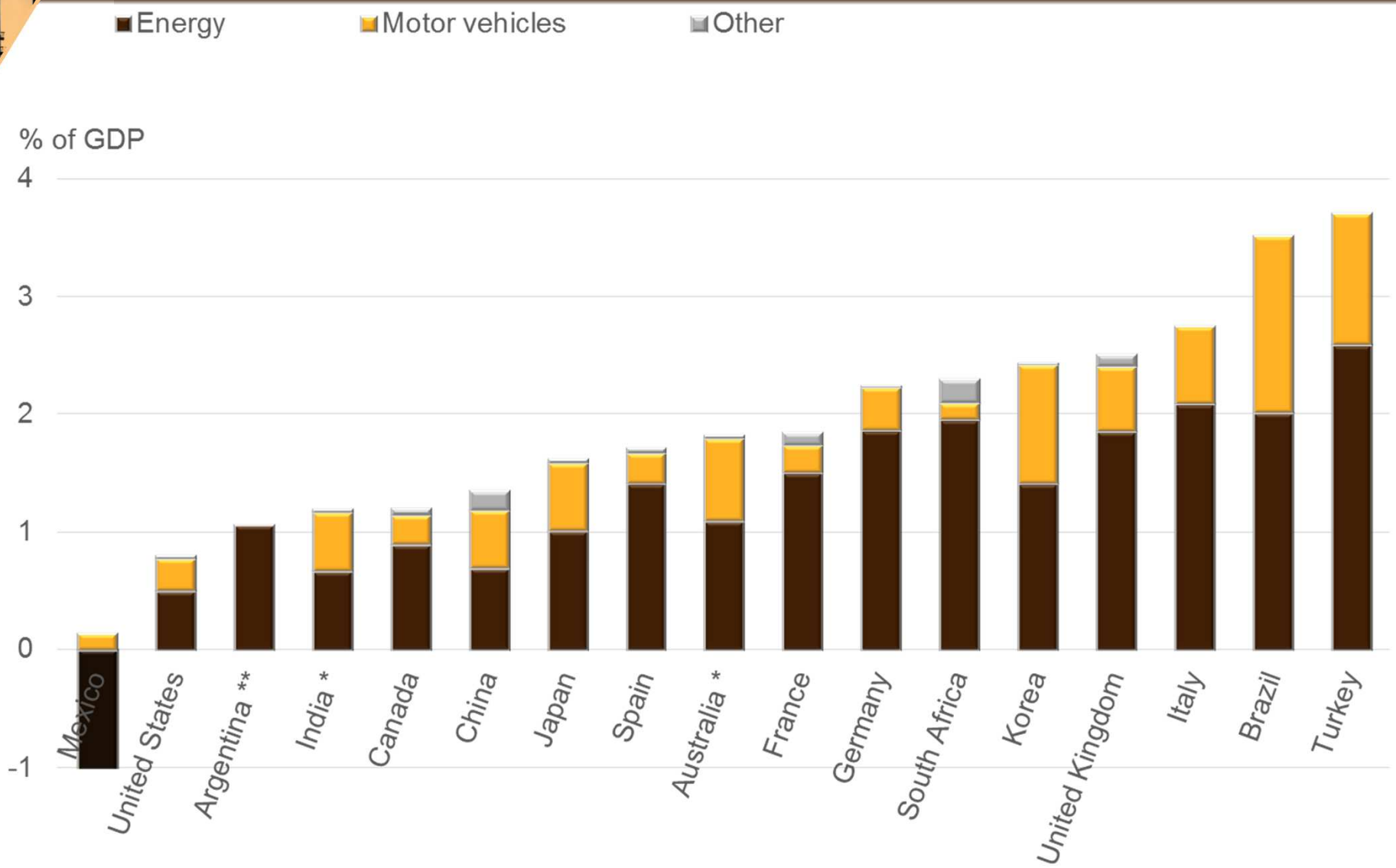
TAXING ENERGY USE

A Graphical Analysis of OECD Energy Use & Taxation

ENERGY USE & TAXATION

- Energy use:
  - Critical to modern economies & living standards
  - Key source of carbon emissions & pollution
- Energy taxation:
  - Tool to influence energy use & thus climate change, air pollution, social cost of vehicle use
  - Source of many explicit & implicit fossil fuel tax expenditures
  - Important source of government revenue - on average, 69% of environmentally related tax revenue is derived from energy taxes

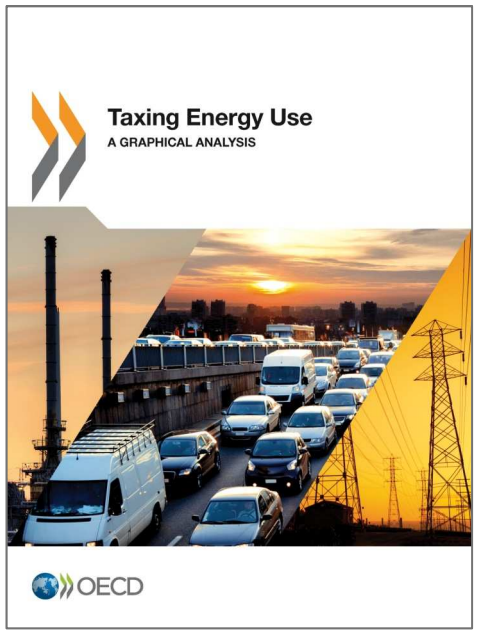
ENVIRONMENTALLY-RELATED TAX REVENUE (2011)



Source | OECD-EEA database of instruments for environmental policy | * 2010 figure | ** 2009 figure

TAXING ENERGY USE

- First systematic comparison of the taxation of all energy use across & within OECD countries
- Considers taxes on fuels as effective taxes on energy & on carbon emissions, highlighting the price signals sent by taxes on different fuels & fuel uses
- Provides a graphical profile (a “map”) of the structure of energy use & taxation in each of the 34 OECD countries

