



Guest article: Effective Carbon Rates

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With the Paris Climate Agreement, which entered into force on 4 November, governments confirmed their commitment to emission reduction goals of keeping average global temperature rise to below 2°C and pursuing efforts to limit it to 1.5°C. This implies decarbonising the global economy in the second half of the century. The gaps between these ambitious targets, existing plans and current policies are vast.

Carbon prices alone are not sufficient to decarbonise the global economy, but by steering investment towards low-carbon infrastructure and technologies, discouraging carbon-intensive production and consumption patterns they are indispensable. Carbon prices induce cost-effective abatement as they allow emitters to decide how to cut pollution. The more stable the prices and the stronger the policy commitment to them, the more effective they will be. In addition, where public budgets are tight, the revenue from carbon pricing is particularly valuable.

To what extent are prices already used to mitigate carbon emissions?

A recent OECD report on **Effective Carbon Rates: Pricing CO₂ through taxes and emissions trading systems** measures effective carbon rates (ECRs) in 41 OECD and G20 economies, representing approximately 80% of global carbon emissions from energy use. ECRs reflect the price signals from emissions trading systems (ETS) and carbon taxes, but notably also from specific taxes on energy use. These three components increase the price of CO₂ emissions compared to other spending, thus capturing the economically relevant contribution of taxes and emissions trading policies to the cost of emitting CO₂.

Data from 2012 (summarised in Figure 1) reveal that countries are far from exploiting the full potential of emissions pricing policies. Most emissions

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Who we are

The **Green Fiscal Policy Network** is a partnership between UNEP, the IMF and GIZ which aims to facilitate knowledge sharing, learning and dialogue on fiscal policies to support the green economy.

The Network is supported by the International Climate Initiative (IKI) and the German Federal Ministry for the Environment, Nature Conservation Building and Nuclear Safety (BMUB).

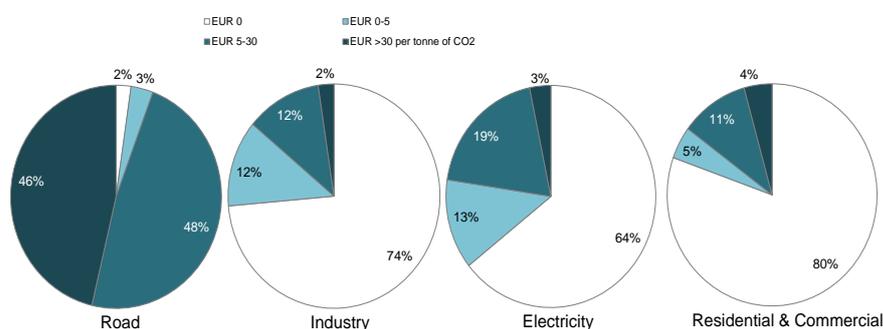
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across the 41 countries examined in the report are not priced, and 90% are priced at less than EUR 30 per tCO₂ (a conservative estimate of the damage resulting from a tonne of CO₂ emissions). They are also likely lower than the prices needed for countries to meet their nationally determined contributions (NDCs). However, it is worth noting that the OECD report considers carbon pricing at one point in time, whereas even a casual look at current policy dynamics highlights the many initiatives in jurisdictions around the world to introduce carbon taxes or trading systems, which allows for a more positive outlook.

The OECD report finds that relatively high ECRs mostly occur in the road transport sector from high excise taxes on motor fuels. In addition to cutting CO₂ emissions, motor fuel taxes can help curb air pollution, congestion and other external costs related to car use, while helping to raise government revenue at a relatively low economic cost. Therefore, relatively high ECRs in the transport sector may well be justified, at least as long as external costs are not addressed by more targeted instruments such as distance- or congestion-charges. However, although higher prices lead to less fuel use in the transport sector, to date this has not been enough to induce a switch to cleaner fuels, or a structural shift towards lower occupancy and away from car-oriented mobility patterns. Several factors, including inertia in transport systems resulting in lock-in, barriers to competition from alternative models, and inadequate infrastructure for greener mobility models and fuels, make a shift more difficult. Prices work, but cannot do the job alone.

Non-road sectors account for 85% of carbon emissions across the 41 countries analysed in the report, with ECRs usually well below EUR 30 (only 4% of emissions in non-road sectors across all countries face a price of EUR 30 or more). This is hard to justify, now and especially going forward. Of the non-road sectors, the industrial, electricity, and residential and commercial sectors account for the largest shares of carbon emissions (33%, 33% and 15%, respectively). In these sectors, the majority of carbon emissions are unpriced, and very small shares are priced at levels above EUR 30 per tCO₂. In the industry sector, 74% are unpriced, and a mere 2% face a price at or exceeding EUR 30 per tCO₂. In the electricity sector, the respective proportions are 64% and 3%; in the residential and commercial sector, 80% and 4%.

