

# Should the EU ETS be extended to transport and buildings?

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This draws on a study written for the Centre on Regulation in Europe (CERRE, [www.cerre.eu](http://www.cerre.eu)).

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# Outline

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- CERRE project, with thanks to Geoffroy Dolphin
  - This is currently being discussed by the EU.
1. What impact would extension have?
  2. Theoretical properties of extension of EU ETS
  3. The role of an EU ETS extension
  4. Will existing standards be undermined?
  5. Addressing distributional impacts
- Overall, the answer is YES. Indeed the onus is on others to propose a feasible alternative with similar properties.

# The impact of extension

*ETS coverage (share of total country GHG emissions) and average CO<sub>2</sub> price, by sector*

	Current scope		GHG emissions – sectoral shares of total 2018 CO <sub>2</sub> emissions			Extended scope – 2018 CO <sub>2</sub> emissions	
		ETS	Road transport	Residential Heating	Commercial Heating		
<b>EU-28</b>	45% - EUR/tCO <sub>2</sub> e	11.73	21% - 5.61 EUR/tCO <sub>2</sub> e	9% - 2.35 EUR/tCO <sub>2</sub> e	4% - 1 EUR/tCO <sub>2</sub> e	79% - EUR/tCO <sub>2</sub> e	20.68
<b>France</b>	26.9% - EUR/tCO <sub>2</sub> e	7.18	27.7% - 7.39 EUR/tCO <sub>2</sub> e	9.4% - 2.5 EUR/tCO <sub>2</sub> e	6.3% - 1.69 EUR/tCO <sub>2</sub> e	69% - EUR/tCO <sub>2</sub> e	18.41
<b>Germany</b>	55% - EUR/tCO <sub>2</sub> e	14.59	18% - 4.84 EUR/tCO <sub>2</sub> e	9.6% - 2.57 EUR/tCO <sub>2</sub> e	3.7% - 1 EUR/tCO <sub>2</sub> e	86% - 23 EUR/tCO <sub>2</sub> e	
<b>Italy</b>	38.8% - EUR/tCO <sub>2</sub> e	10.35	22.4% - 5.98 EUR/tCO <sub>2</sub> e	10.8% - 2.88 EUR/tCO <sub>2</sub> e	5.8% - 1.55 EUR/tCO <sub>2</sub> e	77.7% - EUR/tCO <sub>2</sub> e	20.75
<b>Poland</b>	51.7% - EUR/tCO <sub>2</sub> e	13.81	15.3% - 4.07 EUR/tCO <sub>2</sub> e	8.5% - 2.27 EUR/tCO <sub>2</sub> e	1.7% - 0.45 EUR/tCO <sub>2</sub> e	76% - EUR/tCO <sub>2</sub> e	20.28
<b>Romania</b>	40.7% - EUR/tCO <sub>2</sub> e	10.86	15% - 4.05 EUR/tCO <sub>2</sub> e	5.8% - 1.55 EUR/tCO <sub>2</sub> e	1.9% - 0.51 EUR/tCO <sub>2</sub> e	63.6 - EUR/tCO <sub>2</sub> e	16.97
<b>Spain</b>	42% - EUR/tCO <sub>2</sub> e	11.18	24.7% - 6.6 EUR/tCO <sub>2</sub> e	3.7% - 1 EUR/tCO <sub>2</sub> e	4.4% - 1.17 EUR/tCO <sub>2</sub> e	74.7% - EUR/tCO <sub>2</sub> e	19.94
<b>Sweden</b>	43.2% - EUR/tCO <sub>2</sub> e	11.52	28.6% - 7.64 EUR/tCO <sub>2</sub> e	0.9% - 0.24 EUR/tCO <sub>2</sub> e	1.3% - 0.36 EUR/tCO <sub>2</sub> e	74% - EUR/tCO <sub>2</sub> e	19.76
<b>United Kingdom</b>	34.6% - EUR/tCO <sub>2</sub> e	9.22	24.1% - 6.44 EUR/tCO <sub>2</sub> e	14.4% - 3.83 EUR/tCO <sub>2</sub> e	4.3% - 1.14 EUR/tCO <sub>2</sub> e	77.3%- EUR/tCO <sub>2</sub> e	20.63