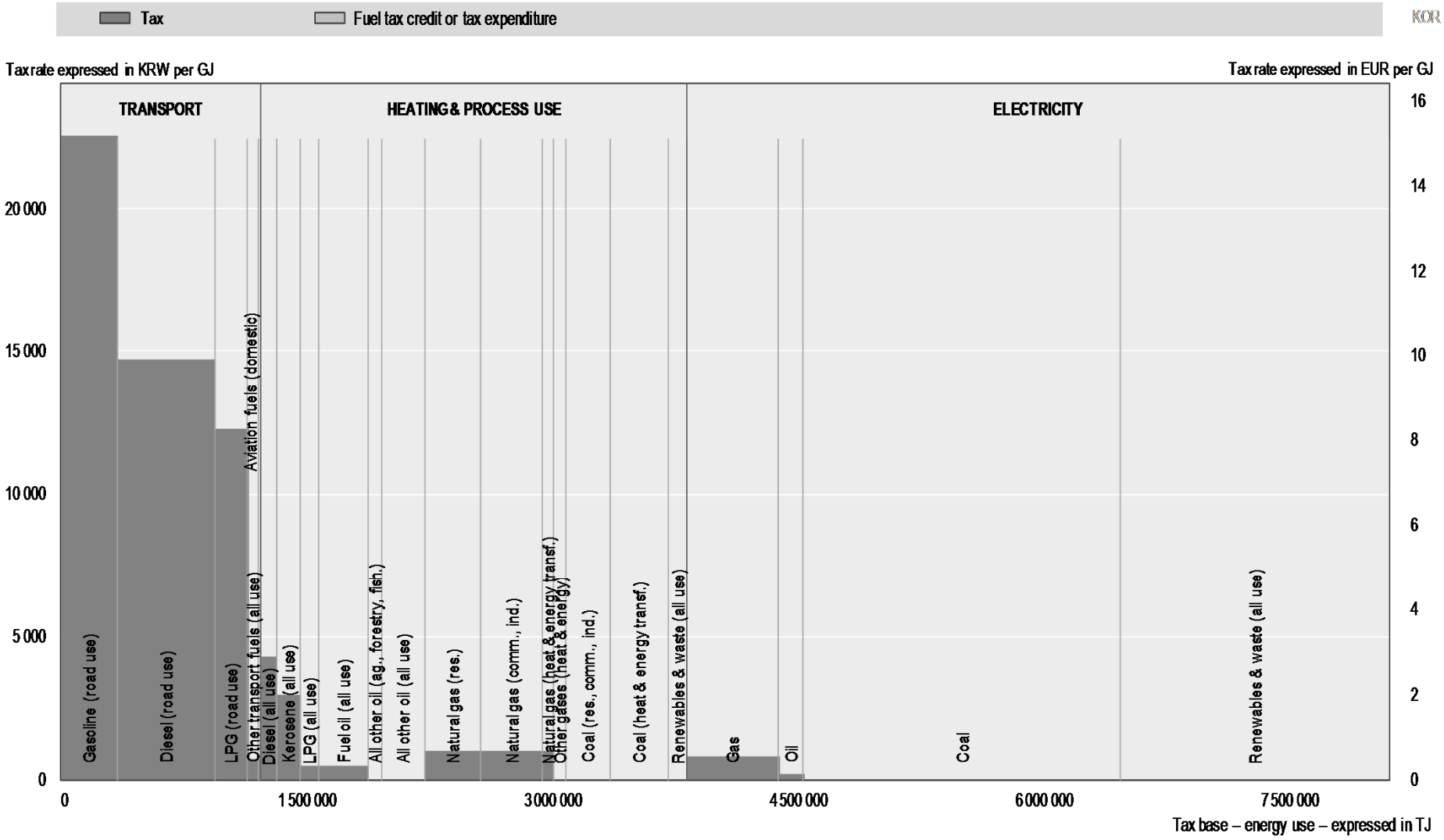


www.oecd.org/tax/tax-policy/taxingenergyuse.htm

GRAPHICAL PROFILES

- Tax base – energy use – shown on horizontal axis:
  - Expressed in common units – alternately, energy content & carbon emissions
  - Divided into three macro categories (transport, heating & process use, electricity)
  - Subcategories reflect tax structure of each country
- Tax rates on energy consumption shown on vertical axis:
  - Converted to effective tax rates based on energy content or carbon emissions
  - Reported tax expenditures are included
  - Where relevant, interaction with emissions trading schemes, or selected sub-national tax rates are shown

EXAMPLE – ENERGY MAP FOR KOREA



Source | OECD | *Taxing Energy Use* | 2013

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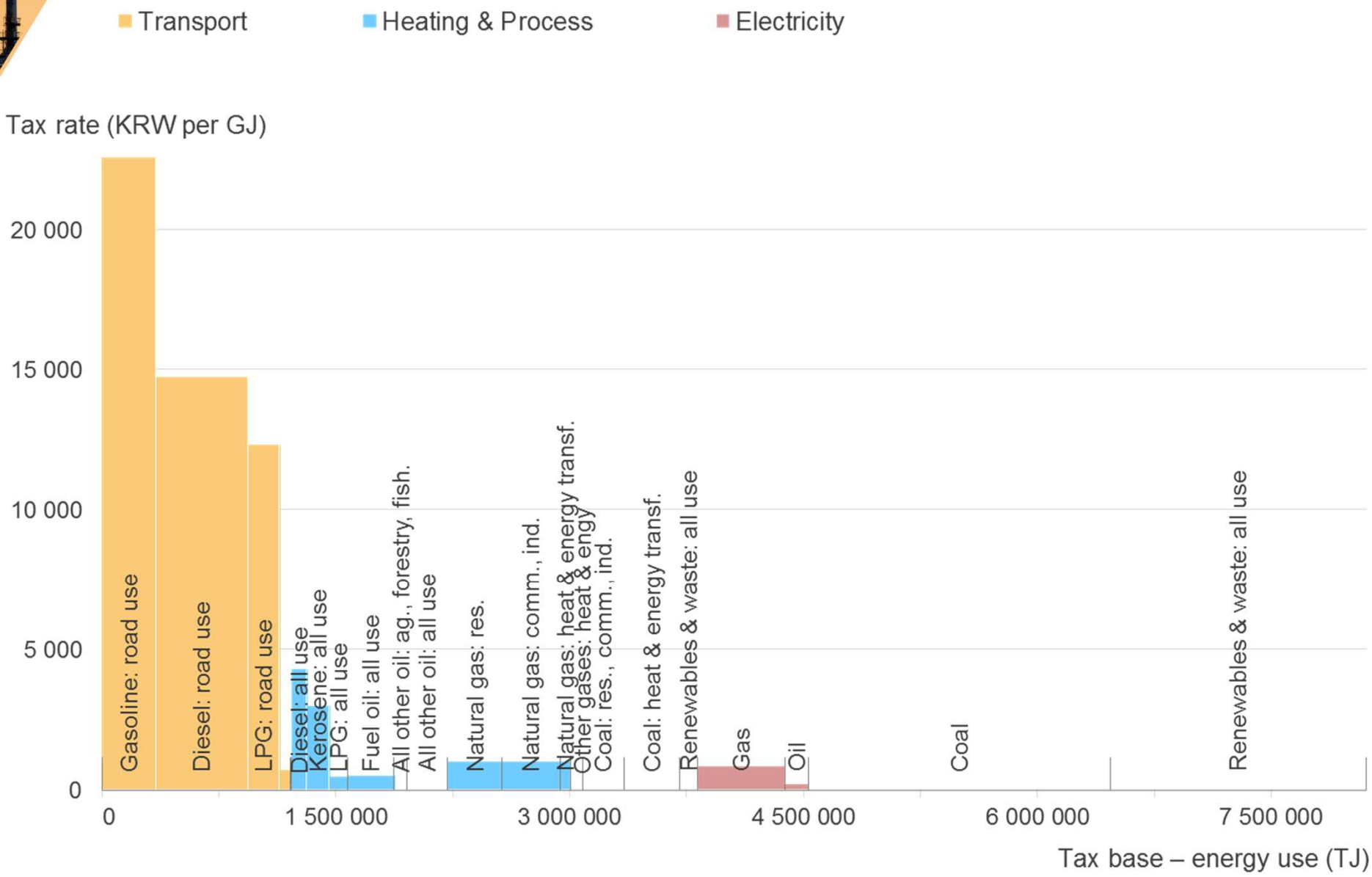

