Tax policy and the low carbon transition

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BETTER POLICIES FOR BETTER LIVES

Incentives, resilience and revenue

- Providing decarbonisation incentives – **carbon pricing**
  - Indicators
  - Incidence and level playing field; evidence and perceptions
- Adapting to shifting tax bases – **road transport**
- Reports from Germany, the Netherlands, France

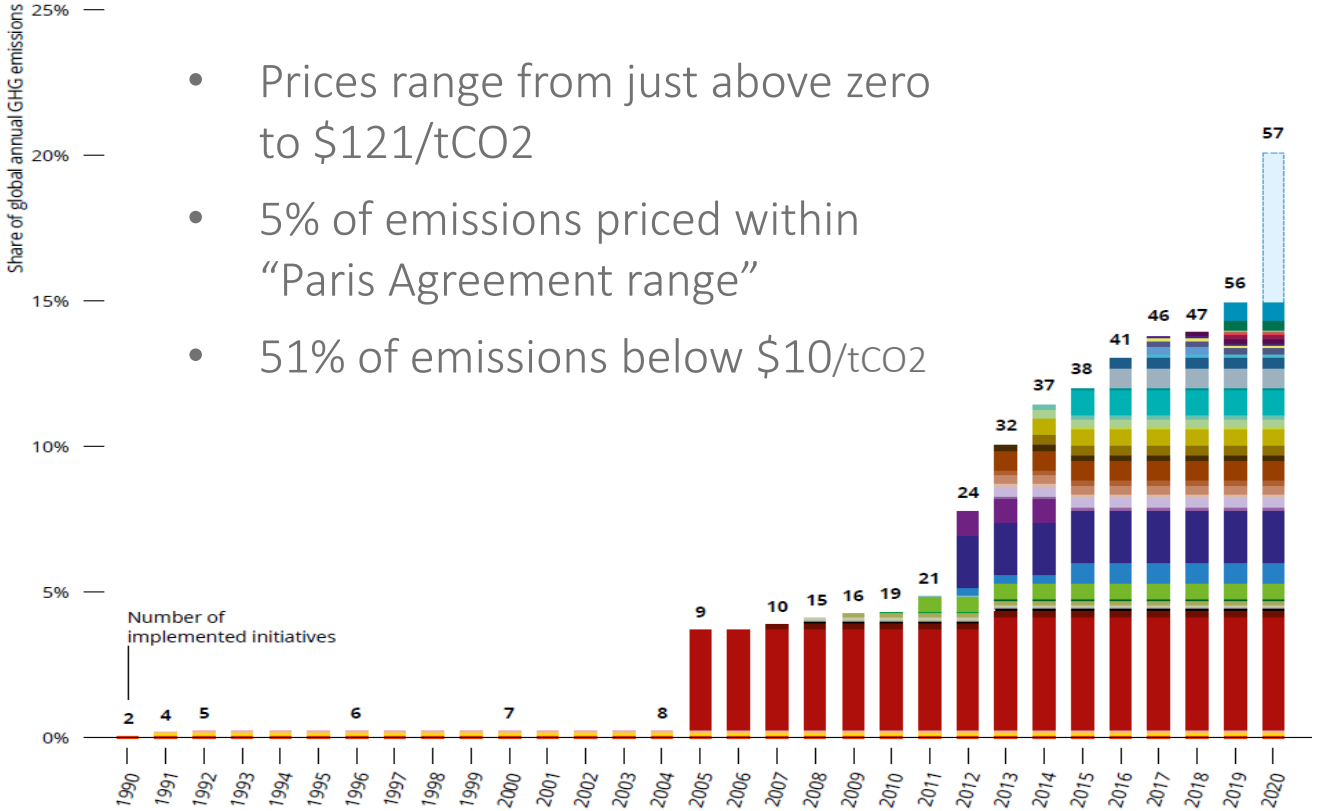
Carbon pricing

Carbon prices for energy use today

- Where do we stand? 2 perspectives
  - **Explicit carbon pricing**: carbon taxes and emissions trading systems – **policy intention**; statutory base is GHG emissions or energy use (equivalent, given the physics)
  - **Effective carbon rates**: taxes on energy use (excise, carbon taxes) and emissions trading systems – **incentives**; statutory base is GHG emissions or energy use (equivalent, given the physics)

Explicit carbon prices – WB State and Trends (2019, p. 15)

- Prices range from just above zero to $121/tCO2
- 5% of emissions priced within "Paris Agreement range"
- 51% of emissions below $10/tCO2



Taxing Energy Use 2019

Analyses tax-based energy price signals in EUR/GJ and EUR/tCO2 across all forms of energy use, including clean energy sources

Breaks down tax rates and tax base by

- Country (44 countries, 80% of world energy use)
- Sector, and
- Energy category

Overall, taxes are not being used to provide meaningful environmental price signals

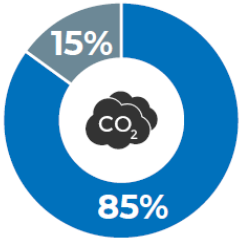
	Average* fuel excise per tCO_2 in 2018	Average* explicit carbon tax per tCO_2 in 2018	**Average* effective carbon tax per tCO_2 in 2018**
Coal and other solid fossil fuels	0.61	0.13	**0.73**
Fuel oil	3.50	0.46	**3.96**
Diesel	70.65	3.11	**73.76**
Kerosene	4.27	0.34	**4.61**
Gasoline	84.34	1.50	**85.83**
LPG	10.23	0.89	**11.12**
Natural gas	4.08	1.19	**5.26**

* Emission-weighted average across all 44 countries and int'l aviation & maritime

Outside road transport, the bulk of carbon emissions are completely unpriced

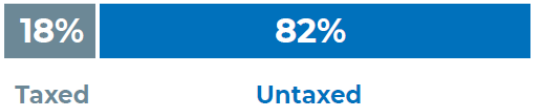
85% of energy-related CO_2 emissions take place **outside the road sector**.

Road emissions fuel use by cars, trucks and other road vehicles



Non-road emissions electricity generation, manufacturing, heating, aviation and maritime transport

But **taxes only cover 18% of non-road emissions**, leaving a tax of zero for the remaining 82%.

