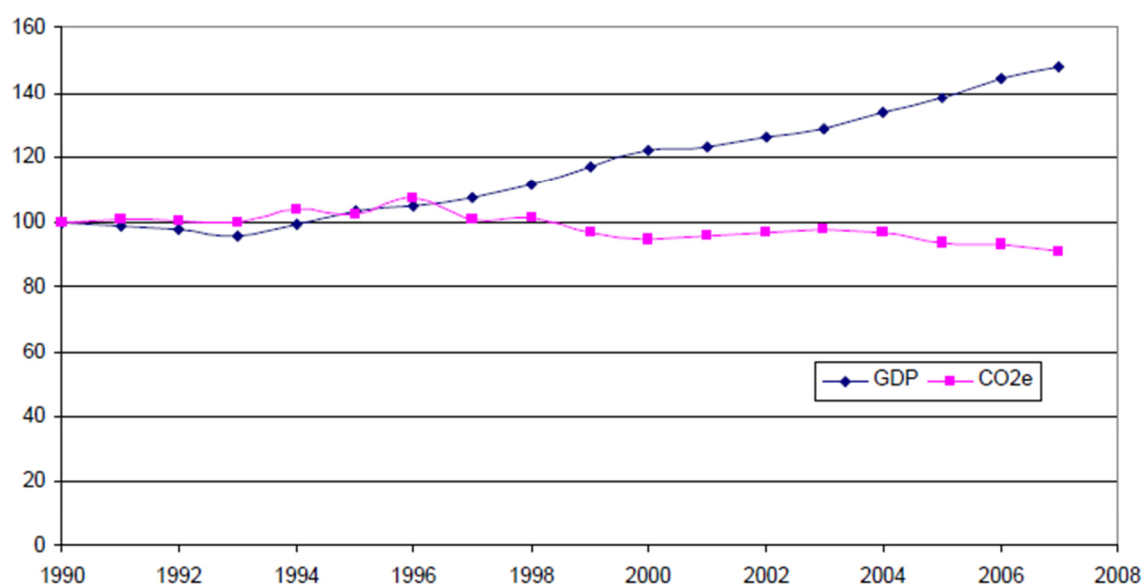
ETR has also been facilitated by the fact that Sweden has major national renewable energy sources, such as hydro power and various biomass products, primarily from the forestry sector which have helped support the transition.

### 11.4 Key environmental impacts and effectiveness

Since the implementation of the CO<sub>2</sub> tax in Sweden, a **steady decrease of CO<sub>2</sub> emissions** has been observed. CO<sub>2</sub> emissions decreased by 9 per cent between 1990 and 2007 (see Figure 3 below). Average GHG emissions further decreased in the 2008-2011 period to 12.6 per cent below 1990 levels. This result is substantially lower than the 4 per cent burden-sharing target for Sweden in the 2008-2012 period. In sectors not covered by the EU ETS, emissions were significantly lower than their target, by 13.5 per cent of base-year emissions. (International Environmental Agency, 2013) (Withana et al, Annexes, 2013) It is assumed that without the introduction of the CO<sub>2</sub>, the average CO<sub>2</sub> emissions would be 20 per cent higher (Cottrell, 2010). NO<sub>x</sub> and SO<sub>2</sub> taxes in place have also had an effect on the emission reductions achieved (Johansson, 2000).

In 2010, **CO<sub>2</sub> emissions from fuel combustion were 9.8 per cent lower than in 1990**, amounting to 47.6 million tonnes (Mt). However, there was an increase in emissions of 14.9 per cent from 2009 due to the economy recovery. In the same year, carbon intensity lowered by 40.5 per cent from 1990 levels. (International Energy Agency, 2013) (See Figure 3 below)

**Figure 2: Evolution of GDP and CO<sub>2</sub> emissions in Sweden between 1990 and 2008**



**Source:** Ministry of Finance, Sweden (2011) Swedish energy and CO<sub>2</sub> taxes. National design within an EU framework, p 16. URL [http://www.dt.tesoro.it/export/sites/sitodt/modules/documenti\\_it/eventi/eventi/SESSION\\_I\\_-\\_SUSANNE\\_AKERFELDT\\_x6x.pdf](http://www.dt.tesoro.it/export/sites/sitodt/modules/documenti_it/eventi/eventi/SESSION_I_-_SUSANNE_AKERFELDT_x6x.pdf)



According to the International Energy Agency, Sweden's total final consumption of energy has remained stable since the early 1970's as a result of **improved energy efficiency** across the economy, and the effect of CO<sub>2</sub> and energy taxes in place. (International Energy Agency, 2013)

### 11.5 Key economic impacts

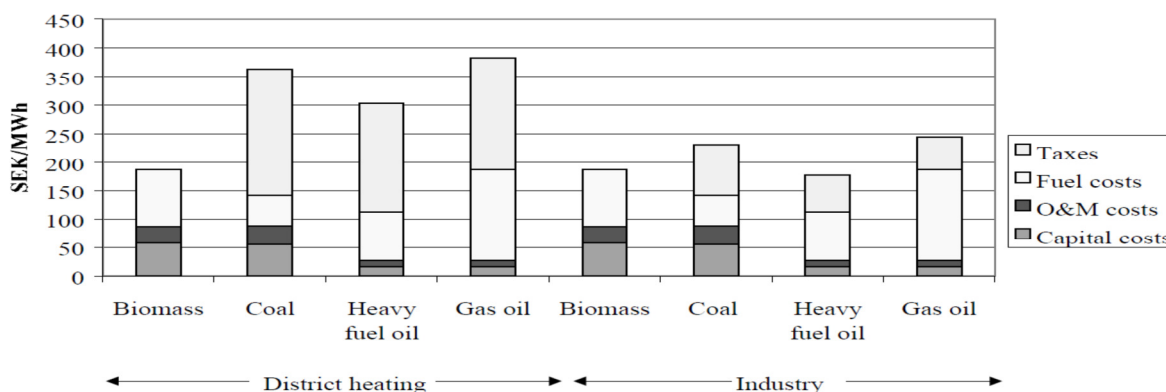
The high CO<sub>2</sub> tax rate set in Sweden would reduce **competitiveness** if similar measures were not also taken abroad. As discussed above, several exemption or reduction in tax rates have been granted to energy intensive industry or sectors subject to carbon leakage, in order to be able to compete on international market. These provisions, however, reduce the **cost-effectiveness** of the CO<sub>2</sub> tax when it comes to its application to energy-intensive industries. This is explained by the fact that, when tax rates are differentiated, marginal emission reduction costs for each subject to the tax are not equal. Thus, the total social cost of achieving the environmental objective is not minimized (Wallart, 1999: Thomas, Callan, 2006).

Hammar and Åkerfeldt observed that in the case of Sweden there is **no direct link between increased CO<sub>2</sub> emission levels and economic growth**. While CO<sub>2</sub> equivalent emissions were reduced by 9 per cent in the period 1990 – 2007, the country experienced economic growth equivalent to +51 per cent. (Hammar and Åkerfeldt, 2013) (see Figure above).

According to Johansson there are reasons to believe that low taxation on energy use by industry has resulted in **minor improvements in energy efficiency**. This assumption is justified by the results of a study conducted in 1995 by the Swedish Environmental Protection Agency, which found that the low CO<sub>2</sub> tax rate did not provide sufficient incentive for industry to invest in energy efficiency technology. However, Johansson recognizes that since then the tax has been doubled to 50 per cent of the general taxation level, which means that this might trigger some **technological innovation in the years ahead**. (Johansson, 2000)

In terms of technological developments, the most apparent effect of the CO<sub>2</sub> tax is **the development of the use of biomass in the district heating system**. This is mostly due to the lower heat production costs for biomass-based plants compared to fossil-fuel based plants (see Figure 4 below) and led to technical solutions for biomass extraction and the creation of a biomass market. In addition, the expansion of biomass has given way to the introduction of flue gas condensation, increasing biomass plants efficiency by 10-25 per cent (Johansson, 2000).

**Figure 3: Heat production costs for new plants**



**Source:** Johansson, B. (2000) 'Economic Instruments in Practice 1: Carbon Tax in Sweden'. Swedish Environmental Protection Agency, p 6. URL <http://www.oecd.org/sti/inno/2108273.pdf>

According to the modelling exercise undertaken in the COMETR study, **employment** rates are slightly higher due to ETR, although revenues were used to cut income tax, instead of social security contributions. This was attributed to the increase in GDP resulting from the ETR which caused employment to increase slightly compared to the reference scenario. Investments were also found to be higher by nearly 1.5 per cent in 2006, although these fall after 2006. In the long run, an increase in GDP of 0.5 per cent is foreseen. (Andersen *et al*, 2007)

**Administrative costs** have been found to be very low and approximately 0.1 per cent of the total revenues from energy and CO<sub>2</sub> taxes (Susanne Åkerfeldt, 2011). This is due to the simple system in place for tax payers (Hammar and Åkerfeldt, 2013).

### 11.6 Key social impacts

The high tax rates for households are likely to increase their expenses regardless their ability to pay. **Low income households** are likely to be more affected by the tax. Thus the Swedish Government has foreseen the option of using increased tax revenues to support low income households in the future should such a situation arise. (Government Bill 2008/09:162). However, no evidence has been found in the literature regarding the impacts of the CO<sub>2</sub> tax.

### 11.7 Revenue use

Revenues from the CO<sub>2</sub> tax have been used to partly offset losses cause by the reduction of income tax rates and have been relatively constant over time. The most recent data show total tax revenues of EUR 3,044 million (SEK 25.4 billion) in 2011. More than one third of the total revenues come from the household sector (almost EUR 1 million, SEK 9 billion), while energy production industry accounted for a very small portion (EUR 154,000; SEK 1.4 billion) (Statistics Sweden, 2013).

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## 12 Landfill tax in the UK

### 12.1 Brief summary of the case

The UK landfill tax was introduced in 1996. It has two rates, a 'lower rate' which applies to less polluting (inactive/inert) wastes and a 'standard rate' which is applied to all other wastes (including general/unsorted municipal waste). The initial lower tax rate was EUR 2.5/t (GBP 2)<sup>19</sup> and the standard rate EUR 8.6/t (GBP 7); as of 1 April 2014 the lower rate is EUR 3 (GBP 2.50) and the standard rate EUR 99 (GBP 80). The tax was initially aimed at 'internalising externalities associated with landfill', but following a 2002 policy review the main objective became to change behaviour to drive down the amount of waste landfilled. Whilst the introduction of the tax predated the 1999 EU Landfill Directive, the latter was almost certainly a driver for the subsequent significant increases in the tax rate.

The tax has been a major driver in reducing the percentage of MSW landfilled in the UK from around 86 per cent of MSW generated in 1996 to around 36 per cent in 2012. The environmental impact of the lower rate of tax is less evident, although there was a significant decrease in the first four years following the introduction of the tax.

The tax at its inception was designed to be revenue neutral so that it did not have a detrimental financial impact on businesses (it was offset by a reduction in employers' national insurance contributions). From 1 April 2012 – 30 March 2013 (the most recent year for which all data is available), almost EUR 1.4 billion (GBP 1.1 billion) of cash receipts were collected through the landfill tax. Since the introduction of the tax in 1996, the total cash receipts from the landfill tax amount to almost EUR 14.3 billion (GBP 11.5 billion). (HM Revenue and Customs, 2014a) Whilst revenues from the tax are not earmarked for waste management improvements, landfill operators may contribute up to 6.8 per cent of landfill tax liability to environmental projects in return for tax credits, through the Landfill Communities Fund (LCF). During 1 April 2012 – 30 March 2013, EUR 82.6 million (GBP 66.1 million) was claimed as credit/donated to environmental bodies. Since the introduction of the tax, the total amount donated is almost EUR 1.5 billion (GBP 1.2 billion). (HM Revenue and Customs, 2014a)

### 12.2 Brief description of the design and scope

The UK landfill tax was introduced in 1996 with two rates: a 'lower rate' which is applied to less polluting wastes (inactive or inert waste such as rocks, soils, minerals and ash) and a 'standard rate' for all other wastes (including general/unsorted municipal waste). It is a tax on waste disposal, and at its inception had an expressed aim of 'internalising externalities associated with landfill'. Following a policy review in 2002, it was acknowledged that the tax rate was too low to change behaviour (i.e. to reduce the amount of waste landfilled), and so it was decided to make the primary goal to 'change behaviour', i.e. to encourage waste producers to produce less waste, recover more value from waste e.g. through recycling or composting, and to use more environmentally friendly waste disposal methods. (EEA, 2012)

The tax has applied since 1 October 1996 to all waste that is disposed of at a licensed landfill site, unless the waste is specifically exempt from the tax (exemptions include dredging from waterways, mining/quarrying waste, burial of pets, material from reclamation of contaminated land, filling of quarries, and waste used for the restoration of landfill sites). The tax is charged per tonne and is paid

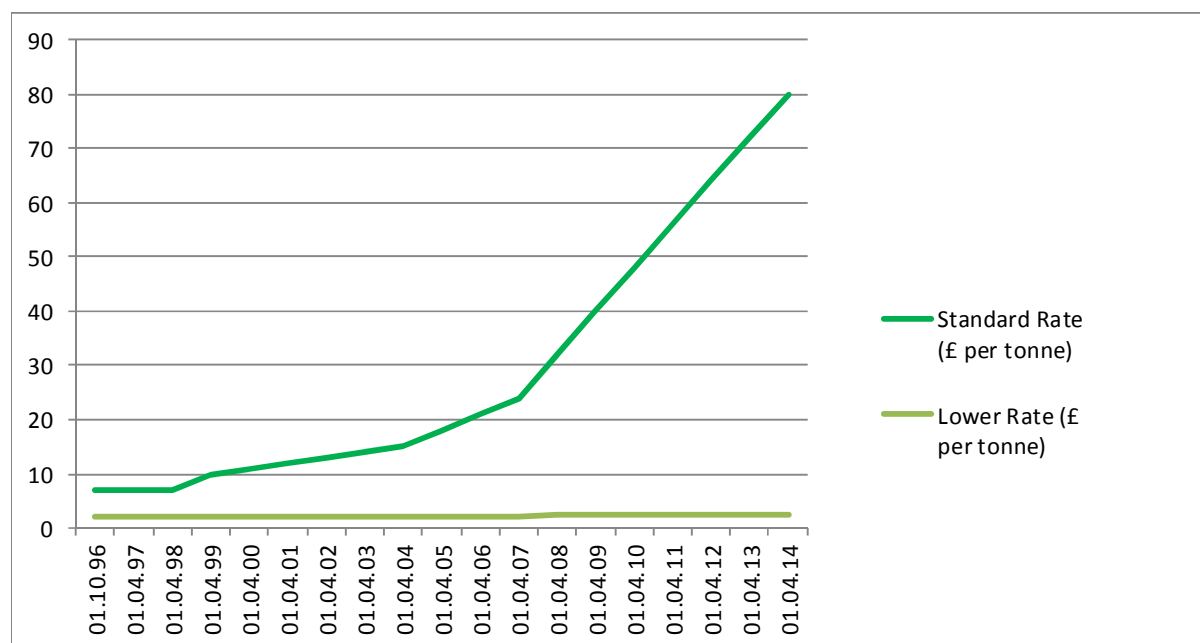
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<sup>19</sup> Throughout this case study, a nominal exchange rate of GBP 1 = EUR 1.25 has been used, and figures rounded to one decimal place.

by the landfill site operator, but operators pass on the cost to businesses/councils/waste depositors (EEA, 2012).

At its introduction, the lower rate was EUR 2.5/t (GBP 2) and the standard rate was EUR 8.6/t (GBP 7). The lower rate remained the same until 1 April 2008, when it rose to the rate of EUR 3 (GBP 2.50); it has stayed at that rate ever since, and will do so until at least 1 April 2014. The standard rate rose by EUR 3.8 (GBP 3) on 1 April 1999, then by EUR 1.3 (GBP 1) each year until 1 April 2004, by EUR 3.8 (GBP 3) each year until 1 April 2007, and by EUR 10 (GBP 8) each year since then. As of April 2013, the standard rate was EUR 89 (GBP 72) and from 1 April 2014 it will rise to EUR 99 (GBP 80). (HM Revenue and Customs, 2014a) These changes in rates are shown in below. There is a floor under the standard rate to prevent it falling below EUR 99 (GBP 80) until at least 1 April 2020.

