Europe's tax deals for diesel

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Executive summary & policy recommendations

Low oil prices – ideal time to act

At the time of writing, the oil price was some 70% below its 2008 peak and some 60% below its post-crisis 2012 peak. Although the price was still significantly above the 1998 lows of $10-15/barrel, any notion of 'peak oil' has well and truly vanished from the energy agenda.

In addition, Europe is gripped by the diesel NOx scandal – Volkswagen admitted to having used a 'defeat device' to artificially lower emissions in the test but not on the road. It was long known that NOx emissions from new diesel cars hardly decreased in the last decade despite progressively more stringent standards. Numerous cities around Europe struggle with the air quality consequences and the continent is rethinking its strategy of stimulating diesel through lower diesel taxes.

Since Europe imports almost 90% of its oil, cheap oil is a short-term economic boon for EU countries but a substantial long-term threat. A low oil price threatens progress made on energy efficiency and the reduction of carbon emissions. The increase in oil prices in the last decade helped Europe achieve a 10% decrease in transport fuel consumption and CO_2 emissions since 2007, overturning trends of rising transport oil use that started with the advent of the combustion engine a century ago.

Raising transport fuel taxes now increases the economic benefits, and locks in the progress in energy efficiency that the transport sector has achieved. Higher transport fuel taxes can help Europe achieve economic, social and environmental objectives in five ways:

1. It will stimulate all possible avenues for lower oil use and reduce transport CO_2 emissions. Europe's comparatively high fuel taxes are the main reason Europeans use around 60% less fuel per head than Americans. Fuel taxation will be key in honouring the recent commitment to cut non-ETS emissions by 30% in 2030 compared with 2005 levels;
2. It will help tackle unemployment especially if proceeds are used to cut taxes on labour;
3. It will help boost Europe's domestic spending, creating wealth and jobs;
4. It will shift oil rents from governments from producer countries (Russia, Middle East) to governments from consumer countries (the EU) and offers geopolitical dividends;
5. It will help industrial innovation as consumers have greater incentives to buy more fuel-efficient vehicles.

Europe's fuel tax policy faces two challenges

- The first is to align tax rates for petrol and diesel used by cars. The current indirect subsidy for diesel compared with petrol tax leads to air quality problems as highlighted in the recent NOx cheating affair. Numerous publications also conclude that the subsidy is not beneficial for the climate because it enables low-cost mobility, bigger and heavier vehicles, and has caused Europe to be a 'diesel island' in a world dominated by petrol drivetrains in cars.
- The second is to avoid a tax race to the bottom on diesel used by trucks. For small, central EU member states it is extremely attractive to tax diesel for trucks at the minimum rate because it seduces hauliers to fill up their huge tanks on their territory, which boosts revenue. Luxembourg is an obvious example, but is by no means the only one. In turn, this makes it much more difficult for other countries to raise truck diesel

taxes policy on their own. The result is a race to the bottom, i.e. the EU minimum level of €0.33/l.

How Europe has been taxing fuels

This study is an update of an earlier study published in 2011 that analysed fuel price and tax trends in Europe since 1980. This report adds a specific analysis of diesel tax paid by trucks, as well as how fuel tax revenues have evolved as a share of total tax revenues and GDP. Its main conclusions are:

Fuel tax and revenue trends

- In 2014, the average road fuel tax paid by motorists and hauliers, excluding VAT, was €0.52 which, corrected for inflation, is 20% below the 2000 level of €0.64/l. This surprise finding can be explained by: 1) inflation eroding nominal tax rates; 2) a shift from petrol to lower-tax diesel fuel; and 3) diesel tax rebates for trucks that have been introduced by eight countries over the past 15 years.

- Total tax revenues, in real terms, excluding VAT, have been decreasing over time too. In 2000, they were around €200 billion, in 2014 they were down to €167 billion. They have also plummeted as a percentage of GDP, from 1.7% to 1.2% in 2014. They have also fallen as a percentage of total tax revenues, from above 6% in 2000 to below 5% in 2014.

Fuel for cars: trends in alignment of tax rates for petrol and diesel

The gap between petrol and diesel taxes in Europe is quite unique in the world and is the main reason why diesel engines have taken off in Europe and not worldwide. Ravaged post-war Europe needed tax revenues, petrol was used by well-off people able to afford a car, hence governments started to tax it. Diesel was used by trucks and was lightly taxed or not at all.

- The weighted-average fuel price paid by motorists in 2014 was €1.39 per litre and the price at the time of writing (early September 2015) was €1.24. This is around 20% below the peak prices both in 2012 and the early 1980s, which were over €1.50 in real terms.

- The gap in tax levels for diesel and petrol paid by motorists is currently €0.14/l which is 30% lower than petrol per unit of energy or tonne of CO2. Over the past 15 years, the gap has been coming down but very slowly, at a rate of around half a cent per litre per year. The indirect fuel subsidy per diesel car, assuming it consumes 15,000 litres of fuel over its lifetime, and including 21% average VAT, currently amounts to €2,600;

- Differences across the EU vary from zero (UK) to €0.28/l (the Netherlands); per unit of energy that is 10 to 44% lower tax on diesel than on petrol;

- Italy, Finland, Sweden and Austria are the main countries that have taken voluntary action to close the gap by several cent over the years. In Greece the gap has actually increased significantly because petrol tax was raised in the budgetary crisis and diesel tax was not.

Diesel tax for trucks: a race to the (€0.33/l) bottom

- Trucks pay on average €0.44/l diesel tax in the EU now, €0.04 below the rate cars pay and 15% below the inflation-corrected €0.52/l they paid in 2000. Truck diesel tax rebates totalled around €4.5bn in 2014, up from €0 in 1999.

- The number of countries giving fuel tax rebates to hauliers has gone up from only Italy in 2000 to eight now (Italy, France, Spain, Romania, Belgium, Hungary, Ireland, Slovenia).
- The number of countries that tax truck diesel at or close to the minimum level is now 10. Over the past years, Belgium, Greece, Hungary and Latvia have joined. Finland has worked to increase their truck taxes, which are currently far from the minimum.

Policy recommendations

It is crucially important for Europe to address the twin diesel tax challenge: to align petrol and diesel tax rates for cars, and to end the 'race to the bottom' in diesel tax rates for trucks. The timing is right: oil prices are low, Europe has committed to 2030 climate and energy targets, and there is more and more recognition of the need to end subsidies on diesel fuel.

Voting on tax issues is still subject to unanimity in the Eurozone and the wider EU alike, which is an important explanation why three previous attempts to reform fuel taxation at EU level have failed. Still we believe a new attempt is needed that draws lessons from previous experieness listed below:

- A 2002 proposal (2002/410) would harmonise truck diesel taxes. This proved a bridge too far; setting maximum levels is unnecessary;
- A 2011 proposal (2011/169) would have mandated all member states to align petrol and diesel taxes. This was a bridge too far in another way because it does little or nothing to solve the truck diesel tax 'race to the bottom' issue. It also proposed – contentiously and unnecessarily – to split tax levels in a CO_2 and energy component;
- A 2007 proposal (2007/52) would raise the EU minimum tax for diesel from to €0.33/l to €0.38/l. This addresses both the alignment and tax competition issue and is the most pragmatic way forward. It failed primarily because of high and climbing oil prices at the time and the lack of recognition of the need to end diesel's tax favours.

Our short-term recommendation is to revisit the 2007 proposal, raise the general minimum level for diesel significantly, and correct it for future inflation. It should be complemented by a truck road-pricing scheme with clear CO_2 differentiation. Even if fuel tourism would continue to exist, member states could actually take their own decisions without necessarily having to look to their neighbours for action.

Our long-term recommendation is for the EU to really solve the diesel tax competition issue without needing harmonised tax rates – and actually leaving member states freer than today. The United States and Canada have the International Fuel Tax Agreement (IFTA), which enables states and provinces to tax truck diesel on the basis of where the trucks drive, not where they fill up. This eliminates all incentives for states to become a 'fuel tax havens' because lowering tax rates decreases, not increases, revenues. The EU can do the same. What needs to be implemented is the automatic registration of diesel use per truck per country and a payment system. In technical and administrative terms this is not difficult. But it is a change, and change requires political commitment. This report shows it is worth it.

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1. Introduction

1.1. A decade of EU inaction on fuel taxes

Since the EU was enlarged in 2004, the Energy Taxation Directive (ETD) has not been updated. The legislation sets a minimum tax rate for energy products, including oil, coal, natural gas and electricity. Many things have changed since it was passed back in 2003. The EU now has 28 member states, while the last revision was approved in union with only 15 member states – mostly in western Europe. Back in 2000, only 32% of new cars sold were diesel[1]. Currently, most cars sold in the EU run on a diesel engine (53%[2]), which, according to the European Environmental Agency, "is contributing to air quality problems"[3]. Issues such as fuel tourism are increasing, with more countries every year implementing fuel taxes rebate systems.

In 2011, T&E published a report[4] on the evolution of fuel taxation in Europe. Four years and one failed attempt to update the ETD later, it's time to take stock of the progress to date and update the study to take account of the latest developments. This report also highlights the importance of fuel taxation in tackling climate change and meeting the EU's 2030 goals. Transport is the only sector that has increased its emissions since 1990 and transport's share of overall EU total greenhouse gases (GHG) is growing. With new climate targets in place for 2030 – in particular for the non-ETS – measures need to be taken to ensure that transport contributes its fair share. This time, the study includes new dimensions that were not included in the previous one. A specific chapter on trucks summarises the numerous tax benefits they enjoy in the EU's member states.