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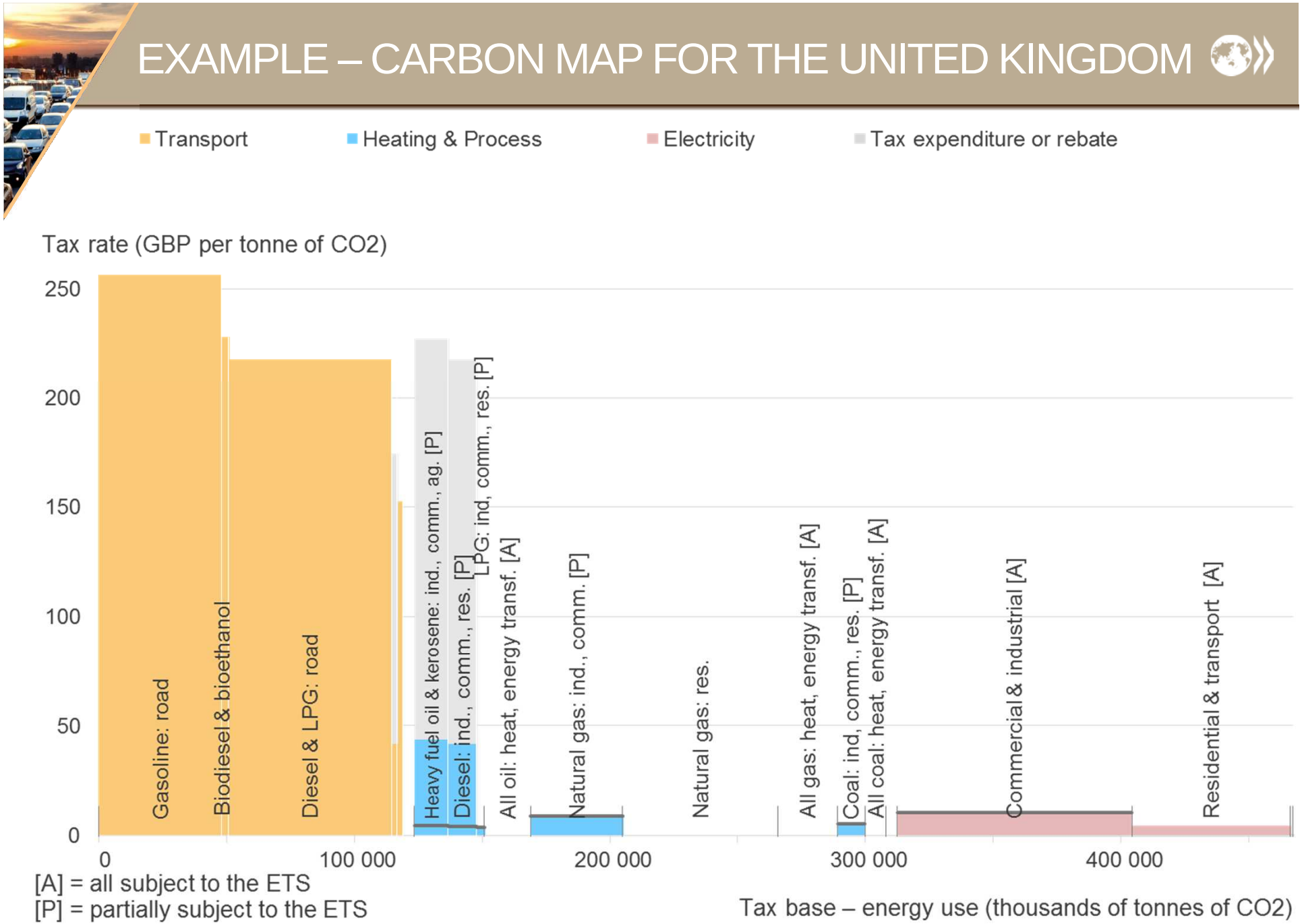
EXAMPLE – CARBON MAP FOR THE UNITED KINGDOM