**Figure 6: Changes in the standard and lower rate of UK landfill tax, 1996-2014**



Source: HM Revenue and Customs, 2014a

### 12.3 Drivers and barriers of the ETR

A 1993 report by the Royal Commission on Environmental Pollution advocated steps to shift waste away from landfill towards incineration, to address environmental impacts such as greenhouse gas emissions and leaching from landfill sites, and also to ensure that the full economic costs of waste disposal to the wider community were better reflected in the cost to those disposing of waste (i.e. to attempt to internalise environmental externalities within the cost of landfilling). It was therefore recommended that a landfill tax be applied to all waste deposited in landfill sites, to increase the cost of landfilling to waste disposal site operators, and in turn to waste disposal authorities and households and businesses, to provide an incentive to produce less waste and recycle more. (Royal Commission on Environmental Pollution, 1993) The purpose of the tax was therefore explicitly environmental from the outset; indeed on the eve of its introduction the Environment Minister James Clappison stated that: “The central purpose of the tax is to ensure that landfill costs reflect the full cost of the environmental impact of the activity.” (Seely, 2009) This is also evidenced by the lower rate for inert waste, which by its nature has less damaging environmental impacts. Further, in a Parliamentary debate in 1996, the Paymaster General David Heathcoat-Amory stated that: “The tax is designed not only to tax waste with the potential to pollute water or air, but to catch the external costs associated with the landfilling or rubble waste and all categories of inactive waste.

Such activities are not without environmental impact. [...] the problems caused by noise, dust, smell, seagulls and lorry movements [...] represent an external cost of landfilling [and] The tax is designed to capture those costs and to attribute them to the producer of the waste” (Hughes and Seely, 1996). In 1998, when reviewing the impact of the tax since its introduction in 1996, HM Customs and Excise acknowledged that the current tax rate had been “based on an estimation of the environmental cost of landfill as a waste disposal option” but that there was strength of feeling that “the rate would need to be much higher if it were to influence behaviour away from landfill towards re-use, recovery or recycling”. This, together with forthcoming “new, tougher targets for reducing reliance on landfill” therefore led to the first increase in the tax rate, from GBP 7 (EUR 8.6) to GBP 10 (EUR 12.4). (Seely, 2009)

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

The introduction of the EU Landfill Directive in 1999, with its targets to reduce the amount of biodegradable waste sent to landfill, can be seen as a major driver for a renewed push to reduce the amount of biodegradable waste landfilled and the total amount of waste landfilled in the UK.

A 2002 Strategy Unit review (leading to the ‘Waste not Want not’ report) followed the entry into force of the Landfill Directive. This led to a government response that recommended a significant increase in the rate of landfill tax for active waste (i.e. the standard rate of tax) (Defra, 2003); this was indeed actioned and laid the groundwork for subsequent significant increases in the tax rate.

The commencement of the Landfill Allowances and Trading Scheme (LATS) also followed the entry into force of the Landfill Directive. The LATS ran from 1 April 2005 until 30 September 2013. It set a limit on the amount of biodegradable municipal waste (BMW) that each unitary and waste disposal authority could send to landfill, and allowed those authorities to trade, bank and borrow landfill allowances. It helped to reduce the amount of waste sent to landfill, leading to associated reductions in greenhouse gas emissions from the landfill of biodegradable waste (Environment Agency, 2014).

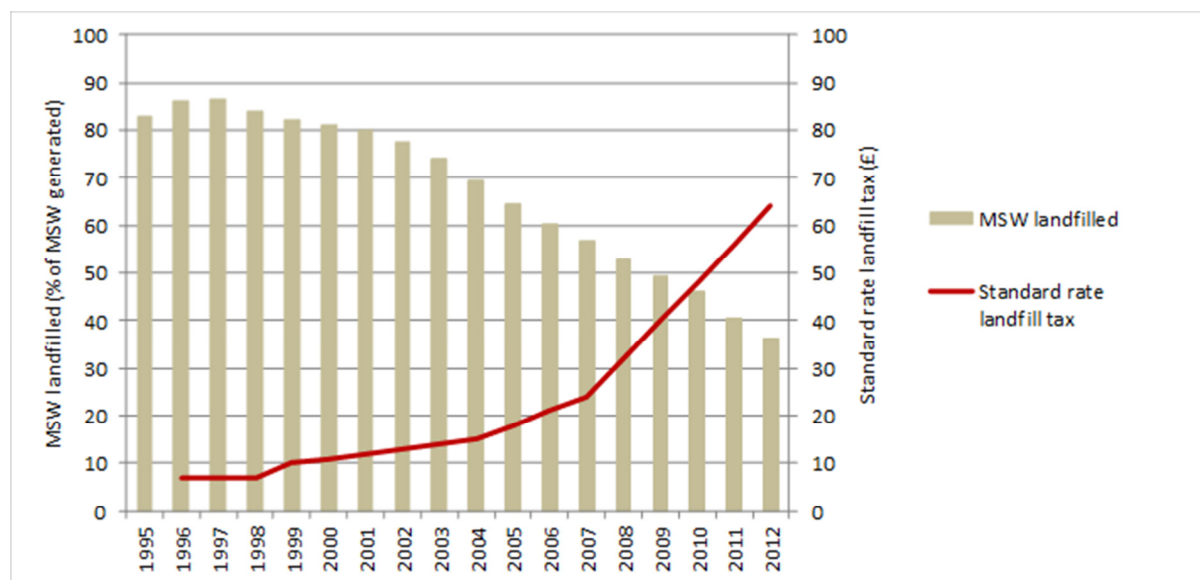
#### **12.4 Key environmental impacts and effectiveness**

The UK traditionally had a high rate of landfilling of municipal (household) solid waste (MSW) compared with its European neighbours: in 1995, only five of the EU27 landfilled more municipal waste than the UK (in kg per capita). As the standard rate of landfill tax has increased, the effect on waste subject to this tax rate has become more pronounced, with a turning point reached around 2001/2002, and a decline in the percentage of generated waste sent to landfill continuing to the present day (see Figure 7 below). By 2012, 16 of the EU27 were landfilling more municipal waste (in kg per capita) than the UK (Eurostat, 2014).

The decline in the percentage of generated MSW sent to landfill has been accompanied by increases in the percentage of MSW incinerated (from 9 per cent in 1995 to 16.5 per cent in 2012), recycled

(from 7 per cent in 1995 to 28 per cent in 2012) and composted/digested (from 0 per cent in 1995 to 17.6 per cent in 2012) (Eurostat, 2014).

**Figure 7: Standard rate of landfill tax compared to the percentage of municipal waste sent to landfill in the UK**



Source: Eurostat, 2014 and HM Revenue and Customs, 2014a

**Table 3: Standard rate of landfill tax compared to the percentage of municipal waste sent to landfill in the UK**

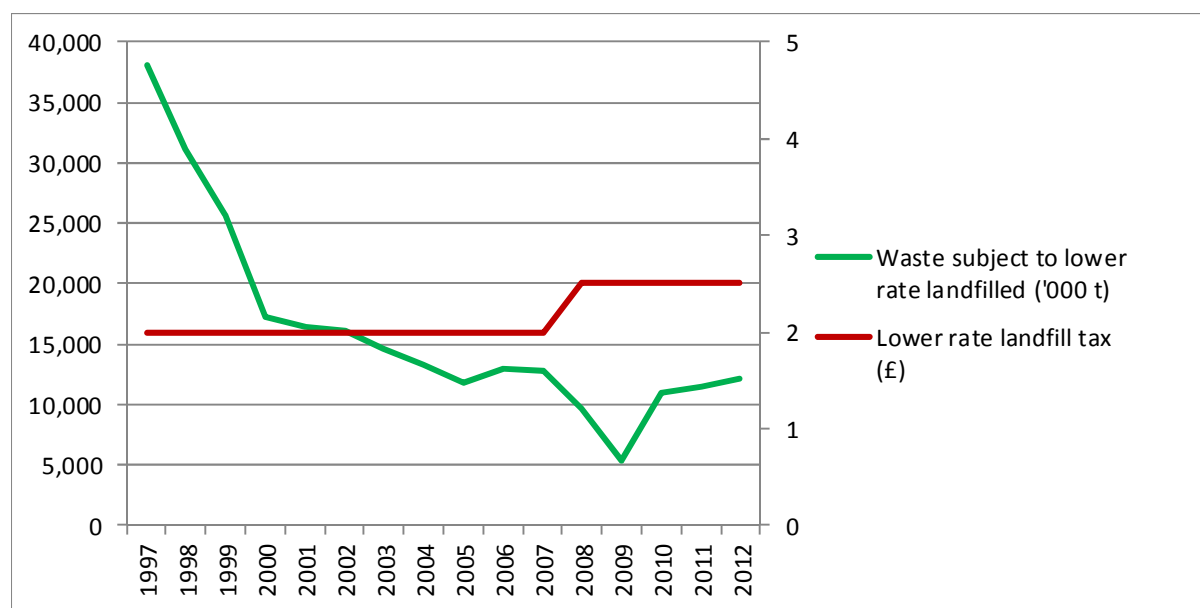
Year	Standard rate landfill tax (EUR)	MSW landfilled (percentage of MSW generated)
1995	0	82.9
1996	7	86.1
1997	7	86.5
1998	7	83.9
1999	10	82.2
2000	11	81.1
2001	12	80.0
2002	13	77.6
2003	14	74.1
2004	15	69.3
2005	18	64.4
2006	21	60.2
2007	24	56.6
2008	32	52.7
2009	40	49.2
2010	48	46.0
2011	56	40.5
2012	64	36.4

Source: Eurostat, 2014 and HM Revenue and Customs, 2014a

Since the lower rate of landfill tax (which applies to inactive or inert waste such as rocks, soils, minerals and ash) has hardly changed since its introduction, it is difficult to judge the environmental impact as a direct result of the tax.

Figure 8 below plots the change in the amount of waste landfilled that is subject to the lower rate. Over time a general falling trend can be observed, with a significant decrease in the first four years following the introduction of the tax. Since then, the most significant downward spike was at the time of the global financial crisis, which is likely to have resulted in the generation of less waste from construction and demolition whilst such activity was put on hold.

**Figure 8: Lower rate of landfill tax compared to the percentage of waste subject to that rate sent to landfill in the UK**



Source: HM Revenue and Customs, 2014a

**Table 4: Lower rate of landfill tax compared to the percentage of waste subject to that rate sent to landfill in the UK**

Year	Lower rate landfill tax (GBP)	Waste subject to lower rate landfilled ('000 t)
1997	2	38,000
1998	2	31,060
1999	2	25,729
2000	2	17,170
2001	2	16,432
2002	2	16,167
2003	2	14,565
2004	2	13,303
2005	2	11,820
2006	2	12,990
2007	2	12,818
2008	2.5	9,676
2009	2.5	5,396
2010	2.5	11,032
2011	2.5	11,462
2012	2.5	11,462



2012	2.5	12,094
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Source: HM Revenue and Customs, 2014a

Some local authorities and landfill operators anticipated, and were concerned, that the introduction of the tax may lead to the unintended consequence of an increase in fly-tipping to avoid paying the new tax, and the possible associated environmental impacts. However, in January 1999 the Government dismissed reports of increased fly-tipping as a result of the tax as ‘anecdotal’, stating that there was no ‘really hard or solid evidence as to whether this is a serious problem and one that is wholly or directly attributable to the Landfill Tax’. (Seely, 2009)

Untreated mixed municipal waste may not be exported for disposal (i.e. landfill). However, waste that is subject to even minimal pre-treatment to convert it to refuse-derived fuel (RDF<sup>20</sup>) may be exported for energy recovery in facilities that meet the requirements of the Waste Framework Directive. Evidence suggests that the amount of RDF produced in and exported from the UK each year has increased whilst the rate of the landfill tax has also increased. This suggests both that the tax is effective in driving waste away from landfill, but also that the UK lacks sufficient energy-from-waste capacity for the treatment of residual waste (Associate Parliamentary Sustainable Resource Group, 2013 and CIWM, 2013). In 2011, around 272,000 tonnes of RDF were exported; this rose to 892,900 tonnes during 2012, and 1,586,946 tonnes during 2013 (Letsrecycle.com, 2014). Since the landfill tax will not fall below GBP 80 (EUR 100) per tonne until 2020 at the earliest, export volumes of RDF are also expected to continue increasing in the short term (Associate Parliamentary Sustainable Resource Group, 2013 and CIWM, 2013), at least until the UK increases its own energy-from-waste capacity. In 2013, 43 UK firms chose to export RDF to continental European destinations, compared with 25 during 2012. Eight European countries received RDF exported from the UK in 2013: the most significant destinations were the Netherlands (1,175,000 tonnes), Germany (181,000 tonnes) and Denmark (119,941 tonnes), with Sweden, Estonia, Ireland, Latvia and Norway also receiving UK exports (Letsrecycle.com, 2014).

The existence of excess capacity in easily accessible markets, the Netherlands being a prime example (it has an estimated 15 per cent over-capacity for energy-from-waste (Associate Parliamentary Sustainable Resource Group, 2013)), has resulted in reduced costs of sending RDF to be incinerated abroad. This is because countries with excess capacity need to import RDF to keep incinerators running efficiently (or to meet contractual obligations), and ‘gate fees’ (fees charged by incineration plants to receive waste) are therefore reduced so that it remains an attractive option for exporting countries. In 2013, it was estimated that gate fees in the UK ranged from GBP 68-111 (EUR 85-139) per tonne, whereas gate fees in continental Europe ranged from EUR 30-42 per tonne. There is anecdotal evidence that in some cases, energy-from-waste operators may even accept material from the UK at or below cost. For example, in Scandinavia, recycling rates are very high, meaning that there is little indigenous waste available for energy-from-waste plants. Such plants in Scandinavia often operate at almost 90 per cent efficiency (due to their scale and heat use), meaning that more energy is derived from the same material. This inherent energy value can result in very low gate fees (with some operators charging EUR 0 per tonne, and one Finnish facility actually paying around EUR 25 per tonne for imported RDF). (Associate Parliamentary Sustainable Resource Group, 2013)

Such situations suggest that **some level of cooperation between countries** in setting waste-related taxes and fees could be advisable, **if environmental taxes are to achieve the best possible**

<sup>20</sup> RDF is a crude fuel for use in energy-from-waste facilities. It is usually produced from residual materials from the municipal solid waste (MSW) stream; recyclables are extracted, then the left-over fraction put through a basic process such as drying and shredding, or simply the removal of large pieces and metal elements, to create a more consistent material with improved environmental outcomes compared to the incineration of untreated MSW.

**environmental results and support the application of the waste hierarchy.** This should include deterring the export of waste for which recycling, reuse or prevention is environmentally preferable to the use of such waste as fuel in energy-from-waste plants (taking into account plant efficiencies and reasonable economic considerations). This could be attempted, for example, by ensuring that the price of waste treatment (i.e. any tax plus facility gate fees, transport costs etc.) is higher at the bottom of the waste hierarchy (landfill, incineration without energy recovery and energy recovery) and lower towards the top (recycling, reuse). This would not necessarily mean applying the same rate of tax in each Member State, or even in neighbouring Member States, but tax rates could be set at the level needed to discourage exports/imports. For example, the European Commission has previously indicated a willingness to consider a developing a common method for calculating a minimum rate of landfill tax for the EU Member States, to drive waste management improvements (Watkins et al, 2012).

There is also a related issue of introducing a definition or criteria for RDF (which are currently lacking in EU legislation and may therefore allow low-quality RDF to be exported, resulting in sub-optimal environmental performance). Indeed, during a focussed consultation process launched in March 2014, the UK Government stated that it is 'keen to ensure that RDF produced for both the domestic market and for export is limited to material which cannot be effectively recycled, and the combination of fuel and technology is sufficient to deliver clear environmental benefits' and that 'minimally treated RDF being produced for export does not necessarily achieve the best environmental outcome in terms of the waste hierarchy or support wider aims around energy security and self-sufficiency' (Defra, 2014).