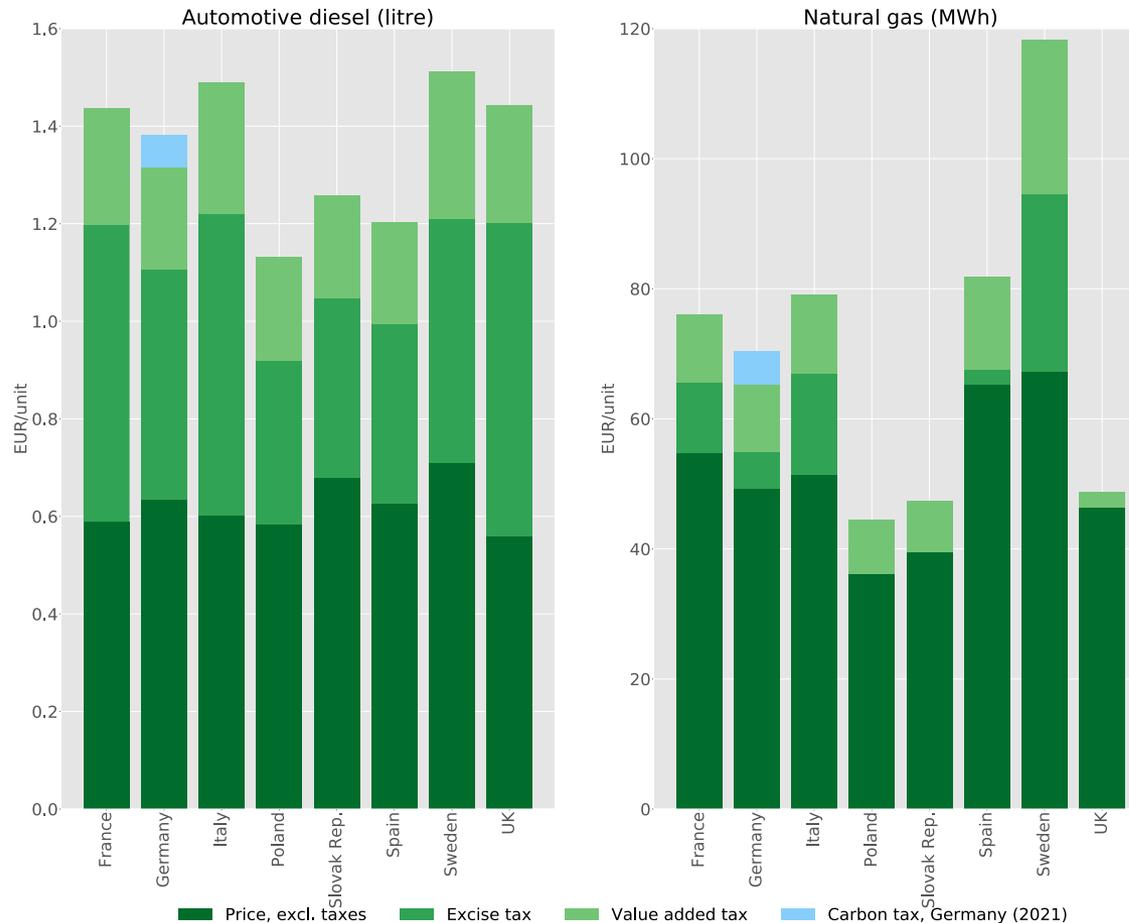
Source: Pollitt and Dolphin, 2020. Assumption of 26.68 Euro/tonne CO<sub>2</sub>

# Related policies are of three types...

1. Policies which serve as a complement in covered sectors in EUETS:
  - **Renewable Energy Directive** and aspects of the **Large Combustion Plant Directive**.
2. Main instruments of road transport and building emissions reduction in sectors currently under the scope of the Effort Sharing Decision
  - Regulations setting CO<sub>2</sub> **emission performance standards** for new passenger cars and for new light commercial vehicles (EU, 2019)
  - **Energy Performance in Buildings Directive** (EPBD) (EU, 2019).
  - **Ecodesign Directive** (EU, 2009) which sets the framework for the energy efficient design of 31 product groups
  - **Energy Labelling Directive** which specifies energy consumption labelling requirements for 15 product groups (EU, 2017).
3. Other policies which are related:
  - **Energy Taxation Directive** (ETD) (EU, 2003).