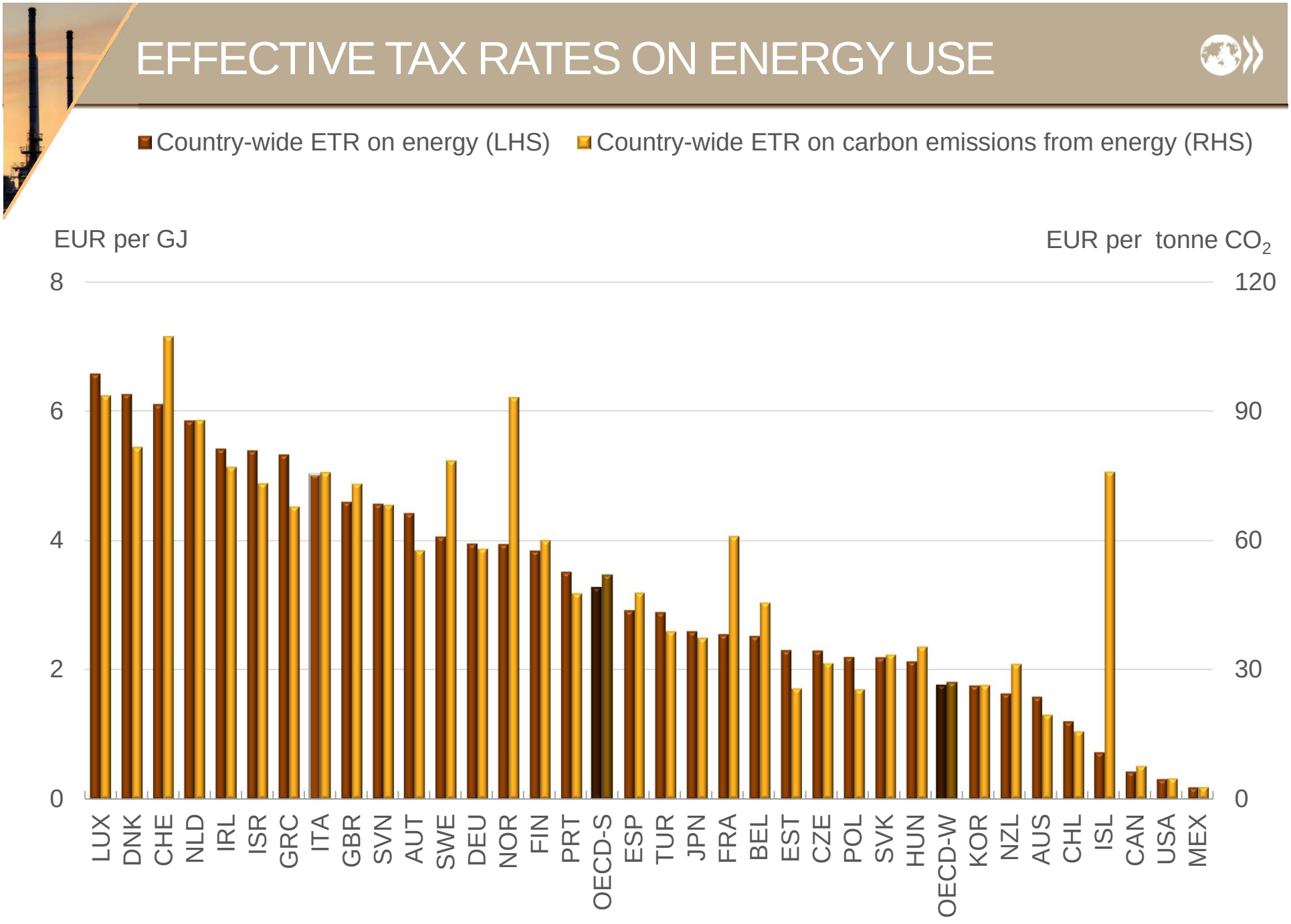


Source | OECD | *Taxing Energy Use* | 2013

CROSS-OECD ANALYSIS

- Underlying data structure (differentiated by user & energy source) identical for OECD countries
- Permits comparison across OECD countries:
  - Base sizes in both energy use & carbon emissions
  - Effective tax rates (ETRs):
    - Economy-wide
    - Major user groups
    - Fuel specific
    - Snapshot of energy use & taxation
  - Carbon intensity & effective tax rates

EFFECTIVE TAX RATES ON ENERGY USE



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EFFECTIVE TAX RATES BY USE

- Transport fuels are most commonly taxed & are taxed most heavily across the OECD
- Heating & process use & electricity generation are taxed at lower rates & are in some cases untaxed
- Substantial variations in tax rates exist within each category of fuel use, based on:
  - The fuels used (e.g. coal vs. natural gas);
  - The users of fuel (e.g. road vs. non-road transport)

EFFECTIVE TAX RATES BY USE

OECD Simple Average

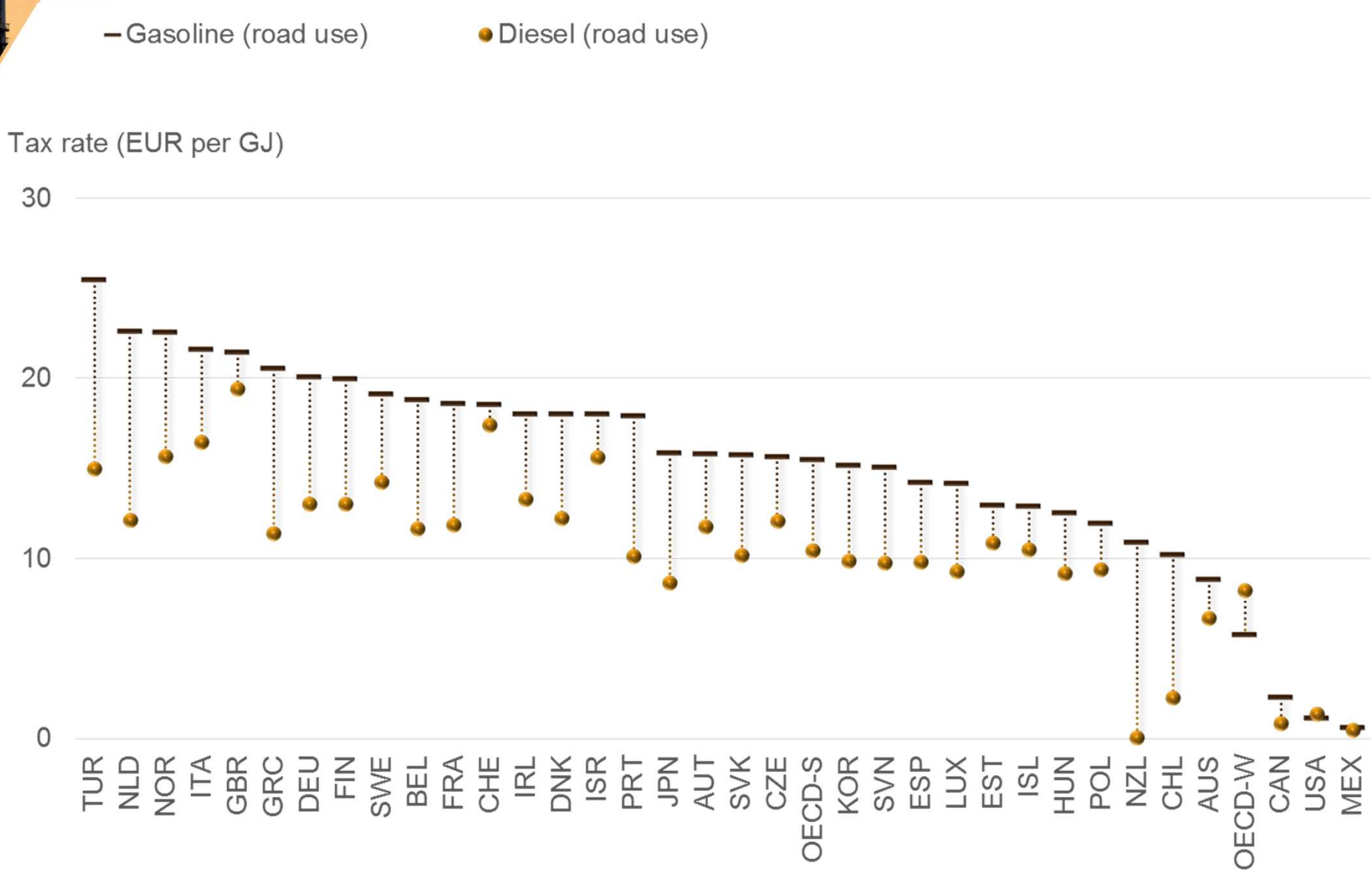
	Transport	Heating & process	Electricity	All fuels
Energy *EUR/GJ*	11.5	0.9	0.9	3.3
Carbon emissions *EUR/tonne CO_2*	161	12	13	52