This report focuses on petrol and diesel use in road transport. The EU, through its recently launched Energy Union, is trying to build an energy-efficient, low-carbon and energy secure Union. But too much of the Energy Union's focus has been on gas. Indeed, currently 94% of transport relies on oil products, of which 90% is imported[5]. More than a quarter of all final energy consumed in the EU is used by road transport[6]. Ensuring the right taxation of fossil fuels in road transport, the main user of oil products, is key to achieving the Energy Union's objectives.

1.2. Objectives of the study

The objective of this study is threefold:

- To analyse the importance of adequate fossil fuel taxation for the decarbonisation of the road transport sector in the EU;
- To assess the environmental, social and economic impact of the EU's failure to update the Energy Tax Directive;
- To explore alternative solutions to deal with road fuel taxation.

1.3. Structure of the paper

The next chapter explains why adequate levels of fossil fuel taxes are important from a climate, economic, innovation and energy security point of view.

Then we review recent efforts (and failures) to update the ETD. This includes an analysis of how currently low oil prices present a political opportunity to reverse the situation.

[1] ACEA, 2015. http://www.acea.be/statistics/tag/category/diesel-penetration
[2] ACEA, 2015. The Automobile Industry Pocket Guide.
[3] EEA, 2015. The European Environment. State and Outlook 2015. Synthesis Report.
[4] Transport & Environment, 2011. Fuelling oil Demand. What happened to fuel taxation in Europe?
[5] EC, 2015. A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy.
[6] EC, 2014. EU transport in figures. Statistical Pocketbook 2014.

Subsequently, we quantified the trends of fossil fuel taxes in road transport in the EU in recent decades, using a comprehensive database containing several decades of data on prices, taxes, consumption, inflation and currency differences. It includes a description of the gaps that policy inaction helped to create.

We dedicate a chapter to bring together and analyse all fiscal advantages trucks benefit from in the EU. This is followed by a chapter with some specific case studies on practices in EU member states when it comes to fuel taxation.

The last chapter proposes different alternatives on how to solve the issues discussed in the previous chapters.

2. Why have high fuel taxes?

Fuel taxes are almost as old as the internal combustion engine. For instance, the UK established a fuel tax in its Finance Act of 1908, with the main objective of improving the road network[7]. However, throughout the last 100 years the purpose of (increasing) fuel taxes has been country and time-specific. For instance, the US established a fuel tax in 1933 as a way to increase government revenue during the Great Depression. Sometimes it has been used to fund wars, but often it simply funds governments' annual budgets. In the early 2000s in Germany, the Schröder government used the increased revenues from energy taxes to reduce labour taxes. So, historically, many different reasons have been used to justify fuel taxation, not just road building and maintenance. Others include revenue raising, wealth redistribution or payment of external costs (including air pollution and road accidents)[8].

In this section we explore why we need higher fuel taxes and whether this is effective, economically smart and fair.

2.1. Because it's smart economic policy

Both the current and previous European Commissions (EC) have been calling for a restructuring of the tax burden. The 2015 Annual Growth Survey[9], the first one of the new EC, states that:

> *Employment and growth can be stimulated by shifting the tax burden away from labour towards other types of taxes which are less detrimental to growth, such as recurrent property, environment and consumption taxes.*[10]

Research by the EC also supports this argument. One taxation paper concludes that "*relying on green taxation to raise revenues, rather than labour taxation, would be expected to be more efficient for the economy as a whole*"[11].

Despite this evidence, labour tax is still the largest source of tax revenue in the EU and has been increasing since 2009, while environmental taxation has remained stable[12]. This should change to promote growth and jobs.

[7] Library of Congress, 2014. National Funding of Road Infrastructure: England and Wales.
[8] RAC Foundation, 2012. Fuel for Thought. The what, why and how of motoring taxation.
[9] The Annual Growth survey outlines the main features of the EC's new jobs and growth agenda. It sets out what more can be done at EU level to help Member States return to higher growth levels. It kicks off the European Semester of economic and budgetary policy coordination.
[10] European Commission, 2014. Annual Growth Survey 2015.
[11] European Commission, 2013. The marginal cost of public funds in the EU: the case of labour versus green taxes.
[12] Eurostat, 2014. Taxation trends in the European Union. Data for the EU Member States, Iceland and Norway.

The fossil fuel supply-chain is one of the least labour-intensive value chains, and has most of its value-creation outside Europe[13]. So shifting spending towards other, more labour intensive, areas of the economy leads to net job creation. Fuel taxation reduces fuel consumption, so people can spend more in other more valuable sectors for the economy as a whole. And given that Europe imports virtually all of its oil, higher petrol taxes would also have a positive impact on the trade balance.

To have an idea of the impact on the revenues of member states of an increase of 1 cent on fuel taxes, the following table summarises the income for member states before emissions-reduction effects are considered (first-order effect). It would yield almost €3.2 billion for EU member states.

Member state	Increased revenue in 2014 with 1 cent increase (million €)
Austria	85.12
Belgium	90.07
Denmark	41.10
Finland	44.77
France	448.00
Germany	581.03
Greece	57.04
Ireland	40.84
Italy	349.07
Luxembourg	24.75
Netherlands	120.29
Portugal	56.89
Spain	286.81
Sweden	75.85
United Kingdom	427.38
Cyprus	6.92
Czech Republic	60.09
Estonia	8.89
Hungary	37.61
Latvia	9.32
Lithuania	14.35
Malta	2.14
Poland	147.34
Slovakia	22.90
Slovenia	21.27
Bulgaria	21.67
Romania	54.44
Croatia	20.22
EU-28	**3,157.13**

[13] Cambridge Econometrics et al., 2013. Fuelling Europe's Future.

2.2. For innovation

Taxation is a powerful tool to steer consumers towards a more resource-efficient use of energy. The European Commission recognises in its Energy Union Communication that "*putting the EU at the forefront of clean transport (…) is central to the aim of turning the Energy Union into a motor for growth, jobs and competitiveness"*[14]. Having high fuel taxes creates demand for vehicles with low consumption levels, which pushes manufacturers to keep innovating and creates demand for their more efficient products, which increases their global competitiveness. It is also a stimulus for electric cars, which is one of the objectives of the Energy Union. Electric vehicles, trains and waterway transportation are more efficient than internal combustion engines.

2.3. For energy independence

Transport is a critical sector when it comes to energy security. 94% of transport relies on oil products, of which 90% are imported[15]. This dependency has worsened in recent decades[16]. In 2014, 29% of all imported crude oil came from Russia, worth up to €78 billion[17]. All oil imports add up to an annual cost of €271 billion[18]. In 2012, 76% of energy content of all petroleum products was used by the transport sector[19]. That adds up to a cost of €564 million every day in imports for the transport sector only. Road transport uses more than 70% of all oil-derived fuels used in the transport sector[20]. That means that more than half of all petroleum products are used for road transport in the EU. Proper fuel taxation is key to ensuring that the EU advances towards energy independence.

2.4. For social purposes

Some argue that fuel taxes might have a greater impact on the poor. However there are two reasons why this need not be the case and why, in fact, the poor can actually benefit.

First, richer households make greater use of private motoring than poorer households[21]. For instance, in the UK the poorest 10% households spend a lower percentage of their budget (3%) compared to the average household (4.9%). Some of the richest households (8th and 9th decile) spend 5.9% of their budget on fuel. Looking at the graph below, it can be concluded that an increase in fuel taxes impacts more the richest households, and, in fact, fuel taxes are considered a progressive tax. It is explained both by car ownership and by the fact that richer households have more fuel-consuming cars.

[14] European Commission, 2015. Energy Union Package. A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy.
[15] European Commission, 2015. Energy Union Package. A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy.
[16] European Commission, 2014. EU Energy markets in 2014.
[17] European Commission, 2015. Monthly and cumulative crude oil imports into the EU.
[18] €-$ average exchanged rated used (1.3285): European Central Bank, 2014. ECB reference exchange rate, US dollar/Euro.
[19] http://www.eea.europa.eu/data-and-maps/indicators/final-energy-consumption-by-sector-8/assessment-2
[20] http://www.eea.europa.eu/data-and-maps/daviz/transport-energy-consumption-eea#tab-chart_2
[21] RAC Foundation, 2012. Fuel for Thought – The what, why and how of motoring taxation.

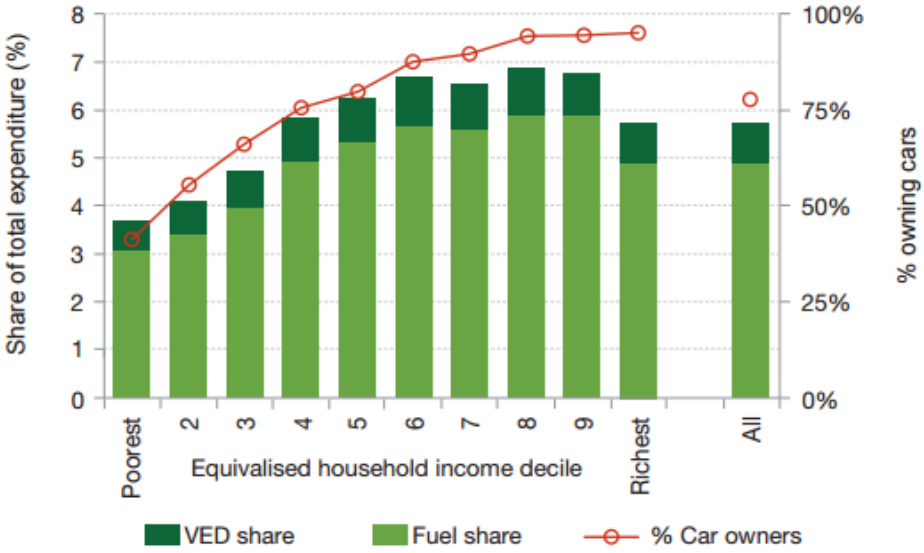


Figure 1: Average budget shares of vehicle fuel and VED in the UK, by income decile, 2009[22]

Second, social impacts strongly depend on the use of the revenues. The extra revenue from higher fuel taxes can be used for redistributing wealth through social programmes for the households with the lowest income. An alternative would be to switch from other types of taxation, such as reducing labour taxes for those on the lowest incomes or to reduce VAT on basic goods.