# Energy taxes not harmonized...

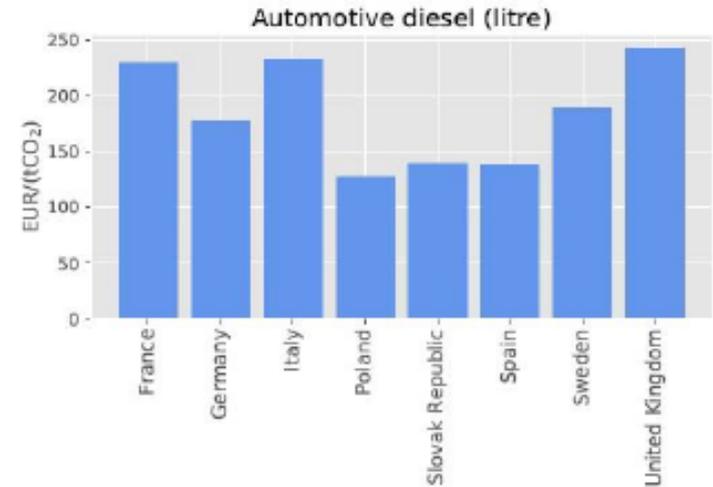
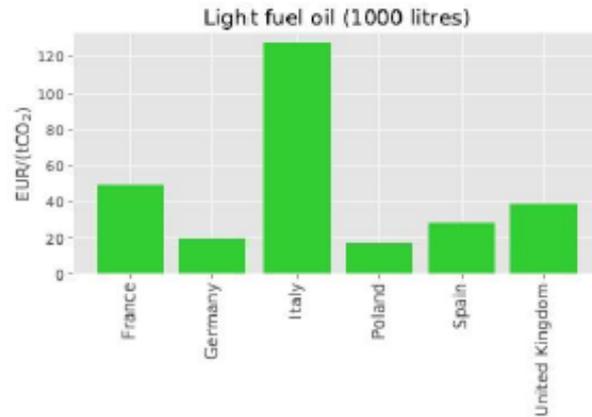
Figure 3-1 Taxes and charges applied to transport and heating fuels in 2018, by Member State and



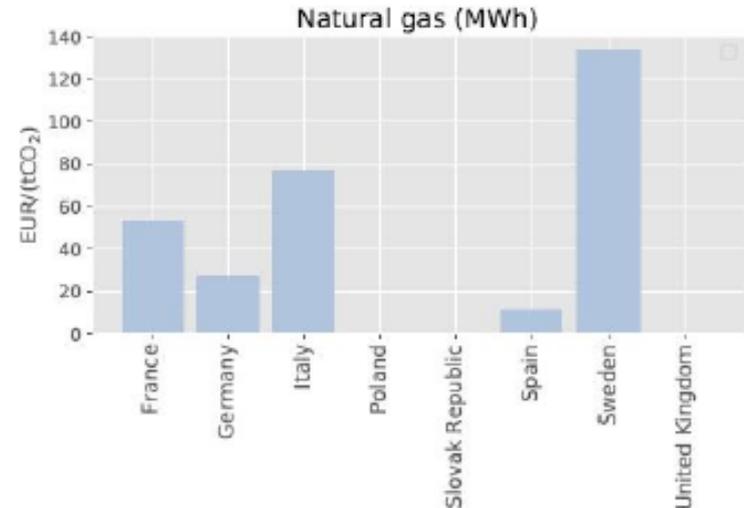
Source: Pollitt and Dolphin, 2020.

# Energy taxes indexed by carbon content...

Figure 3-2 – Fuel duties indexed by carbon content (households)



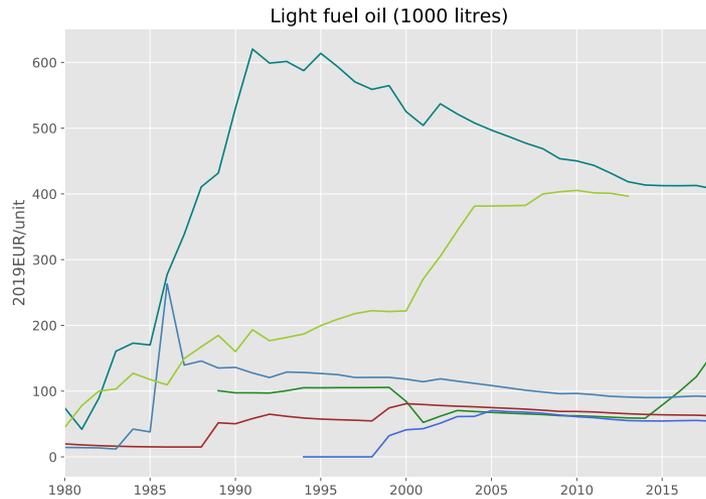
Important to note that even high energy taxes do not clearly reflect carbon externality as there are lots of other things to be priced in fuel costs, e.g. local pollution, congestion, road pricing etc.