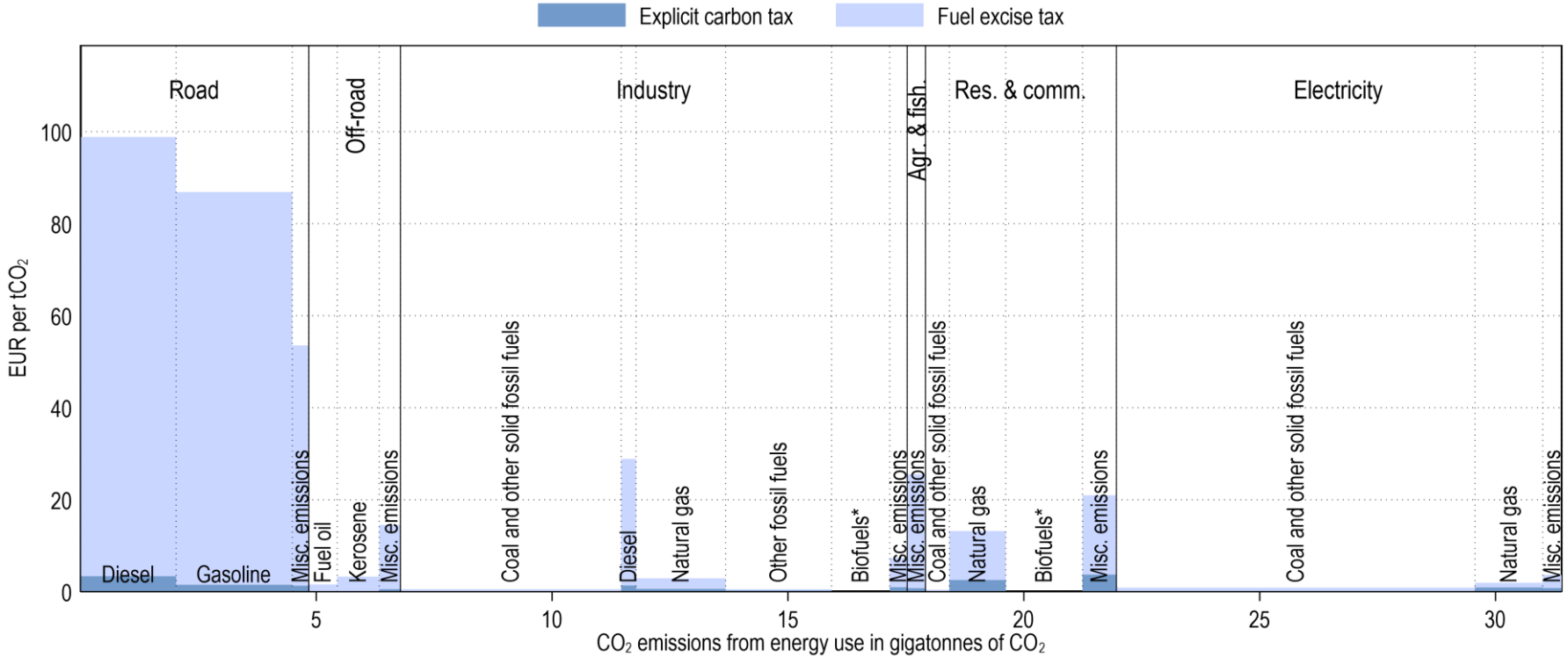


Only 4 countries tax non-road emissions at more than EUR 30 per tonne on average, a low-end benchmark of the climate damage caused by CO_2.

Emissions from **international** aviation and maritime transport are **not taxed at all**.

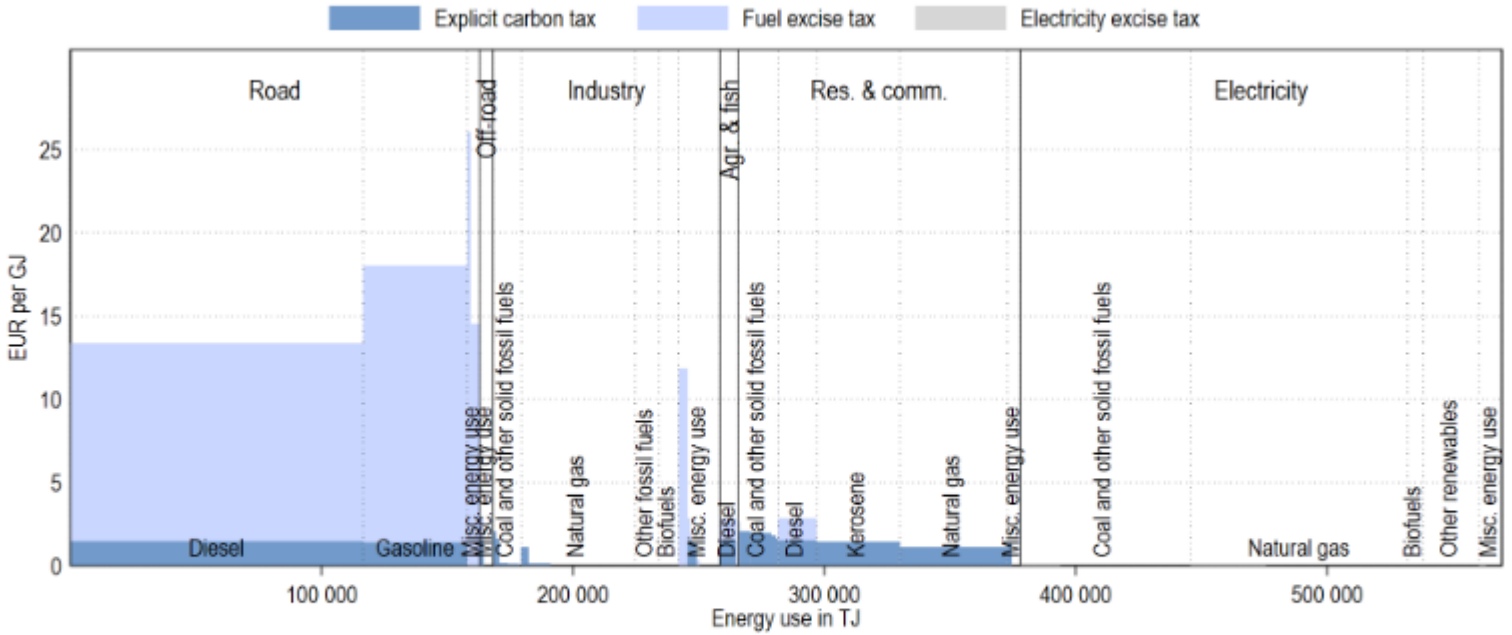
Fuels used in **domestic** aviation and navigation are **sometimes taxed**, but rarely reflect a low-end carbon benchmark.

Taxes on energy use by sector and fuel (all countries, EUR/tCO2)



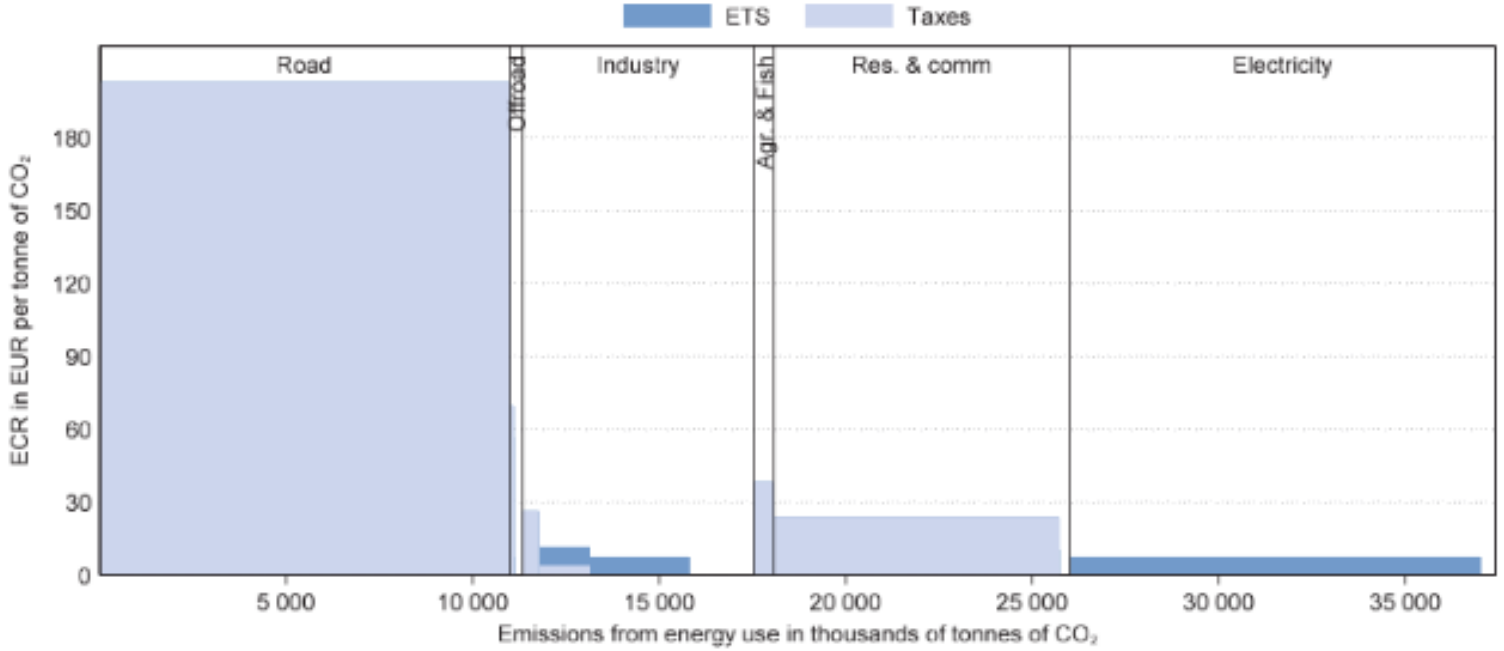
Emission-weighted average by sector and energy category

TEU profile for Ireland (EUR/GJ)



Note: Tax rates applicable on 1 July 2018. Energy use data is for 2016 and adapted from IEA (2018[2]), *World Energy Statistics and Balances*. Energy categories (labelled at the bottom) that represent less than 1% of a country's energy consumption are grouped into "misc. energy use" and may not be labelled.

