T&E response to Energy Taxation Directive

Evaluation and fitness check roadmap consultation

September 2017

1. Introduction

The Energy Taxation Directive (ETD) has not been reviewed since 2003, and needs updating and adapting to current circumstances. 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 and ending the ban on taxing bunker fuels 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 CO2 emissions. Europe's comparatively high fuel taxes are the main reason Europeans use around 60% less transport 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.

Below we discuss the issues that T&E considers should be reviewed in the ETD.

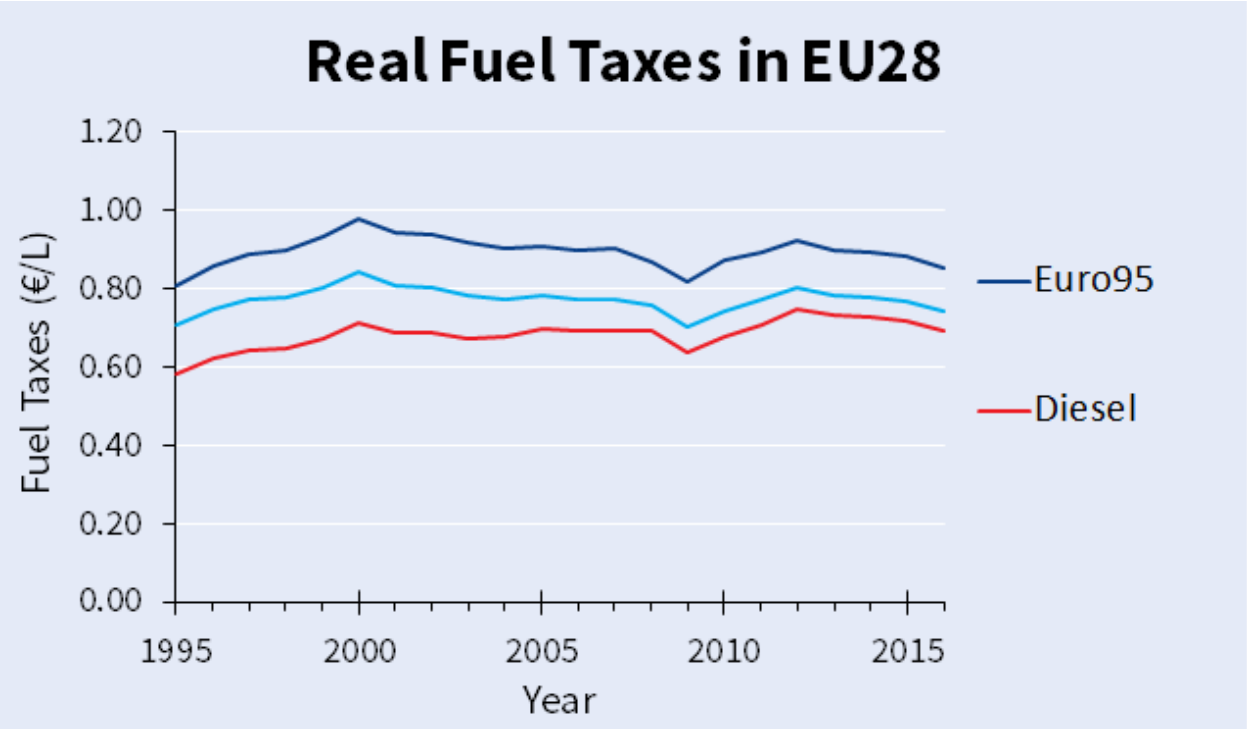
2. Eliminate diesel bonus for cars

In most countries diesel fuel has always been taxed at a lower rate since it was predominantly used by commercial vehicles. By applying two different tax rates for diesel and petrol, governments have maximised stable fuel tax revenues from petrol car drivers whilst protecting the commercial road haulage sector from excessive costs and from competition from neighbouring countries with a lower diesel rate. When the share of diesel passenger cars remained low, this taxation framework worked effectively; but this is no longer the case.

Across most European countries, diesel taxes are currently 10%-40% per litre lower than petrol taxes, with the biggest diesel bonuses in the Netherlands (37%) and Greece (41%). The UK is notable as the only EU country with no diesel bonus, while non-EU Switzerland levies slightly higher taxes on diesel than petrol. In both cases, this results in diesel actually being slightly more expensive to buy on station forecourts than petrol. Elsewhere, the lower tax rate for diesel shields consumers and drivers from the fact that diesel costs more per litre than petrol pre-tax. While the world market price for diesel is consistently higher than for petrol, consumers see the opposite at the pump almost everywhere in Europe. This disparity is even more important when tax rates are considered relative to energy content or CO emissions per litre, which are around 10% and 16% higher, respectively, for diesel than petrol.