### 12.5 Key economic impacts

Initial costs of compliance with the landfill were estimated as follows: for large operators: GBP 25,000 – GBP 50,000, and for small operators: GBP 750. Ongoing costs were estimated as follows: for large operators: up to GBP 10,000, and for small operators: GBP 1,500. (Seely, 2009)

All other economic information found so far is included under section 11.7. Revenue use below therefore is not repeated here.

### 12.6 Key social impacts

The tax at its inception was designed to be revenue neutral so that it did not have a detrimental financial impact on businesses. The cost of the new landfill tax to business was therefore offset through a reduction in the higher rate national insurance contributions paid by employers (from 10.2 per cent to 10 per cent) from April 1997. At the time of its introduction, UK Chancellor Kenneth Clarke described the landfill tax as 'a tax on waste in order to reduce the tax on jobs. The money raised by the landfill tax will allow for a matching cut in the main rate of employers' national insurance contributions by a further 0.2 per cent to 10 per cent from April 1997. That will cut the cost of employment by half a billion pounds and will make it cheaper for businesses to create new jobs.' (Seeley, 2009). In addition, the Landfill Tax Credit Scheme (now the Landfill Communities Fund, see section 7. Revenue use below) was created by HM Revenue and Customs to channel tax receipts from landfill operators towards a wide range of environmental projects. (EEA, 2012)

### 12.7 Revenue use

From 1 April 2012 – 30 March 2013 (the most recent year for which all data is available), almost EUR 1.4 billion (GBP 1.1 billion) of cash receipts were collected through the landfill tax. Since the

introduction of the tax in 1996, the total cash receipts from the landfill tax amount to almost ERU 14.3 billion (GBP 11.5 billion). (HM Revenue and Customs, 2014a)

Revenues from the tax are not currently earmarked for waste management improvements; they are received by HM Revenue and Customs. However, landfill operators are able to contribute part of their tax liability (since 1 April 2013, up to a maximum of 6.8 per cent of their annual landfill tax liability (HM Revenue and Customs, 2014b)) to environmental projects in return for tax credits. Landfill operators can claim tax credits worth 90 per cent of any qualifying contribution. The contributions are directed into the Landfill Communities Fund (LCF) which finances projects run by environmental bodies that are enrolled under the LCF; these bodies must be non-profit making and not under the control of local authorities or registered landfill site operators. Projects that may be funded include: reclamation of/reduction in pollutants on land; the provision, maintenance or improvement of non-profit making public parks/amenities near a landfill site; the maintenance, repair or restoration of buildings/structures near a landfill site; the conservation or promotion of biodiversity near a landfill site (e.g habitat provision, conservation, restoration or enhancement, or maintenance or recovery of a species in its natural habitat); and financial, administration and other similar services to enrolled environmental bodies. During 1 April 2012 – 30 March 2013, EUR 82.6 million (GBP 66.1 million) was claimed as credit/donated to environmental bodies. Since the introduction of the tax, the total amount donated is almost EUR 1.5 billion (GBP 1.2 billion). (HM Revenue and Customs, 2014a)

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**ANNEX 3 – Case studies on future plans and visions on environmental  
taxation in selected European countries**

## 13 Belgium

### 13.1 Brief summary of plans on ETR

Relative to the EU-28, revenues from environmental taxation in Belgium are quite low (Eunomia and Aarhus University, 2014). An explicit ETR in Belgium has not been implemented, and there are currently no imminent plans for such a change. This may change after the federal elections in May of this year. It is also important to keep in mind that Belgium is currently in the process of the sixth state reform which involves transferring competences from the federal to the regional level<sup>21</sup>. Energy taxation was and remains mainly a federal level competence. However, distribution tariffs for gas and electricity are moving from the federal to the regional level in July 2014. Transport taxation and environmental levies are already regional competences.

The 2009-2014 coalition agreements of the three Belgian Regions expressed a desire for comprehensive traffic taxation reform. A political agreement was concluded between them in January 2011, to introduce kilometre charging for trucks larger than 3.5 tonnes by 2016 (Transport and Mobility Leuven, 2012). This charge will be based on covered distance, place, time and environmental characteristics of the vehicle. There are also plans for an electronic vignette for light vehicles, through time-bound user rights. However, it will be up to the next government to take the final decision. The Brussels government has recently started a pilot project involving pay-as-you-drive, where drivers pay for the number of kilometres they cover with their vehicle, instead of a general, annual road tax (De Redactie, 2014).

Moreover, there are rumours of plans to revise company car taxation. Supposedly, the state secretary for mobility wants more advantages for low or zero emission vehicles (make them 150 per cent and 120 deductible, respectively), and higher taxation for more polluting vehicles (De Morgen, 2014a). However, the coalition partners may not approve, as government Di Rupo already reformed fiscal deductions for company cars (Stabiliteitsprogramma België 2012-2015).

A change in the opposite direction can also be observed, as VAT on electricity will be lowered from 21 per cent to 6 per cent as of 1 April 2014 as part of an economic re-launch programme. This could actually be seen as counter-ETR (Eunomia and Aarhus University, 2014).

At the regional level, the planned reform of the annual circulation tax in Flanders may contain design aspects favouring low emission-cars (Expert input, May 2014). This bears resemblance to Wallonia's car purchase taxation (although this is a one-off tax) which contains an eco-malus component when the vehicle emits 146 grams or more of CO<sub>2</sub> per kilometer. The amount of this tax component is based on CO<sub>2</sub> emissions in g / km (Direction générale opérationnelle de la Fiscalité du Service public de Wallonie, 2014). Moreover, the revenues from the European Trading Scheme (ETS) auctioning will end up in the regional budgets.

Some municipalities have announced changes in environmental taxation. For instance, in July the municipality of Laakdal will start using a system of differentiated tariffs based on weighing unsorted waste and fruit/vegetable/garden waste. To this end, they are introducing special waste receptacles (Laakdal, 2014). On another note, the city of Hasselt is considering introducing a CO<sub>2</sub> tax for shops

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<sup>21</sup> A political agreement was found in September-October 2011 and approved by the Council of Ministers in April 2012 for the implementation of a Belgian Stability Programme which sets guidelines and objectives of fiscal policy for the period 2012-2015.

that keep their doors open during the next winter, as keeping the door open increases energy use for heating (Limburg Actueel, 2014).

Eunomia and Aarhus University (2014) give an overview of proposed tax reforms in Belgium.

### 13.2 Brief description of overall vision for ETR

Several strategic documents point to the importance of fiscal reform in Belgium, most of them including a focus on fiscal greening.

An important working document is the long-term (federal) policy vision on sustainable development. The vision, adopted in May 2013, also serves as the framework for the 5 year Federal Plans for Sustainable Development. Its objectives state that by 2050 Belgium will be a resilient society adapted to environmental challenges, in which production and consumption activities are based on efficient use of natural resources, taking into account planetary boundaries, and where economic development and environmental degradation are completely decoupled. The objectives also include high ecological and social performance of all goods and services over their entire life cycle, as well as large scale production of low-carbon, especially renewable, energy. Objective 47 specifically states that taxation will integrate external costs by a gradual shift from labour taxation to taxation based on ecologic and social external factors (Programmatorische Federale Overheidsdienst Duurzame Ontwikkeling, 2013).

In addition to this general vision, the Federal Coalition Agreement of 21 November 2012 established a Federal Parliamentary Commission to look at options for a fiscal reform. The Commission's final report, presented on 24 February 2014, notes that several experts consulted for the report indicated that the fiscal pressure on labour could be significantly reduced through a tax shift, for example towards more green taxation. Some experts pointed to harmonization of excise duties on petrol and diesel, as well as introducing a pay-as-you-drive system, or a levy on home heating. Other options mentioned include a carbon tax, although some fear for the competitiveness of companies and the energy bill of low income households. The report states that it is important to ensure coherence between the federal state and the regions in implementing fiscal reform (Belgische Kamer van Volksvertegenwoordigers en Senaat, 2014). The report does not give specific recommendations; this was deemed unrealistic as all political parties are profiling themselves for the elections (De Morgen, 2014b). There were several abstentions in the adoption of the report, and one political party voted against its adoption.

The report also makes reference of the EU recommendation for Belgium to replace labour taxation with taxation that is less disturbing for growth, and more determined by studying the potential of fiscal greening, e.g. for diesel, fuel oil, and the private use of company cars. Regarding the latter, some speakers suggested a doubling of taxes on company cars, reinforcement of support for clean vehicles and tax exemptions for using public transport, and a fiscal arrangement to phase out the use of company cars in exchange for a lowering of social security contributions for employers. Other speakers suggested that if the decision is taken to increase vehicle taxation, this could be done in a progressive way (like in Denmark; which has higher taxes on more luxurious vehicles), in order to prevent a situation where more expensive vehicles are taxed less than less expensive ones (Belgische Kamer van Volksvertegenwoordigers en Senaat, 2014).

At the regional level, it is worth mentioning that in 2012, Flanders adopted a Materials Programme with nine levers and 45 actions. Action 13 aims to 'Construct a green fiscal policy to promote a circular economy'. The Brussels Capital Region is currently also developing a strategy on circular economy, and the Walloon region has a regional development strategy called the 'Marshall Plan



2022' which involves circular economy aspects. At the Federal level, a roadmap to support and complement the actions of the regions is being developed. The recommendations of a working group set up to develop the federal roadmap on a circular economy include a proposal for action in the field of green taxation (De Schoenmakere, 2014).

A final relevant report that we identified is the Federal Government Service for Finance's management plan for 2012-2017. Under the section on excise duties the plan underlines the challenges of adjusting legislation related to environmental and packaging taxes and of shifting to green taxation (Federale Overheidsdienst Financiën, 2011). The Flemish policy document on finance and budget 2009-2014 also states that Flemish taxation will be increasingly focused on greening (Muyters, 2009).

### **13.3 Country's support for EU recommendations on ETR**

The Federal Parliamentary Commission's report makes reference to EU (and OECD) recommendations on ETR in Belgium and seems to support them, although the report also points to many possible barriers to implementing ETR (Belgische Kamer van Volksvertegenwoordigers en Senaat, 2014).

At the regional level, the Flemish Environmental Policy Plan 2011-2015 stated that the Flemish government intends to evaluate and reform potentially environmentally harmful subsidies (Ministerie van de Vlaamse Gemeenschap, 2010). Last year IEEP contributed to a report on making an inventory of environmentally harmful subsidies, something which the European Commission requests of all MS. The annual Flemish environment plan for 2014 states that although this study did not lead to firm statements regarding environmentally harmful subsidies, its findings and methodology will be used to assist the Flemish government in developing and evaluating subsidies in the coming years (Vlaamse Overheid, 2014).

### **13.4 Perspective on opportunities for future ETR**

The Flemish strategic document points to the benefits of acting before being forced by EU action. It states that a global approach is needed for all transport taxes (eurovignet, the one-off vehicle registration tax or BIV, and other transportation taxes). To objectively calculate the costs of mobility, e.g. with pay-as-you-drive, there is a need to consult with national and international partners, and cooperate with other policy makers (Muyters, 2009).

### **13.5 Perspective on synergies from aligning Member States efforts on ETR**

No specific insights were found during the literature review into the Belgian perspective on potential synergies from aligning European countries' ETR measures. The only reference to a possible synergy from aligning Member States efforts on ETR identified in the literature includes the pay-as-you-drive system (Muyters, 2009).

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## 14 Denmark

### 14.1 Brief summary of plans on ETR

Denmark has been traditionally one of the countries in Europe where the environmental tax to GDP ratio is the highest. In 2011 this ratio was 4.1 per cent, while the EU average was 3 per cent (EC, 2013). The first environmental taxes were introduced in the 1970s and 1980s and were linked to transport, waste, retail packaging, disposable tableware, pesticides and CFCs. At that time taxes were used to solve specific regulatory problems rather than shifting the tax burden, but this focus changed in the 1990s. Throughout the 1990s and the 2000s, the Danish government introduced numerous environmental taxes including *inter alia* taxes on water, carbon dioxide, sulphur emissions and phosphorus in animal food. Overarching green tax reforms took place in 1993, 2007 and 2009 (Larsen, 2011).

Political agreement on the latest major tax reform was reached in 2009. The reform, also called *Spring Package 2.0* will be implemented between 2010 and 2019. The main objective of the reform is to increase labour supply via the reduction of marginal taxes on labour income, while at the same time softening the effects of the economic crisis and strengthen the role of environmental taxes to achieve national and international objectives in the areas of energy, climate and the environment (Danish Ministry of Taxation, 2009).

ETR is a major component of the 2009 reform with revenues of reformed environmental taxes expected to increase by DKK 1.75 billion (Danish Ministry of Taxation, 2009). The following environmental tax measures are to be implemented as part of the tax reform (Ministry of Taxation 2009):

- Increase energy taxation of business and households,
- Continue yearly price taxation of energy taxes from 2015,
- Uniform taxation of all heating from combined heat and power production,
- Introduce tax on air conditioning, road lighting, lubricants and GHGs,
- Reduction of threshold in CO<sub>2</sub> tax,
- Revenue from sale of CO<sub>2</sub> quotas (ETS),
- Introduce road pricing for lorries,
- Increase tax on cars without 'particle filter', company cars and registration tax for taxis,
- Introduce annual tax on vans depending on fuel consumption standards,
- Increase waste water tax by 50 per cent,
- Increase tax on waste,
- Reduce tax on retail packaging,
- Increase tax on CFC gases.

In 2012, a new Energy Agreement was reached which includes a wide range of ambitious initiatives. As the consumption of fossil fuels is projected to drop, the revenues from taxes on coal, oil and gas will also drop. A new security of supply tax was therefore introduced which applies to all fuels for space heating, including fossil fuels, biomass, biogas and renewable fuels. Even though the introduction for the tax was primarily justified by fiscal needs it will also finance few subsidies for renewable energy (Danish Ministry of Climate, Energy and Building, 2012).

### 14.2 Brief description of overall vision for ETR

The latest package of tax reform in Denmark is regarded as an opportunity to reduce the effects of the economic crisis and shift the burden of taxes from labour to environmentally harmful activities.

The proposed environmental tax measures in the package form a complex approach and are expected to have a positive impact on the state of the environment (see **Error! Reference source not found.**). Even though the changes in corporate taxation are expected to increase the burden on business and industry, it is specifically noted that the direct burden on business should be seen in proportion to the green objectives achieved (Danish Ministry of Taxation, 2009).

**Table 1: Estimated effects of the proposed environmental tax measures on energy and the environment**

Elements related to:	Climate gases outside CO <sub>2</sub> -quota sector (Million ton)	Energy consumption (PJ)	Renewable energy (PJ)	Emission of particles (Ton)	Discharge of nitrogen (Ton)	Discharge of phosphorus (Ton)	Emission of organic material (Ton)
Energy consumption	-0.5	-16.1	5.6	-30	-	-	-
Environmental issues	0.0	-	-	-	-250	-95	-245
Vehicles	0.0	-0.9	0.0	-30	-	-	-
<b>Total effect</b>	<b>-0.5</b>	<b>-17.0</b>	<b>5.6</b>	<b>-30</b>	<b>-250</b>	<b>-95</b>	<b>-245</b>

Source: Danish Ministry of Taxation, 2009 (p. 24)

### 14.3 Country's support for EU recommendations on ETR

In 2011 and 2012, the EU's country-specific recommendation for Denmark highlighted the need to implement fiscal consolidation measures in the country (Council, 2011 and Council, 2012). In response to this, Denmark's 2012 National Reform Programme (NRP) highlighted the contribution of the *Spring Package 2.0* to the consolidation of public finances through the implementation of financing elements, such as higher energy taxes (Danish Government, 2012). The importance of the ETR in achieving fiscal stability was also emphasised in the 2013 NRP (Danish Government, 2013).

In its 2012 assessment of the Danish NRP, the Commission highlighted that GHG emissions in the agriculture sector are still largely untaxed in Denmark and the potential to strengthen the overall vehicle taxation to make it more efficient (EC, 2012). The road pricing for lorries introduced as part of the *Spring Package 2.0* and the increased taxes on cars without particle filters, company cars and taxis can be seen as a step in this direction.