2.5. For the climate

Preventing dangerous climate change is a strategic priority for the European Union. The EU has legislated to achieve a 20% reduction of GHG emissions by 2020 below 1990 levels. In January 2014, the European Commission issued a communication proposing a next step for 2030: the EU should reduce its greenhouse gas emissions by 40% compared with 1990 levels[23]. EU leaders agreed with this in October 2014[24]. The EU's 2050 ambition is to reduce greenhouse gas emissions by 80-95% compared to 1990 levels.

Different sectors will contribute differently towards achieving decarbonisation of the EU's economy. The importance of the transport sector, where emissions grew by 20% between 1990 and 2010[25], is growing. The figure below illustrates the evolution of transport emissions without additional measures to curb them. The figure clearly suggests that without significant transport emission cuts the EU's 2030 and certainly 2050 goals are not achievable.

[22] RAC Foundation, 2012. Fuel for Thought – The what, why and how of motoring taxation.
[23] http://ec.europa.eu/clima/policies/2030/index_en.htm, consulted on April 2015.
[24] European Council, 2014. Conclusions on 2030 Climate and Energy Policy Framework
[25] EEA GHG viewer.

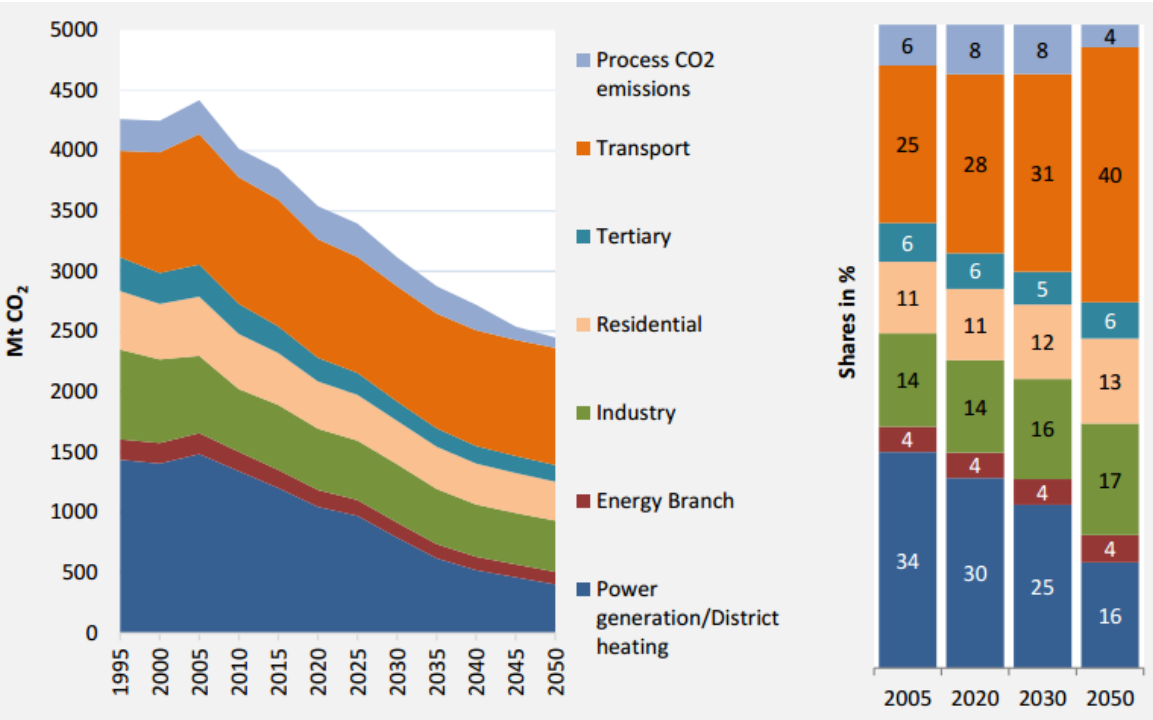


Figure 2[26]: Evolution of CO_2 Emissions by Sector

The White Paper on Transport[27] established that a reduction of at least 60% of GHGs by 2050 with respect to 1990 is required to achieve the overall target. It also established an interim target of 20% GHG reductions compared to 2008 by 2030. More recently, the EU agreed on reducing emissions from sectors not included in the EU Emissions Trading System (EU ETS), which are those under the scope of the Effort Sharing Decision (ESD), by 30% by 2030 below 2005 levels. Most of the transport sector is under the scope of the ESD. Only aviation is included in the EU ETS, although currently only those arising from intra-EU flights. International maritime emissions are currently not included in either the ETS or the ESD.

Road transport is the main contributor to CO_2 emissions (more than 90%[28]) in the non-ETS sector. Taxes play a vital and proven role in decreasing our transport-related emissions.

For instance, the United States uses almost three times the amount of petrol and diesel for road transport per person[29]. Pump prices in the US are half of those in the EU[30]. The most common indicator used by economists to study the relationship between the changes in prices of a certain good and how they affect demand is called price elasticity of demand. Low elasticity means that even if prices increase, the demand is not really affected. On the contrary, high elasticity implies that if the price goes up, the demand will go down.

How sensitive demand is to fuel price/tax increases has been the subject of extensive research. There are important differences between long and short-term price elasticities of demand. Short-term elasticity tends to be lower, because there are fewer alternatives to change habits than in the long term (choice of car, place to live, etc). However, long-term elasticity tends to be higher, because consumers can take informed decisions to change their behaviour and consumption pattern. Short-run elasticities are

[26] European Commission, 2013. Trends to 2050. Reference Scenario 2013.
[27] European Commission, 2011. Roadmap to a single European transport area - Towards a competitive and resource-efficient transport system.
[28] EEA GHG Viewer, 2012 emissions data.
[29] Calculation by T&E. For petrol and diesel consumption in the EU, European Commission, 2014, EU transport in figures was used. For the US, World Bank data on Road sector diesel and gasoline fuel consumption per capita was used.
[30] World Bank data, Pump price for gasoline (US$ per liter), consulted on 16/04/2015.

between -0.25 and -0.34[31], and they tend to be higher in Europe than in the US[32]. It can be interpreted as European consumers being more responsive to price changes as they have more alternatives. In the short run, fuel consumption tends to be inelastic. However, long-run elasticities, which are more interesting from a policy perspective, tend to be more elastic, between -0.58 and -0.84. That means that a 10% rise in fuel prices (for instance through taxation) reduces fuel consumption between 5.8% and 8.4% in the long run.

Most of these studies deal with passenger cars; less has been done on the freight side, which currently accounts for about a third of fuel use in road transport. A literature overview by CE Delft[33] for T&E arrives at a long-term elasticity of -0.2 to -0.6 for road freight.

Putting these results together, we can assume an overall price elasticity of -0.6. So if fuel prices rise by 10%, consumption and emissions go down by 6%.

A recent study[34] has also concluded that not all changes to final fuel prices have the same repercussions for demand. Consumers have a stronger response to fuel tax changes. Tax changes are associated with bigger changes in fuel consumption and vehicle choices than equivalent changes in overall final prices. It would imply that fuel taxes may be even more effective in reducing fuel consumption than previously thought.

On top of this, a new study[35] found that many known fossil fuel reserves must not be burned for global temperatures to rise no more than 2°C, and avoid the most disastrous effects of climate change. This includes one-third of known and extractable oil reserves, including most Canadian tar sands and all Arctic oil. These unconventional types of oil are more expensive to extract and are generally only profitable when oil prices are high. The aim of vehicle efficiency policies is to reduce oil consumption and demand but ultimately it would also reduce oil prices, which in turn could stimulate demand and emissions. A fuel tax is a smart way to solve this dichotomy. No matter how cheap or expensive oil is on the market, it should be expensive for the consumer in order to reduce road transport emissions. This would decrease demand for oil and depress oil prices. This would help keep unconventional types of oil in the ground.

3. The lost decade of fuel taxes

3.1. Recent attempts to reform EU fuel taxation

In October 2003, less than one year before the largest enlargement of the EU, to the east, the Energy Taxation Directive (ETD) became law. It established a minimum tax level for motor fuels: 33 cent for each litre of diesel (during the initial years was a transitional value of 30.2 cent) and 35.9 cent for each litre of petrol. It included much lower taxation for certain categories of vehicles, such as machinery used in construction or vehicles used for agricultural or piscicultural works. Most member states also had exemptions for specific purposes, such as local public passenger transport vehicles, ambulances or national armed forces. In general, all road transport vehicles were covered by the ETD.

However, the Directive had some key shortcomings. For example, no binding review clauses or automatic inflation adjustments were included. This means that minimum taxation levels established back in 2003 have remained stable throughout the period. The European Commission itself recognised, back in 2011,

[31] OECD, 2012. Greenhouse Gas Emissions and Price Elasticities of Transport Fuel Demand in Belgium.
[32] Espey, 2008. Gasoline demand revisited: an international meta-analysis of elasticities
[33] CE Delft, 2010. Price sensitivity of European road freight transport – towards a better understanding of existing results.
[34] Li, S. et al, 2013. Gasoline Taxes and Consumer Behavior.
[35] McGlade & Ekins, 2015. The Geographical distribution of fossil fuels unused when limiting global warming to 2°C.

that the ETD "*is outdated in that it does not address the EU's higher ambitions in energy and climate change policies*"[36].