The gap in tax levels for diesel and petrol paid by motorists is currently €0.13/l which is 30% lower than petrol per unit of energy. The ETD must be reviewed to align tax rates for petrol and diesel used by cars

based on energy content. The current indirect subsidy for diesel compared with petrol tax (assuming it consumes 15,000 litres over its lifetime, including VAT, currently amounts to €2,400) leads to air quality problems as highlighted in the Dieselgate scandal. It is also 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 (and soon hybrid & electric) cars.



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. Differences across the EU vary from zero (UK) to €0.34/l (Greece); per unit of energy that is 10 to 44% lower tax on diesel than on petrol; France, Belgium and Portugal are among the main countries that have taken voluntary action to close the gap by several cents over the years. In Greece the gap has actually increased significantly because taxes were raised in the budgetary crisis and, while petrol was left with high taxation, diesel tax was decreased again. Overall, the trend heads in the right direction, but the absolute progress is painfully slow.

3. Fuel tourism for trucks

Another challenge is Europe's fuel taxation 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 tanks on their territory, boosting revenue. This makes it much more difficult for other countries to raise truck diesel taxes policy on their own.

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.

In 2014, trucks paid on average €0.04 below the diesel tax rate cars paid. 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 in 2014 (Italy, France, Spain, Romania, Belgium, Hungary, Ireland, Slovenia).

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. A system like the International Fuel Tax Agreement (IFTA) could work in Europe. A fuel tax agreement operates in the US and Canada which is known as the International Fuel Tax Agreement, or IFTA. 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.

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.

4. Inflation & revenues

In 2016, the average road fuel tax paid by motorists and hauliers, excluding VAT, was €0.54 which, corrected for inflation, is 17% below the 2000 level of €0.65/l. 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.

Total fuel tax revenues, in real terms, excluding VAT, have been decreasing over time too. In 2000, they were around €200 billion, in 2016 they were down to €183 billion. They have also plummeted as a percentage of total tax revenues, from 6% to 4.6% in 2016.

5. Biofuels

Article 16 of the ETD allows member states not to charge fuel tax duties to the fraction produced from biomass. In practice 22 out of 28 member states decided not to have any excise duties on bioethanol and biodiesel. Only Belgium, Spain, Poland and Portugal decided to charge it at the same level as petrol or diesel, while Finland and Sweden charge a reduced fuel tax.

Not all biofuels are created equal. Food-crops grown on land are used to produce biofuels and are associated with negative indirect impacts (ILUC). When these indirect impacts are accounted for, a majority of current food-based biofuels at EU level – food-based biodiesel – are worse for the climate than fossil diesel.

The European Commission has signalled at several occasions the necessity to stop providing public support to food based biofuels. The current state aid guidelines for the period 2014 to 2020 go in that direction. Investment aid in food based biofuels cannot be justified anymore, unless it is used to convert a plant for advanced biofuels. One of the justifications for this decision is the overcapacity in the food based biofuels market at EU level. Regarding operating aid, it can only be granted until 2020.

The Commission reaffirmed the decision not to provide public support to food-based biofuels after 2020, in its Communication on a Policy Framework for Climate and Energy in the Period from 2020 to 2030 (published in January 2014): "The assessment of how to minimise indirect land-use change emissions made clear that first generation biofuels have a limited role in decarbonising the transport sector. The

Commission has already indicated, for example, that food-based biofuels should not receive public support after 2020."

In 2015, member states agreed to limit the share of food based biofuels that can be counted in their transport renewables target at 7% in 2020, while reporting indirect emissions. More recently, the European Commission announced in its Low Emissions mobility strategy that it was focusing on a gradual phase out of food based biofuels at EU level.

For all these reasons, the ETD should be aligned with current state aid guidelines and should be reviewed to ensure that food based biofuels do not receive further public support. Public support should rather focus on cleaner alternatives, such as advanced biofuels from waste and residues, provided they deliver substantial greenhouse gas savings and appropriate sustainability criteria are adopted.

6. Taxation of electricity in transport

Electricity used in vehicles should be taxed the same as the rest of electricity, in order not to penalize households equipped with a charging point. Charging points lead to more efficient charging of EVs, and allow demand response mechanisms, that are essential to balance the electricity grid.