### 14.4 Perspective on opportunities for future ETR

As detailed above Denmark has a comprehensive environmental tax reform plan, which will be implemented until 2019. Denmark can be therefore seen as one of the front-runners in Europe in relation to environmental taxes. In terms of harmonisation rules in the EU, the *Spring Package 2.0* only refers to this in relation to VAT.

### 14.5 Perspective on synergies from aligning Member States efforts on ETR

No specific insights were found during the literature review into the Danish perspective on potential synergies from aligning European countries' ETR measures.

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## 15 France

### 15.1 Brief summary of plans on ETR

In September 2012 the French government organised an ‘environmental conference’ which, according to the government, reflected the importance it gives to major environmental issues and its intention to initiate an “ecological transition” (“transition écologique”) (MEDDE, 2012). Following this and to support implementation of ETR commitments in the “Ecological transition roadmap” (presented in September 2012), the government set up a **committee for environmental taxation** (‘comité pour la fiscalité écologique’) in December 2012. The committee is a permanent advisory and evaluation body responsible for formulating opinions on proposed environmental taxation measures and formulating ETR related proposals (MEEDE, 2013a). The Committee is meant to work primarily on climate change, air quality, water, waste and conservation of biodiversity (MEDDE, 2013). In the past, several environmental fiscal reform commissions have been established in France including Landeau, Michel Rocard and Alain Juppé on carbon taxation (Expert input, April 2014).

The main new environmental tax measure to have found its way in the 2014 finance bill is the so-called **“climate and energy contribution”** (‘contribution climat-énergie’). Its main aim is to progressively increase the tax rate on energy products depending on their energy content and to have a part of the taxes levied on the consumption of fossil fuels calculated on the basis of their CO<sub>2</sub> content. This applies to gasoline, diesel fuel, coal, natural gas as well as domestic heating oil. The value of a tonne of carbon will initially be set at EUR 7 in 2014, and then increased to EUR 14.50 in 2015 and EUR 22 in 2016. It does not apply to sectors within the European Trading Scheme (ETS). From 1 April 2014 the tax only applies to three products. It will be extended to remaining products from 2015. The fact that the reform was passed relatively easily illustrates how it can be easier to modify existing taxes as opposed to introducing new ones.

Based on a decision already adopted under the previous government, the current French administration was also meant to introduce a new heavy duty vehicle tax dubbed “eco-tax” in early 2014, which would have been proportional to the distance travelled (EUR 0,125 /km). However, the government decided to provisionally suspend the introduction of the tax following demonstrations in specific peripheral regions (primarily Brittany) which feared to see their competitiveness undermined. In November 2013 a Parliamentary Commission was established to “address some misunderstandings, (...) discuss the tax from a more rational perspective and re-establish its legitimacy in light of the rationale behind its design” (own translation, Assemblée Nationale, May 2014).

The new Minister of Environment, Ségolène Royale, had indicated her opposition to the tax a few days only after taking office in April 2014. However, in the report of the Parliamentary Commission published in May 2014, it recommends rebranding the so-called “eco-tax” as a “heavy goods vehicle fee” and that exemptions are granted to small transporters which only travel short distances. In addition, the Commission recommended to put in place a fund for the modernisation of the truck fleet and an incentive to use cleaner vehicles through the introduction of a bonus-malus scheme (Assemblée Nationale, May 2014). Given the political sensitivity of the issue and past statements of the new Environment Minister, it is unclear whether a somewhat adjusted version of the tax will eventually be introduced or whether an alternative system to raise funds for infrastructure maintenance will be adopted instead. Other areas that the government is planning to look into include (MEDDE, 2012):

- Tax on fluorinated GHGs in fridges;
- Specific taxation on nitrogen fertilizers, to limit the use of fluorinated greenhouse gases and mineral nitrogen, which is a precursor of nitrous oxide.



Recent developments which go against ETR include an increase in the property tax on housing and on non-built land, which is likely to increase the use of land and thus urban sprawl and changes to laws on taxes on agriculture land which will increase pressure on natural space as it puts more land on the market to let people build.

## 15.2 Brief description of overall vision for ETR

The government recognises that the use of environmental taxation to influence behaviour is largely unexploited in France. It acknowledges that France is one of the laggards in the area of environmental taxation and considers that France should converge towards the European average of environmental taxation. It has announced that environmental taxes will be reformed to support ecological and energy transitions. The **evolution of environmental taxation in France** is to be guided by a process of identification in different themes (climate change, resources, pollution) of the areas in which taxation can play a role in behavioural change. This assessment is to be accompanied by a careful review of economic actors potentially affected by such taxes and impact assessment studies where relevant. The government emphasizes that the overall tax burden should not increase as a result of the introduction or revision of environmental taxes which will need to be compensated by a reduction or removal of other taxes (MEDDE, 2012).

When presenting the proposal for the **2014 finance bill**, the government considered that it “lays the basis of a **new smart environmental taxation** which will allow us to ensure a sustainable growth while at the same time supporting households in their efforts to reduce their consumption and limiting the taxes on the production of companies » (MEDDE, 2012, p.4).

## 15.3 Country's support for EU recommendations on ETR

ETR related measures that the government announced in the “**ecological transition roadmap**” published in September 2012 include a re-examination of tax expenditure relating to fossil fuels. The government states that should this lead to the revision of some exemptions, flanking measures will be taken in particular in view of “supporting low income households and competitiveness of the sectors most exposed to international competition (agriculture, transport and fisheries).” (MEDDE, 2012, p.18).

In official documents the French government does not put heavy emphasis on the fact that an increase in environmental taxation may help reduce taxation on labour. However it clearly states that environmental taxation should not be seen primarily as a means to raise public revenues but rather its main purpose is to change price signals and behaviour in the long run. It also emphasizes that taxes should be introduced when actors are in a position to change their behaviour. Where the competitiveness of specific sectors is a concern, a mechanism for channelling revenues from such taxes back into the sector will be considered (MEDDE, 2012).

## 15.4 Perspective on opportunities for future ETR

The threat to competitiveness tends to be a major concern around the planned introduction of a carbon tax. The government considers that CO<sub>2</sub> emissions from the consumption of fossil energy are insufficiently taken into account in EU tax related rules and has committed to promote, in the context of on-going discussions to revise the energy taxation directive, a **European carbon tax** applying to sectors outside the ETS as well as an **adjustment mechanism at EU borders** which, in a test phase, could first be introduced for a limited range of sectors. (MEDDE, 2012).

Independently of what may be achieved at EU level, the government is also considering how to better take into account the objective of **improving air quality** through changes to car taxes (e.g. company car taxation, bonus malus scheme), fuels and energy (gas, oil and biomass). It is also looking into strengthening incentives through **taxation on water pollutants**, possibly through a progressive increase of the fees on diffuse pollution to reduce by half the use of phyto-sanitary products by 2018 and revise the tax on detergents to reduce phosphate emissions into water bodies. Other tax measures under consideration include measures in the area of waste, water pricing, urban sprawl, and resource extraction (MEDDE, 2012).

The preliminary results of the Committee were published in 2013. Upon receiving these preliminary conclusions the government confirmed it was **determined to make the 2014 finance bill (“loi des finances pour 2014”) the first act in the greening of French taxation** (Ministere de l’économie et des finances, 2013). The government expressed in particular interest in the committee’s conclusions relating to carbon taxation, the difference between the taxation of diesel (“gazole”) and gasoline (“essence”), the taxation of refrigerants or tax instruments to prevent soil sealing/urban sprawl are valuable inputs.

The context for ETR has been changing in France. Originally, Francois Hollande said that ETR should provide incentives to change behaviour rather than being used to raise revenues. However, revenues from environmental taxes were used to finance enterprises, in order to be more competitive. It was also suggested that the current difficulties facing France make it very difficult to make any substantial changes to the tax structure as proposed e.g. in the recently published study for the Commission by Eunomia and Aarhus University (Expert input, April 2014).

### 15.5 Perspective on synergies from aligning Member States efforts on ETR

No specific insights into the French perspective on this aspect were found through the desk-based research. It has been suggested that the EU could have a role to play in supporting the EFR agenda in Europe including by providing a definition for EHS and by considering EHS in the context of state aid. The EU could also require MS to report on their tax spending on EHS, which is currently only required for fossil fuels. There is a need for a check on the negative environmental impacts of state aid alongside evaluation of other impacts. It was also suggested that the EU include these issues in its external policies, i.e. in non-European countries which often have higher EHS. This may help reduce the gap in competitiveness and have geo-political effects (Expert input, April 2014).

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## 16 Hungary

### 16.1 Brief summary of plans on ETR

Political agreement on the **latest major tax reform** was reached in **November 2012**. The main objectives of the reform are to provide fiscal balance and a stable investment environment, to reduce income taxes and increase the role of consumption taxes and taxes on negative externalities (Government of Hungary, 2012). Even though fiscal consolidation is the main aim of the introduced changes, the reform also includes several environmental tax elements.

The rate of the special energy tax on the profits of energy suppliers, also called the **Robin Hood tax**, was increased to 31 per cent from 8 per cent. In addition, a new **public utility infrastructure tax** was introduced which applies from January 2013 to district heating, water, sewage, gas, electricity and telecommunication lines. This tax is a classic property-type tax, since public utility networks present property value and the tax is paid by the owners of the networks. Leaders also agreed to the continuation of a **flat rate registration tax for hybrid-electric vehicles** at HUF 76,000 (EUR 256). For other vehicles the tax rate depends on the engine size, environmental class, age of vehicle and the time of registration (Government of Hungary, 2012).

In **2011 a 'Green Tax Act'** was passed by the parliament and entered into force on January 2012. The act has introduced a number of changes to **environmental fees on products**, covering batteries, packaging materials, electric or electronic products and tyres (LXXXV. Act of 2011 on environmental fee on products). Product fees were not raised significantly, except for advertising papers where the increase was threefold. Nevertheless, the amount of tax revenue of the State from the product fees has grown as a result of changes in exemption rules and liabilities related to packaging. Another new element was the appointment of the National Waste Management Agency as coordinating body to manage and control the waste collection and recycling of waste generated from products under the Green Tax Act (Expert input, May 2014).

The **excise tax rate of diesel fuel** was also increased in order to reduce its tax advantage compared to gasoline (Government of Hungary, 2013b). Furthermore, the previously low **excise tax rate on LPG** was raised to better reflect its polluting nature (Expert input, May 2014). In 2013, a new **electronic road toll collecting system for heavy duty vehicles** was introduced which applies to 6513 kilometres of motorways and main roads (Green Budget Europe, 2014). The deadline of the introduction of a **congestion charge in Budapest** was again postponed and now it is expected to be implemented only by 2016. Hungary received EU subsidies to improve its public transport system in Budapest provided that it will implement a congestion charge system by 2013. As the building of the new metro line and the development of new park and ride areas were delayed the deadline was extended to 2015. Nevertheless, now further delay is expected (Origo, 2013). According to informal information, the decision as to whether or not to introduce the congestion charge will be decided at a local level by the different councils of Budapest (Expert input, May 2014).

Finally, in 2012 the **'soil pollution charge'** was increased by ten times (Topkalkulator, 2012) and in 2013 a new **landfill tax** was introduced which will annually increase until 2016 (Hogg et al, 2014).

### 16.2 Brief description of overall vision for ETR

In **2008**, the government published its long-term **Climate Change Strategy**. Environmental tax reform is not a major component of the strategy, which includes plans until 2025. ETR is seen as a mechanism which could strengthen the government's contribution to achieve climate and energy

objectives and indicates that besides the environmental benefits it can also induce employment benefits (Government of Hungary, 2008).

In 2013, the government agreed on the **Fourth National Environmental Protection Programme** of Hungary, which provides a strategy in the field from 2014 until 2019. The draft of the programme only weakly mentions ETR as one of the government's tasks in order to achieve the environmental objectives. In addition, it notes that in many cases revenues of environmental taxes are not ring-fenced to environmental protection actions and further efforts are needed to harmonise the greening of the Hungarian taxation with OECD and EU approaches (Government of Hungary, 2013a).

As indicated above environmental taxes – besides public health product taxes, new taxes on financial transactions and telecommunication taxes - are one component of the **2013 tax reform** (Government of Hungary, 2012).

### 16.3 Country's support for EU recommendations on ETR

The Council of the European Union in its **Country-Specific Recommendations** for Hungary repeatedly highlighted the need to alleviate the tax burden on low-wage earners for example by shifting part of the tax burden to environmental taxes (Council, 2012 and Council, 2013). The importance of such a tax shift was also reiterated at the **Environmental Council** on March 2014, where exchange of views took place on the topic on how to green the European Semester (Council, 2014).

Responding to the above recommendations the Hungarian government in its **2013 National Reform Programme** noted the following two environmental tax adjustments which form an important part in increasing the role of consumption taxes: (i) Increased excise duty rate on diesel fuel and (ii) increased environmental fees on products which deemed to have a negative impact on the environment (Government of Hungary, 2013b).

### 16.4 Perspective on opportunities for future ETR

As indicated above numerous changes have been applied to environmental taxes recently in Hungary. The drivers behind the recent changes seem to be multi-fold, including fiscal stabilisation, job creation, revenue generalisation and environmental protection. The excise tax rates of diesel and LPG were increased to better reflect their polluting nature. The 2011 changes to the environmental fees on products and the appointment of the National Waste Management Agency as the sole coordinating body aimed to make waste recycling processes more efficient and to increase the potential to achieve positive environmental outcomes. Previously, a number of separate coordinating organisations dealt with the fees which led to inefficient outcomes in both administrative and environmental terms (Expert input, May 2014). In contrast, the Robin Hood tax is regarded as a solely revenue generating tool (Expert input, May 2014).

### 16.5 Perspective on synergies from aligning Member States efforts on ETR

Insights from targeted interviews suggest that Hungary supports on-going discussions to revise the Energy Tax Directive including the proposed minimum tax rates and the polluting component, i.e. that tax rates take into consideration the emitted CO<sub>2</sub>, however it may need additional time to implement the minimum rates for heating fuels (Expert input, May 2014). In contrast, in relation to environmental product charges, insights from targeted interviews suggest that countries have different approaches in this area and thus it would not be possible to have a harmonised product tax (Expert input, May 2014).

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## 17 Ireland

### 17.1 Brief summary of plans on ETR

Environmental fiscal reform has been an important part of the Irish response to the economic crisis (Fedrigo-Fazio et al, 2013). In 2011, environmental taxes in Ireland accounted for 9 percent of total taxation, against an EU average of 7 per cent (Department of Finance, 2013). Recent changes in environmental taxes include the introduction of a carbon tax on transport, heating and solid fuels (2009/2010/2013) and a tax on the carbon windfall profits of utilities (2010). Moreover, the Vehicle Registration Tax (VRT) rate and the Motor Tax rate have been revised to reflect CO<sub>2</sub> emission levels rather than engine capacity (Commission on Taxation, 2009). In 2014 an air travel tax introduced in 2009 was abolished. It is hoped that this will generate new airline routes into Ireland, and thus boost Irish tourism and local economies. However, Irish Minister for Transport, Tourism and Sport Leo Varadkar said he will be monitoring the response of airlines, warning that the tax can be re-imposed next October if the response is not sufficient. In Northern Ireland, the air passenger duty is set at GBP 13 per passenger, per flight. Here competition issues have led industry to call out for abolition of the UK air tax as well.

Imminent plans for reform can be observed with regard to water and carbon taxation. Currently, households are exempted from paying for water services, and there are no taxes on water effluent (European Environment Agency, 2010). However, a charging system based on metered use (above a free allowance) and conservation measures are to be introduced following the transfer of water services responsibilities, assets and liabilities from local authorities to State company Irish Water which began in January 2014. Domestic water charges will commence with effect from 1 October 2014 and Irish Water intends to issue the first bills to domestic customers from January 2015 (Department of the Environment, Community and Local Government, 2012; Fedrigo-Fazio et al, 2013; OECD, 2014). The carbon tax will increase from EUR 10 to EUR 20 per tonne with effect from 1 May 2014 (Citizens Information, 2014). Moreover, the Accelerated Capital Allowance (ACA) scheme,<sup>22</sup> which was intended to run until 2011, was recently extended to run until end 2014 (OECD, 2014).