In 2011 the EC proposed a revision of the ETD. It intended, among other things, to have the same taxes for both diesel and petrol, while being adjusted every three years based on inflation. It also proposed introducing a CO_2 element into energy taxation: the higher the emissions of a particular fuel were, the higher the CO_2 tax would have been, rewarding greener energy sources[37].

On April 2012, the European Parliament rejected the proposal of the Commission – although strictly speaking it wasn't a co-legislator. MEPs rejected the proposal because, among other reasons, it would mean a double burden for sectors already affected by the ETS. There were apparently concerns that a revised ETD could further depress ETS carbon prices[38] and, of course, it was also seen as an increase in prices at a time of economic crisis. Member states were not able to reach an agreement and so the 2003 Directive continues to regulate energy taxes. One key challenge is that each of the 28 member states has a veto when it comes to tax issues which effectively gives fuel tax havens a veto over EU fuel policy.

From July 2014 oil prices have fallen by more than half. In January 2015 EU nominal average prices for diesel and petrol, including taxes, were at the lowest level since 2010[39], even without factoring in inflation. Still, from a historic perspective oil prices remain high. Not so long ago, oil prices above $30 were considered so high that they could even lead to a global recession[40]. In September 2015 oil prices stood at around $45/barrel. It is unclear how long oil prices will remain at this level but there are a number of reasons for adjusting the way we tax fuel in the EU.

4. Fuel taxes – what happened in EU countries

In the previous sections we explained the use and importance of setting high fuel taxes. This section investigates whether that has happened. In order to answer that question we use an entirely up-to-date database with fuel prices, fuel taxes, inflation and fuel consumption figures since 1980. The database was developed by consultancy CE Delft in the early 1990s and since then has been regularly updated for, among others, the European Environment Agency's (EEA) Transport and Environment Reporting Mechanism (TERM) reports. The last update took place in February 2015 when average fuel prices and inflation figures for the year 2014 were added. Truck-specific information was also added, although more detailed information is included in a later section.

4.1. Methodology

Fuel price and tax data in the database come from the European Commission's Oil Bulletin (http://ec.europa.eu/energy/observatory/oil/bulletin_en.htm). Data is available for leaded premium petrol (not in use anymore), unleaded Euro 95 and automotive diesel, and separated into pre-tax prices, excise duty and VAT. Inflation and fuel consumption data come from Eurostat. Putting these data together allows calculation of inflation-corrected, sales-weighted average (petrol plus diesel) prices and taxes over time, for each EU member state. Annual averages are calculated by taking five quarterly data points, January, April, July and October of the year in question, and January of the next year. Sales-weighted averages for petrol and diesel have been calculated on an energy basis and the resulting prices are presented for a litre of fuel with energy content between that of petrol and diesel. In countries with little

[36] European Commission, 2011. Revision of the Energy Taxation Directive – Questions and Answers.
[37] Ibid.
[38] Corporate Europe Observatory, 2014. Life beyond emissions trading
[39] https://ec.europa.eu/energy/en/statistics/weekly-oil-bulletin
[40] The Guardian, 2000. Oil price back over $30 per barrel. 17/02/2000.

difference between petrol and diesel prices and where petrol has a high share of the fuel market, this can lead to the 'weighted average' fuel price being above the individual ones for petrol and diesel. (See, for example, the UK graphs at the end of this report.) Complete records since 1980 are only available for the nine member states that made up the EU in 1980: Germany, France, Italy, UK, Netherlands, Belgium, Ireland, Denmark and Luxembourg. Together these nine countries (still) account for two-thirds of EU28 fuel consumption. EU12 data (including Greece, Spain and Portugal) are available as of 1986, EU15 (including Sweden, Finland and Austria) as of 1995, EU25 as of 2004, and EU27 (including Romania, Bulgaria) data as of 2007, and EU28 (including Croatia) as of the second half of 2013. All country-specific graphs can be found in Annex I.

4.2. General trends

4.2.1. Inflation eroding fuel taxes

The European Central Bank defines inflation as a broad increase in the prices of goods and services, not just of individual items[41]. As a result, you can buy less for €1 as time passes by. Inflation marks the difference between nominal and real prices: the first one determines the price on a price tag at a certain moment in time, while the latter is an adjusted value that reflects how much something would cost now considering inflation. Real price is the right way to look at the cost of a good if we want to see if something is cheaper or more expensive now that in the past.

The graph below[42] shows the evolution of diesel and petrol prices in the EU since the beginning of the 1980s in real terms. The weighted-average fuel price in 2014 was €1.39 per litre. The graph does not show developments since; on 1 September 2015 the weighted average was €1.24 per litre. The latter is more than 25 cent below the 2012 peak price and 16 cent below the peak prices in the early 1980s. The graph shows that in the early 1980s the correlation in price between petrol and the mix was strong, as it was the most used fuel. However, over time, a strong correlation can be observed between diesel and the mix, as diesel is the main type of fuel currently being sold in the EU (more than twice the amount of diesel was sold in the EU in 2014 than petrol). The graph includes all taxes, including VAT. As explained in a later chapter, commercial vehicles benefit from some exemptions, so the real price they pay is significantly below what is shown in the graph, and real weighted average fuel prices are lower too.

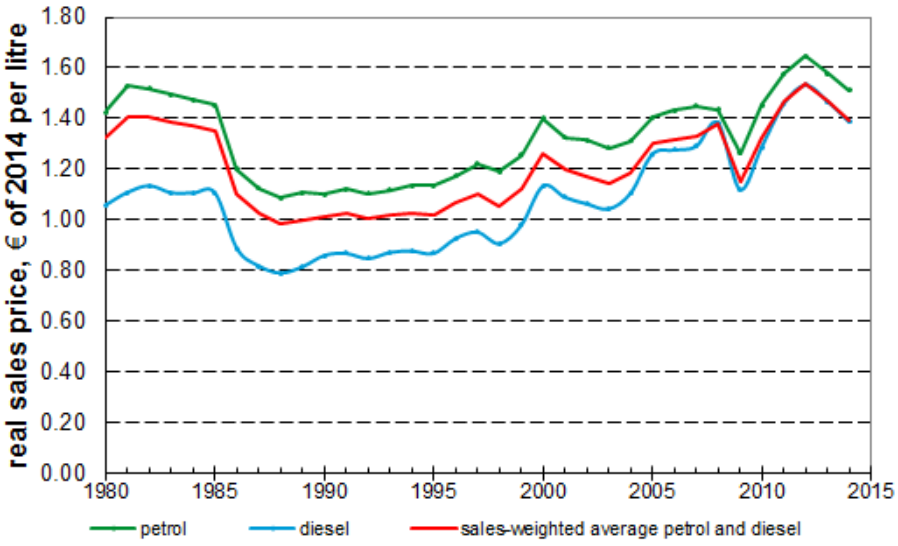


Figure 3: Real sales prices, in euro, in 2014 per litre of transport fuel.

[41] European Central Bank, 2015. ECB: What is inflation?. ECB website, consulted on May 2015.

[42] See methodology to see which member states were included in each period: EU9 as of 1980, EU12 data as of 1986, EU15 as of 1995, EU25 as of 2004, EU27 as of 2007, and EU28 as of the second half of 2013.

Oil is a very volatile raw material. Governments cannot control its price as it is traded in global markets. However, they can decide how to tax petroleum products such as petrol and diesel. For this reason, it is important to analyse the development of fuel taxes in Europe.

The graph below shows that, contrary to popular belief, when inflation is considered, fuel taxes in the EU have constantly decreased from a peak at the end of the century. In 2014, they were 20% lower than in 2000 (€0.64 vs. €0.50). The graph does not include the special conditions that trucks benefit from, such as tax-rebates, which are analysed in detail in a later chapter.

The ETD is partially responsible for this drop. The legislation did not reflect a periodic review of the minimum tax levels at an EU level. Consequently, member states do not have the obligation to keep fuel taxes at pace with inflation.

On top of that, the fact that diesel has lower taxes also explains the drop. In 2000, diesel represented 53% of all fuel sales. In 2014, it went up to 70%. Therefore, the average fuel tax is also lower overall.

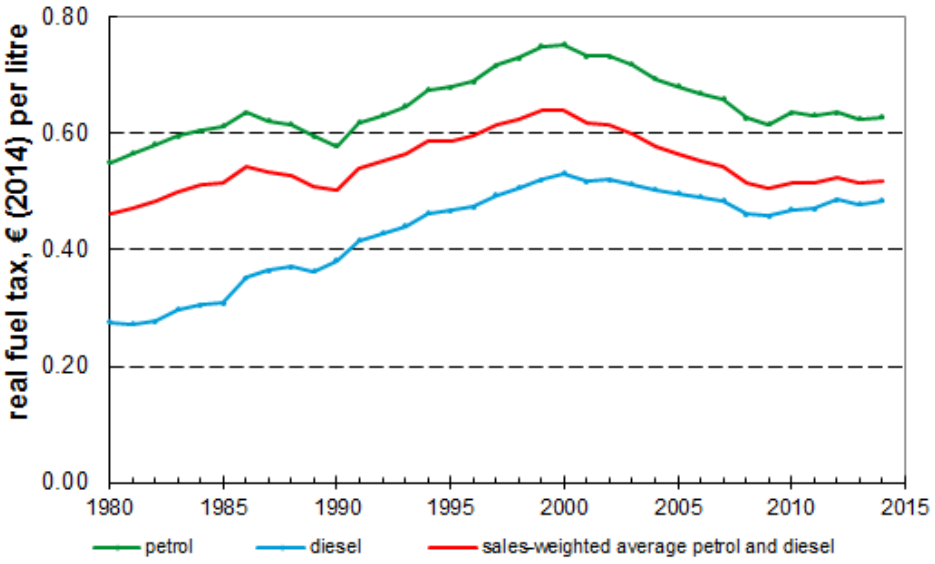


Figure 4: Real fuel taxes, in euro, in 2014 per litre of transport fuel.

