

INDICATOR SPECIFICATION

Transport fuel prices and taxes in Europe



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This indicator considers the price of fuel in the EU, including cost price, excise duty and VAT. Definitions: 'All petrol' is a consumption-weighted average price of both leaded and unleaded fuel, corrected using the energy-content of an equivalent amount of unleaded petrol. 'All fuel, unleaded petrol equivalent' is a consumption-weighted average price of unleaded and leaded petrol and diesel, corrected using the energy content of an equivalent amount of unleaded petrol. 'Nominal' is the price with no adjustment for inflation. 'Real' is the price corrected for inflation, using 2015 as the baseline year. 'Average, all fuel, unleaded petrol equivalent (real, weighted by consumption)' is the consumption-weighted average of the 'All fuel, unleaded petrol equivalent (real)' line across the full time series.

Assessment versions

Published (reviewed and quality assured)



No published assessments

Rationale

Justification for indicator selection

An increase in fuel prices can result in a decrease in fuel and transport demand, and greenhouse gas emissions, thereby leading to a decrease in pressures on the environment. Several different estimates of the price elasticity of demand for fuel have been made. Goodwin et al. (2004), for example, estimated an elasticity of 0.6, i.e. a 10 % increase in fuel price would lead to a 6 % decrease in fuel demand.

Fossil fuel consumption is directly linked to emissions of carbon dioxide (CO₂), a primary greenhouse gas. Links between fuel consumption and other pollutants (e.g. nitrogen oxides (NO_x), hydrocarbons (HC), particulate matter (PM), etc. and noise) depend on the vehicle technology used (i.e. EURO standards and noise classes, type of engine and fuel needed) and trip conditions, as well as the type of fuel.

Fair and efficient transport pricing is a crucial precondition for sustainable transport. It implies that users pay for the full (environmental and social) costs of transport.

Fuel taxation, therefore, is a potential instrument for reducing emissions from transport. In particular, it represents the best charge structure for internalising climate change related externalities, as fuel consumption (factoring carbon content of fuel) is an excellent proxy for greenhouse gas emissions. The European Commission is aiming to achieve fair and efficient pricing of transport (European Commission, 2006), which implies that transport charges should aim to reflect the external costs of transport. However, to date fuel taxation is not generally used to internalise the environmental externalities of transport, possibly because high fuel tax is often politically unviable. Phase I (from 2011 to 2016) of the European Commission's transport White Paper strategy (2011) indicates that motor fuel taxation should be revised to take account of the energy and CO₂ component. Some Member States do, however, reduce taxation on fuels that have low life-cycle emissions.

Policies favouring the uptake of diesel fuel have succeeded in increasing diesel consumption over petrol for use in road transport. Largely, these policies were put in place in Europe because of the improved fuel efficiency (and reduced CO₂ emissions) that are attributed to diesel fuels. Unfortunately, the environmental disadvantages associated with diesel fuels were not fully realised until long after the policies were put in place. As recognised in 'Tax Reforms in EU Member States 2014' (EC, 2014), specific measures could be introduced such as adjusting the level and structure of fossil fuel excise duties so as to reflect the carbon and energy content of the fuels, and indexing environmental taxes to inflation.

Scientific references



No rationale references available

Indicator definition

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'Real' is the price corrected for inflation, using 2015 as the baseline year.

'Average, all fuel, unleaded petrol equivalent (real, weighted by consumption)' is the consumption-weighted average of the 'All fuel, unleaded petrol equivalent (real)' line across the full time series.

Units

Fuel prices include cost price, excise duty and VAT and are expressed in Euros per litre.

Policy context and targets

Context description

Fair and efficient transport pricing is a crucial precondition for sustainable transport. It implies that users pay for the full (environmental and social) costs of transport. Therefore, the price and tax levels of fuel are important for three key reasons:

Fuel taxation is an instrument that serves different policy objectives; one possible use could be to internalise external costs. If prices and duties of transport (including fuel taxes) covered all social costs, the demand for transport would be economically optimal for the welfare of society as a whole, since prices would reflect all health, environmental and infrastructure costs. However, fuel taxes are not the only way towards fair pricing. For example, charging per kilometre or vehicle regulations could be some effective measures;

Higher fuel prices act as incentives to reduce fuel consumption, e.g. through purchase and use of more fuel efficient vehicles, a shift to non-motorised or public transport modes, fewer trips and less motorised transport-orientated patterns of settlements; and

Differentiated fuel taxes can stimulate a shift towards alternative fuels, for example to biofuels or to electric vehicles. However, there can be unwanted side effects, e.g. the lower fuel tax on diesel, once

introduced to support maritime vessels, also fostered a shift from petrol to diesel passenger cars.

The European Transport White Paper (EC, 2001) proposed to 'harmonise excise duty on diesel for commercial uses, which in practice would be higher than the current average tax on diesel'. The aim of this harmonisation is to achieve better internalisation of external costs. Harmonisation also aims to improve the internal market by establishing a level playing field for shippers from different EU Member States and creating more stable prices in road transport. However, a 2002 Commission proposal to do so was rejected by the Council. The proposal resulted in decreases in excise duty incomes for several countries, up to 50 % in the UK. Also transport organisations argued against fuel tax revision. More recently in the European transport White Paper of 2011 (EC, 2011), the Commission has proposed to 'revise motor fuel taxation with clear identification of the energy and CO₂ component' by 2016.