### 17.2 Brief description of overall vision for ETR

Ireland's latest National Sustainable Development Framework, published in June 2012, supports the OECD strategy Towards Green Growth and its recommendations, noting the dividends commonly associated with environmental tax reforms. Although the scope for action on taxation over the short to medium term is said to be limited by the budgetary constraints currently facing Ireland, the Framework still proposes the development, in the long term (>10 years), of a Framework for Environmental Tax Reform, taking into account issues of equity and competitiveness. It also proposes to consider the wider application of user charging, where appropriate (Department of the Environment, Community and Local Government, 2012).

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<sup>22</sup> This scheme provides for a system of accelerated capital allowances for the purchase of energy efficient capital assets, enabling businesses to write off the entire cost of a specified set of energy efficient products in the first year of purchase, whereas normally depreciation or wear and tear of assets can only be written off against profits gradually over eight years (OECD, 2014).

### 17.3 Country's support for EU recommendations on ETR

Ireland supports recommendation 3 of the European Resource Efficiency Platform<sup>23</sup> regarding the phasing out of environmentally harmful subsidies (EHS), and shifting the tax burden away from jobs to resource use in order to promote resource efficiency. The Framework for Sustainable Development specifically proposes to:

*“Develop a Framework for Environmental Tax Reform: A gradual shift of the tax base away from taxing what we want more of, such as investment and labour, towards taxing what we want less of, such as pollution,”* as well as *“Shifting the Fiscal Focus towards the Green Economy: In line with the recommendations of the OECD, priority will be afforded, in the context of advancing the green economy agenda in Ireland, to the development and implementation of appropriate fiscal measures. This includes, over the longer term, the rationalisation and phasing out of environmentally or economically harmful subsidies, including on fossil fuels, taking into account the impact of such measures on the most vulnerable groups in society through appropriate social policy instruments.”* (Department of the Environment, Community and Local Government, 2012)

In its country-specific recommendations for Ireland for 2014, the European Commission recognises that, in Ireland, environment-friendly taxation has been expanded (European Commission, 2014). Ireland has stated that its National Reform Programmes implementing commitments under the Europe 2020 Strategy will take account of the measures in its Sustainable Development Framework. Moreover, government documents also endorse the EU Regulation on environmental economic accounts which contains a module on environmental indicators for environmental taxes (Department of the Environment, Community and Local Government, 2012).

Regarding EHS, in Ireland many fuels and energy services are subject to VAT at a special rate of 13.5 percent. Moreover, a subsidy is provided to peat production in the form of a Public Service Obligation levy to support the higher cost of purchases of electricity generated from peat, although support to peat-fired power plants is expected to cease by 2020 (Fedrigo-Fazio et al, 2013). In the area of agriculture, the most wide-spread EHS is the reduced rate of excise tax for diesel used in the sector. Budget 2014 announced an ‘Agri-taxation Review’ which will develop recommendations for consideration in the context of Budget 2015. Moreover, in 2013 during the Irish Presidency of the EU Council, securing agreement on the 7<sup>th</sup> Environment Action Programme to 2020 which includes commitments on ETR and EHS reform was a key priority.

### 17.4 Perspective on opportunities for future ETR

A recent government staff working document states that environmental taxes are already above EU average, and therefore notes limited potential for further reform (O’Connor, 2013). However, there have been several unofficial recommendations for changes in environmental taxation in recent years which suggest some further opportunities for ETR. For example, in 2011 the ‘Tax Strategy Group’, a government interdepartmental committee which examines and develops proposals for measures in the areas of taxation for the annual Budget and Finance Bill, proposed to increase the rate of excise duty for individual types of fossil fuels separately rather than increase the overall carbon tax rate for all fossil fuels, given the sensitivities that may accompany increasing the prices of home-heating oils and natural gas, particularly during the winter season. Their report states that petrol and auto-diesel have the highest revenue raising potential. The report also proposes to increase excise duties on High Sulphur Marked Gas Oil (Tax Strategy Group, 2011).

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<sup>23</sup> [http://ec.europa.eu/environment/resource\\_efficiency/documents/action\\_for\\_a\\_resource\\_efficient\\_europe\\_170613.pdf](http://ec.europa.eu/environment/resource_efficiency/documents/action_for_a_resource_efficient_europe_170613.pdf)

In 2010, the OECD stated that Ireland could raise environmental taxes on environmental “bads” to 15-20 percent of total tax revenues by 2015 (OECD, 2010). The fiscal changes proposed by the European Environment Agency in a briefing note on the potential for further environmental tax reform in Ireland include increasing carbon-energy taxes on transport fuels to UK levels (which would imply a bigger increase in the tax rate of diesel), and increasing those on energy products used for other purposes for economic sectors not covered by the EU ETS<sup>24</sup> and for households. The report also points to the possibility of revising the annual car tax and vehicle registration tax for vehicles other than passenger cars, and increasing the air travel tax to UK levels (rather than abolishing it). Moreover, it proposes to introduce pollution taxes on SO<sub>2</sub> and NO<sub>x</sub> emissions as well as taxes on water effluent, pollution and abstraction. Additionally, it suggests the introduction of a mineral fertiliser tax, abolishing VAT exemptions on fertilisers, as well as the introduction of an aggregates tax and a property or land value tax. It also states that Ireland could reform environmentally damaging subsidies by reducing the partial tax exemption on diesel for the agricultural sector (EEA, 2010). These recommendations might have had an influence on the adoption of water charges. Also, the Irish government is considering introduction of a land value tax (Bruvoll et al, 2013), and even announced that it would introduce one in 2013, however this commitment was weakened following a change in government in 2011.

A Commission on Taxation report from 2009 states there is only limited support for new environmental product taxes, due to the multitude of environmental levies or charges facing retailers, and the success of industry-led initiatives, e.g. for packaging and tyres. An exception is the support for economic disincentives for (unnecessary) packaging. The Commission recommended that environmental product taxes be considered where voluntary initiatives are unsuccessful, and if a set of criteria are met<sup>25</sup>. The Commission further emphasised the benefits of charges for final disposal of domestic and industrial waste, and the replacement of the VRT system by a system based on car usage. Moreover, it supported the concept of a focussed scrappage scheme, under which incentives would be given to motorists who traded-in cars that are over 10 years old against low emissions new cars. Also, it recommended that businesses that are not in the emissions trading scheme should be given a rebate on their carbon tax payments if they participate in an approved mandatory energy reduction programme (Commission on Taxation, 2009).

### **17.5 Perspective on synergies from aligning Member States efforts on ETR**

We did not identify a specific government perspective on synergies from aligning Member States efforts on ETR. However, there are benefits to be gained from cooperation in certain areas, particularly with regard to the UK. For example the European Environment Agency proposed Ireland introduce a HGV vignette scheme like the one in Germany, and noted that revenues from increasing excise duties on petrol and diesel to UK levels would be ‘netted out’ by the expected reduction in tank tourism from Northern Ireland and by differences in VAT rates (EEA, 2010).

The 2009 Commission on Taxation called for further research into the potential for expanding the ACA scheme, noting the Dutch model as an example. Additionally, the Commission recommended that Ireland support amendments to the EU VAT Directive that would allow the implementation of

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<sup>24</sup> Approximately 28 per cent of total Irish greenhouse gas emissions fall within the scope of the ETS (Department of the Environment, Community and Local Government, 2011).

<sup>25</sup> It states that product taxes should only be imposed if voluntary agreements, underpinned by regulation where appropriate, have been unsuccessful or have not been applied; and if the tax is likely to be environmentally effective: i.e. the user has an alternative to the pollutant; if the tax is expected to change behaviour, and there is a measurable behavioural response; if the administrative burden is not excessive; and if the collection costs are not excessive in relation to the expected yield (Commission on Taxation, 2009).

lower VAT rates for energy-efficient goods and services, something which is also supported by the UK (Commission on Taxation, 2009).

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## 18 Italy

### 18.1 Brief summary of plans on ETR

In the early 1990s, Italy had one of the highest shares of environment-related taxes to GDP among European countries. However, this was followed by a steady decline in the following 15 years with revenues from environment-related taxes falling by around 30 per cent relative to GDP. Recent figures show a reversal of this trend in 2011, when a 2.8 per cent increase in revenues from environmental-related taxes was registered (Eurostat 2013).

**Most environmental-related taxes in Italy are in the area of energy** (which accounts for 2.1 per cent of environmental tax revenues as a share of GDP in 2011) **and transport** (which accounts for a 0.65 per cent share of GDP in 2011). A small portion of revenues (0.03 per cent as a share of GDP) comes from air pollution and waste taxes (Eurostat 2013). In the 1990s, a number of taxes on air pollution, groundwater, waste, plastic bags, and pesticides were introduced. In recent years some energy and transport taxes have been revised.

In 2011, the approval of the budget package '**Salva Italia**', with the aim to strengthening Italy's position on the financial markets, introduced several environmental-related taxes and charges (Eunomia and Aarhus University, 2014) These include:

- An increase of excise taxes on motor fuels from January 2012 (Article 23, Decree Law 98/2011),
- A new tax on high-powered vehicles and boats,
- A revised tax on municipal waste (TARES) from 1 January 2013 (Article 14, Decree Law 201/2011),
- Incentives for photovoltaic energy (Decree Law, 5 July 2012) and non-photovoltaic renewable energy (Decree Law, 6 July 2012).

Further fiscal measures were introduced in 2012, including increased excise duties on motor fuels (diesel, in particular), the removal of some incentives for company cars, and a proposal for a carbon tax (to come into effect with the adoption of the amended energy taxation Directive).

The **Fiscal Delegation Law** (Delega Fiscale) approved by the Italian Parliament on 24 February 2014 seeks to consolidate the budget by reviewing and adjusting several taxes and charges over a 12 month period. Italian Prime Minister, Matteo Renzi, announced a 'double digit' reduction of labour taxation (around EUR 10 billion) and a commitment to complete fiscal reform in Italy (Expert input, April 2014).

Several conferences have been held in Italy over the past 18 months which seek to support environmental fiscal reform (Expert input, April 2014). A conference held on 6 March 2014 at the Permanent Representation of the EU to Italy in Rome gathered academics, research institutes and NGOs to discuss the potential benefits for ETR in Italy (Permanent Representation of EU in Italy website) The Minister of Environment, Gianluca Galletti, attended the conference and reiterated the commitment of the Italian government to the implementation of ETR and the European Semester recommendations. Further information on the government's implementation strategy on ETR/EFR is currently not available (Ravazzi, 2014); however it is worth noting that greening the economy will be one of the priorities of the **Italian Presidency of the EU** in the second half of 2014. Particular attention will be paid to the promotion of green jobs (Expert input, April 2014).

## 18.2 Brief description of overall vision for ETR

The recently approved Fiscal Delegation Law aims to introduce new green taxes and revise existing taxes in accordance with existing taxation at regional and local level, and in respect of, among others, the principle of fiscal neutrality (Article 15, Fiscal Delegation Law). The Fiscal Delegation Law provides a potentially very wide delegation of power to the government to introduce new forms of fiscality without any further specification (Ravazzi, 2014). Two broad priorities are envisaged: to **drive the market towards sustainable modes of production and consumption**; and to **review excise taxes applied to energy products and electricity**, also on the basis of carbon content, SO<sub>x</sub> and NO<sub>x</sub> emissions. According to Article 15, Fiscal Delegation Law, revenues will be used to:

1. Reduce income tax, especially on labour generated by green economy,
2. Support the diffusion and innovation of low-carbon technologies and products,
3. Finance sustainable production and consumption modes,
4. Revise the financing of subsidies for renewable energy production.

Critical challenges and drivers of recent efforts include *inter alia* endemic instability due to the economic and financial crisis, a high fiscal burden on Italian taxpayers, a perceived fiscal intolerance towards the introduction of new taxes, and problems related to technical capacity (Ravazzi, 2014).

## 18.3 Support for EU recommendations on ETR

In 2013, in the context of the European Semester, a country specific recommendation for Italy was approved by the European Council, clearly indicating the desirability of EFR in the period 2013-2014. This recommended the shifting of the tax burden from labour and capital in a budget neutral manner. This option received serious attention in Italy. The first proposal of the Fiscal Delegation Law, including explicit reference to environmental fiscality (Article 14), was made on 16 April 2012 by the Monti government. However, the Fiscal Commission of the Chamber cancelled the environmental fiscality on 9 October 2012, in view of the fact that the proposal for a directive on energy taxation (COM(2011)169) at EU was not yet approved. Environmental fiscality was subsequently reintroduced by the Fiscal Commission of the Senate in November 2012 (Ravazzi 2014).

The fiscal delegation proposal was taken forward by the then newly appointed Letta government in April 2013, with a specific reference to a green tax reform in Article 15 (IISole24Ore, 2 June 2013). A single final text of the proposal was approved on 25 September 2013, and finally adopted at the end of February 2014 by the Italian Parliament. Article 15 of the fiscal delegation specifies that the revenues from the introduction of a carbon tax will be **recycled back to the economy** by decreasing income taxes (in particular, on labour), financing low-carbon technologies, and revising subsidies to renewable energy sources.

## 18.4 Perspective on opportunities for future ETR

According to Article 1 of the Fiscal Delegation Law, the introduction of new environmental taxes or the revision of existing taxes and charges has to be **completed in 12 months** from the adoption of the Law. Specific measures envisaged by Article 15 are:

- The revision of excise duties on energy products, as a function of the carbon content and SO<sub>x</sub> and NO<sub>x</sub> emissions, and in conformity with the principles which will be adopted in the revised Energy Tax Directive;
- The reduction of income taxation, especially on labour generated by green economy activities;
- The diffusion and innovation of low-carbon technologies and products;



- The financing of sustainable production and consumption modes;
- The revision of subsidies to renewable energy sources. (Article 15, Fiscal Delegation Law)

## 18.5 Perspective on synergies from aligning Member States efforts on ETR

The Italian government is compelled to agree on new forms of fiscality within 12 months from the adoption of the Fiscal Delegation Law in February 2014. However, in order not to penalize Italian companies in terms of competitiveness, the Fiscal Delegation Law requires that the starting date of the effects of the provisions on environmental fiscal reform are coordinated with the transposition of **harmonized rules agreed at EU level** (in particular in relation to the reform of the Directive on taxation of energy products and electricity) (Article 15, Fiscal Delegation Law). The practical effects of this provision, namely whether the starting date of the fiscal measures will be delayed until the Energy taxation directive will be adopted, are still unclear. This element of ambiguity had yet to be clarified as of April 2014 (Ravazzi, 2014).

No specific insights were found in the literature as to synergies with other European member states on ETR. However, experts contacted in the course of the study suggest that there may be some willingness to take part to a working group of European countries (e.g. coordinated by the OECD) to move forward on ETR (Expert input, April 2014).

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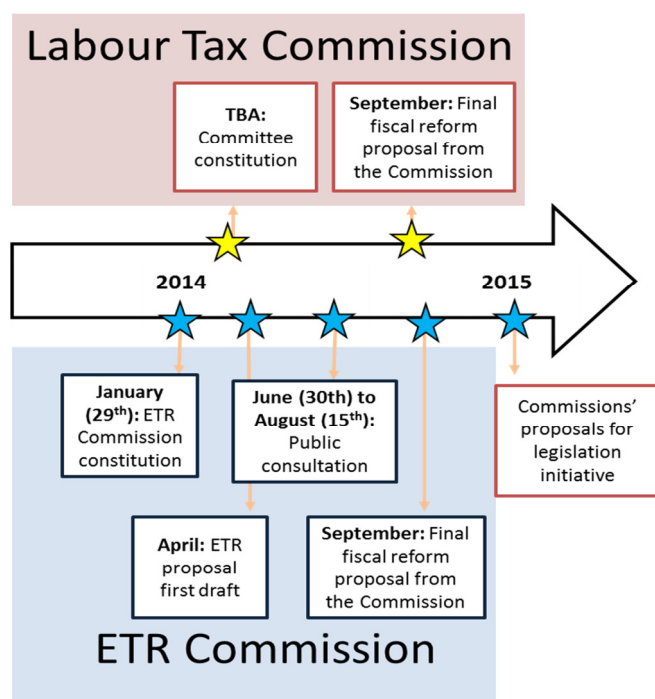
## 19 Portugal

### 19.1 Brief summary of plans on ETR

A budget crisis, skyrocketing income taxes, and an unresponsive economy have increased interest in ETR in Portugal (Soares, 2014). One of the Government's objectives is to reduce the fiscal weight for households, starting from reforming and reduce labour taxes (IRS) in 2015. The current economic framework and excessive fiscal debt means that the country has to secure government revenues. Thus, the national government established two committees: one that aims at researching the possibility of reducing labour taxes and a second one on introduction on environmental taxes (LUSA/SOL 2013). The former, the "Commission to reform labour tax (IRS)" has as its objectives to assess the consequences of excessive fiscal burden on households and find solutions to minimize it, again keeping in mind the vision to reduce labour taxes in 2015 (Simões, 2014).