Figure 1: Proportion of CO₂ emissions from energy use at different price levels, in four economic sectors



Source: OECD (2016)

There is large variation in carbon prices across countries and sectors

These numbers conceal strong variation in prices within and across countries. For example, it is worth noting that the 10 countries with the highest ECRs represent 5% of the 41 countries'

Quick links

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[GIZ Environment and Climate Change](#)

Upcoming events

[3rd regional workshop of Green Fiscal Policy Network – 'Financing for the SDGs: The role of fiscal reforms, revenue management and sovereign wealth funds in the extractives sector'](#)

7-8 December
Bangkok, Thailand

Workshop. Workshop will explore how to raise and use revenues from extractives to support the SDGs, while reducing negative environmental and social impacts.

[GIZ Training – 'Capacity Development for Environmental Fiscal Reform \(EFR\)'](#)

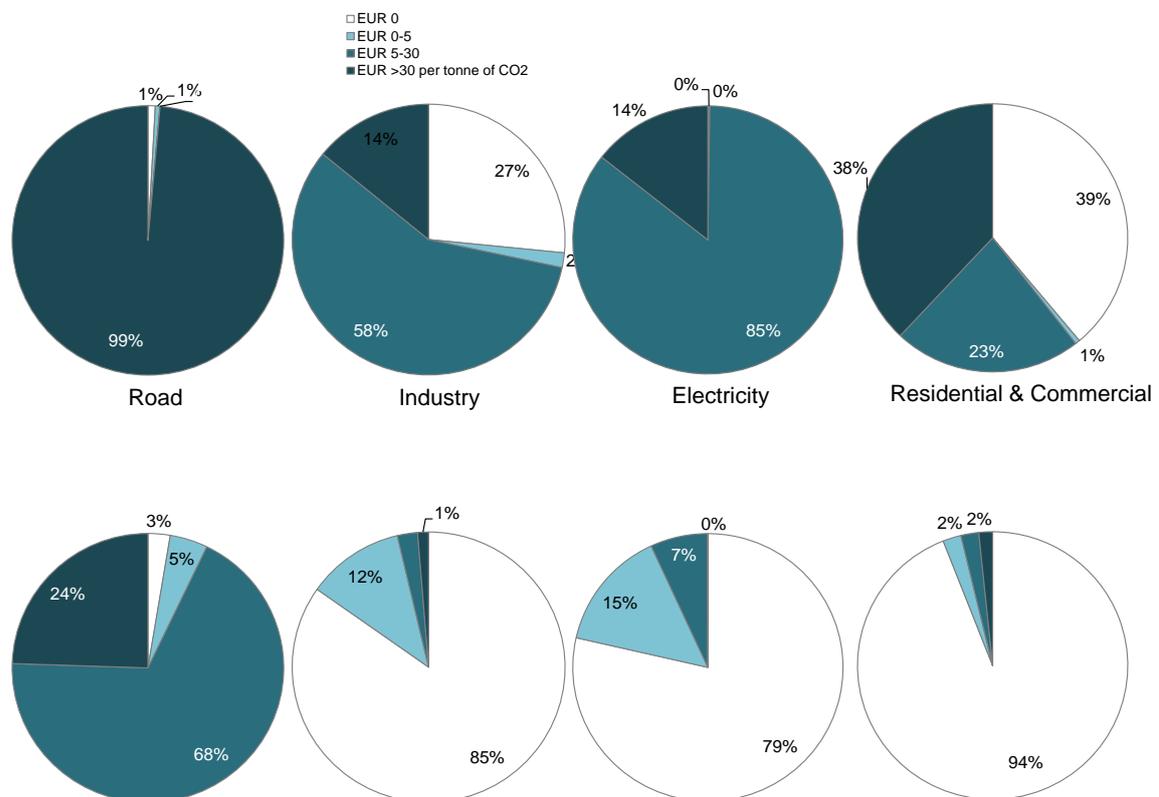
4-6 December
Bangkok, Thailand

Training will focus on the design and implementation of EFR.

carbon emissions, whereas the 10 countries with the lowest rates – which include several large countries – account for 77% of emissions.