Source | OECD | *Taxing Energy Use* | 2013

FUEL USE IN TRANSPORT

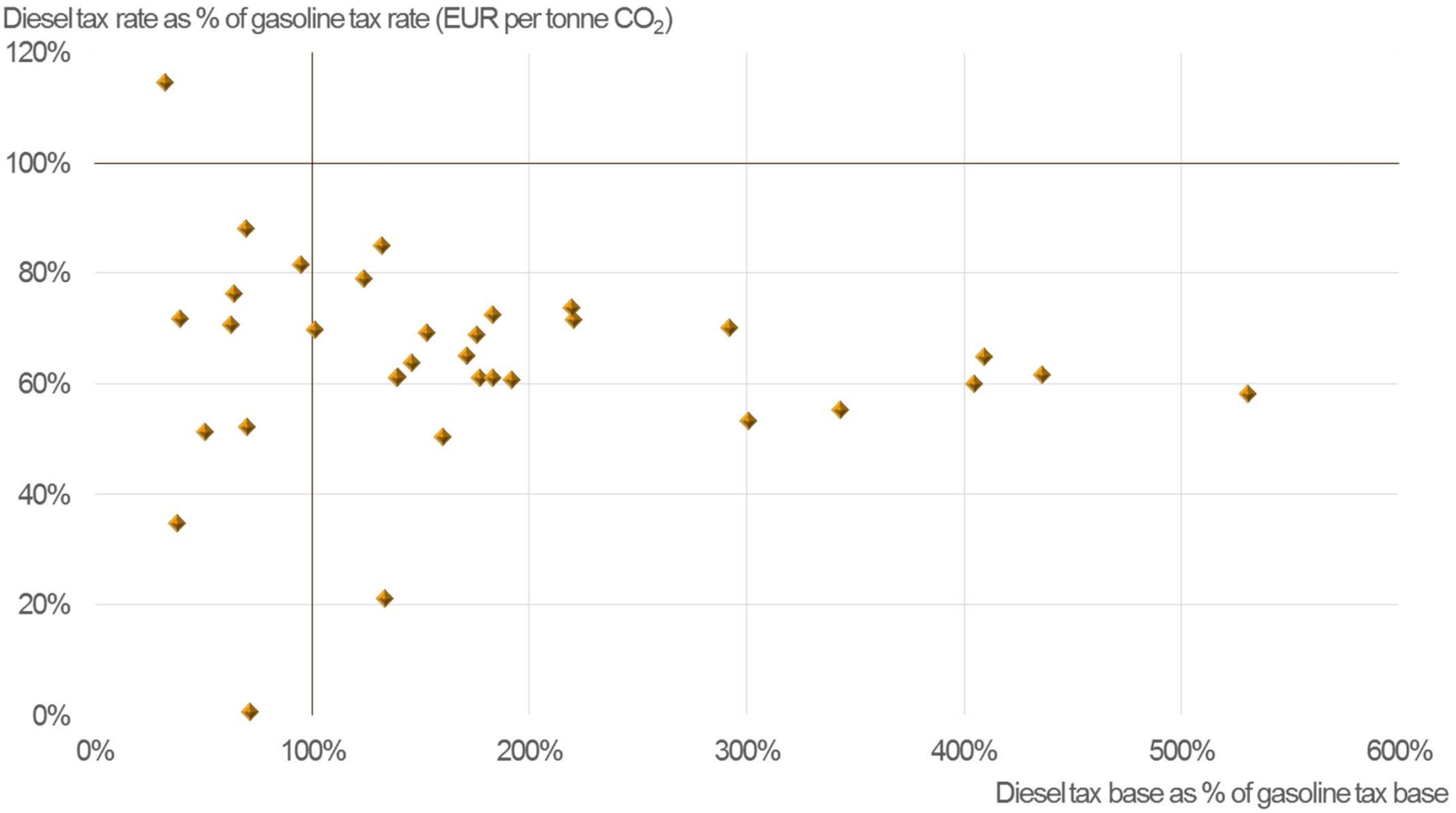
- All OECD countries tax transport fuels & almost all do so at higher rates than other categories of fuel use
- Road fuels are taxed more heavily than non-road fuels
  - May be reasons for higher taxation given additional externalities associated with transport (e.g. noise, accidents, congestion)
  - Oil products are most commonly taxed & taxed at higher rates:
  - Diesel is taxed at lower rates than gasoline in 33 countries
- Tax preferences commonly include domestic aviation, rail & marine use, & in some cases, heavy transport
- CO_2 taxes tend to account only for small proportion of total tax rates