ECR profile for Ireland, 2015 – EUR/tCO_2



The carbon pricing gap

- The carbon pricing gap measures the **extent to which the effective carbon rates fall short of a benchmark value** (e.g., EUR 30/tCO_2), as a percentage
- The carbon pricing gap was estimated at **76.5% in 2018**, down from 83% in 2012.
- In other words, **if countries would seek to set a price floor for carbon emissions of EUR 30/tCO_2, they are only one quarter of the way there**.
- **ETS** play an important role in some places and some sectors, but on the aggregate don't strongly modify the carbon pricing picture.

Tax revenue implications of decarbonising road transport

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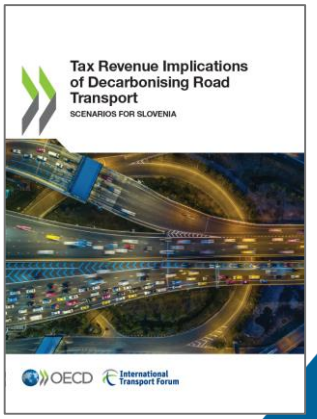
Potential tax base erosion in the transport sector

- The road transport fuel tax base could erode
- Eroding tax bases may put stress on government budgets
- Need to anticipate the potential decline of fuel tax revenues and decide whether and how to respond.

- How could tax revenue from transport fuels evolve over time as vehicles rely less on fossil fuels?
- How could the tax system respond to declining revenues?

- Case study for Slovenia: very detailed data combined with scenarios;

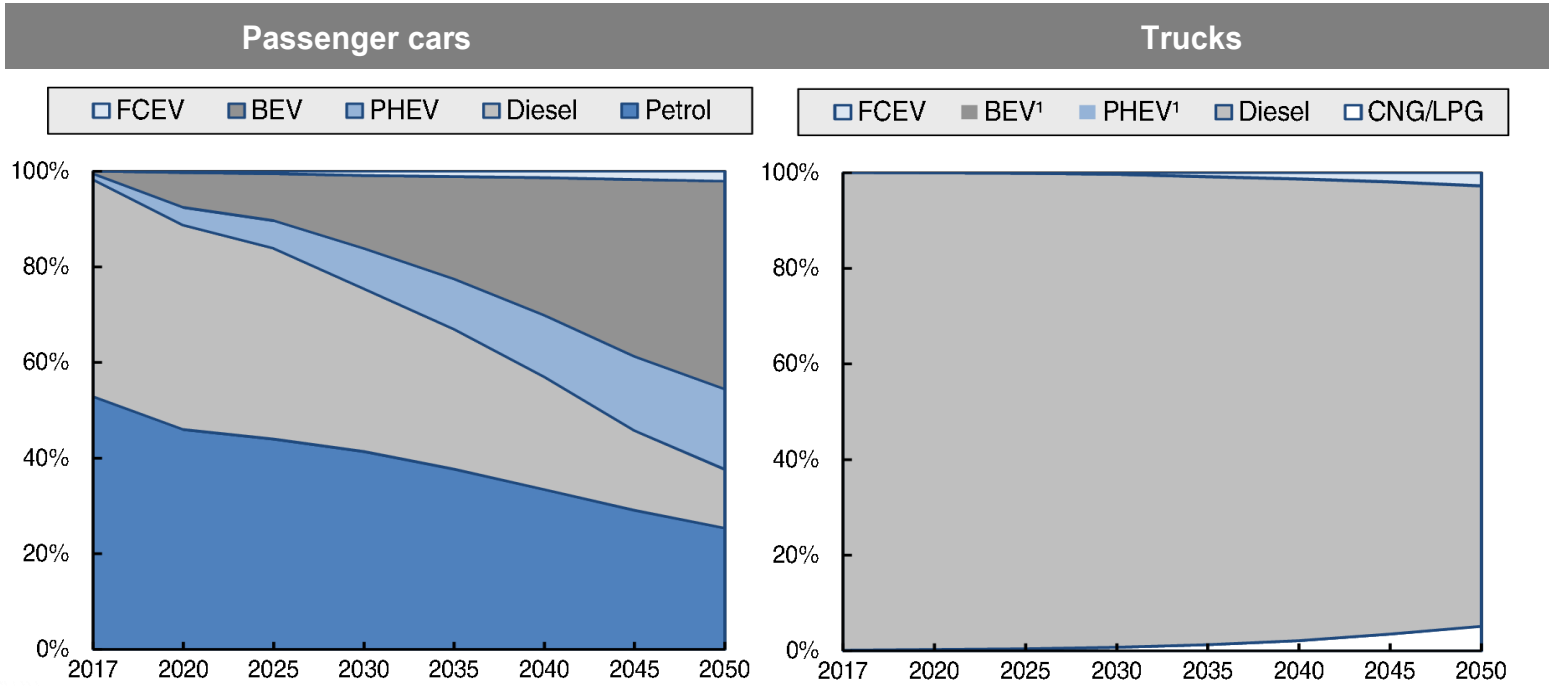


In 2016, **14.6% of total tax revenue collected at the central government level in Slovenia came from excise duties and carbon taxes levied on diesel and gasoline used in road transport**

Main technology scenario (model input)

Alternative fuel vehicles in new vehicle sales in Slovenia, 2017-2050

(Based on IEA 2°C scenario)



Source: OECD/ITF (2019), Tax revenue implications of decarbonising road transport: Scenarios for Slovenia, OECD Publishing, Paris, .

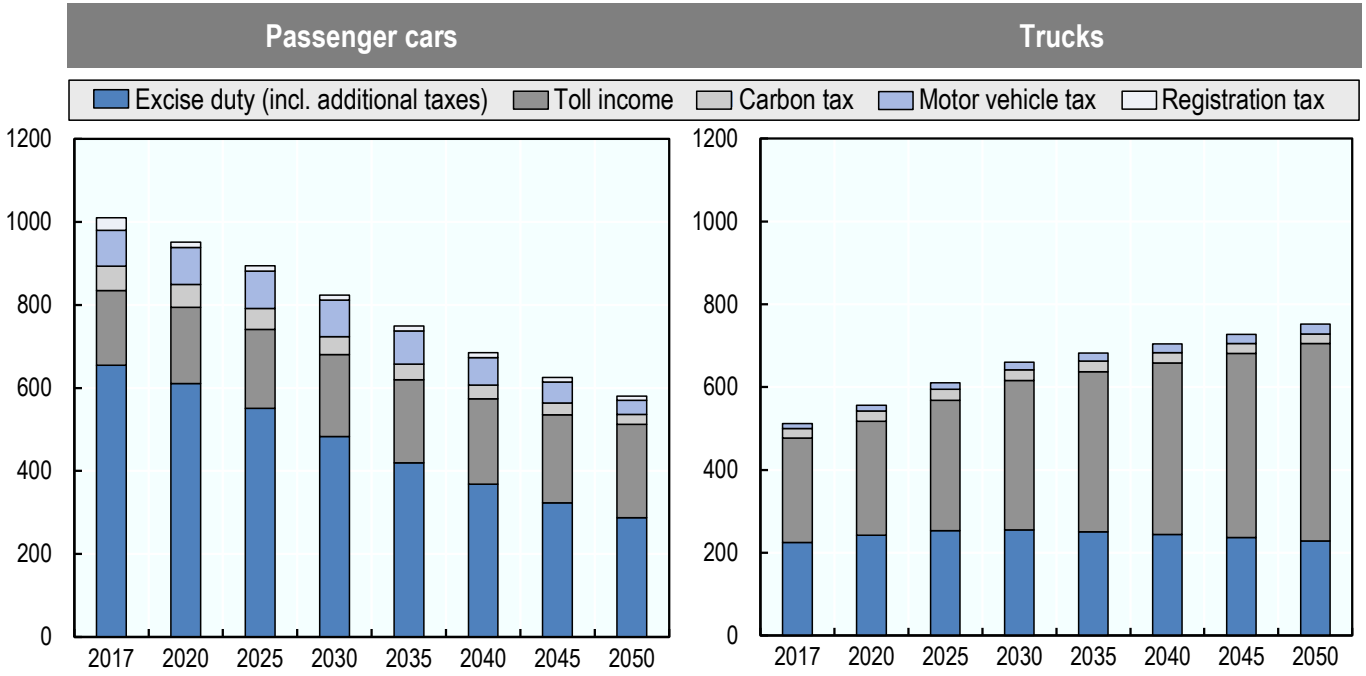
Findings

Under current policies, tax revenues from diesel and gasoline use in private cars are likely to decline substantially in the coming decades in Slovenia.