There is large variation in the levels and coverage of ECRs across the main economic sectors between ten countries with the highest and lowest ECRs (Figure 2). Almost all emissions from the road sector are priced in both country groupings, but the levels of ECRs differ: 99% of road sector emissions are priced at levels at or above EUR 30 per tCO₂ in countries with high ECRs, but just 24% of emissions are priced at that level in countries with low ECRs. The differences in pricing between the two groups are equally pronounced in the non-road sectors. This is not to say, however, that there is no scope to enhance carbon price signals in high-rate countries as even in these countries most emissions are priced at less than EUR 30 per tCO₂. Of the 41 countries, only the Netherlands prices more than 50% of emissions from non-road sectors at EUR 30 per tCO₂ or more.

Figure 2: Proportion of CO₂ emissions from energy use at different price levels, in the ten countries with the highest (above) and lowest (below) ECRs



Source: OECD (2016)

Note: In 2012, countries with the highest ECRs, in alphabetical order, were: Denmark, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Sweden, Switzerland and the United Kingdom. Countries with the lowest ECRs, in alphabetical order, were Canada, Chile, Mexico, United States, Brazil, China, India, Indonesia, Russia and South Africa.

The three pricing instruments included in ECRs – carbon taxes, other specific taxes on energy use, and emissions trading systems – are used to varying extents across economic sectors. In the road transport sector, carbon is priced almost exclusively via excise taxes on fuel use in all countries analysed. Specific taxes on energy use are also the dominant component of the average effective carbon rate in the industry, electricity, residential and commercial sectors, but the role of price signals from tradable emissions permits tends to be larger in these sectors than in the road sector. Carbon taxes presently only play a small role on average, with the largest impact in the residential and commercial sector.

Almost all road transport emissions are covered by a carbon price, but ECR coverage is much lower in the non-road sectors (Table 1). While the mix of pricing instruments varies widely across countries and sectors, specific taxes on energy use tend to cover larger proportions of emissions than emissions trading systems or carbon taxes. Nevertheless, in some countries with low or no

tax coverage in certain sectors, emissions trading systems significantly enlarge the proportion of emissions covered by a pricing instrument.

Table 1: Proportion of emissions subject to a positive effective carbon rate by price instrument

	ETS	Taxes			ECR
		Carbon tax	Specific taxes	Combined tax	
Industry	13%	0%	17%	17%	26%
Residential and commercial	3%	1%	17%	18%	20%
Electricity	18%	0%	27%	27%	36%

Source: OECD (2016)

Taxes and emissions trading systems frequently overlap in that they apply to the same emissions base. However, taxing emissions that are subject to a trading system does not result in additional emission reductions when the cap is binding. This may compromise the cost-effectiveness of emissions abatement as it undermines the uniformity of the price signals sent by a trading system. While this does not necessarily mean that taxes and trading systems should never be combined, the justification for levying taxes on ETS-covered emissions should be to address other market failures, or raise revenue. Carbon taxes and emissions trading systems hardly overlap, probably by design.

How to measure progress with carbon pricing?

The “carbon pricing gap” is a synthetic indicator of the extent to which ECRs fall short of pricing emissions at EUR 30 per tCO₂. If all emissions were priced at least at EUR 30 per tCO₂, the carbon pricing gap would be zero, and if all emissions were unpriced, it would be 100%. Currently, the carbon pricing gap is 80.1% for the 41 countries examined in the OECD report. Moderate increases in the levels of carbon prices, and extending prices to sectors where there are currently none, can go a long way to narrowing the carbon pricing gap. For example, if all countries were to increase their carbon prices to at least the levels currently observed in the median country for each economic sector, the carbon pricing gap would decline to 53.1%.

Progress with carbon pricing can be made using taxes or emissions trading systems. While trading may have the advantage of better political feasibility – especially when combined with free allocation of allowances – taxes may be a simpler option administratively as they can often be integrated in existing tax systems. In addition, free allocation of permits can weaken long run investment incentives. Irrespective of the pricing instrument chosen, meaningful progress with carbon pricing will require higher and more stable rates than currently observed. To make carbon prices more uniform, and minimise the cost of the low-carbon transition, rates could first be increased in non-road sectors, efforts could also be concentrated in countries where ECRs are low across all energy uses.

The Paris Agreement has created momentum and fresh energy to strengthen carbon pricing policies across the world. To cite just two examples among many, Canada is introducing carbon pricing – via taxes or ETS – in all jurisdictions from 2018, while the Chinese government is advancing the introduction of a national ETS in 2017. We need to seize these opportunities to move to comprehensive carbon pricing at meaningful levels – now is the time to price carbon and embark on low carbon economic development paths.

References

OECD (2016), Effective Carbon Rates: Pricing CO₂ through Taxes and Emissions Trading Systems, OECD Publishing, Paris, DOI: <http://dx.doi.org/10.1787/9789264260115-en>

What's new on the Network?