4.2.2. Shrinking revenues and missed climate opportunity

If we assume that sales-weighted average fuel taxes would have remained at 2000 levels – i.e. without the €0.14/l drop that actually happened – the sale price (including VAT) would have been roughly 14 cent higher in 2014. Instead of an average price of €1.39, fuel would have costed €1.53. That represents a 10% increase in price. Given the elasticity of demand explained in a previous section, the consumption of transport fuel, and therefore its associated CO_2 emissions, would have been 6% lower.

2013 and 2014 data is still not available, but in 2012 road transportation emissions in the EU were 843 Mt of CO_2 equivalent. That would have saved, only in 2012, more than 50 Mt of CO_2, equivalent to Portugal's total annual CO_2 emissions. If upstream emissions (associated with oil extraction, refining and so on) had also been incorporated, the emissions saving would have been 10% higher.[43] The cumulative impact of such policy would have been much greater. Considering stable demand if taxes would have been lower (first-order response), member states would have received €36 billion in additional revenues if taxes would have been kept at 2000 real levels.

[43] The relative increase in emissions due to upstream processes is based on the EC impact assessment for the amendment of regulation 443/2009 and 510/2011

From an energy security point of view, Europeans would have saved almost €34 million every day on oil imports, adding up to more than €12 billion in 2014, even considering elasticity and reduced consumption.

When revenues for governments are analysed, we see they have been decreasing, both in absolute terms and as a percentage of the total collected tax revenues (see graphs below).

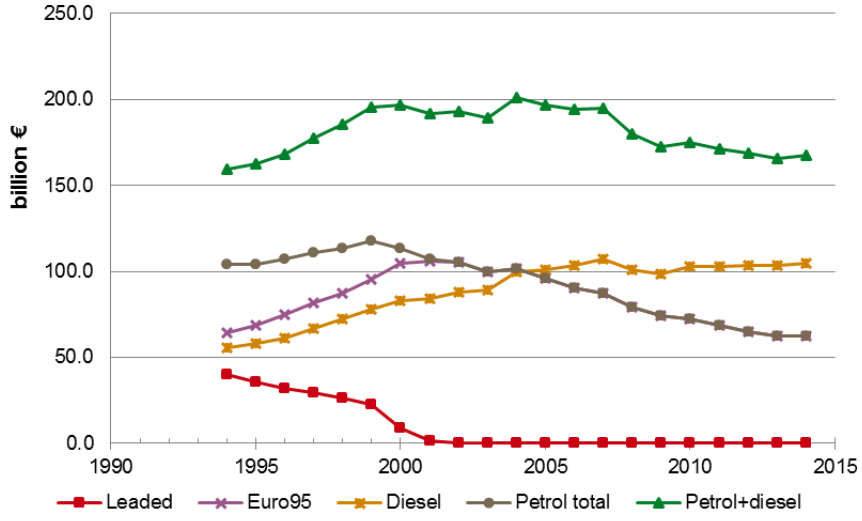


Figure 5: Total revenues from road fuel taxes in 2014, in billion euro

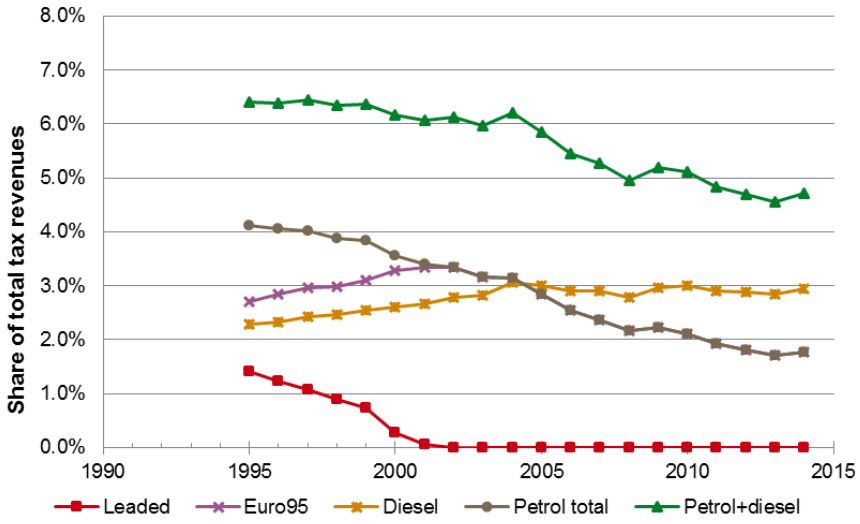


Figure 6: Share of total tax revenues coming from road fuel taxes, in % of total government revenues, in 2014 real prices

4.3. Gap between diesel and petrol

In recent decades, there has been a tax policy throughout Europe that favours diesel over petrol. As can be seen in figure 4, there has always been a gap between diesel and petrol fuel taxes. Although the gap has decreased over time, in 2014, the sales-weighted average gap was more than €0.14/l. In some member states, such as the Netherlands, the difference is even €0.28/l. Only the UK has a policy in place to ensure that diesel and petrol are taxed at the same level. The indirect fuel subsidy per diesel car, considering their different energy content and using average values for the EU in 2014, assuming it consumes 15,000 litres of fuel over its lifetime, and including 21% average VAT, currently amounts to €2,600.

If diesel would have been taxed the same way as petrol between 2001 and 2014, the average fuel tax by 2014 would have been €0.61 instead of €0.50. Before taking into account reductions in consumption, the extra revenue for member states in 2014 would have been around €30 billion.

Diesel has higher CO_2 emissions per litre. There is no environmental reason for the two minimum rates to differ. In fact, diesel cars are responsible for huge air pollution problems in cities due to higher emissions of nitrogen oxide and particulate matter. Economically or environmentally speaking there are no apparent reasons why diesel and petrol should be taxed differently per unit of energy or tonne of CO2. An OECD paper[44] argues that taxes for diesel should be higher than for petrol.

> "*Diesel emits higher levels of both carbon dioxide and harmful air pollutants per litre than gasoline. This implies that, from an environmental perspective, the level of tax needed to reflect these environmental costs should be higher for a litre of diesel than a litre of gasoline. The other social costs are more directly linked to distance travelled than to the amount of fuel used. However, since diesel vehicles are often more fuel efficient and thus travel further on a litre of fuel, the social cost per litre of fuel is likely to be higher for diesel than for gasoline. This too implies that the level of taxation reflecting these social costs should be higher for a litre of diesel than for gasoline.*"

Other publications[45] [46] argue that Europe's lower diesel tax has not been beneficial to the climate because of the climate effect of the additional PM and NOx emissions and the larger vehicles and additional mobility it has caused.

On top of that, we have an imbalance in Europe when it comes to refining capacity. According to FuelsEurope[47] the promotion of diesel through taxation and other instruments "*has led to excess gasoline-production capacity and a corresponding shortage of diesel production in the EU*". In addition "*the EU relies heavily on foreign imports. Currently, the majority of diesel and heating gasoil comes from Russia*". Closing the gap would also help EU refineries to improve Europe's competitiveness while improving our energy security and decreasing our dependency on Russian-refined diesel.

Individual member states will have a hard time to simply increase the gap to bring diesel prices closer to petrol, because other member states won't do it and therefore the problem of fuel tourism would become more acute. Therefore, EU action is needed.

5. The erosion of diesel taxes for trucks

Trucks are buying cheaper diesel than private consumers. To an extent this has always been the case because hauliers buy diesel in bulk, securing discounts, and can reclaim VAT, lowering the net fuel price they pay. In addition, since 2000 an additional phenomenon has been on the rise – a possibility to reclaim part of the excise duty in some member states.

To quantify the amount of fuel used by trucks[48] the EU Reference scenario 2013 (EC, 2013) was used, which was also the basis for the REST model[49]. This model was developed by CE Delft for DG ENER for calculating the contribution of renewable energy sources in transport to the RED and FQD targets. A check with

[44] OECD, 2014. The Diesel Differential. Differences in the tax treatment of gasoline and diesel for road use.
[45] Michel Cames and Eckard Helmers, Critical evaluation of the European diesel car boom - global comparison, environmental effects and various national strategies, June 2013
[46] L. Schipper and L. Fulton, Disappointed by Diesel? Impact of Shift to Diesels in Europe Through 2006, 2009
[47] FuelsEurope is the voice of the European petroleum refining industry.
[48] Ad-hoc analysis performed by CE Delft commissioned by T&E.
[49] CE Delft, 2014. REST Model.

Eurostat consumption data shows that PRIMES data has a good match for consumption data for the EU28 but also on a national level.

In the EU Reference scenario 2013 the energy demand by trucks can be distinguished. The difference between PRIMES and TREMOVE is that TREMOVE is outdated (latest version 2010) and reports fuel consumption of vehicles registered in that country, while PRIMES proves a good match to the fuel consumption per country. PRIMES data was available for 2005, 2010 and 2015. For all years before 2005, the share of fuel consumption by trucks of 2005 was used. Other years were interpolated.

5.1. Diesel rebates

Eight member states offer the option to hauliers to partially recover the diesel tax they pay. They typically do this for two reasons. The first is to respond to pressure from the haulage industry complaining about competitive disadvantages vis-a-vis foreign competitors. The second is related to this; by keeping diesel taxes for trucks low they hope to seduce more foreign trucks to fill up at their petrol stations, securing domestic tax revenue from foreigners. At EU level this competition is pointless; in the end trucks need to fill up somewhere. But, more importantly, it is harmful. The 'losing' member states need to secure income through much more harmful forms of taxation such as labour taxes. And what's more, it leads to a 'race to the bottom' in fuel taxes, harming the climate as much as energy security and employment.