- Total tax revenues from fuel used in passenger cars in Slovenia would drop by 56% between 2017 and 2050 if demand for cars and car use develops in line with the scenario.
  - This assumes that fuel-efficiency improves in line with European standards until 2030 and that alternative fuel technologies account for roughly 60% of new passenger car purchases in 2050 in line with the IEA 2°C scenario.
- The picture for trucks is different, with slower expected take-up of alternative technologies.
  - Furthermore, Slovenia's current toll system for trucks provides an effective means to raise revenue independently of fuel use.

Fuel tax revenue from passenger cars is expected to drop in Slovenia

Tax revenue from passenger cars and trucks for the baseline scenario, 2017-2050



Source: OECD/ITF (2019), Tax revenue implications of decarbonising road transport: Scenarios for Slovenia, OECD Publishing, Paris.

Tax reform simulation: distance-based charges

Kilometre tax equivalent to cover revenue loss from fuel taxes on passenger cars (2020-2050)

(No differentiation along vehicle dimensions; no behavioural effects)

	2020	2025	2030	2035	2040	2045	2050
Fuel tax revenue loss from cars for IEA 2DS (million EUR)	47.6	112.5	186.1	256.1	312.7	362.4	402.1
Km-equivalent; car and truck kilometres on motorway (EUR per vkm)	0.0071	0.0158	0.0247	0.0330	0.0389	0.0433	0.0458

Source: OECD/ITF (2019), Tax revenue implications of decarbonising road transport: Scenarios for Slovenia, OECD Publishing, Paris.

Findings

Shifting from taxes on fuels to taxes on distances driven can contribute to more sustainable tax policy over the long term [“distance less elastic than energy”], improving environmental and mobility outcomes at the same time.

- In the long run, revenues can be sustained by
  - gradually increasing fuel or carbon taxes (to cover the external costs closely related with fossil fuel use)
  - phasing-in distance-based charges for cars (to reflect external costs closely related with distances driven).
- The existing distance-based charging systems could raise revenue and manage external costs more efficiently
  - Passenger cars: by providing a direct link to the amount of kilometres driven, instead of charging an all-you-can-drive access via a vignette. [“is a congestion charge a distance-based charge?”]
  - Trucks: by differentiating existing distance-based toll rates by time and place.
- Higher vehicle taxes (including on alternative fuel vehicles) may cover the shortfall in revenues, but their limited ability in managing external costs from driving reduces their appeal.

Contribution of different tax types to raising revenue fairly and efficiently in the long-run

Summary of impact evaluation by tax type

	Fuel or carbon tax	Vehicle tax	Distance-based charges
Long-run revenue stability	☹	☺	☺
External cost management • CO_2 emissions • Air pollution • Driving-related external costs (e.g., accidents, congestion, noise and air pollution exposure, road damage, use of public space)	 ☺ 😐 ☹	 ☹ 😐 ☹	 ☺ ☺ ☺
Administrative and implementation costs	☺	☺	☹

Source: OECD/ITF (2019), Tax revenue implications of decarbonising road transport: Scenarios for Slovenia, OECD Publishing, Paris.
and
Van Dender, K. (2019), "Taxing vehicles, fuels, and road use: Opportunities for improving transport tax practice", OECD Taxation Working Papers, No. 44, ECD Publishing, Paris.

Distance-based charging and total taxes and charges, 1998 and 2008 (Van Dender, OECD Tax Policy working paper 44, 2019)

	Electronic distance based charge introduced:	Change in taxes and charges per trip: 2008 / 1998	Charges and taxes per trip in 2008, € of 2010	composition of per trip taxes and charges			
				% vehicle charges	% fuel excise taxes	% vignette	% tolls and distance-based charges
Switzerland	2001	3.62	327.6	2.5	19.2	0.0	78.3
Austria	2004	1.29	127.6	5.3	37.0	0.0	57.7
Germany	2005	1.49	91.4	4.4	66.8	0.0	28.9
Czech Rep.	2007	2.05	85.4	6.0	55.6	0.0	38.4
France		0.97	98.1	2.7	51.7	0.0	45.6
Portugal		1.82	87.9	3.5	53.3	0.0	43.2
Italy		0.88	79.9	4.3	66.0	0.0	29.7
Spain		0.83	78.8	4.8	49.8	0.0	45.4
United Kingdom		0.95	109.0	8.3	91.7	0.0	0.0
Sweden		1.13	66.1	12.9	80.4	6.7	0.0
Denmark		1.02	61.6	4.1	88.3	7.6	0.0
Netherlands		1.04	59.5	8.5	83.7	7.8	0.0
Hungary		0.37	58.9	18.9	76.0	5.1	0.0
Belgium		0.85	48.4	8.1	83.8	8.2	0.0
Finland		0.90	44.1	20.0	80.0	0.0	0.0

Country reforms – incentives and revenue

EU Green Deal

- 11 December 2019: climate, biodiversity, pollution – net zero 2050 (law), decouple growth from resource use – public investment, shift private investment
- By June 2021, review & revise all policy instruments (ETS, ETD, non-ETS MS targets) to arrive at effective carbon pricing throughout the economy
- **Border carbon adjustments** instead of free permits and compensation for higher electricity prices (tbd)
- **Extend ETS to maritime transport, road pricing, revise exemptions maritime & aviation in ETD** (tbd)

Klimapaket Germany

- December 2019 compromise; -55% by 2030 compared to 1990
- CO2 tax in non-ETS sectors at EUR 10/tCO2 in 2021 to EUR 35 in 2025
- EEG Umlage to decline slightly (electricity a bit cheaper)
- VAT on long distance rail from 19% to 7%
- Tax credit car commuting +21km from 30 to 35ct/km
- Air ticket tax to rise
- EV subsidies (5k EUR?)
- Subsidies for replacing oil heating systems

Klimaatakkoord Netherlands

Climate agreement 28 June 2019: sector-specific goals based on estimated cost-effectiveness; norms, prices and subsidies; climate law with 10y horizon

- **Heating: tax natural gas up, tax electricity down** (budget-neutral)
- Mobility: **investigate replacement fuel taxes by km charges**, time-limited tax preferences and subsidies for EVs
- Industry: strengthen ETS, energy taxes, ODE charge, **national CO2 charge**
- Electricity: **minimum price EU ETS**, minimum national CO2 price electricity