7. Lower Taxation of natural gas products

The use of natural gas in transport does not deliver climate benefits in most cases. However, natural gas in transport is considerably undertaxed in comparison to petrol or diesel. According to a study commissioned by T&E, natural gas is taxed 90% below petrol and diesel. Considering its climate impact and the existence of cleaner alternatives, it should be taxed at the same rate as petrol or diesel based on energy content.

8. Fuel tax exemption for aviation

Fuel for intra and extra-EU flights is mandatorily y exempt from taxation, a subsidy to the sector which is valued at €32 bn per annum. The case for continuing the ban on such taxation, as contained in Article 14 of the current Directive, is weak. The EU faces no international legal obligation to ban such taxation - the UN's Chicago Convention on civil aviation bans taxing on arrival fuel already onboard, but not fuel uplifted. No other country(ies) ban aviation fuel taxation and in fact both India and Brazil tax domestic aviation fuel heavily. While most Air Service Agreements (ASAs) contain a mutual fuel tax exemption, we understand the EU is under a Council mandate to remove this exemption from future ASAs and therefore the exemption should also be removed from the ETD.

Aviation emissions have grown as a share of EU emissions from 1.5% in 1990 to 4.5% in 2015. This growth is expected to continue, and is partly due to the generous tax exemptions (both fuel tax and VAT) which artificially lower the price of flying and distort competition with other, low carbon, alternatives. This exemption stimulates demand and disincentives operational and fleet efficiency improvements. At present only one-quarter of EU aviation emissions are included in the EU emission trading scheme, which due to an oversupply of allowances is delivering too low a price signal. The ban therefore acts as a barrier to economy-wide carbon pricing, which is essential if we are to meet the goals of the Paris Agreement.

The present facility in the ETD - where two states can agree to bilaterally remove the exemption - has to date not been used. This may be due to legal complexities relating to ASAs and third country carriers, and also due to concerns that taxing on a bilateral basis may be administratively complex. The first step is simply to remove the exemption in the ETD.

At a minimum, the exemption should be removed for flights within Europe, which may be easiest to reconcile with the current status of ASA renegotiations. However the long-term goal should be to ensure all aviation emissions are subject to effective carbon pricing, and this can be facilitated by removing the exemption in Article 14 of the ETD.

9. Shore side electricity

Article 14 of the Directive also bans the taxation of maritime fuels which again is extraordinary since no other country(ies) have taken such a step. So at this moment while it might be difficult to introduce a mandatory EU-wide minimum energy tax in this sector for all ships, certain segments, notably fuels supplied to intra-EU shipping could be taxed without the danger of ships escaping to non-EU ports to bunker. So in any case the exemption is again a complete anachronism and should be removed. Consequences of the current ban:

- On-shore power supply (OPS) to ships at ports is significantly disadvantaged compared to ships at berth generating on-board electricity from tax-free bunker fuel, leading to air pollution around ports and climate change;
- Market barrier for the uptake of battery-electric zero emission vessels (ZEVs);
- Subsidiarity and unnecessary red tape – there is no reason EU legislation should ban Member States from implementing such taxes if they want to.

Ships burn fuel both for propulsion (main engines) and on-board electricity generation (auxiliary engines). While the main engines are switched off at berth, auxiliary engines are kept running to sustain on-board operations. For example a typical ocean going cruise ship could require around 120 MWh of electricity per 10-hour port call.

Combustion of marine fuels both in ports and outside leads to greenhouse (CO2, CH4) and non-greenhouse (NOx, SOx, PM and BC) emissions, thereby affecting climate change and exacerbating local air pollution. A typical ocean going cruise (e.g. Royal Princess) during a 12 hour port call in Venice would emit around 80 t - CO2, 1,450 kg - NOx, 160 kg - PM from the auxiliary engines alone. This would equate to the same emissions in an entire year from 39 passenger cars (for CO2), 435 cars (NOx) and 302 cars (PM 2.5/10).

Table 1: Emissions from a cruise ship during 12-hours port stay vs. a passenger car in a year

	A single cruise ship (12 hours) Non-ECA (kg)	Average passenger car (per year) Emissions of an average LDV (kg)[1]	# LDVs required to emit shipping emissions per year
CO2	79,734	2,024	39
NOx	1,461	3	435
SOx	751	x	x
PM	157	1	302

*Source: T&E analysis

Replacing on-board fuel combustion with electricity supplied from onshore power grids at ports could dramatically reduce air pollution, but also lower GHG emissions. On-shore power supply (OPS) is a well-developed concept and a number of ports in Europe already provide this service. However, the price difference between electricity supplied via OPS and on-board power generation creates prohibitive costs against OPS.