The latter, referred to as the "**Commission to the reform of environmental taxation**", is an initiative to assess the suitability of shifting the fiscal burden from households and firms to green taxation, following the example of other European countries. The Ministries of Environment and Finance will work in close coordination in the Commission (Crisóstomo and Garcia, 2014) which will focus on mobility, energy, waste and biodiversity (Soares 2014). This initiative is part of the State's reform package that envisages a roadmap to economic sustainability after the troika, according to the Minister of Finance. The corporate tax has already been revised, while labour taxes reform revision is to follow (Gonçalves, 2014).

**Figure 1: Timeline of upcoming ETR initiative**



**Source:** Own compilation based on Lusa (2014), Gonçalves (2014), Dinheiro Vivo (2014)

The objectives of the ETR Commission is to diversify revenue sources, achieve revenue neutrality and economic competitiveness, redefine the legal basis of environment and energy taxation, promote economic competitiveness and environmental sustainability and increase the efficiency of raw material use (Gonçalves, 2014). No proposals have been issued by the Commission as of May 2014. However the introduction of a carbon tax may be among the proposals put forward (Crescimento Sustentavel, 2012, see section 2).

The expected timeline of work of the two committees is summarized in Figure 1. In January 2014, the government gave a mandate for a draft proposal to be issued by September 2014 by both Commissions. At the end of March, a the first phase of the work was

completed and included the publication of a report assessing the *status quo* which sets out definitions, evolution, green economy, legal framework, ETR recommended guidelines and assessment of the Portuguese tax system, 'best' practices in Portugal and selected cases, environmental concerns, sectors & markets, ETR principles and six annexes including one on Spain

(Soares, 2014). A public consultation is scheduled from 30 June to 15 August, and the final proposal will be submitted on 15 September 2014 (Gonçalves, 2014).

## 19.2 Brief description of overall vision for ETR

A proposal to revise the 1987 “Lei de Bases do Ambiente” (Environmental Basis Law) was put forward in June 2012 but has yet to be agreed on. It includes one paragraph on environmental taxation as an environmental policy instrument, defining green taxes as the taxes that have polluting activities as their tax base and whose implementation should not be motivated at raising revenues (Diário da Assembleia da República, 2014).

The Portuguese Stability and Growth Programme includes, among other measures, the creation of rebate tax for companies acquiring electric vehicles and the expansion of the energy taxation to electricity (IEEP, 2013). But other important reform documents that have fiscal reform implications (such as the Memorandum of Understanding for Portugal on 7 April 2011 and its subsequent revisions) do not include any environmental taxation initiatives.

ETR in Portugal was first launched through the Council of Ministers Resolution of 14 July 1997 that set the principles that guide energy, environmental and housing taxation (Ruivo, 2006). The Government Communication of October 2013, entitled “Um Estado Melhor”, is an orientation guide with no legislative power that sets the steps to future State reform, as approved by the Portuguese Government. This document envisions that “green taxation” initiatives should be taken into consideration to promote sustainable development, eco-innovation, reduces external energy dependency, achieve international targets and diversify revenue sources (Governo de Portugal, 2013). This served as a driver for the ETR reform initiatives mentioned in section 1. On the 4<sup>th</sup> February 2014, the Coalition for Green Growth (“Coligação para o Crescimento Verde”) was created, which is an organisation to advise the environment ministry. The Coalition mentions ETR as one of the goals that needs analysis and discussion (QREN, 2014; Governo de Portugal, 2014). Another important issue for consideration when designing ETR in Portugal is regressivity and impacts on income distribution (Expert input, April 2014).

“Plataforma para o Crescimento Sustentável” (Sustainable Development Platform) is a think-tank that published a report in 2012 which, among other initiatives for sustainable development in Portugal, included a proposal for a carbon tax. The report suggested a reduction of 3,5 per cent of the labour tax (IRS) as opposed to the creation of a EUR 9 carbon tax for industries that are not covered by the ETS (Crescimento Sustentável, 2012). Jorge Vasconcelos, the president of the ETR commission created in January 2014, is also one of the members of the Board of “Plataforma para o Crescimento Sustentável”, while the current environment minister is the president of the think-tank (Dinis, 2013).

## 19.3 Country’s support for EU recommendations on ETR

As recommended by the 2001 OECD Environmental Performance Review, Portugal has made progress in expanding the use of environmentally related taxes. It has introduced waste and water taxes, a tax on inefficient light bulbs, and CO<sub>2</sub> emissions-based vehicle taxes.

A 2011 Memorandum of Understanding between Portugal, the IMF, the EU and the European Central Bank prescribes a tax system reform in Portugal according to a principle of fiscal neutrality. Other supporting documents include the call for reform of environmentally harmful subsidies in the Annual Growth Survey launching the European Semester for 2013 (COM(2012) 750), and the call for green tax reform in the Presidency Synthesis Report on the Implementation of the European

Semester, 6662/12 (2012) of the European Council of Ministers. Moreover, the EEA report on potential for ETR in Portugal noted the potential revenue to be raised through an ETR, which attracted the attention of the Ministry of Finance.

#### **19.4 Perspective on opportunities for future ETR**

Key drivers behind ETR in Portugal include the budget crisis, rising income taxes, an unresponsive economy, the 2011 Memorandum of Understanding (between Portugal and the IMF, EU and ECB), the Annual Growth Survey 2013 (COM(2012)750), EHS reform, the European Semester, EU Council Presidency Synthesis Report (6662/12, 2012) which mentions green tax reform), the long process leading to EEA report in 2013 on EFR potential in Portugal and resulting conference organised by the MoE & EEA, a dynamic and committed new environment minister and a strong interest in e-mobility (Soares 2014).

The introduction of environmental taxes is mostly due to transpositions of EU directives to national law (e.g. product taxes from 2002 to 2009, petrol based products tax in 1999, reform of the passenger vehicle taxation in 2005). National initiatives tackle mostly the reforms of existing taxes (e.g. tax on vehicles in 2007) (Vasques, 2007). Another area currently being explored is the introduction of a plastic bag charge, although this currently faces strong opposition from supermarkets. Moreover a Spanish report which claimed that plastic bag charges do not have an environmental effect is now also being used by opponents in Portugal (Expert input, April 2014).

Key barriers to ETR in Portugal include a 'tax allergy', resistance to ETR agenda from Spain, low knowledge of ETR among stakeholders, traditionally high energy taxes, 'peripheral country' discourse and issues of private data protection. For example, there are concerns that the introduction of higher fuels taxes could cause a problem with exports which is a particular problem for Portugal given its reliance on transport to access markets and goods. Private data protection is another problem faced in the introduction of road charges (Soares 2014).

The Commission on ETR is currently developing its proposals. Possible options for consideration could include the removal of EHS, introduction of a CO<sub>2</sub> tax, subsidies for electric mobility by raising traditional vehicle taxes, adoption of congestion charges and air transport tax (for the latter, however, Spain would have to co-operate), biodiversity charges, and waste taxes adjustments (Expert input, April 2014). The national elections, to be held in 2015, may provide a window of opportunity to further the ETR agenda.

#### **19.5 Perspective on synergies from aligning Member States efforts on ETR**

Expert input suggests that there is a need for more cooperation and harmonisation of efforts on ETR particularly between Portugal and Spain given cross-border implications. However, it has been noted that Spain appears reluctant to take forward ambitious ETR-related efforts and this may act as a barrier to Portuguese efforts in this regard (Expert input, April 2014).

At the European level, a major concern in Portugal is the 2011 proposed revision of the Energy Tax Directive as well as interactions with the EU ETS. Energy intensive sectors are currently exempted from energy taxes in Portugal. In this context, the introduction of a tax in Portugal and not in other EU MS would translate in an indirect subsidy to polluters in other countries. It was noted that harmonisation at EU level on grandfathering of auctions under the ETS could be helpful in this regard (Expert input, April 2014).

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## 20 Sweden

### 20.1 Brief summary of plans on ETR

In the last two decades Sweden has carried out two major fiscal reforms, both of which have included environmental tax reform elements. The overall objective of the **1991 tax reform** was to reduce personal income taxation by SEK 71 million (EUR 9.5 billion). Income tax rates were significantly cut and the losses were partly offset by the introduction of a CO<sub>2</sub> and a SO<sub>2</sub> tax. Sweden was one of the first countries to introduce a carbon tax and the new environmental taxes rose approximately SEK 18 billion (EUR 2.4 billion). Sweden's ten-year **green tax shift programme starting in 2001** was also part of a major fiscal reform with the aim of lowering taxes paid by low and medium income people and achieve an ecologically sustainable society. Between 2001 and 2004, SEK 10 billion (EUR 1.1 billion) tax shift was implemented and further income tax reductions and environmental tax increases were carried out in the second half of the programme (Speck and Jilkova, 2009).

When the CO<sub>2</sub> tax was introduced, exemptions and lower rates were applied to energy intensive industries and non-ETS sectors, such as agriculture and forestry. However, in **2009 the carbon tax was reformed** via the Swedish Government's Bill 2009/40:10 which reduced the number of exemptions to domestic industries and increased the taxes for non-ETS sectors. The Bill scheduled changes to be carried out in 2010, 2011, 2013 and 2015, in line with the revision of the EU Fuel Quality Directive, the EU Energy Taxation Directive and the new ETS period from 2012/2013 (IEA, 2013).

In 2013, the government announced the introduction of a **compulsory quota system** of ethanol content in gasoline and fatty-acid methyl ester, or biodiesel, in diesel fuel, which will be implemented from 2014 (Swedish Government, 2012a). The quota system seeks to achieve 10 per cent and 7 per cent blending of biofuels in low-blended fossil fuels and diesel, as allowed by the EU Fuel Quality Directive (IEA, 2013). The quota system is planned to be accompanied by adjustments in the energy taxation system. In the 2013 Budget Bill an **energy tax on biofuels used for low-blend purposes** was proposed by the government (IEA, 2013), while the 2014 Budget Bill scheduled the **reduction of the energy tax on aircraft fuel with low lead content** and extended the temporary **reduction of taxable benefit rates for environmentally friendly cars** for another three years (Swedish Government, 2013).

At the end of 2013, the Swedish Government set up a Committee to investigate the need for **new economic instruments in the area of chemicals** to reduce the presence of, or risk of exposure and spread of environmental and hazardous emissions from various groups, such as clothing and consumer electronics (Swedish Government, 2013). The Committee is currently discussing the possibility of introducing an excise duty act on certain groups of consumer products containing hazardous chemical substances. The conclusion of these discussions and the main findings of the investigations will be presented in January 2015 (Expert input, May 2014).

Even though the focus of the 2014 Budget Bill's section on the water sector was on water quality, the government is believed to further improve the country's **water pricing system** as Sweden is known to have problems with the application of adequate water abstraction fees (Country Report on Sweden, 2013).

On 9 April 2014, the Swedish Government presented its Spring Fiscal Policy Bill which includes fiscal plans for the years 2015 and 2016. The main focus of the proposed initiatives is on knowledge, education and employment. Nevertheless, the importance of meeting climate and environmental



challenges is emphasised and the tax rate of the **vehicle tax on light vehicles** is planned to be increased (Swedish Government, 2014).

Finally, acknowledging the large amounts of greenhouse gas emissions from ruminant meat production, discussions are underway in Sweden on the possible introduction of a **carbon tax on meat consumption** (Euractiv, 2013). The Swedish Government's expert authority, the Board of Agriculture, proposed a carbon tax on meat at the consumer level and also discussed the potential role of an emission trading system and a climate tax on GHG emissions at the farm level, which could be calculated using a standard of how much GHG is emitted for a kilogram of beef, chicken etc. (Jordbruks verket, 2013).

## 20.2 Brief description of overall vision for ETR

Several strategic documents point to the importance of sustainability and the protection of the environment and climate in fiscal policies, including an extensive use of green taxes. This is reflected in the **latest Budget Bill** published in 2013. The Bill specifically indicates that Sweden has a '*long tradition and good experience*' with environmental taxes (Swedish Government, 2013, p.49).

In 2009, the government published its **long-term energy and climate strategy**, in which carbon and energy taxes were seen as an essential component to reach the greenhouse gas reduction targets. The strategy specifically stated that the enhanced use of green taxes and reductions in energy tax exemptions will bring around two million tonnes of reduced GHG emissions (Swedish Government, 2009).

In 1999, 15 **Environmental Quality Objectives (EQOs)** were formulated by the Swedish Government and in 2004 a 16<sup>th</sup> objective was adopted. These 16 EQOs form the centrepiece of Sweden's environmental policy and include objectives such as reduced climate impact, clean air, good-quality ground water and a rich diversity of plant and animal life (Swedish Government, 2004). In 2008, the Swedish Environment Protection Agency carried out an evaluation of the objectives and identified economic instruments, including taxes and charges, as effective policy instruments which can help to achieve the established environmental objectives (Swedish Environmental Objectives Council, 2008).

## 20.3 Country's support for EU recommendations on ETR

In 2011, 2012 and 2013 the EU's **country specific recommendations** for Sweden highlighted the need to implement fiscal policies that will help to meet Sweden's medium-term budgetary objective, fixed at a structural deficit of 1 per cent of GDP (Council, 2011, Council, 2012 and Council, 2013). Nevertheless, environmental taxes were not mentioned at all in the context of these recommendations and thus Sweden's national reform programmes did not include any details on ETR. At the same time, national reform programmes also gave further details on Sweden's overall reform strategy and how it implements the Europe 2020 strategy. In the **2012 National Reform Programme** one of the main objectives was to improve the climate and the environment for sustainable growth and the government specifically indicated that existing climate policy instruments have been supplemented with environmental taxes in order to meet national climate targets (Swedish Government, 2012b).

## 20.4 Perspective on opportunities for future ETR

As detailed above Sweden has carried out numerous environmental tax reforms and recently introduced future plans on how to further strengthen the role of energy and carbon taxes. Sweden can be therefore seen as one of the front-runners in Europe in relation to ETR.



The government in its **2014 Budget Bill** concluded that reporting internationally Sweden's experience with environmental taxes can influence other countries and '*encourage strong measures globally*' (Swedish Government, 2013, p.49). Even though this statement does not indicate whether Sweden would prefer a harmonised European approach for environmental taxation or keep its policies at national level, it provides an insight that sharing good practices can have positive impacts and can lead to the application of successful green taxes in other countries.

## 20.5 Perspective on synergies from aligning Member States efforts on ETR

No specific insights were found during the literature review into the Swedish perspective on potential synergies from aligning European countries' environmental tax reform measures.

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## 21 Switzerland

### 21.1 Brief summary of plans on ETR

In 2000 three projects related to ETR were rejected by popular vote<sup>26</sup>. The first was a tax on final consumption of non-renewable energy, the revenues of which were proposed to be used for promotion of solar energy and energy conservation. The second was a counter-project to this initiative, with a tax based on the energy level of non-renewable energy, where revenues were intended to be used to support renewable energy, energy conservation and hydropower. The third was a tax on non-renewable energy, the revenues of which were proposed to be used to lower the social security contribution (Daguet, 2014).