GASOLINE & DIESEL FOR ROAD USE



Source | OECD | *Taxing Energy Use* | 2013

DIESEL & GASOLINE – TAX RATES & USE



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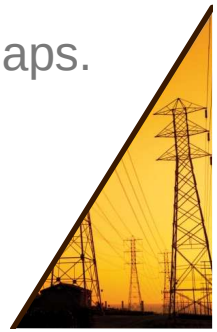
HEATING & PROCESS FUEL USE

- Taxed at significantly lower rates than transport use
- Effective tax rates on carbon send very different signals to different fuels and users
  - Coal for these purposes is often untaxed
  - 16 OECD countries tax industrial use more lightly than residential & commercial use
- Some fuels or users may be untaxed or taxed at low rates due to distributional or competitiveness concerns
  - Impacts can be addressed in other ways that do not implicitly subsidise energy use
  - The price set by the EU ETS is not included but is shown in the maps. In 2012 this was around EUR 6-9 per tonne of CO_2



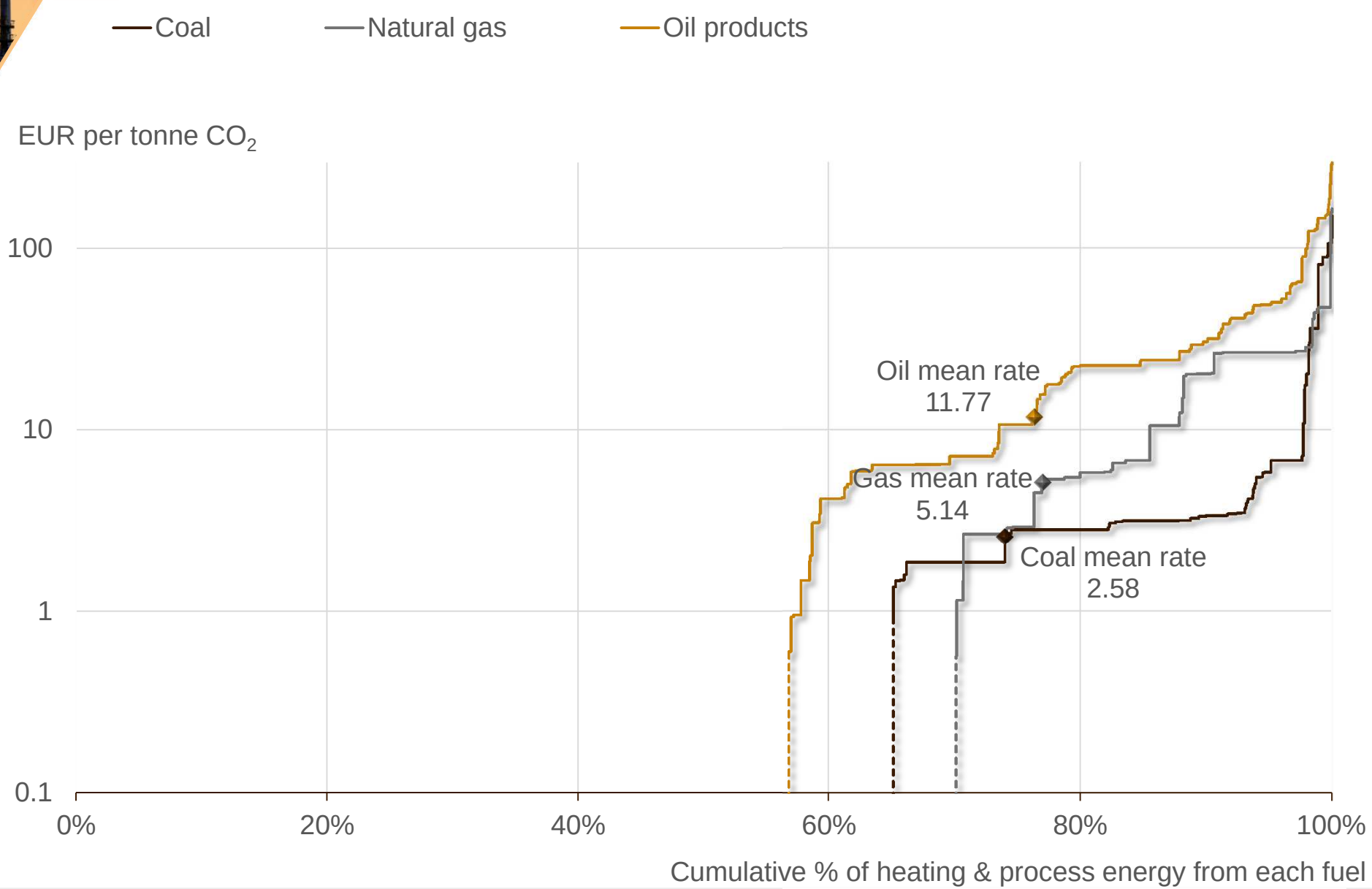
TAXATION OF FUELS FOR HEATING & PROCESS USE

OECD Simple Average

	Diesel	Fuel oil	Natural gas	Coal	All fuels
Energy *EUR/GJ*	3.4	1.3	0.7	0.6	0.9
Carbon emissions *EUR/tonne CO_2*	46	17	13	5	12