For example, the average electricity price for industrial consumers in the EU is €8.5 cents/kWh, while each kWh electricity produced via on-board diesel generators would cost €4.6 cents with heavy fuel oil (HFO) and €7.2 cents with marine gas oil (MGO) under current bunker prices. As is evident from the table 2, electricity produced on-board is on average 34% cheaper than purchasing it from the on-shore grid.

The principal reason for such a discrepancy is that bunker fuels are tax exempt in Europe, while electricity prices include a variety of taxes. This creates a market barrier for the uptake and use of OPS technology by ships leading to considerable air pollution and GHG emissions.

[1] EURO VI real-world emissions

Table 2: Price of electricity – on board generation vs. supply from shore connection

	Price ($/t)	Price **(€/t)**	Price **(€/kWh)**	Difference vis-à-vis electricity
HFO	320	269	0.046	-46%
IFO	360	302	0.052	-39%
MGO	500	420	0.072	-16%
Average EU electricity			0.085	0%

*Sources: World Bunker Prices | Rotterdam, *15/09/2017; Kg oil equivalent = ~ 11.7 kWh (IEA); estimations assume 50% on-board engine efficiency; Average EU electricity prices for industrial users.*

Tax-free, hence cheaper than shore-side electricity, bunker fuels also create a market barrier for the uptake of zero emission vessels (ZEVs) powered by on-board batteries. With current battery technologies, a sizeable number of smaller EU vessels (notably, ferries, RoRo ships and fishing boats) can be run fully on battery-electric propulsion system from the technical point of view. This would eliminate on-board GHG emissions, as well as air pollution from these ships. However, as the quick desk analysis (table 3) indicate, operational energy costs of a battery-electric ferry would be higher than a ferry propelled by internal combustion engine (ICE) running on cheap, dirty and tax-free bunker fuel. This is despite the higher energy efficiency of electric motors compared to ICE. This creates a market barrier for the uptake of battery-electric and hybrid technologies by ships. To change this balance mandatory tax exemptions to bunker fuels must be lifted and OPS should be granted tax exemptions for a transitional period.

Table 3: Cost of energy for a theoretical battery-electric vs. marine diesel engine ferry

Single journey estimates					
Marine Diesel Engine (0.1% S)			Battery-electric propulsion		
Energy used/journey (kWh)		15,360	8,084	Energy used/journey (kWh)	
Fuel (tonnes)		1.31	52	156 Wh/kg (current)	Battery weight (tonnes)
			40	200 Wh/kg (2020)	
			16	500 Wh/kg (2030)	
CO2 (kg)		4,088	0	CO2 (kg)	
NOx (kg)	pre-2021	99	0	NOx (kg)	
	†† post-2021	17			
SOx (kg)		3	0	SOx (kg)	
PM (kg)		1	0	PM (kg)	
Fuel costs (tax-free)		**€ 672**	**€ 777**	Electricity costs (with tax)	
			-179	Taxes on electricity	
Fuel costs (tax-free)		**€ 672**	**€ 598**	Electricity costs (without tax)	

Sources: T&E analysis; Clarifications: Example ferry: Pride of Burgundy (RO-RO/passenger ship), 5,812 DWT capacity, 28,138 gross tonnage, 1.5 hours single journey time, 21 miles single journey distance (Calais - Dover); IMO fuel availability study (p.46) 2020 forecasts $616/t = €512/t (current exchange rates); Average France-UK electricity prices (€0.0961/kWh) for industrial users (>2GWh<20GWh/year); Fr/UK electricity taxes - on average 23% of total electricity price (source: Eurostat); Only if the ferry in question were built after 2021. Hence, existing ships will still emit higher amounts of NOx.