Interest in ETR has recently been boosted by Switzerland's climate and energy policies. In 2008 a CO<sub>2</sub> tax on energy products (including heating oil and natural gas, but excluding energy products used as transport fuels) came into force, based on the CO<sub>2</sub> emissions reduction law. The CO<sub>2</sub> tax rate is increased if emission reduction targets are not achieved. According to the revised CO<sub>2</sub> Act the CO<sub>2</sub> levy may be increased to CHF 60 (EUR 50) per tonne of CO<sub>2</sub> in 2014. Missing future interim reduction targets could further increase the CO<sub>2</sub> levy up to a maximum rate of CHF 120 (EUR 100) in 2018. Revenues of the levy are earmarked and passed on via lump-sum transfer to households and industries in proportion of their wage bills (Speck, 2013). Part of the revenues is used to finance the Buildings Programme, which supports the energy-saving renovation of buildings and investments in renewable energy (Daguet, 2014). Other environment/energy related taxes in place include mineral oil taxes, a fee on electricity (to finance the feed-in tariff for renewable energy), a motor fuel surcharge, and a tax on Volatile Organic Compounds. A proposal for a CO<sub>2</sub> tax on fuel was rejected by the Swiss Parliament in 2011.

In order to ensure security of energy supply and reach CO<sub>2</sub> emission reduction objectives, in spring 2011 the government agreed an Energy Strategy to 2050. This Strategy includes a decision to phase-out nuclear energy by 2035 as well as additional policy initiatives to further reduce electricity demand and CO<sub>2</sub> emissions. In April 2012 the Federal Council decided to split the 2050 Energy Strategy into two stages. The first stage aims at increasing energy efficiency with the help of standards and subsidies. The second stage (after 2020) involves the transition from a supportive scheme to an incentive system based on taxes.

At the end of 2012 the Liberal Greens presented a popular initiative "Energy tax (on non-renewable energy) instead of VAT", which succeeded in gathering 100,000 signatures. However, in May 2013 the Federal Council rejected it, without proposing a counter initiative. Although it shared the view of the Liberal Greens about reaching the energy and climate targets with incentives taxes, it rejected the suppression of the VAT and the resulting high energy tax rate (Daguet, 2014).

In November 2011 the Federal Council announced its intention to study the potential for ETR, and put the Federal Finance Department in charge of analysing and recommending possible solutions, in collaboration with the Federal Department of the Environment, Transport, Energy and Communications and the Federal Department of Home Affairs (Daguet, 2014). In September 2013

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<sup>26</sup> To adopt a law in Switzerland, first either a proposal from the Federal Council, a demand from the Parliament or a citizens initiative is detailed in a draft project. The draft project is submitted to Federal Offices for consultation, after which a public consultative process is opened with different stakeholders (cantons, political parties, interest groups and associations). Based on this the Federal Council prepares a dispatch (message) with a draft constitutional article and/or law that will be submitted to Parliament for discussion and decision.

the Federal Ministry of Finance's report entitled "Transition from an energy support scheme to an incentive scheme based on taxes. Options for an incentive scheme in energy policy" was published, which launched a pre-consultative process (not the official consultative process). This procedure was unusual, but had to do with the complexity of the case. The report proposes to replace the current support scheme (feed-in tariff and Buildings Programme) with one of two options:

- **Option 1:** Tax will continue to apply to combustible fuels and electricity (energy consumption), with slightly higher tax rates applied and revenues used for lump-sum redistributions to households; redistribution to firms in proportion of their payroll and a partial earmarking to support schemes;
- **Option 2:** Tax will continue to apply to combustible fuels and will be expanded to cover the CO<sub>2</sub> component of transport fuels and electricity (energy consumption). Higher tax rates will apply. Revenues will be used for lump-sum redistribution to households; redistribution to firms in proportion of their payroll; and partial earmarking for a transitional period.

Under the first option, the support scheme would have to be maintained in order to reach the climate and energy objectives. The second option would allow an abandoning of the support scheme (Böhringer and Müller, 2014).

The next steps on the proposal are the following. In May 2014 the Federal Council will decide the future official consultative process, and the key features of the incentive scheme, based on the results of the pre-consultation and other considerations. Also in 2014, the Parliament will debate the popular initiative "Energy tax instead of VAT", and depending on the Federal Council decision, a draft constitutional amendment will be prepared for the Energy incentive scheme. If all goes well, in 2015 the official consultation will take place for this draft constitutional amendment. In 2016 the Federal Council could then decide on a Dispatch to the Parliament on this amendment, followed by Parliamentary debates in 2016 and 2017. A mandatory referendum on the constitutional amendment could follow in 2019. After this, discussion of implementation laws could commence (Daguet, 2014).

## 21.2 Brief description of overall vision for ETR

The Swiss Green Economy Programme, launched in 2010, identifies six areas of action, one of which focuses on ecological tax reform and another which includes the assessment of impacts of new legislation on resource use and efficiency (EEA, 2011). Moreover, the Swiss Federal Council's programme for the legislative period 2011 – 2015 included the development of an ETR (Daguet, 2014). A Swiss Green Economy Action Plan was adopted on 8 March 2013.

The Sustainable Development Strategy 2012 – 2015 states that:

"Fiscal-policy instruments must also be deployed in the energy, transport, emissions and resources fields in order to promote sustainable development. Financial incentives are a useful means of influencing human behaviour. In conjunction with sector policies, the recent past has seen the introduction of some – from the sustainable development perspective – new and important instruments on both the income and expenditure sides, e.g. the CO<sub>2</sub> tax, the Heavy Vehicle Fee (HVF), and direct payments to the agricultural sector. This type of approach should be extended in the future."

It also states that, based on the existing framework, the Federal Council is working on aligning the tax system more closely with its environmental impacts. Current inappropriate tax and subsidy incentives are to be eliminated. The greening of the tax system is to be revenue-neutral (Swiss Federal Council, 2012).

### **21.3 Country's support for EU recommendations on ETR**

Switzerland does not receive country-specific recommendations from the European Commission. Regarding environmentally harmful subsidies, it is worth noting that Switzerland has already reformed one EHS by introducing road infrastructure cost recovery through distance-based heavy goods vehicles charging (IEEP et al, 2007).

### **21.4 Perspective on opportunities for future ETR**

The development of an ETR in Switzerland from 2021 faces several issues including the lack of political majority supporting a tax on transport fuels in the Parliament and lack of agreement on the amount of taxes. Moreover, the abolition of the existing support scheme is complex, as the feed-in tariff for renewable energy is needed to reach targets for renewable energy. An incentive tax alone would not be able to encourage the development of such energy, as international laws prohibit the discrimination of the same product from two different countries.

Acceptance of ETR and the constitutional amendment by the population and cantons might be problematic. There is a perceived risk for long-term financing of the public budget, as the tax may lead to a decrease in revenues over time which could have implications in particular for financing road infrastructure. This fear is particularly shared by the cantons, which are entitled to a part of the federal income tax. However, the report by the Federal Finance Administration has planned a compensation scheme for them. There are also fears regarding the long term financing of social insurance in case of a reduction of social security contributions and resistance to mixing objectives between financing and incentives, especially for roads. Finally, some representatives of business interests argue that the Swiss tax system in general can be considered quite efficient, thus reducing the expected gains from the decrease of distortions. The political costs of ETR are currently seen to outweigh the political benefits (Daguet, 2014).

Further concerns in the debate include consideration of security of the energy supply, distributional effects of using a regressive tax to reduce a progressive income tax, neutrality in terms of tax-to-GDP ratios and the competitiveness of domestic companies (with energy-intensive production). Several compensation variants which differ in terms of efficiency gains and distribution impacts have been examined (Ecoplan, 2012).

### **21.5 Perspective on synergies from aligning Member States efforts on ETR**

We did not identify a perspective on synergies from aligning Member States efforts on ETR, however in discussions at the expert workshop it was noted that international co-ordination on ETR could be helpful in overcoming public resistance to ETR in Switzerland. It was pointed out that countries/stakeholders sometimes do not want to be the first to implement an environmental tax/charge, but may be willing to do so if efforts are co-ordinated and citizens and stakeholders can see that other countries are interested in pursuing a similar path.

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## **ANNEX 4 – Workshop agenda and summary of discussions**

## Summary of discussions at experts' workshop on Environmental Tax Reform in Europe: Opportunities for the future

10 April 2014

Permanent Representation of the Netherlands in Brussels

Avenue de Cortenbergh 4 – 10, 1040 Brussels

### 1. Introduction

An experts' workshop on 'Environmental tax reform in Europe: Opportunities for the future' was held on 10 April 2014 in Brussels. The workshop was attended by representatives from national governments, the European Commission, international organisations, NGOs, academia and other organisations. The workshop was organised in the context of a study being carried out by IEEP for the Ministry of Infrastructure and the Environment of the Netherlands (IenM) which seeks to support the case for further greening taxation in Europe where appropriate. The study aims to provide an overview of existing experiences on ETR, assess future prospects for ETR in Europe and explore the potential for cooperation on ETR in relevant areas.

The objective of the workshop was to discuss the interim findings of the study, share insights on ETR, discuss how to make progress on ETR, and identify like-minded countries, organisations and individuals interested in pushing the ETR agenda forward. Discussions were organised around different sessions and held under Chatham House Rules. Presentations from the workshop are available from the following link: <https://www.dropbox.com/s/rdgldvtv0u21m7y/Presentations%20at%20ETR%20workshop%20-%2010%20April%202014.zip>.

This summary focuses on the key points raised during discussions in each session of the workshop. This summary is the study team's interpretation of the discussion and does not represent a commonly agreed position among participants at the workshop. The results of the workshop will feed into the final report of the study which will be available in June 2014.

### 2. Environmental tax reform – Current experiences and opportunities for the future

The presentation by Sirini Withana (IEEP) on **current experiences and perspectives on ETR in Europe** set out the preliminary findings of the IEEP study to date. This included a synthesis of the overview inventory of environmental taxes and charges in 32 European countries developed by the study team which covers transport, energy, carbon, air, waste, materials, products, water, agriculture, terrestrial biodiversity, and marine biodiversity. The presentation also set out key insights from the cases examined in the study on the impacts and effectiveness of environmental taxes and charges, insights on future plans and visions on ETR in a number of European countries and the six themes identified as potential issues around which a 'coalition of the willing' could be gathered, i.e. Resource pricing and circular economy, Climate and energy, Pollution & pressures on environment,



biodiversity & health, Revenue raising for fiscal consolidation, Competitiveness, growth and innovation, Jobs, equity, social costs and benefits.

The presentation by Mikael Skou Andersen (University of Aarhus) set out the main results of a recently published study by Eunomia and Aarhus University on the **potential for environmental fiscal reform in 12 EU Member States**. The presentation set out the results of the study which identified significant potential for EFR to be in France (where there is a low share of environmental taxes and almost no taxes on vehicles) and Belgium. The study also found that there to be significant potential for EFR in the area of transport (in particular in relation to vehicle taxation), as well as in energy (particularly in relation to transport fuels and the discrepancy between diesel and petrol fuels, as well as heating fuels) and some potential in pollution and resources (particularly in relation to water abstraction). Potential windows of opportunities for ETR include the European Semester, new revenue sources for renewable energy, and energy security concerns (particularly among eastern European countries).

In discussions during the session, participants discussed what is meant by the term '**coalition of the willing**'. It was clarified that this term is not meant to represent a formal European collation, but rather should represent voluntary **cooperation** and **collaboration** between countries where this could be useful to ensure more effective instruments. The example of the aborted airline tax in the Netherlands was used to illustrate how a lack of cooperation has led to a sub-optimal situation - the Netherlands introduced an airline tax before Germany however subsequently had to abolish the tax due to passengers using airports in Germany and Belgium to avoid the tax. Shortly after the Dutch tax was abolished, Germany and Austria introduced a similar tax.

**Participants agreed that such a coalition could be useful.** Given that the **fiscal unanimity rule** often prevents meaningful action on ETR in the EU, participants agreed that **enhanced cooperation** and **other 'willing' or voluntary approaches** should be explored over mandatory approaches. For example, approaches such as the Irish plastic bags charge are being encouraged across the EU and illustrate that a formal approach is not always necessary. Cooperation and coordination between countries can also be helpful in **building support** for ETR by overcoming countries reluctance to be the 'first mover' and illustrating to the public that other countries are interested in pursuing a similar path. Some participants suggested using an alternate term, e.g. '**coalition of like-minded countries**'.

Some participants noted that this cooperation should best be **initiated by national governments** to ensure progress, and **engage policy-makers from different areas** (including in particular **finance/tax departments**) as well as wider stakeholders. Participants also stressed the importance of **informal exchanges of national experiences and plans**. For example the lessons from overcoming opposition to the introduction of a plastic bag charge in Ireland could be useful to other countries considering similar measures such as Portugal.

Participants discussed how such a coalition could be organised. Some participants suggested that a **sectoral approach** (i.e. on carbon, on pesticides etc.) could be appropriate; others suggested such a **regional approach** could be useful around common problems. **Marine litter** in North-East Atlantic was provided as an example where countries around the North Sea could come together to develop solutions to this common problem through a mix of instruments including environmental taxes, charges, awareness raising campaigns, education etc. Some cooperation is already underway, for example the largest harbours in Europe - Amsterdam, Rotterdam, Antwerp and Hamburg are co-operating to harmonise port reception facilities. Another area suggested for a potential collation was around **EU state aid rules** which sometimes prevent / hinder the introduction of environmental taxes given the need to provide allowances/exemptions for certain sectors. A coalition of the willing was

also considered an innovative way to address **competitiveness-related concerns**, for example bringing together a group of countries which have common competitiveness interests.

It was stressed that **different forms of cooperation are needed in relation to different materials and pollutants depending on how easy it is to avoid a given tax or charge**. This depends *inter alia* on the **movability across borders** of consumers (e.g. in the case of an airline tax or a fuel tax) or of the resource/material to be taxed (e.g. waste). For example, substantial quantities of waste are exported from the UK (given high landfill taxes) to other countries in Europe including the Netherlands. It is more difficult to avoid taxes/charges on resources/materials/products which are consumed locally (e.g. plastic bags charge). Thus, how easy it is for the taxed item to move across borders determines the need for cooperation/coordination.

Participants also discussed the issue of **competitiveness**, with some maintaining that arguments are sometimes not supported by a robust evidence base. The double dividend argument (i.e. win-wins for environment and jobs) was also questioned. Some participants argued that while opposition on the basis of competitiveness is misplaced, it is still one of the major obstacles to meaningful environmental tax reform in several areas. The need for an **improved evidence base** on the economic and competitiveness impacts of ETR was stressed. Some evidence is emerging on the impacts of strict environmental policies on the productivity of firms - if the results show that there is no impact on firms' productivity after the introduction of environmental policies, this can be used to support arguments that environmental policies (including taxes) can benefit the environment without having a harmful impact on the economy.

### 3. On the road to reform: ETR commitments and responses at national and EU level

Aldo Ravazzi (Ministry of Environment, Land and Sea, Italy) provided an overview of recent **ETR initiatives in Italy** including the recent approval of the **Delega Fiscale** which includes provisions on energy and environmental fiscality. The Government has 12 months to implement the delegation which includes *inter alia* revisions to excise taxes on energy products and electricity (to include carbon content, SO<sub>x</sub> and NO<sub>x</sub>). Ambiguities and constraints include co-ordination with existing local and regional taxation, the principle of fiscal neutrality, and coordination with the revised Energy Tax Directive. High energy prices in Italy are said to have driven the increased energy intensity of the economy (which is one of the highest among OECD countries). It was also noted that greening the economy will be one of the priorities of the forthcoming Italian Presidency of the Council.

Claudia Dias Soares (Universidade Católica Portuguesa, Portugal) provided an overview of recent **ETR initiatives in Portugal** where a joint **Commission on environmental taxation** was set up by the Ministry of Finance and the Ministry of Environment in January 2014. She noted that fiscal neutrality is a core principle of potential ETR in Portugal. An encouraging recent development is the new environmental framework which mentions environmental taxation and includes it in a list of environmental policy instruments. The first report of the Commission was published in March setting out the status quo and provides a common base for discussion with stakeholders. Potential areas of focus in the future include: mobility, energy, waste and biodiversity. She recognised the **benefits from cooperation among countries, including neighbours** where limited action in Spain acts as a major barrier to ETR in Portugal.