Source | OECD | *Taxing Energy Use* | 2013

TAXATION OF FUELS FOR HEATING & PROCESS USE

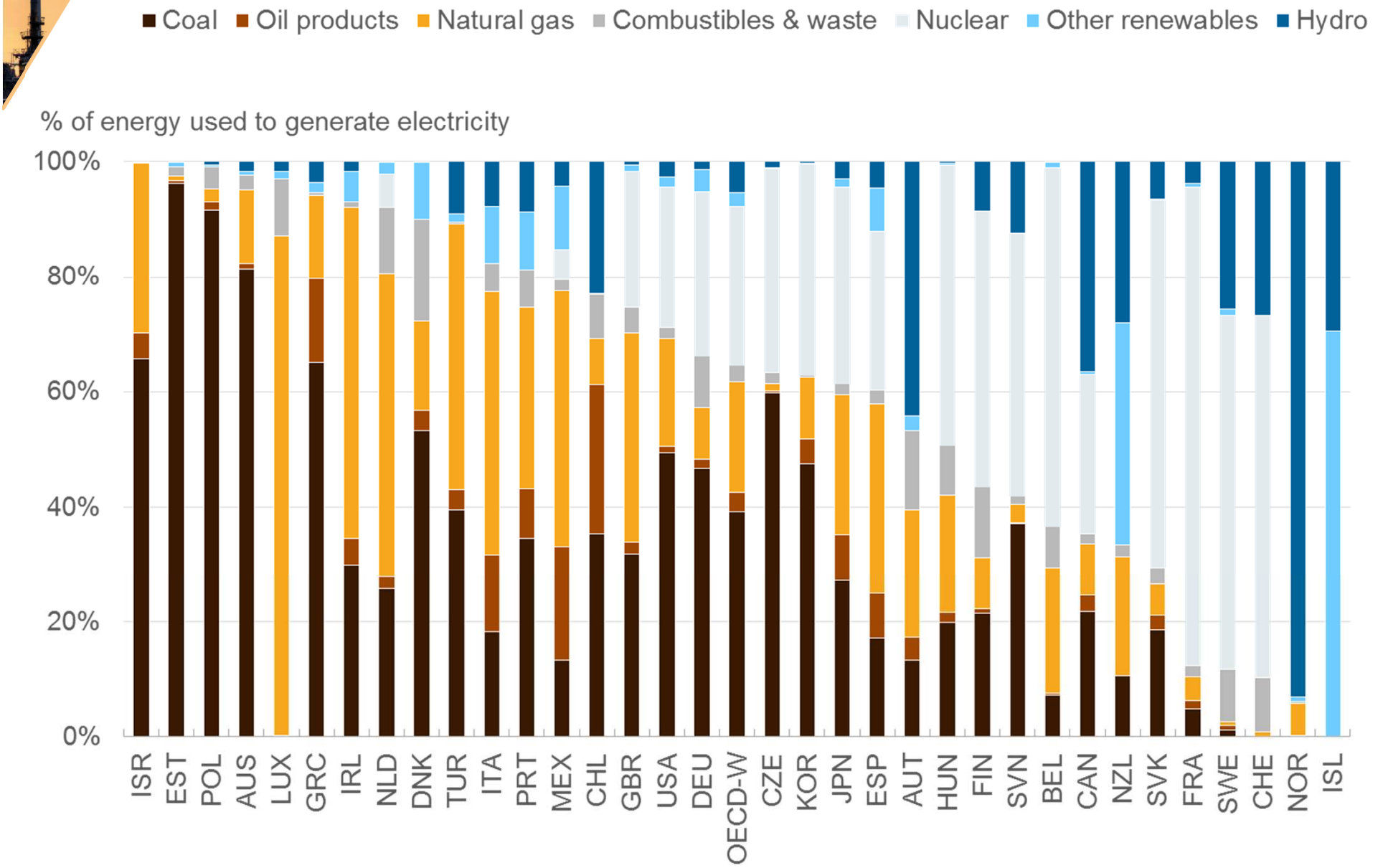


Source | OECD calculations based on *Taxing Energy Use* | 2013

ELECTRICITY GENERATION

- Both the consumption & generation of electricity can be taxed, with consumption being more commonly taxed
- The range of fuels used to generate electricity is more diverse than for transport use (primarily oil products) & heating & process use
- Carbon content of electricity generation varies significantly, impacting implicit tax rates
- Taxes on the consumption of electricity provide no signal in terms of the underlying fuels used to generate electricity

ELECTRICITY GENERATION



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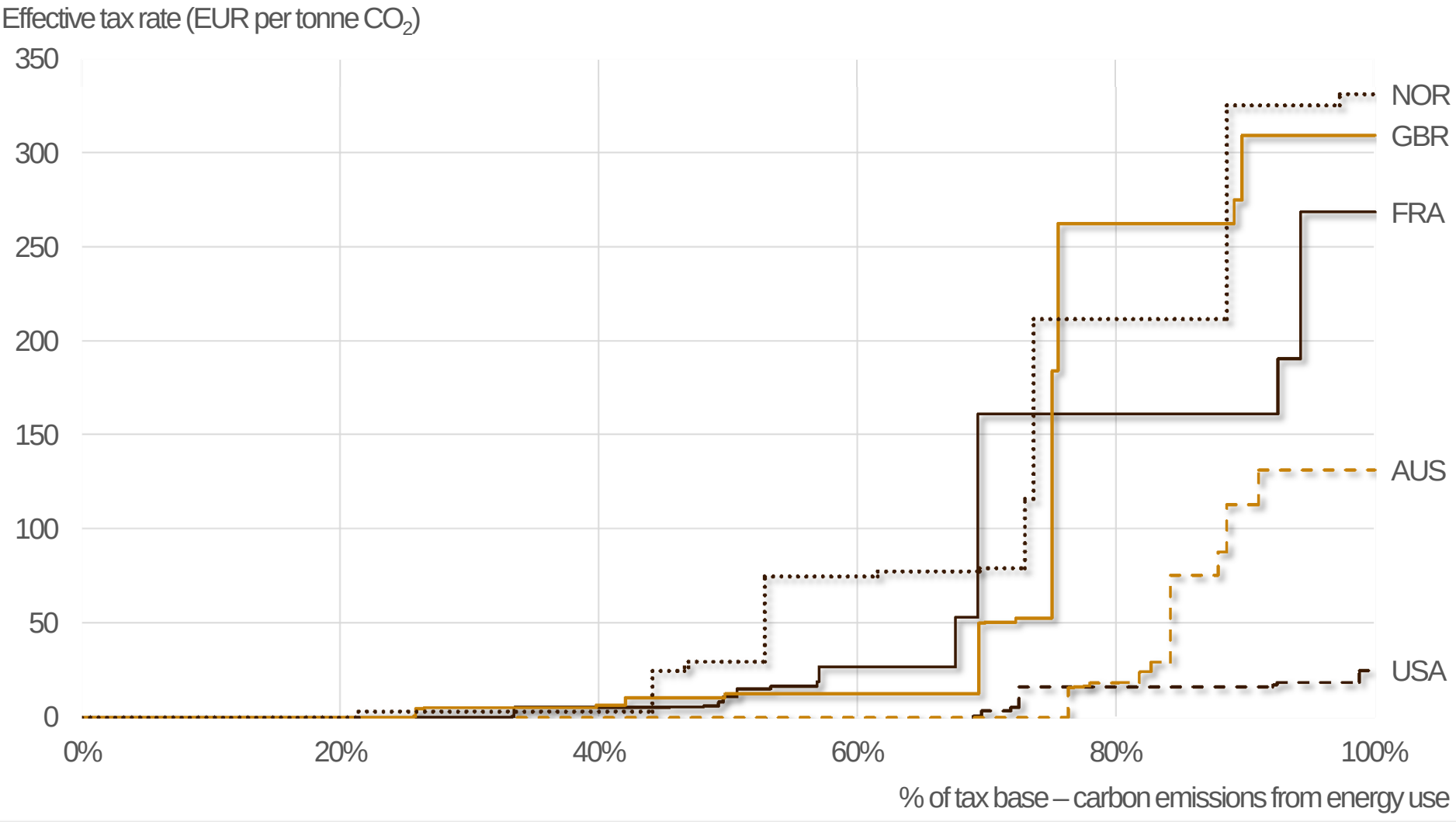
SNAPSHOT OF ENERGY TAXATION