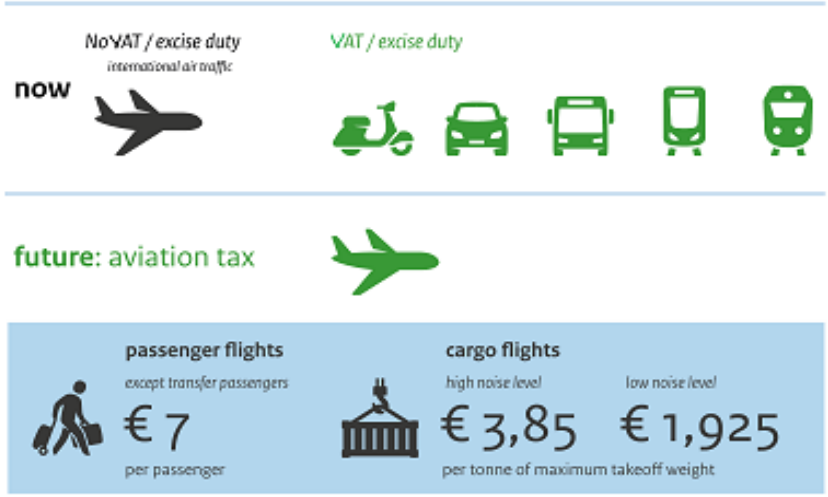
Netherlands 2019: Carbon floor price

- Bill submitted to parliament June 4th, entry into force 1-1-2020
- For electricity generation in EU ETS (circa 135 companies)
- Floor price in addition to EU ETS: if ETS price drops, a national tax is levied
- Starting at € 12,30/ton CO2 in 2020 and increasing each year, to € 31,90/ton CO2 in 2030.
- Will give electricity producers long-term certainty about the minimum cost of CO2, encouraging sustainable investment
- Unilateral introduction of a carbon floor price significantly above EU ETS price could reduce Dutch CO2-emissions (-8 Mt. in 2030), but might have an adverse effect on EU emissions (+4 Mt. in 2030)

Aviation tax

Dutch Aviation Tax in 2021

National aviation tax in case insufficient progress is made on creating a Europe-wide tax.



total anual return of € 200 million

Switzerland – Complete revision of CO_2-law

Present state of affairs…

Federal Council

- Preliminary Draft **from 2015**
- Consultation round **from end of August 2016**
- Draft / Dispatch **1 December 2017**

Parliament

- Commission / First Council
  Wintersession 2018
- Commission / Second Council
  Fallsession 2019
- Commission / First Council
  Wintersession 2019?
- Final votes
  Springsession 2020?

Federal Council

- Adopted wording of law
- Fac. referendum / poss. popular vote
- Entry into force **1 January 2021**

Complete revision of CO_2-law

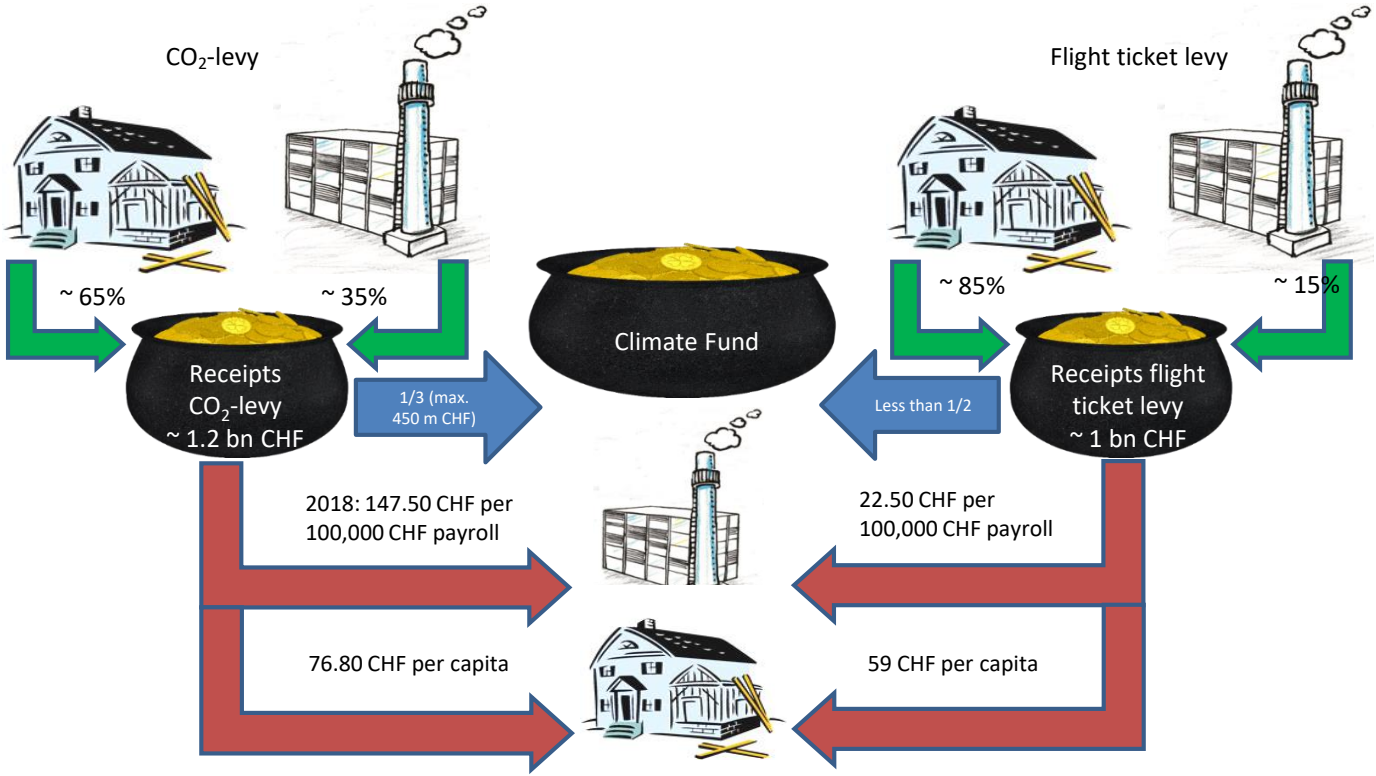
Purpose: anchors goals of the Paris Agreement:

1) Keep the increase in global average temperature to well below 2 degrees Celsius above pre-industrial levels and pursue efforts to limit the increase to 1.5 degrees Celsius above pre-industrial levels;
2) **Reduce greenhouse gas emissions to a level that does not exceed the removal capacity of carbon sinks**;
3) **Increase the ability to adjust** to the adverse impacts of climate change;
4) Make finance flows consistent with a pathway towards low greenhouse gas emisions and climate resilient development.

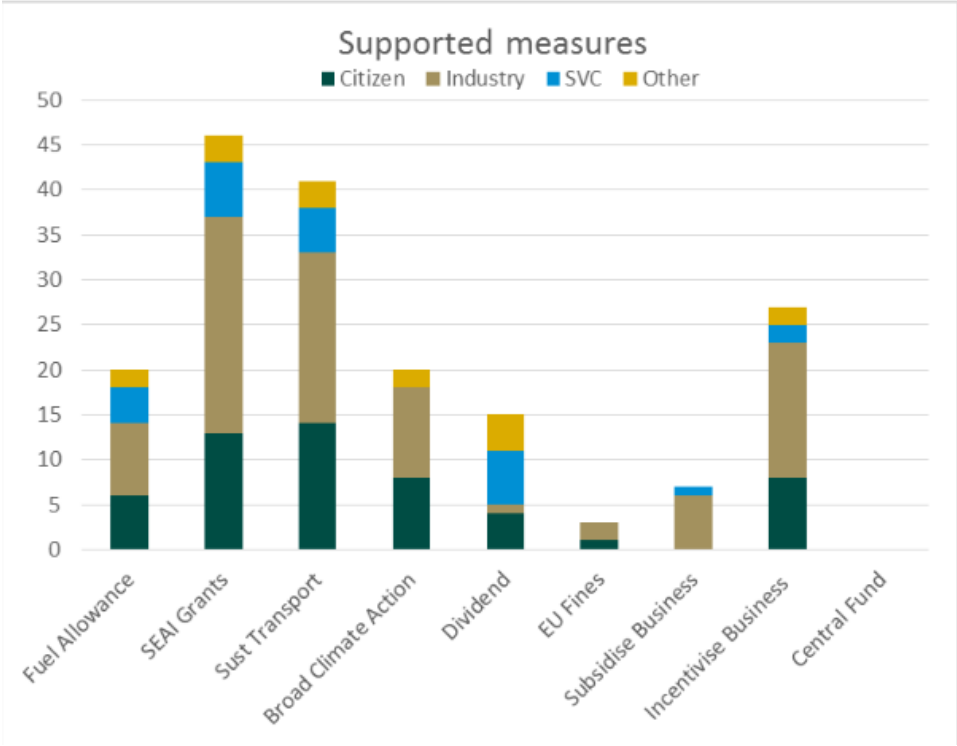
Complete revision of CO_2-law
Flight ticket levy and climate fund