Below there is a table with member states and the amount that can be reclaimed[50]. These values have changed throughout time, so only the latest values are shown:

Member state	Diesel rebate for commercial users (€ cent / litre)
Belgium	7.63
France	4.89
Hungary	3.60 (11 HUF)
Ireland	5.50[51]
Italy	21.42
Romania	4.26 (0.19 RON)
Slovenia	12.14
Spain	2.71

Applying the rebates to the amount of diesel sold to trucks yields a total amount reclaimed of over €4.5 billion, up from almost nothing in 2000. This implies that, on average in the EU, they get a fuel tax rebate of €0.04/l; they pay €0.44/l whereas cars pay €0.48/l. This is lost revenue for the member states involved, and also for its neighbours in the form of fuel tourism. More and more, member states are implementing similar measures each year.

[50] In-house research by Magnus Nilsson. In some member states, each region has a different value. In those cases the values were averaged.
[51] Average for 2014

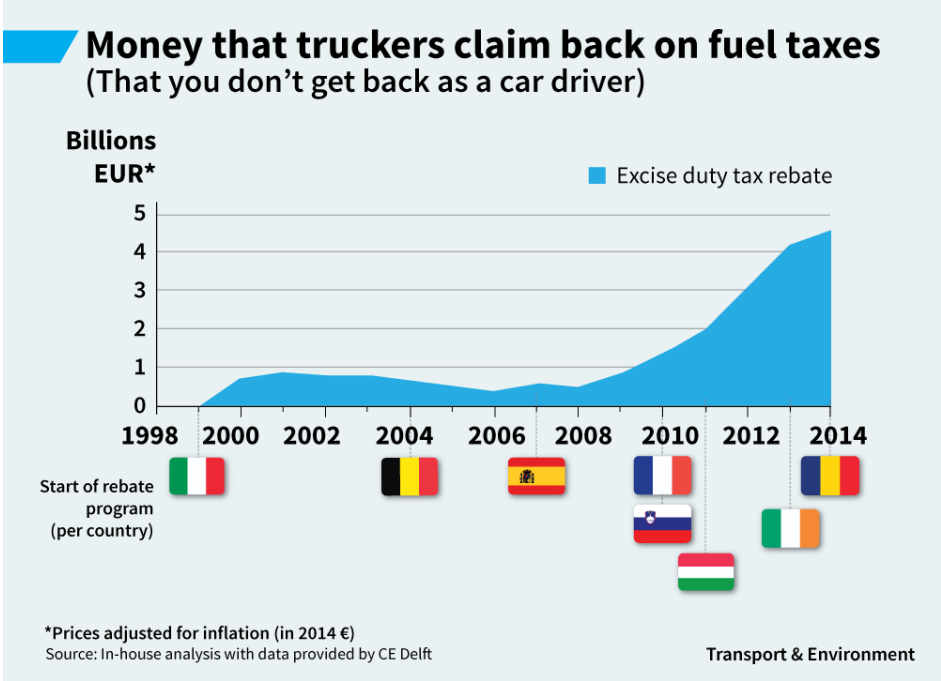


Figure 7: Total tax rebates in million euro, in 2014, as a consequence of tax rebates

Another piece of evidence that the problem is worsening is that the real fuel tax difference paid by hauliers has constantly been increasing during the last decade, as can be seen in the figure below:

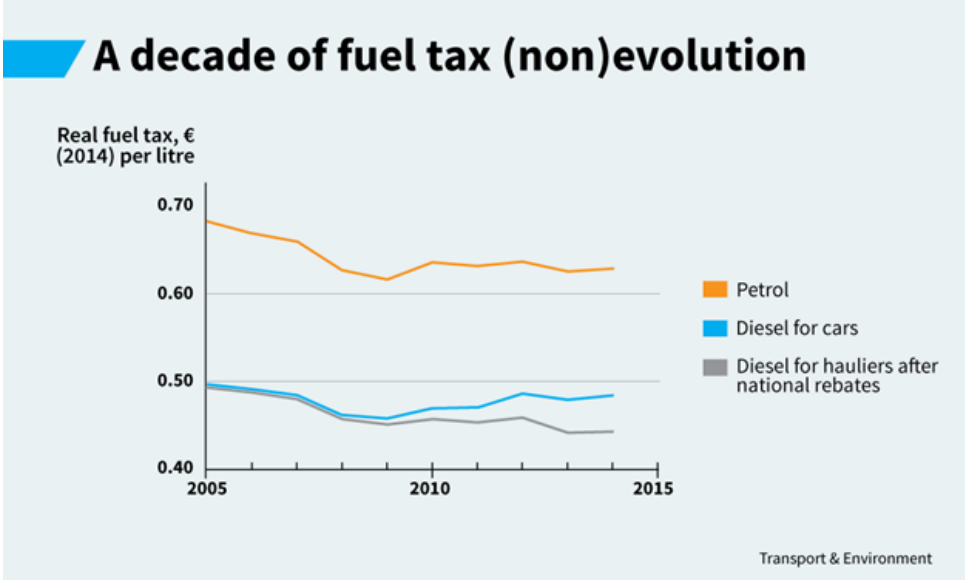


Figure 8: Real fuel taxes, in euro, in 2014 per litre of transport fuel, including national rebates

This discount makes fuel tourism for trucks more acute. In countries like Slovenia, were the fuel tax is not relatively low, with this mechanism they almost reach the very minimum level. That is also the case for Spain, Hungary, Romania and Belgium. In cases like Belgium, it is hard to say if they are trying to compete with neighbours with already low levels (Luxembourg) or if they are trying to attract fuel tourism as well. The table below shows the actual excise duties paid in all member states in 2014, from low to high[52]:

[52] Three countries seem to be under the legal value, although in reality they might be at the very minimum. The differences might be due to the exchange rate used in those three countries (none of them are part of the Euro zone).

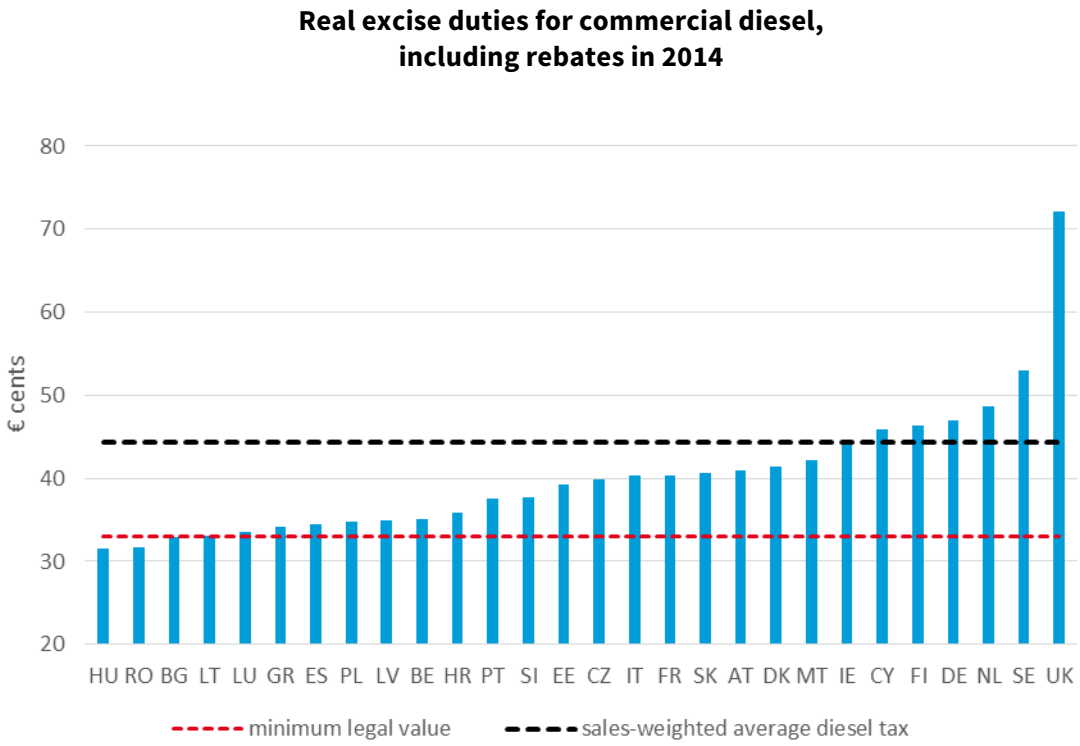


Figure 9: Real excise duties in 2014 by member state, in euro cent

Decreasing the costs for hauliers through rebates is not environmentally or economically efficient, even for the sector involved. Evidence shows that when new costs, related to distance, are introduced, sectors become more efficient[53]. A good example is when road charging for hauliers was introduced in Germany with the Maut system, which translated into a decrease in the average distance travelled per tonne of goods. That meant that were are fewer empty trucks driving around and action was taken to reduce distances driven, either by improving their route planning or changing trade patterns.

Besides, hauliers, like any other business in the EU buying a good or service, don't pay VAT on fuels. VAT is only paid by the end user of a product or service. Companies transfer the VAT received to the tax authorities on a monthly, quarterly, or annual basis, depending on turnover and specific member state rules. On purchasing goods or making use of services, companies regularly have to pay VAT themselves. The taxes collected and paid can be balanced out in the input VAT deduction. For companies, VAT represents a transitory item only. When the fuel is purchased in another member state different from its own, there is a European mechanism in place to reclaim it as well. In principle, an increase in fuel VAT doesn't impact truck companies. The only impact that an increase in VAT can have on hauliers is regarding their cash-flow. In most cases, if the VAT balance is positive, they need to pay to national treasuries on a quarterly basis. If the balance is negative, they need to wait until the annual declaration to receive it.