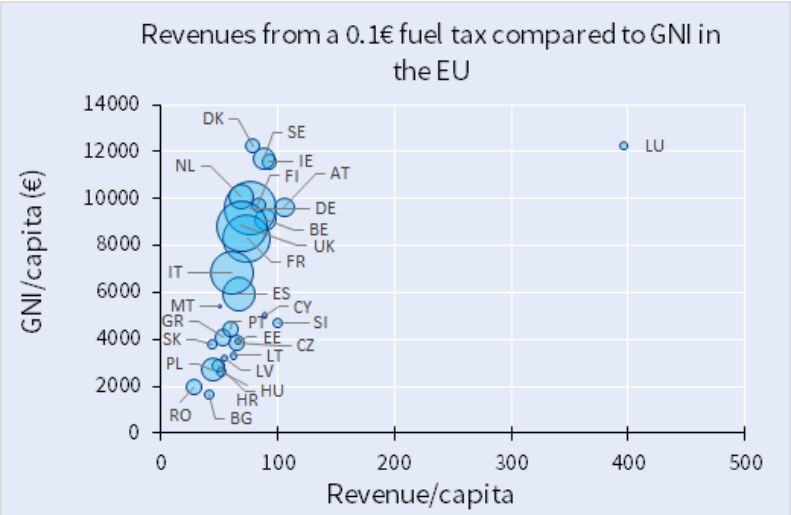
The EU should end the counterproductive ban on marine fuel fuel taxation and take shipping sector into Article 15 which leaves tax policy open. This can lead bunker fuels being taxed in order to incentivise ships to switch to sustainable zero emission technologies such as battery electric propulsion, as well as use on-shore power supply services. Additionally, taxing bunker fuels will generate revenues for the member states.

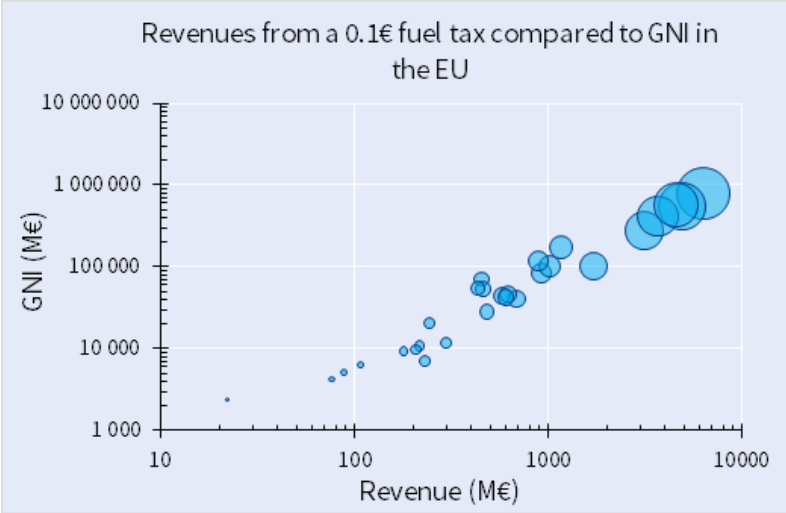
On-shore electricity supplied to ships can be exempt from taxes for a transitional period to incentivise the uptake OPS and ZEVs powered by battery power. This would ease the transition of shipping sector towards decarbonisation, as well as help reduce air pollution in ports and coastal areas.Tax-free, hence cheaper than shore-side electricity, bunker fuels also create a market barrier for the uptake of zero emission vessels (ZEVs) powered by on-board batteries. With current battery technologies, a sizeable number of smaller EU vessels (notably, ferries, RoRo ships and fishing boats) can be run fully on battery-electric propulsion system from the technical point of view. This would eliminate on-board GHG emissions, as well as air pollution from these ships. However, as the quick desk analysis (table 3) indicate, operational energy costs of a battery-electric ferry would be higher than a ferry propelled by internal combustion engine (ICE) running on cheap, dirty and tax-free bunker fuel. This is despite the higher energy efficiency of electric motors compared to ICE. This creates a market barrier for the uptake of battery-electric and hybrid technologies by ships. To change this balance mandatory tax exemptions to bunker fuels must be lifted and OPS should be granted tax exemptions for a transitional period.

10. Equity issues

With the imminent departure of the UK from the Union, a Europe-wide fuel taxation for road transport should be considered an equitable option to plug the budget gap. A fuel excise is equitable as those the generated revenues are proportional to the country's' GNI. A price of 10c per litre could raise €34 bn at 2016 consumption levels. Additionally, a fuel excise is Pigovian (a tax that is intended to correct an inefficient market outcome as a result of negative externalities) and would help entice consumers to cleaner transport modes.

The following two figures show the relationship between how much a member state would contribute after a 10c fuel excise compared to their GNI, both in absolute terms and considering per capita contributions. Whichever metric, those countries with the highest GNI (i.e. those most able to afford it) would contribute proportionally the most.





Further information

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Further reading:

Most of the data in the previous sections are from a T&E internal database on EU fuel taxes. T&E will soon launch this database in our website.

https://www.transportenvironment.org/publications/europes-tax-deals-diesel
https://www.transportenvironment.org/publications/diesel-true-dirty-story
https://www.transportenvironment.org/publications/towards-european-fuel-tax-agreement
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