Third regional workshop to focus on fiscal reform and extractives

The Green Fiscal Policy Network, in collaboration with the UNDP-UNEP Poverty Environment Initiative Asia-Pacific is organizing a regional workshop on **'Financing for the Sustainable Development Goals (SDGs): The role of fiscal reforms, revenue management and sovereign wealth funds in the extractives sector'** on 7 and 8 December 2016 in Bangkok, Thailand. The workshop will bring together representatives from governments, international and regional organizations, industry, academics and other experts, to discuss and share experiences with fiscal frameworks applied in the extractives sector and how these can be reformed to better support sustainable development. For further information, please contact: greenfiscalpolicy@gmail.com.



New associated partner joins the Network

In August, **Green Budget Germany** was welcomed as a new associated partner of the Network. Associated partners enable the Network to have wider outreach and support further knowledge development and information sharing.



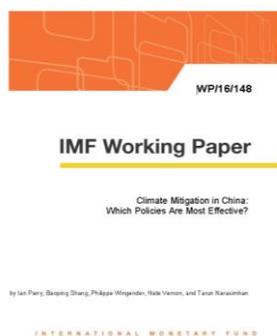
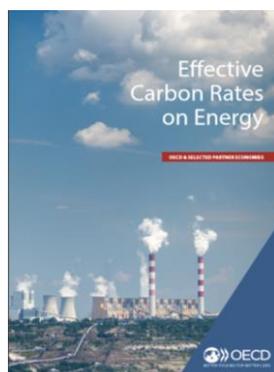
Insights from Network members

Read the latest blog posts and articles by Network members on green fiscal policies.

The Price is Right? Signals, Distortions and Patches in Greening Finance (UNEP)
The Overwhelming Case for a Carbon Tax in China (IMF)
Gender and Fossil Fuel Subsidy Reform (IISD/GSI)
Taxing nutrients (GBE)

Publications

A number of new publications have been added to the Network website. This includes some of the latest reports and insights on green fiscal policy reforms from the IMF, UNEP, IISD, GBE, GBG, the World Bank, OECD, and the Nordic Council. To review the latest publications, visit the **Policy Insights** and **Case Studies** pages of the website.



Country profiles

The Network website includes profiles of green fiscal reforms in more than 30 countries around the world. These profiles provide an overview of the fiscal, social and environmental situation in each country and information on green fiscal measures in each country. Please visit the **Country Profiles** page for more details.

Recent Events

Political dynamics and the implementation of socially inclusive green fiscal reform – Green Fiscal Policy Network

22-23 September 2016 - Groningen, the Netherlands

During the 17th Global Conference on Environmental Taxation (GCET), the Network in collaboration with UN Economic Commission for Latin America and the Caribbean (UN ECLAC) and Green Budget Europe (GBE) organized a workshop on the political dynamics of implementing green fiscal reforms. Sessions focused on tax design, the role of green fiscal reform in delivering the Sustainable Development Goals (SDGs) and carbon pricing. A summary of discussions and presentations are available on the [Network website](#).



The Role of Carbon Pricing in Implementing the Paris Agreement – RFF and IMF

19 October 2016 - Washington DC, USA

Carbon pricing is expected to play a key role in meeting commitments in the Paris Climate Agreement. However to move forward, there is a need for further country-specific information and a comprehensive strategy to overcome obstacles. This seminar organised by Resources for the Future (RFF) and the International Monetary Fund (IMF) brought together experts and representatives from international organizations to examine how to move carbon pricing forward at the domestic and international level.

Diesel, air quality and health - GBE

15 September 2016 – Dublin, Ireland

Green Budget Europe (GBE), in collaboration with six civil society organisations held a policy briefing to discuss the importance of increasing the tax on diesel in Ireland. This event was organised ahead of the annual budget and followed the publication of a report by the Tax Strategy Group at the Department of Finance which mapped out key policy reasons for equalising transport fuel taxes and a comprehensive five-year programme to achieve this.

The Energy Transition, NDCs, and the Post-COP21 Agenda – IMF, Columbia University and OCP Policy Centre

8-9 September 2016 - Marrakech, Morocco

The International Monetary Fund (IMF), the Centre on Global Economic Governance at Columbia University and the OCP Policy Centre organized a high-level seminar which brought together experts from international organizations, research institutes, academia, policy and business to share perspectives on the energy transition, carbon pricing, and climate change agreements. The seminar aimed to provide a positive contribution to the COP22 debate and the more general discourse on climate change and the energy transition.



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