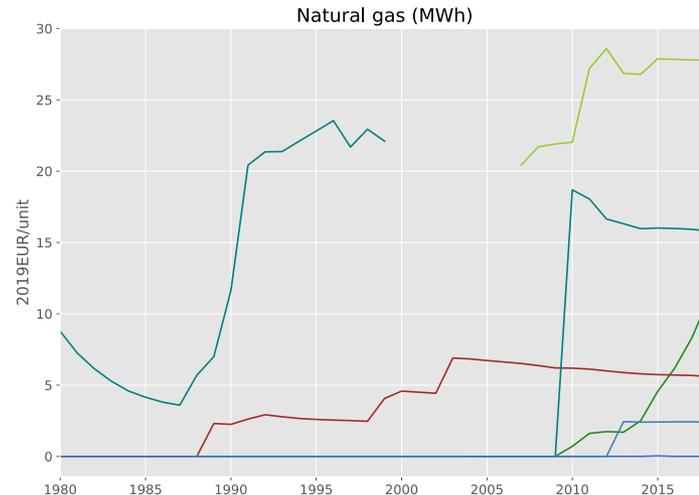
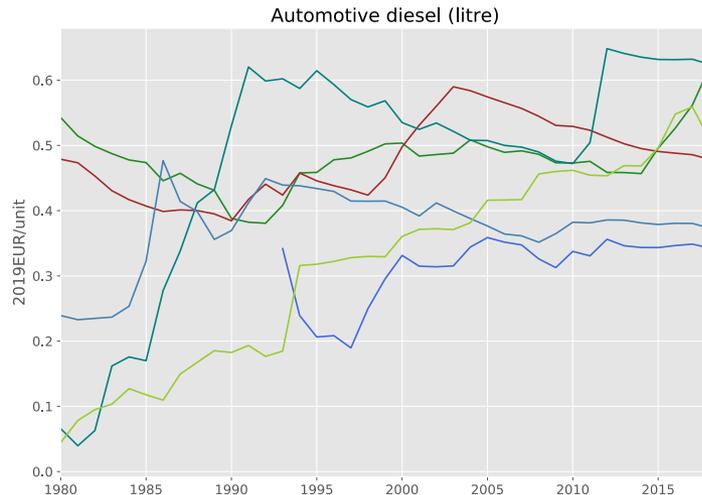
Source: Pollitt and Dolphin, 2020.

# Fuel duties not dynamically efficient...

Excise duties over time



Should be rising at real rate of interest to reflect appropriate pricing of future damage...



Source: Pollitt and Dolphin, 2020.

— France    — Italy    — Slovak Republic    — Sweden  
— Germany    — Poland    — Spain    — United Kingdom

# Effect of carbon pricing on natural gas price

Carbon taxes on road transport and heating fuels in EU ETS participating countries (as of 2017), 2015USD/tCO<sub>2</sub>e

	Road transport	Residential heating	Commercial heating
<b>Denmark</b>	35	35	33.4
<b>Finland</b>	88	87	87
<b>France</b>	0	40.5	40
<b>Iceland</b>	10.5	10.5	10.5
<b>Ireland</b>	26.5	26.5	26.5
<b>Liechtenstein</b>	96	96	96
<b>Norway</b>	82	75.5	69.5
<b>Portugal</b>	9	9	9
<b>Slovenia</b>	23	23	23
<b>Sweden</b>	191	133.5	133.5

Source: Pollitt and Dolphin, 2020.

# Theoretical properties of extension

- Tradeable permit systems (or equivalent emissions tax or abatement subsidy) can achieve any given emissions target at least cost.
- The price signal arising from the creation of a cap-and-trade system can be expected to have certain desirable properties.
  - First, it is expected to rise at the rate of interest on equivalent financial assets.
  - Second, it is expected to go down when new information emerges suggesting demand is lower than expected or the cost of compliance is lower, and vice versa.
  - Third, prices will rise/fall on expectations of increased policy/reduced commitment to targets.
  - Fourth, it is common to all participants and all covered countries, and all are faced with the same changes in price.