Guillaume Sainteny (Associate Professor, Ecole Polytechnique, Massy-Palaiseau, France) provided an overview of recent **ETR related initiatives in France**. He noted that three ETR Commissions have been established over the years, with the most recent launched in 2012. He argued that the recent adoption of the carbon-energy contribution, following two previous failed attempts, was possible as it entails **revisions to existing energy taxes which is a smoother and more acceptable approach**

**than the introduction of new taxes.** Some negative developments in France were also noted including changes to land taxes which could *inter alia* increase urban sprawl and pressure on natural space, the appointment of ministers who are not in favour of environmental taxation (e.g. Minister for Budget, Minister of Environment) and the bonus-malus scheme which he considered to not be a good example from an environmental perspective. He also reiterated the importance of **EHS reform** for consolidation of public budgets and the need for clear definitions and transparent reporting.

Malgorzata Kicia (DG Environment) gave a presentation on the **role and scope for EU policy to support ETR** in which she highlighted some of the key issues which were not already elaborated in previous presentations. In particular she noted the **air quality framework**, which encourages *inter alia* the use economic incentives to reach proposed targets (i.e. NOx charges in Sweden) as well as provisions under the **VAT Directive** which enables reduced VAT rates for heating fuels, taking into account certain social concerns. She also noted that the VAT directive is currently under revision in order to *inter alia* simplify provisions and ensure environmental objectives are not undermined.

Jonathan Parker (DG Environment) gave a presentation on **encouraging Member States' progress on ETR through the European Semester**. He reiterated the underlying principle of environmental integration which is established in the EU Treaties and noted the establishment of an expert group on greening the European Semester in November 2013 to encourage further progress on this issue.

In discussions, some participants questions **how CSRs are followed-up** with the example given of Belgium and France receiving recommendations on EFR for a number of years. The Commission is considering whether these recommendations will be reiterated or promoted at different levels (e.g. regional). It was also noted that the Commission highlights positive efforts in its staff working document to demonstrate that things are happening - whether this is because of the CSRs or not is still a matter of debate. **Other activities around the European Semester** were also noted including the efforts of Green Budget Europe and others to develop 'alternative CSRs' and strengthen dialogue on the European Semester with key stakeholders including the European Parliament to ensure implementation of CSRs. The importance of **EHS reform** and the role of the Commission in pushing this agenda forward was reiterated by certain participants, although others argued that the Commission's role is limited to cases where EHS have the characteristics of state aid.

#### **4. The way forward: Windows of opportunity & 'coalitions of the willing'**

##### **4.1 Roundtable 1: ETR for resource pricing and the circular economy**

The roundtable was opened by a short presentation by Patrick ten Brink (IEEP) on the potential of ETR to support resources pricing and the circular economy, noting *inter alia* that there is a window of opportunity for a group of countries to collaborate on this theme given current policy attention on the circular economy. In discussions, some participants noted that the circular economy concept is not new and that different types of instruments are likely to be relevant at different stages in the circular economy. For example taxes and bans are used quite frequently in relation to waste management (e.g. in Flanders there are numerous tax rates for incineration and landfill), while in other stages in the circular economy softer instruments may be more appropriate such as funding for R&D, information and awareness raising etc.

There was some discussion on the issue of **waste**, in particular landfill and incineration taxes, with some participants noting the substantial **trade in waste** (e.g. between UK and the Netherlands which incinerates substantial amounts of waste from the UK due to high landfill taxes there). Thus, it was argued that increased **co-ordination between front runners** on the issue of waste could be usefully explored (e.g. cooperation between UK, NL, BE, NO, SE on how to reduce landfill). It was also noted

that **combinations of instruments** (e.g. introducing bans in combination with taxes such as in the case of the Netherlands) should be considered. There is however likely to be opposition to introduction of certain taxes, e.g. an incineration tax will affect imports and thus incineration facilities are likely to oppose such a measure. These concerns will need to be addressed and the wider picture kept in mind – e.g. subsidies to incineration plants as the production of energy is regarded as renewable energy and contributes to targets. Also in relation to waste, some participants called for a more consistent classification of waste to ensure greater circularity, e.g. waste classified as ready to recycle does not always undergo a recycling process. The Commission is currently undertaking a fitness check of five waste directives and reviewing waste targets with proposals expected in the coming months.

It was noted that taxes should be introduced where they make sense and there was some discussion on **what taxes should be based on**. Some participants argued that taxes should not just focus on circularity per se, but on the harm (and externalities) caused by non-circularity. The landfill tax in the UK was noted as an example of one of the few taxes to be based on a careful assessment of the (marginal) externality involved although the rate has subsequently increased substantially to comply with EU requirements on landfilling of biodegradable waste. Other participants suggesting taxing a product according to the marginal damage caused.

The need to examine issues from a **global perspective** was highlighted by some participants given the perceived risk of a more protectionist focus of circular economy discussions as well as concerns of rising prices of raw materials which are seen as an important driver of private sector interest in the circular economy. Given that the main environmental impact occurs between the take and make phases, a key question is how to incorporate the cost of extraction of primary materials in prices. Taxes may be a blunt approach, but will help to increase recycling. Another option is to tax imports of primary materials and the issue of border tax adjustments could be further explored.

While some participants supported a more focused approach, e.g. on waste, others argued that a broader, more holistic and integrated approach is needed if for example impacts on eco-design etc. are to be realised. Some participants agreed that a circular economy theme could be a useful umbrella to move forward, particularly given the current political attention on this topic. It was noted that some countries are frontrunners in this area and could be well-placed to collaborate with others on this topic, the example of the UK was noted in this context including efforts in relation to WRAP, the sustainable clothing action plan, and the sustainable electricity action plan.

#### **4.2 Roundtable 2: ETR for climate change and energy**

The roundtable was opened by a short intervention by Stefan Speck (EEA) on the potential of ETR to support climate change and energy objectives. This was followed by a short presentation by Sandra Daguët (Federal Finance Administration of Switzerland) on recent discussions in Switzerland to revise the energy incentive scheme for 2021 onwards and public resistance to further ETR.

Participants agreed that **climate and energy could be a useful theme** around which a coalition of the willing could be established. The potential for ETR in this area is also significant given that energy taxes account for 75 per cent of environmental taxes and the important role of transport taxes.

In the discussions, some participants noted that the perceived **long-term risk of revenue erosion** from environmental taxes is not a major issue as demand for energy is quite inelastic. Thus, one option to address erosion of revenues is to increase the tax rate. External factors, in particular oil prices have also had an impact on declining revenues from energy taxes and thus some participants noted their pessimism of the perceived risks of revenue losses from environmental taxes.

It was also noted that **earmarking of revenues** from environmental taxes can help to overcome some of the barriers to it, e.g. objections in Switzerland of not having enough to finance road infrastructure.

On the issue of **regressivity**, participants discussed different approaches to addressing this issue with some arguing that revenues from the taxes can be used to address regressivity of the overall package, income taxes could be made more progressive or social security contributions could be reduced. It was however noted that in some cases reducing social security contributions or reducing income taxes may not be the best way to address regressivity concerns as it only affects people who are working / pay taxes, thus other instruments are needed to target low-income households.

The need for a more **harmonised carbon price / CO<sub>2</sub> abatement costs** across different energy sources, sectors and users was highlighted given the variation in tax rates applied to different energy sources which has led to significant differences in the price paid per tonne of CO<sub>2</sub> across the economy. There is scope for improvement given that energy sources are not taxed consistently. This is related to the issue of **externalities** linked to energy use, where it was noted that developing countries are interested in using taxes to reduce negative externalities.

#### **4.3 Roundtable 3: ETR for fiscal consolidation, growth and competitiveness**

The roundtable was opened by a short presentation by Kai Schlegelmilch (Green Budget Europe) on the potential of ETR to support objectives on fiscal consolidation and growth. In the discussion, participants noted that **fiscal consolidation objectives** have driven reforms in a number of countries including **Ireland and Turkey** and could be a useful theme for a coalition.

The issue of **regressivity** was raised again. It was noted that Turkey has one of the highest tax rates on petrol among OECD countries - this has had strong progressive impacts as poor people do not own a car and thus are not affected by the higher fuel prices. It was noted that carbon taxes have regressive impacts when applied on heating fuels but not when applied on transport fuels and there is a need for carefully designed measures to address this. For example fuel poverty concerns related to the carbon tax in Ireland are being addressed *inter alia* by tax breaks on public transport to reduce the costs of public transport.

There was also some discussion on **indexation**, with some participants arguing that tax rates should be increased progressively beyond increases in inflation, while others noted that in the UK budgeting on a systematically indexed basis has helped avoid the erosion of tax revenues and provides a way to ensure certainty. Some participants suggested that indexation should be considered as a minimum (as is done in UK and Norway) and progressivity aimed for in the medium-long term.

Participants agreed that **fiscal consolidation could be a useful theme** around which a group of countries could consider collaborating and could build on existing efforts in several countries in this regard. Participants highlighted a number of areas where there is **scope for further progress** including the **exemption for kerosene used in aviation and shipping** where there is a need for work at the international (or OECD) level to move forward and **air pollution taxes** where participants noted rates are very low compared to externalities and the focus of efforts to date have been on CO<sub>2</sub> rather than wider air pollutants. Another important issue for some countries is a **tourist tax**, e.g. Portugal and Italy with revenues potentially earmarked to promote tourism.

The need to keep in mind **potential trade-offs** between objectives was also noted, e.g. health benefits of reduced air pollution could lead to hospitals closing down respiratory wards in the long-

term, with implications for jobs etc. It was suggested that the term ‘**smart taxes**’ as coined by the EEA could be used to promote tax reforms that encourage something that is good for the society overall.

#### **4.4 Roundtable 4: ETR for jobs, equity and social concerns**

The roundtable was opened by a short presentation by Sirini Withana (IEEP) on the potential of ETR to support social objectives including jobs and equity considerations. Participants noted that **social considerations are often presented as barriers to ETR and there is a need to discuss how such concerns can be addressed.**

Participants discussed various options for addressing social concerns including for example **tax free allowances provided for basic use** with an increasing rate as consumption rises. It was noted that as means-tested subsidies are not linked to consumption they encourage further consumption, thus it would be better to group people according to income level and family size and provide them with a **direct subsidy**. Some participants argued for a **reduction of income taxes first**, then the introduction of environmental taxes (in most cases, this is done the other way around). Others noted that **ETR should be promoted as part of a package of measures**, including lower corporate taxes, that an environmental tax should **start with low rates and be progressively scaled up over time**, and new taxes should be distinguished from reforms.

Some **tax reforms can combine both social and environmental objectives**, e.g. car taxation and airline travel taxation benefit a certain segment of society and could have significant environmental benefits. It was also noted that environmental taxes provide an incentive to change behaviour which is not the case with labour taxes.

It was noted that careful design of ETR may lead to jobs; however there is a need for **evidence to support arguments on the link between ETR and employment**. One needs to keep that ETR can lead to both **winners and losers** – e.g. creating jobs in one sector and leading to a loss of jobs in another. It was noted that studies from the 1990s suggested that **reductions of social security contributions on low income households have the largest impact on employment**. In Germany ETR in the 1990s was introduced at the same time as high oil prices and led to a lot of protests against the ETR, even though the environmental tax was a small part of the overall increase in prices. The ETR was maintained because of the positive impact on jobs (from reduced social security contributions).

#### **5. Conclusions and next steps**

The workshop concluded with a discussion on how to **increase coordination and cooperation** among countries on ETR. Participants recognised that the agenda could be taken forward through existing **international fora and networks** including the OECD expert group on environmental taxation and beyond (e.g. there was a suggestion for the EEA to set up a group on the topic) or through bilateral cooperation between a coalition of **interested / like-minded countries**. It was noted that such coalitions should be kept open to engage other countries which may not yet be ready to actively participate in the coalition, but may consider joining in the future.

Participants also highlighted the importance of increasing cooperation among policy-makers, in particular **engaging representatives from ministries of finance and taxation** who may not necessarily be averse to the idea of ETR. For example it was noted that the UK Treasury is keen to portray the aggregates levy and the landfill tax as successes.

The Forum for market based instruments (**MBI Forum**) coordinated by DG ENV and DG TAXUD aims to bring together officials from Ministries of Finance and the Environment, two meetings have been held to date however it was noted that interest in the Forum has declined. Some participants suggested it could be worth reviving the initiative as they considered such a platform useful.

Participants recommended that a 'coalition of like-minded countries' be **focused on specific issues**, for example **vehicle taxes** (where countries with higher taxes could coordinate to increase alignment with the Eurovignette Directive), **mobility** (which could include issues of fuel taxes and is something being examined in a study by the Nordic Council), **landfill/disposal of waste** (where for example the Netherlands, Belgium and the UK could work together on monitoring waste exports / imports); and marine litter (where regional cooperation could take place within the framework of the OSPAR Convention or the Marine Strategy Framework Directive) Such a focused approach was considered practical and likely to achieve progress and could form part of a wider thematic approach to encouraging progress on ETR in Europe.





## ENVIRONMENTAL TAX REFORM IN EUROPE: OPPORTUNITIES FOR THE FUTURE

Experts' workshop  
10 April 2014

Permanent Representation of the Netherlands in  
Brussels  
Avenue de Cortenberg 4 – 10,  
1040 Brussels

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9:30-10:00	<b>Arrival and coffee</b>
10:00-10:30	<b>Welcome and introduction</b>  Welcome by Jeroen Steeghs, Permanent Representation of the Netherlands to the EU and Hermien Busschbach, Ministry of Infrastructure and the Environment of the Netherlands  Introduction to study and objectives of workshop by Patrick ten Brink, IEEP  Tour de table
10:30-11:30	<b>Environmental tax reform – Current experiences and opportunities for the future</b>  <b>Overview of current experiences and perspectives on ETR in Europe -</b> Presentation by Sirini Withana, IEEP [20 mins]  <b>Q&amp;A</b>  <b>Potential for environmental fiscal reform in 12 EU Member States –</b> Presentation by Mikael Skou Andersen, University of Aarhus [25 mins]  <b>Q&amp;A and discussion</b>
11:30-11:45	<b>Tea/coffee break</b>
11:45-13:00	<b>On the road to reform: ETR commitments and responses at national and EU level</b>  <b>National initiatives on ETR:</b> <ul style="list-style-type: none"><li>- Presentation by Aldo Ravazzi, Ministry of Environment, Land and Sea, Italy [10 mins]</li><li>- Presentation by Claudia Dias Soares, Universidade Católica Portuguesa, Portugal [10 mins]</li><li>- Presentation by Guillaume Sainteny, Associate Professor, Ecole Polytechnique, Massy-Palaiseau, France [10 mins]</li></ul> <b>Q&amp;A</b>

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**The role and scope for EU policy to support ETR** - Presentation by Malgorzata Kicia, DG Environment [10 mins]

**Encouraging Member State progress through the European Semester** – Presentation by Jonathan Parker, DG Environment [10 mins]

**Discussion**

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13:00-14:00 **Lunch**

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14:00-15:00 **The way forward (I): Windows of opportunity & ‘coalitions of the willing’**

- **ETR for resource pricing and the circular economy** - Short introduction by Patrick ten Brink (IEEP) followed by roundtable discussion [30 mins]
- **ETR for climate change and energy** - Short introduction by Stefan Speck (European Environment Agency) and presentation by Sandra Daguet (Federal Finance Administration of Switzerland) followed by roundtable discussion [30 mins]

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15:00-15:15 **Tea/coffee break**

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15:15-16:15 **The way forward (II): Windows of opportunity & ‘coalitions of the willing’**

- **ETR for fiscal consolidation, growth and competitiveness** – Short introduction by Kai Schlegelmilch (Green Budget Europe) followed by roundtable discussion [30 mins]
- **ETR for jobs, equity and social concerns** - Short introduction by Sirini Withana (IEEP) followed by roundtable discussion [30 mins]

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16:15-17:00 **Conclusions and next steps**

**Sustaining momentum and opportunities for synergies with upcoming events on ETR** – Chaired by Frans Vollenbroek, Ministry of Infrastructure and the Environment of the Netherlands [15 mins]

**Reflections on the day** - by Herman Vollebergh, Netherlands Environmental Assessment Agency – PBL [10 mins]

Concluding remarks by Patrick ten Brink, IEEP

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