Based on fuel consumption, the total amount of VAT that was reclaimed by hauliers in 2014 added up to almost €27 billion.

5.2. Discounts

Hauliers often/usually buy fuel in bulk, either because they have an agreement with fuel suppliers or because they can store it themselves. This study has tried to estimate the magnitude of the discounts that they benefit from. In general, the larger the annual consumption, the larger the discount. Some

[53] Significance & CE Delft, 2010. Price sensitivity of European road freight transport – towards a better understanding of existing results.

companies in the sector were consulted[54] to estimate an average discount level. We found out that the discount tends to be between 8 and 12 euro cent below the advisory price, although it depends on the company and member state. The discount is applied to the cost price, not including either the fuel tax or VAT. Some countries already include discounts in their methodology when reporting to the Oil Bulletin, while that is not the case for others. Given this and other considerations, we concluded that an average 4-12% discount on the cost price can be considered realistic. If a median discount value of 8% had been considered, hauliers would have saved more than €5.5 billion only in 2014.

5.3. Actual price paid

When all the factors explained above are taken into account (reclaims on fuel taxes and VAT, and bulk discounts), an actual sales-weighted average price of purchase can be calculated. The result is that in 2014 hauliers were buying diesel 33 cent cheaper than other users of the fuel. The difference in price between the two, in real terms, has increased throughout the last decades as can be seen in the graph below.

Average EU real (2014) sales prices for diesel (EUR cent/litre)

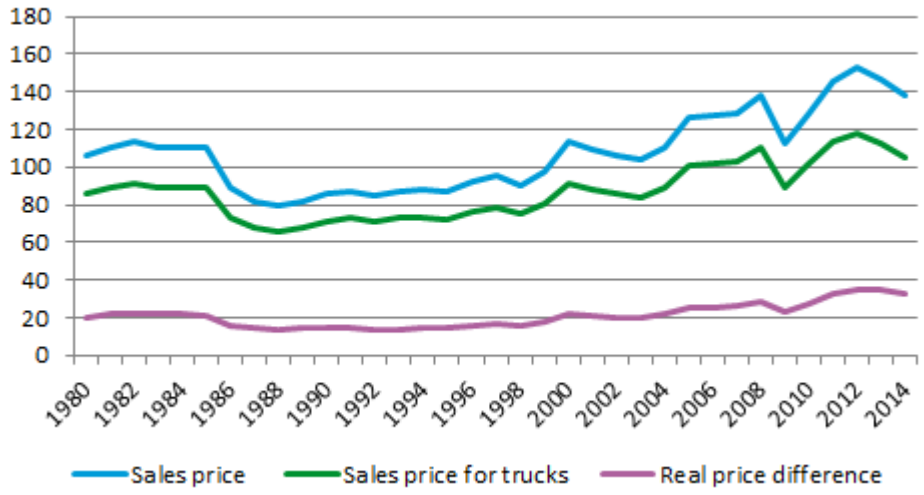


Figure 10: Average estimated EU sale prices for diesel, in euro cent per litre, in 2014

6. Case studies

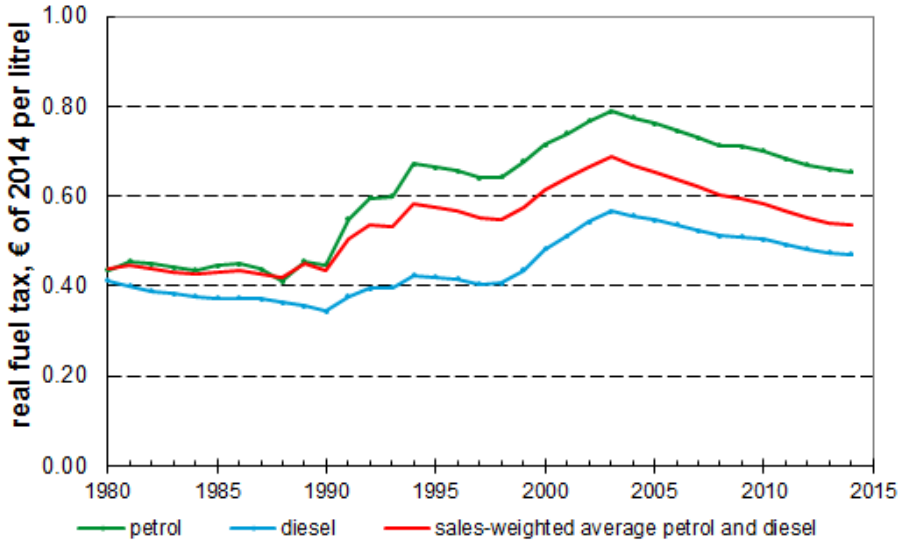
6.1. Luxembourg

Luxembourg is the best example of a country taking advantage of the weaknesses of the current Energy Taxation Directive (ETD). Its strategic location and tiny size helped it to become a “fuel tax haven”. Luxembourg has always followed the minimum diesel tax levels allowed by the ETD. Luxembourg, with a GPD per capita of more than €75,000, has the same diesel taxation levels as Lithuania or Latvia, that are slightly above €10,000 GDP per capita. On average, in 2014 member states got 4.7 % of their overall revenues from road fuel taxes. In the case of Luxembourg, that goes up to 7%. But they are also losing out due to minimum prices not being revised with inflation. Back in 2004, 10% of their overall revenues came from road fuel taxes only.

[54] Work performed by CE Delft for T&E during April 2015.

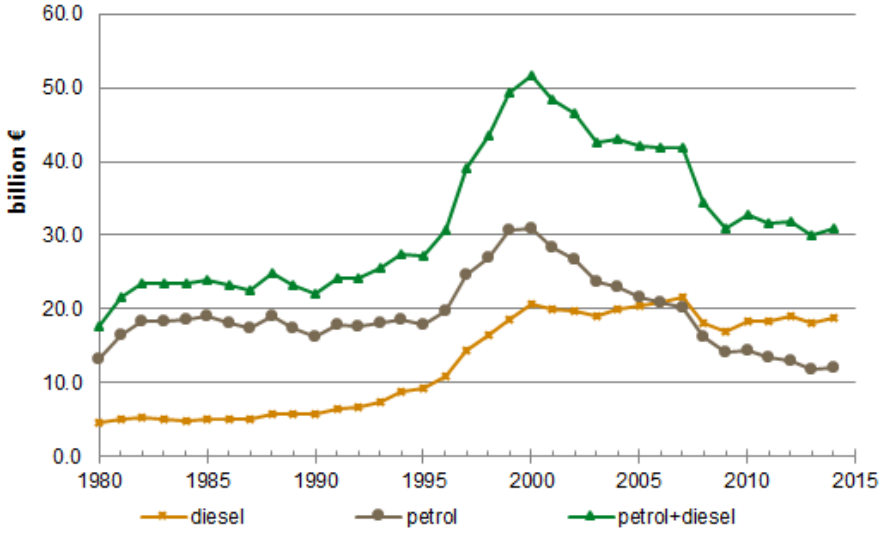
6.2. Germany

During the first half of the decade Germany had one of the highest diesel fuel taxes in real terms in Europe, as a result of the ecological tax reforms by the red-green government that began in 1999. In fact, for five years in a row the country had Europe's highest fuel taxes. However, many things have changed since then. A new government had taken office by the end of 2005. Since 2006, fuel taxes have been decreasing in real terms. In nominal terms, they have not increased prices since 2004. Given a cumulative inflation of 19% over the period, Germany has each year seen lower diesel fuel taxes. In 2014, the excise duty on diesel was below the EU average.



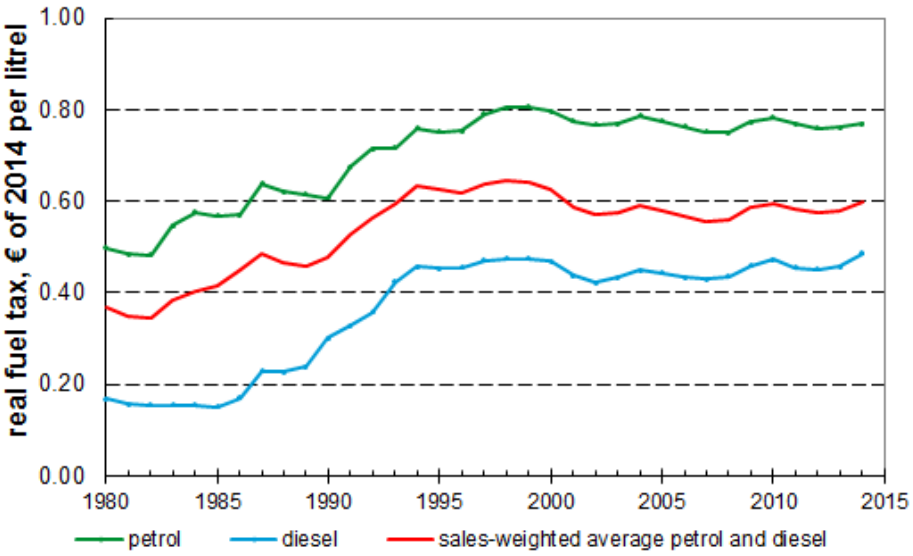
6.3. United Kingdom

The UK has been the only country to take the decision to tax diesel and petrol at the same level per litre. As explained in a previous chapter, this is better than having lower taxation levels for diesel. After an ambitious fuel tax increase programme initiated by the Thatcher government in years when oil was cheap, the Blair government stopped it in 2000. This together with the falling pound, has caused taxes to fall quickly in euro terms in the past 15 years (see graph below).



6.4. Netherlands

The Netherlands is a good example of a country that corrects fuel prices with inflation. During the last two decades, it has managed to keep fuel taxes stable in real terms. However, it still has a large gap between petrol and diesel. In fact, the difference in 2014 in tax level between the two was more than double the EU average (28 euro cent versus 14 cent).