# Theoretical properties of extension

- It will provide further clarity as to the commitment to EU climate policy regime by specifying in what timeframe CO<sub>2</sub> emissions reduction in these sectors will be achieved.
- It would have distributional impacts and must adequately address distributional issues by design.
- There is a risk that a significant extension will cause individual countries to leave the EU ETS, however this is not likely given need to leave EU!
- This extension would shift pricing of the externality from inputs (excise taxes on fuels) to environmental outputs (EUA price on implied and calculated CO<sub>2</sub> emissions) improving whole supply chain efficiency.
- ***Any extension must be consistent with net zero targets and should involve a linear reduction factor to 2050.***

# The role of an EU ETS extension

- **Incentives to stick to long-term commitments.** An ETS whose lifetime credibly extends to 2050 would create a commitment device incentivising the EU and MSs to stick to long term targets.
- **Driving of additional emissions reduction (if required).** Additional efficient policies are necessary, existing standards based policies have merely kept total emissions down.
- *Both standards and emissions trading have desirable properties:*
  - Standards can represent stable long-term price/cost commitments, address myopia and local pollution.
  - Emissions trading can guarantee the achievement of the overall quantity target.
- **A combination of both** guarantees the achievement of overall emissions targets and the reduction of total realised carbon price volatility.

# Price dynamics

- *Would EUA prices spike if the EU ETS was tightened and extended to 2050 in a net zero consistent way, given the slow rate of turnover of vehicles and heating?*
- No, if the extension is to 2050 and banking and borrowing is allowed. Currently, banking is allowed between periods, borrowing within, but currently there is a big surplus. The market stability reserve (MSR) also provides the opportunity to stabilize prices.
- It would also be possible to adjust taxes on transport fuels to reduce impact of introducing EU ETS into this sector.

# Will existing standards be undermined?

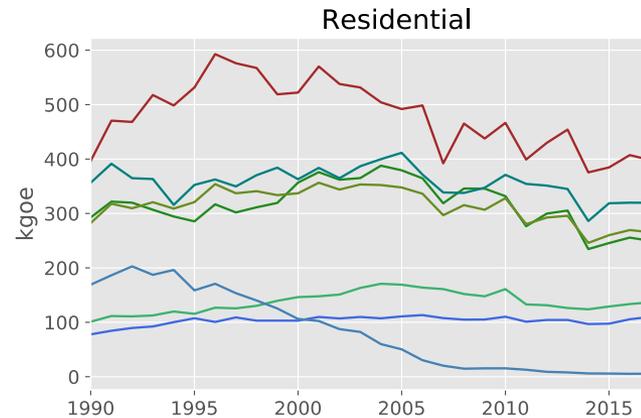
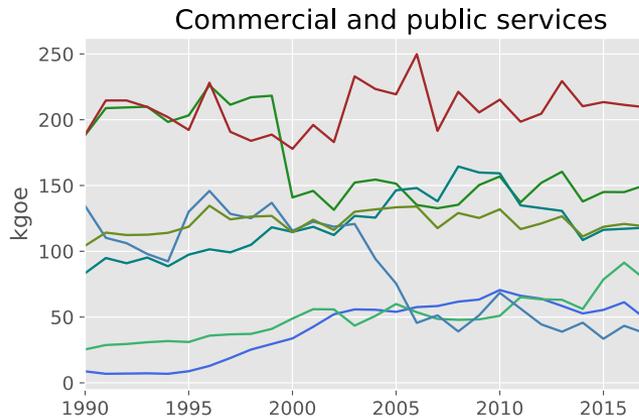
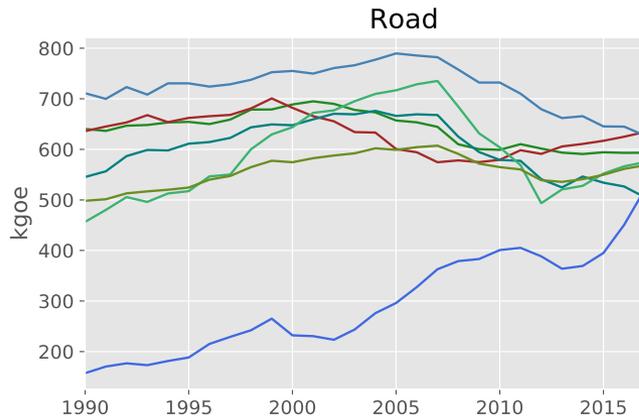
- No, there seems to be no evidence for this. Countries with higher carbon prices seem to also have higher standards.
- The California CaT programme that came into effect in 2013 now covers most of the State's GHG emissions (85%, as of 2017).
- This programme came into being well after the implementation of other (targeted) policies aiming at reducing GHG emissions from the State's power sector (Renewable Portfolio Standards), buildings' sector (Energy Efficiency) or transport sector (Car Average Fuel Efficiency - CAFE).
- The CaT as an economy-wide umbrella policy serves as a backstop and ensures that emissions reductions in line with the environmental objective of California Assembly Bill 32 will be achieved.