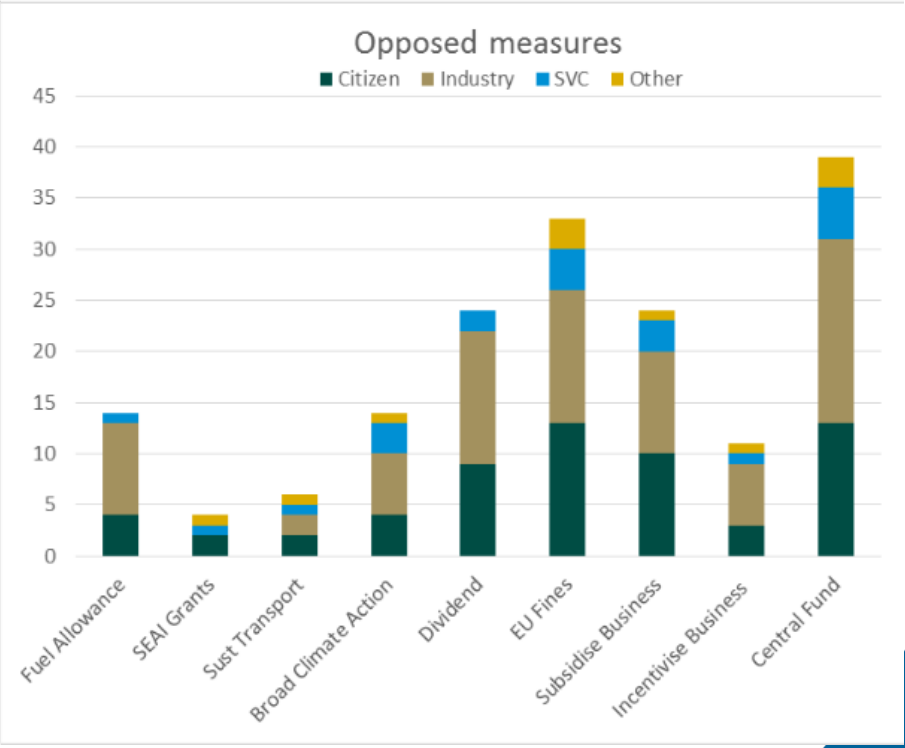
- Flight ticket levy and climate fund as new measures compared to the proposal of the Federal Council.
- **Flight ticket levy**:
  - between 30 and 120 CHF per person per flight;
  - Excluding transit and transfer passengers;
  - Differentiation according to class of carriage and distance travelled;
  - Revenue generated approx. 1 bn CHF per year.
- Technology fund and buildings programme are integrated into **climate fund** and do not expire at the end of 2025 as proposed by the Federal Council.

Complete revision of CO_2-law
Redistribution of receipts



Revenue use – Irish preferences





https://assets.gov.ie/19116/c447474fea5e422080a6384b7a84fbed.pdf, p.29

France: two initiatives on **comprehensibility** of environmental taxation

1. A national exercise: shedding light on environmental dimensions of the yearly Budget Bill with a new “Yellow Book”, a companion document to the Budget Bill.

2. An ongoing study on effective carbon rates in France by the Ministry for the Ecological and Inclusive Transition, following OECD works.

1. Shedding light on environmental dimensions of the yearly Budget Bill

- Report on policy guideline for environmental taxation released in September 2018 (« Comment construire la fiscalité environnementale pour le quinquennat et après 2022 ? »).
- Written by a senior economist (Dominique Bureau) and a deputy in the National Assembly (Bénédicte Peyrol).
- First recommendation: creation of a "Yellow Book" to shed light on the environmental taxation policy of the Budget Bill.
- The National Assembly and the Senate decided to create this Yellow Book, a companion document to the Budget Bill, and dedicated to environmental expenditure and environmental taxation policy (Law number 2018-1317 of 28th December 2018).
- Yellow Book released on 11th October 2019.
- A first step towards the green budgeting exercise next year.

Content of the new “Yellow Book”

- Divided in three parts :
    I. State environmental expenditures.
    II. Public and private environmental expenditure.
    III. Environmental fiscal policy :
        i. Description of environmental taxation tools
        ii. Revenue for each tax
        iii. Tax expenditure : list of those that have a positive or negative effect on the environment
        iv. Effect of environmental taxes on households and firms.
- Collaboration between the Ministry of Environment and the Ministry of Budget.
- Values for 2018, 2019 and 2020.

2. Effective carbon rates in France

Why this work?

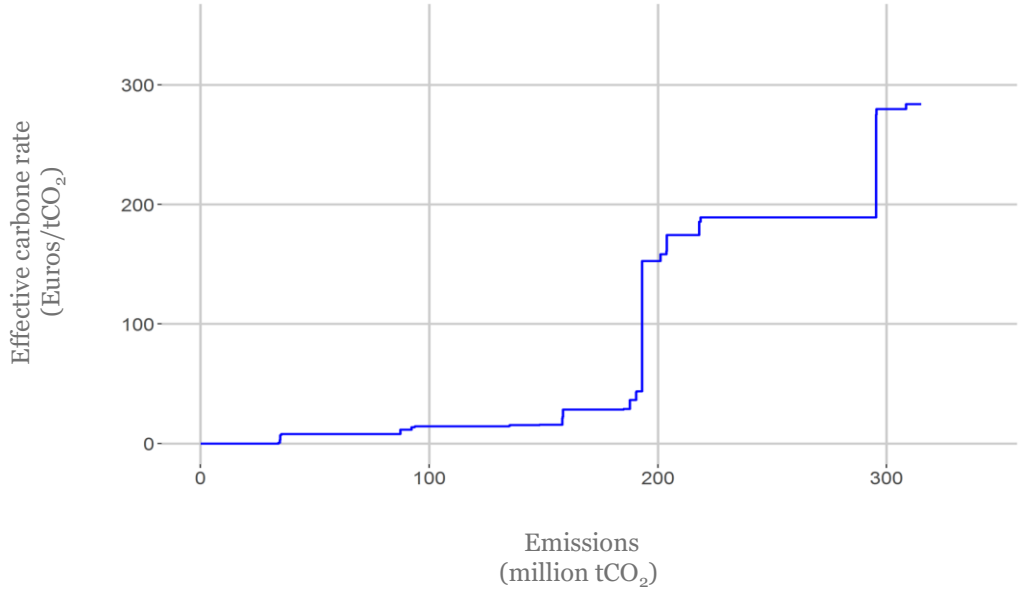
- Lack of visibility of fossil taxation in the French legislation :
  - Taxation rates are expressed in different physical units
  - No explicit distinction of the carbon component
  - An important number of tax expenditures
- No instruments to measure the alignment of taxation with French climate goals
- Identify potential holes in fossil taxation

Method – ELFE Model :

- Consumption => CO_2 Emissions
- Emission Price * Consumption => Tax revenues
- Tax revenues / CO_2 Emissions => Effective Carbon Rate