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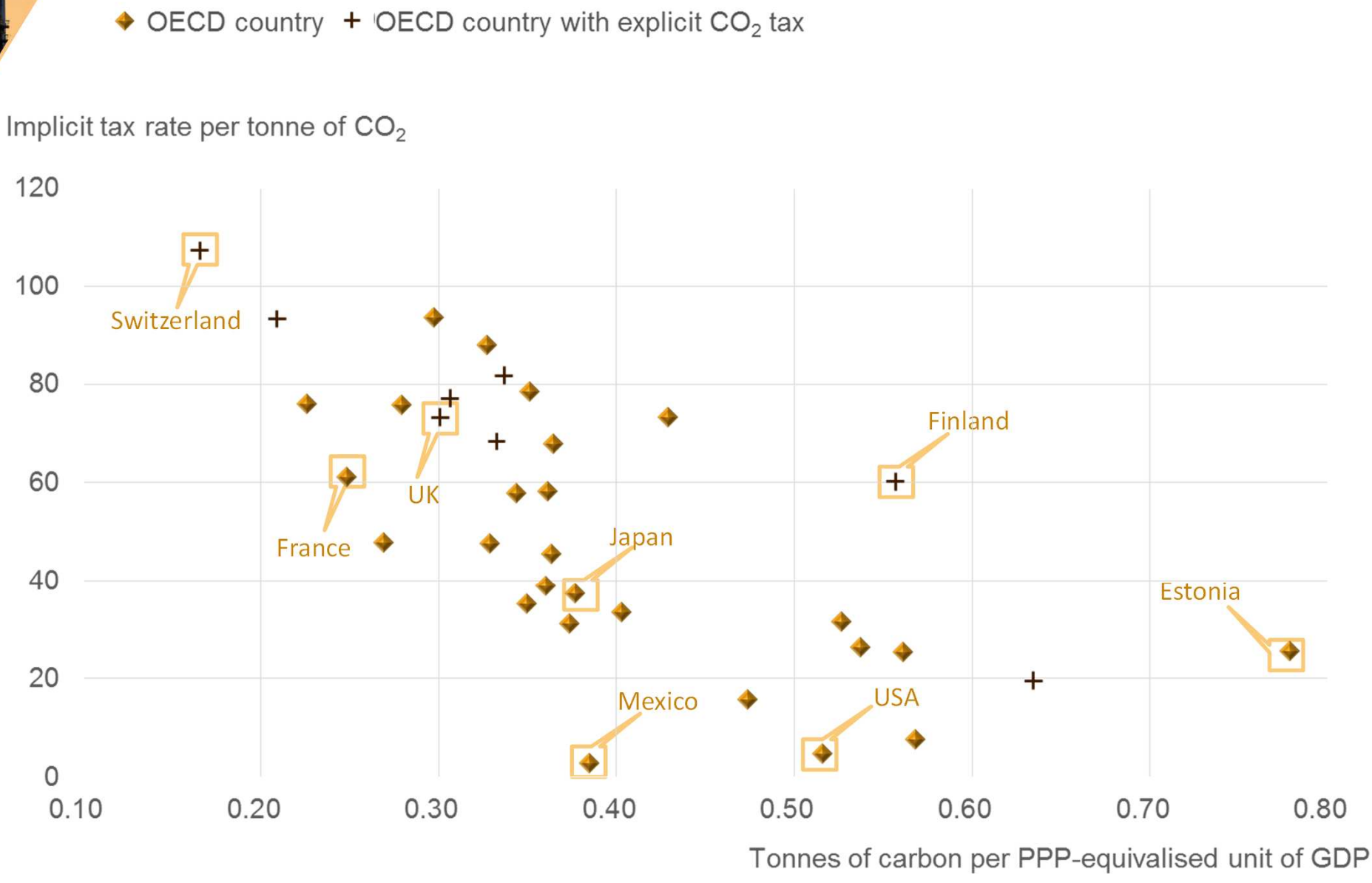
ETR'S ON CARBON & CARBON INTENSITY



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OECD-WIDE CONCLUSIONS

- Effective tax rates on energy vary widely & there are substantial non-neutralities in effective tax rates for different fuels, users & uses
- Tax preferences & low rates mean many sectors don't face an adequate price signal – little incentive to adopt low-carbon approaches or to innovate
  - Road fuel: commonly a substantial tax preference for diesel relative to gasoline
  - Concessions are common for fuel use in certain sectors (e.g. aviation, rail, marine, agriculture, fishing & forestry)
  - Among heating & process fuels: natural gas often under-taxed relative to oil products; often low or zero tax on coal despite significant environmental impact
  - Low rates & concessions often driven by distributional & competitiveness concerns, but often less environmentally damaging ways of addressing these goals

POLICY IMPLICATIONS

- Signals sent by OECD tax systems in terms of carbon emissions are uncoordinated & unclear
- Other policy instruments should be considered in conjunction with energy taxes in order to better address externalities (e.g. congestion), distributional impacts or competitiveness concerns
- Differences in tax rates between different fuels & users often do not seem to reflect deliberate policy choices
- Reappraisal of country tax settings is warranted to ensure energy taxation meets environmental, fiscal & distributional goals

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