# The elephant in the room...regressivity

- Elasticities of fuel prices and carbon prices are low, thus reduce real income.
- The main reasons for regressivity are (Burke, et al., 2020a,b):
  - Carbon-intensive spending as a share of income is higher for poorer households;
  - Cost pass through and lower own price elasticity of demand for poorer households;
  - The extent of fuel poverty.
- Burke, et al. (2020a,b) also note that there can be differences in impact between households of similar income, thus intra-decile unfairness.
- However:
  - Alternative policies may not be better: fuel efficiency standards are not progressive in all circumstances given that they do raise overall compliance costs and effect second-hand prices.
  - Cap-and-trade programs can be designed to alleviate their regressive effects through use of income raised.
  - Carbon pricing progressive for transport, though not heating.
  - The costs of climate change fall disproportionately on the poorest.

# Regressivity across countries in EU....

Fossil fuel energy consumption per capita, 1990-2017



- France
- Poland
- United Kingdom
- Germany
- Spain
- Memo: European Union-28
- Italy
- Sweden

Source: Pollitt and Dolphin, 2020

# Addressing distributional impacts

- ***Direct financial compensation***
  - Currently, 10% of the auctioned EUETS permits 'are divided between Member States with low per capita income receiving a larger share compared to those with high per capita income'
  - Alternatively, direct financial compensation of MSs could be organised via other mechanisms (e.g. the Just Transition Fund).
- ***Counterbalancing policies***
  - Existing countervailing mechanisms e.g. low income tariffs
  - Energy efficiency investments, targeted on fuel poor
  - Final price sterilisation, by adjustment of energy taxes
- ***Timing is important***
  - E.g. when commodity prices benign

# Redistribution in California...

In California, redistribution of this revenue happens in two distinct ways.

First, allowance revenue is invested in a number of state-wide initiatives aiming at improving environmental outcomes. 57% of the cumulative proceeds since the start of the program have been invested in initiatives benefitting “priority populations” In fiscal year 2019-2020, these proceeds totalled \$2.1 billion.

Second, the proceeds of the sale of allowances that are allocated to utilities are returned to households and small businesses ratepayers in the form of ‘carbon credits’.

It would be possible to think of doing something along these lines especially for households negatively affected by an extension of the EU ETS to heating.

# Buildings and transport: a differentiated case?

- Finally, the theoretical case for extension of the EU ETS in both buildings and transport is the same.
- Either separately or together extension to transport and/or buildings would be a major extension in the history of the EU ETS.
- Given that the economic theory behind the extension is stronger if both sectors are taken together, it would seem to be sensible to make the argument for a major extension only once between now and 2050 – give the length of time it might take to agree and implement - if such a policy is to play a major role in meeting EU climate targets.
- Little case for a separate introduction of road transport and heating fuels in the EU ETS in dynamic terms with complementary policies.
- Although an extension to the road transport fuels might be more easily sterilised and hence easier to implement, several other considerations lend support to a joint inclusion of these fuels in the EU ETS.
- Note, Germany has agreed to implement at 25 Euro per tonne carbon tax on both sectors from 2021.

# Conclusion

- Net Zero, and a 55% GHG emissions reduction (compared to 1990) in 2030 requires strengthening the climate policy regime.
- While standards based policies have had some effect, but in the road transport sector, EU emissions 23% more in 2018 than 1990.
- Extension must be done in a way that meets 2030 and 2050 targets, does not undermine existing standards based policies *and* adequately mitigates potentially severe distributional effects.
- Extension of the EU ETS could be an effective dynamic commitment device that sets a long-term signal about the stringency and credibility of EU climate policy.
- It remains the only policy which could actually ensure delivery of the EU's overall carbon budget over the set time horizon.

# Readings

- Burke, J. et al. (2020a). *Distributional impacts of a carbon tax in the UK: Report 1 – Analysis by household type*, Grantham Research Institute on Climate Change and the Environment and Centre for Climate Change Economics and Policy, London School of Economics and Political Science, and Vivid Economics, London.
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