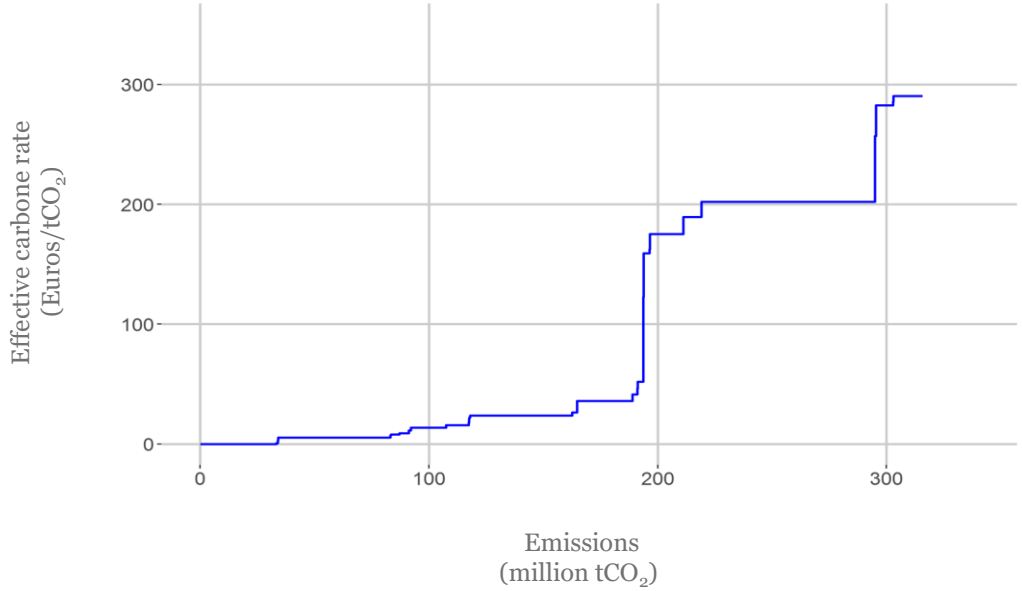
Effective carbon rate curve

In 2015



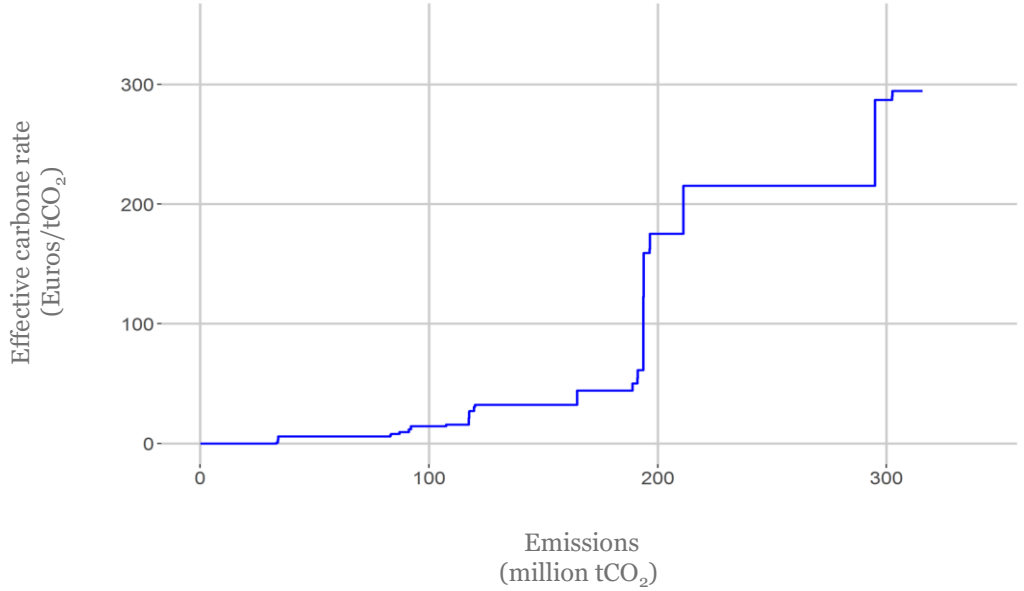
Effective carbone rate curve

In 2016



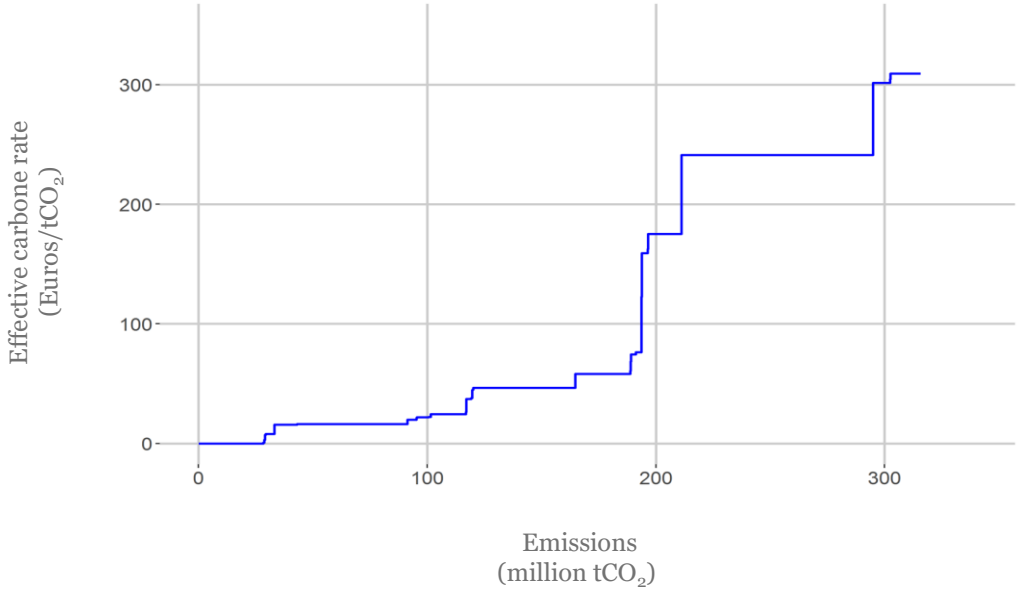
Effective carbon rate curve

In 2017

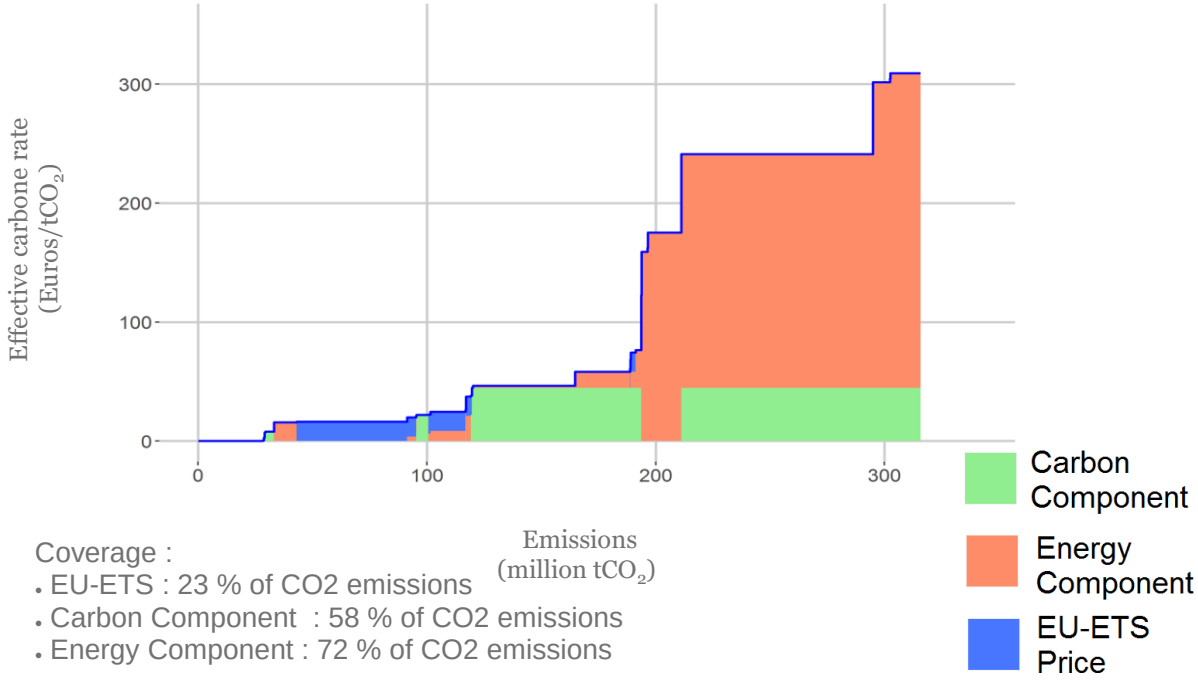


Effective carbon rate curve

In 2018



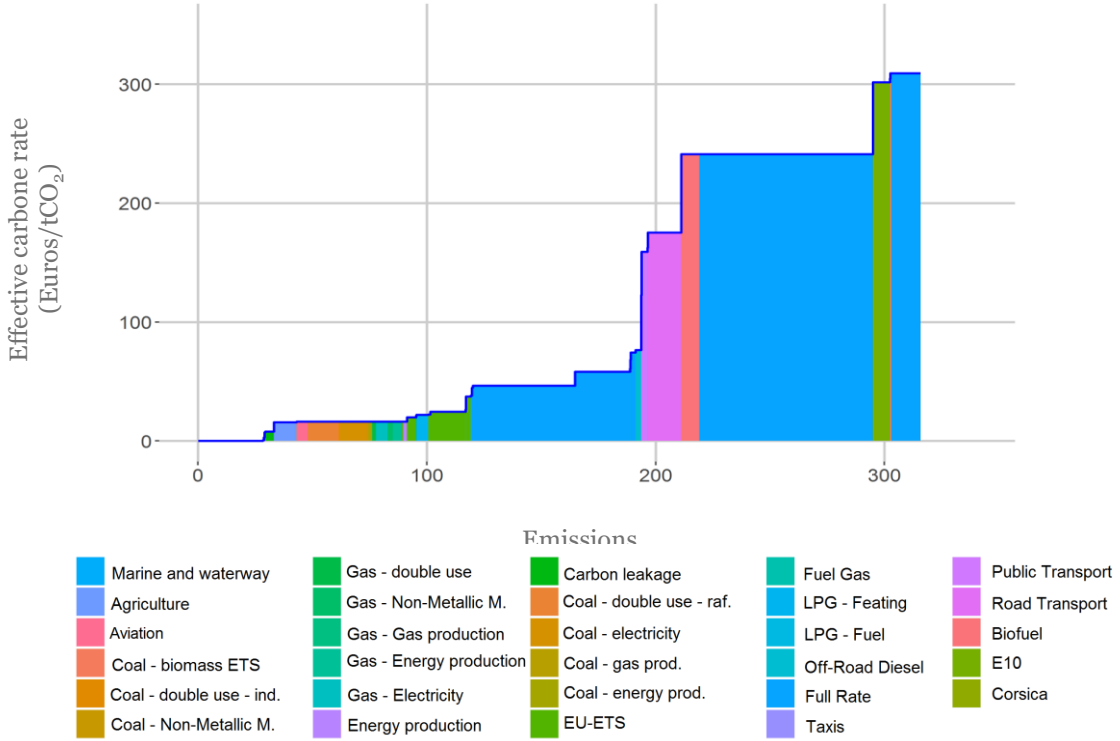
Disparities linked to carbon pricing instruments



Coverage :

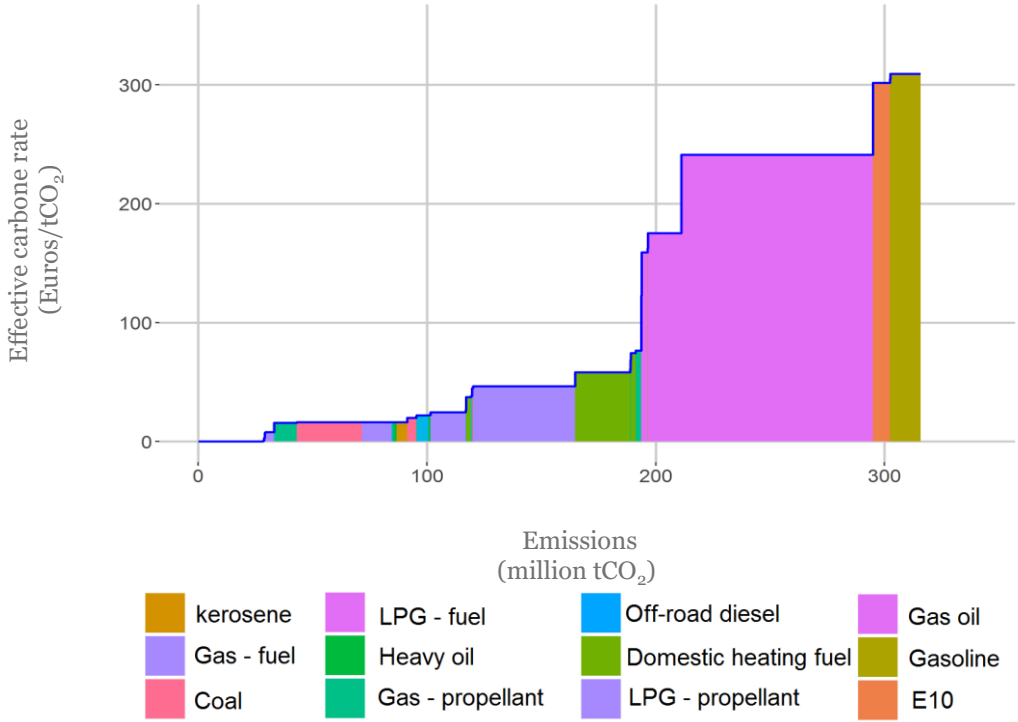
- EU-ETS : 23 % of CO2 emissions
- Carbon Component : 58 % of CO2 emissions