EU minimum levels for road fuel taxes are set out in Council Directive 2003/96/EC on the taxation of energy products. As a result, the minimum excise duty for unleaded petrol increased from EUR 287 to EUR 359 per 1 000 litres. For diesel fuel, the minimum rate increased from EUR 245 to EUR 302 per 1 000 litres in 2004, and up to EUR 330 per 1 000 litres in 2010 (EC, 2007).

The EC's 'Europe 2020' strategy (EC, 2010) includes a positive approach to energy taxes and greening transport: 'where taxes may have to rise, this should, where possible, be done in conjunction with making the tax systems more 'growth-friendly'. For example, raising taxes on labour, as has occurred in the past at great cost to jobs, should be avoided. Rather, Member States should seek to shift the tax burden from labour to energy and environmental taxes as part of 'greening' of taxation systems'.

Targets

The 2011 Transport White Paper suggests that EU motor fuel taxation should be restructured to clearly identify the energy and CO₂ components.

Related policy documents

COM (2001) 370 final. European transport policy for 2010.

WHITE PAPER European transport policy for 2010: time to decide COM (2001) 370 final

COM(2006) 314

'Keep Europe Moving – Sustainable mobility for our continent'. Mid-term review of the Transport White Paper, published in 2001 by the European Commission: Communication from the Commission to the Council and the European Parliament of 22 June 2006. COM (2006) 314 final

COM(2010) 2020 final, Europe 2020: A strategy for smart, sustainable and inclusive growth
European Commission, 2010. Europe 2020: A strategy for smart, sustainable and inclusive growth.
COM(2010) 2020 final.

Council Directive 2003/96/EC

Restructuring the Community framework for the taxation of energy products and electricity. EU, 2003.

Transport White paper 2011

Roadmap to a Single European Transport Area - Towards a competitive and resource efficient transport system

Methodology

Methodology for indicator calculation

Fuel prices and taxes are presented weekly in a DG Energy Oil Bulletin (prior to 2006, data were also presented in a monthly format). Information is available for each of the EU Member States (including the EU-10 from mid-2004, and Bulgaria and Romania as of January 2008). Fuel prices are corrected for inflation using the Harmonised Indices of Consumer Prices (HICP) for each Member State. Prices are then weighted by fuel consumption to calculate an EU-28 average.

As leaded petrol was replaced by unleaded petrol during the period studied, an equivalent price for unleaded fuel has been calculated. This is a consumption weighted average, corrected for the slightly different energy content of the two fuels.

Methodology for gap filling

No methodology for gap filling has been specified.

Methodology references

No methodology references available.

Data specifications

EEA data references

No datasets have been specified here.



External data references

Road fuel excise duties in the EU

Harmonised index of consumer prices (HICP)

Oil bulletin prices history

Data sources in latest figures

Uncertainties

Methodology uncertainty

There is little uncertainty in the methodology used. However, information on annual fuel consumption is not currently available.

Prior to 2006, quarterly data were used, i.e. 15.01, 15.04, 15.07 and 15.10. After 2006, weekly data have been published. The HICP only makes monthly data available, so the same HICP index is used for every fuel price data point in each month. Consumption data are available annually, so calculations for the weighted average price by consumption use the same consumption data for every week in a given year.

Data sets uncertainty

Information on fuel prices and taxes is considered to be a reliable data set.

Rationale uncertainty

No uncertainty has been specified.

Further work

Short term work

Work specified here requires to be completed within 1 year from now.

Work description



Further work related to fuel prices and taxes could include gathering information and data on other transport fuels, such as jet fuel, marine fuels, rail diesel and electricity taxes, or even alternative fuels such as biofuels, liquefied petroleum gas and natural gas. However, in most cases, this information is not collected centrally by bodies such as Eurostat and can be difficult to obtain from other sources.

Resource needs

No resource needs have been specified

Status

In progress

Deadline

2017/12/31 00:00:00 GMT+1

Long term work

Work specified here will require more than 1 year (from now) to be completed.

General metadata

Responsibility and ownership

EEA Contact Info

Diana Inciene

Ownership

European Environment Agency (EEA)

Identification



Indicator code

TERM 021

Specification

Link: fuel-prices-and-taxes

Version id: 1

First draft created:

21 Aug 2007, 11:09 AM

Publish date:

21 Apr 2009, 12:00 AM

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09 Feb 2021, 06:19 PM

Primary theme: Transport

Frequency of updates

Updates are scheduled once per year

Classification**DPSIR:** Driving force**Typology:** Descriptive indicator (Type A - What is happening to the environment and to humans?)

Related content

External Data Spec

Road fuel excise duties in the EU

[<https://www.eea.europa.eu/data-and-maps/data/external/road-fuel-excise-duties-in>]

External Data Spec

Harmonised index of consumer prices (HICP)

[<https://www.eea.europa.eu/data-and-maps/data/external/hicp-2015-100-annual-data>]

External Data Spec

Oil bulletin prices history

[<https://www.eea.europa.eu/data-and-maps/data/external/oil-bulletin>]

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Transport