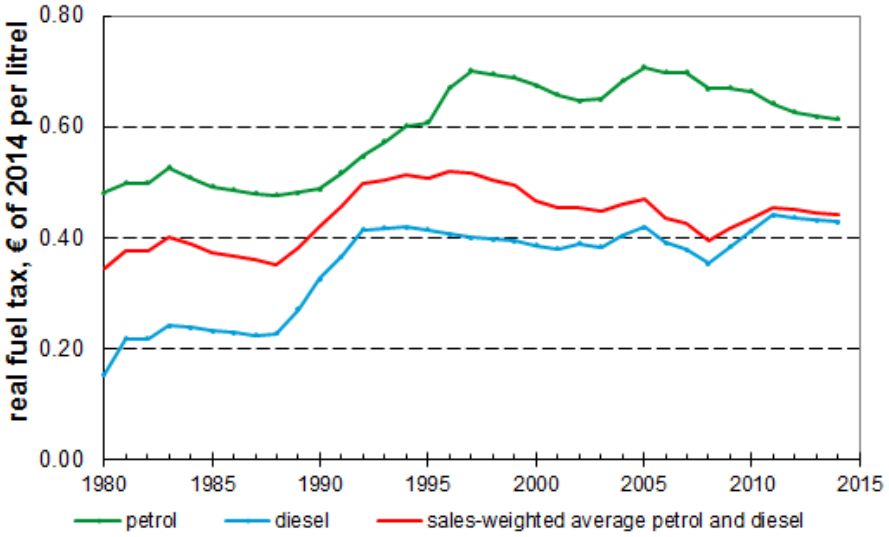


6.5. Belgium

In Belgium the gap between petrol and diesel is relatively large, 17 cent versus 14 cent on average in the EU. However, the federal government recently announced, as part of the 2016 budget, that it would raise diesel taxes while keeping petrol taxes stable[55]. According to initial plans, the increase will be 3.5 cent for 2016 and it would go up to 10.6 cent by 2018.

It is unclear how it would impact the other gap – the one in diesel taxes among member states. Luxembourg is a neighbouring country of Belgium. Fuel tourism for cars is unlikely to happen at a large scale, because population density in Belgium in areas close to Luxembourg is low. However, if Belgium also implemented these changes for commercial diesel, the problem of fuel tourism for hauliers would only get worse. To avoid it, Belgium might react in two different ways: implementing different taxes for commercial and non-commercial diesel, or through increasing the already existing tax rebates for commercial diesel. Having cheap Luxembourg diesel around the corner, Belgium has its hands tied in that respect. This is a clear example of why an European approach is needed.

[55] Le soir, 2015. Accord sur le tax shift: électricité, alcool, tabac et diesel coûteront plus cher. 24/07/2015.



6.6. Finland

Back in 2010, Finland had almost the lowest diesel excise duty at the time (34 cent per litre in nominal terms). However, since then they have made progress to considerably increase excise and benefit from the advantages of high fuel taxes. By 2014, they had gone up to 46 cent per litre, which was almost the EU average in that same year. It is an example of movement in the right direction. However, they can continue improving the policy. The gap between petrol and diesel is still 16 cent per litre, which is above the EU average. While this gap is smaller than in the past, there is still room for improvement. Finland does not suffer from fuel tourism, as their neighbouring EU countries have even higher diesel taxes and, in any case, most of the population lives on a peninsula with no road connection to any other EU member state, except a circuitous route to Sweden.

7. Conclusions and Policy recommendations

Fuel taxes are key to cutting CO_2 emissions and to achieving GHG reduction targets. They are also key from economic, energy independence and even wealth distribution points of view. However, in real terms, they have been decreasing in the EU. Some of the main conclusions are:

Fuel tax and revenue trends

- In 2014, the average road fuel tax paid by motorists and hauliers, excluding VAT, was 52 euro cent which, corrected for inflation, is 20% below the 2000 level of 64 cent/l. This surprise finding can be explained by 1) inflation eroding nominal tax rates 2) a shift from petrol to lower-tax diesel fuel and 3) diesel tax rebates for trucks that have been introduced by eight countries over the past 15 years.
- Total tax revenues, in real terms, excluding VAT, have been decreasing over time too. In 2000, they were around €200 billion, in 2014 they were down to €167 billion. The have also plummeted as a percentage of GDP, from 1.7% to 1.2% in 2014. Also as a percentage of total tax revenues, from above 6% in 2000 to below 5% in 2014.

Fuel for cars: trends in alignment of tax rates for petrol and diesel

The gap between petrol and diesel taxes in Europe is quite unique in the world and is the chief reason why diesel engines have taken off in Europe and not worldwide. Ravaged post-war Europe needed tax revenues, petrol was used by well-off people able to afford cars, hence governments started to tax it. Diesel was used by trucks and was lightly taxed or not at all.

- The weighted-average fuel price paid by motorists in 2014 was €1.39 per litre and the price at the time of writing (early September 2015) was €1.24. This is around 20% below the peak prices both in 2012 and the early 1980s, which were over €1.50 in real terms.
- The gap in tax levels for diesel and petrol paid by motorists is currently 14 cent/l or 30% higher for diesel. Since a litre of diesel contains around 10% more energy than a litre of petrol, the tax gap per unit of energy is higher. Over the past 15 years, the gap has been coming down very slowly, at a rate of around half a cent per litre per year. The indirect fuel subsidy per diesel car, assuming it consumes 15,000 litres of fuel over its lifetime, and including 21% average VAT, currently amounts to €2,600;
- Differences across the EU vary from zero (UK) to 28 cent/l (the Netherlands); per unit of energy that is 10 to 44% lower tax on diesel than on petrol;
- Italy, Finland, Sweden and Austria are the main countries that have taken voluntary action to close the gap by several cent in recent years. In Greece the gap has actually increased significantly because petrol tax was raised in the budgetary crisis and diesel tax was not.

Diesel tax for trucks: a race to the (€0.33/l) bottom

- Trucks pay on average 44 cent/l diesel tax in the EU now, 4 cent below the rate cars pay and 15% below the inflation-corrected 52 cent/l they paid in 2000. Truck diesel tax rebates totalled around €4.5bn in 2014, up from €0 in 1999.
- The number of countries giving fuel tax rebates to hauliers has gone up from only Italy in 2000 to eight now (Italy, France, Spain, Romania, Belgium, Hungary, Ireland and Slovenia).
- The number of countries that tax truck diesel at or close to the minimum level is now 10. In recent years, Belgium, Greece, Hungary and Latvia have joined. Finland worked to increase their truck taxes, currently being far from the minimum.

It is necessary to find a way to close those two gaps at the same time. If they are approached separately, the solution for one might worsen the other. Actions also need to be coordinated at EU level. If it would happen at an individual member state level, other member states could decide not to act and therefore, benefit from more acute fuel tourism.

Ideally, the solution to close these two gaps is to revise the Energy Taxation Directive. It is one of the few tools that ensure positive impacts for the economy, energy independence, wealth redistribution and the climate, as presented in previous sections. With oil prices currently low, it seems the right moment to modify the ETD.

The ETD is based on a numbers-and-timetables approach. It could be replaced by a principles-based one that has the potential to generate more support among member states. For instance, it could include minimum rates that are inflation adjusted, or values that go up if oil prices go down. It could also include guidelines for national decisions: every national decision, from now on, should narrow the gap between petrol and diesel tax for cars. It could not allow member states to widen the gap between the two.

Regarding fuel taxes for diesel used by trucks, the EU could learn from the US-Canada model: the International Fuel Tax Agreement (IFTA)[56]. Under this system, truckers pay their fuel tax depending on where they drive. It would end fuel tourism, avoid tax leakage and allow full fiscal independence by individual member states.

IFTA: a model to follow

The International Fuel Tax Agreement, or IFTA, is a fuel tax agreement that operates in the US and Canada. Under the IFTA, truck operators (hauliers) record distance travelled and fuel consumed within each state/province (jurisdiction). Tax paid where fuel is purchased is later reconciled against actual use. Thanks to this reconciliation process, hauliers obtain a rebate from some jurisdictions and pay additional taxes to others. Significant differences in tax rates between neighbouring states/provinces are sustained under this system because the haulier ultimately pays tax at the rate where travel actually takes place. For example, Pennsylvania's fuel tax is approximately 46 cent per gallon higher than New Jersey's, but thanks to the IFTA, tax distortion ('fuel tourism') does not occur.
To know more about this system, check a briefing by Green Budget Europe and T&E on the subject:
http://www.transportenvironment.org/publications/towards-european-fuel-tax-agreement

Even if the VW scandal creates momentum to raise the minimum level for diesel, changes to the ETD are not in the Energy Union communication[57], so it seems unlikely that it will happen. On the other hand, it does mention that the Commission "*will promote the use of road charging schemes based on the polluter-pays and user-pays principles*". This new scheme should have a CO_2 component that would tackle road emissions.

It should be complemented by a road pricing scheme with a clear CO_2 component. It is not currently allowed in the Eurovignette Directive for heavy goods vehicles, either for cars in general. Member states should be allowed to charge vehicles based on distance travelled and based on the how polluting the vehicle is. Even if fuel tourism would continue to exist, member states could actually take their own decisions without necessarily having to look to their neighbours for action. An European framework is needed to avoid market distortions and to level the playing field.

[56] For more details, check a briefing by Green Budget Europe and T&E on the subject:
http://www.transportenvironment.org/publications/towards-european-fuel-tax-agreement
[57] European Commission, 2015. A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy.

Annex 1: Country specific graphs

Please, visit www.transportenvironment.org for country-specific data.