- Energy Component : 72 % of CO2 emissions

Disparities linked to fiscal regimes



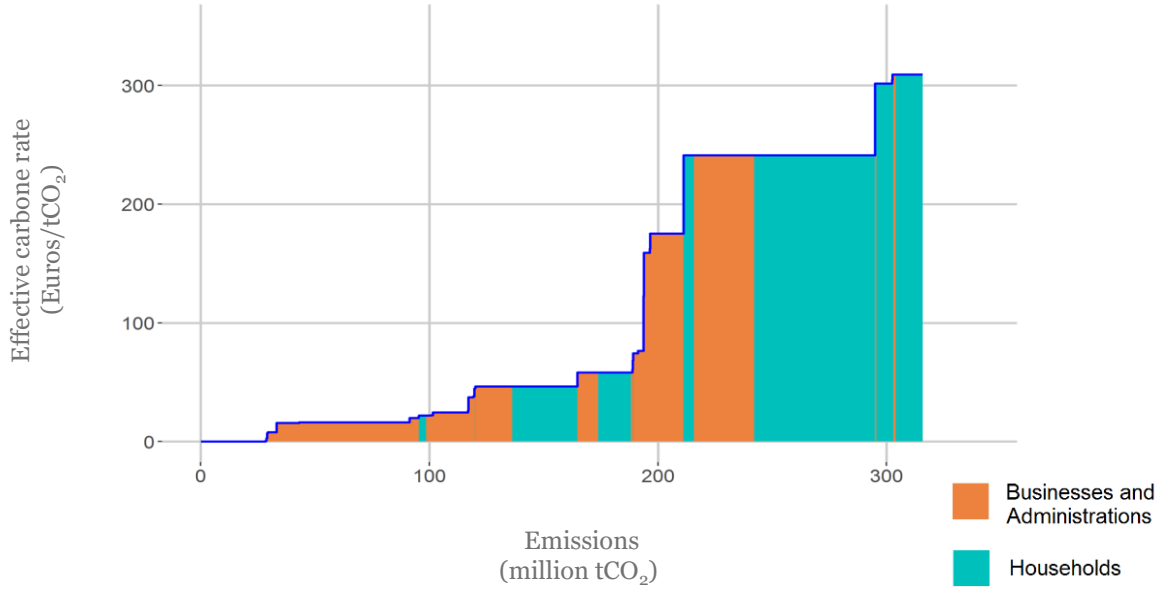
Disparities between energy products

ECR by product - in 2018



Disparities between economic agents

ECR by actor - in 2018



Summing up

- Emission abatement incentives, sometimes decarbonisation incentives (but: free permits?)
- Preparing for a tax base shift: not so much; distance-based tax more from a mobility and new revenue perspective (easy when tax exporting, not so easy domestically)
- Public support – revenue use – alternative instruments