

# How can Carbon Prices and Policies be effectively aligned?

## WHAT ARE THE ISSUES?

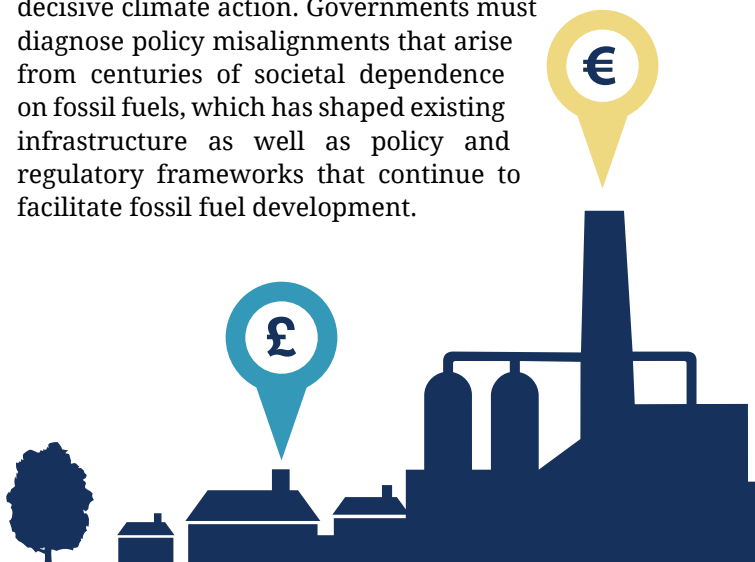
Setting a price on carbon emissions — through taxation or an emissions trading system — is an essential policy tool for achieving the transition to a low-carbon economy. It makes carbon emissions part of the economic equation for governments, businesses and consumers, creating incentives for transition at the broadest scale and lowest economic cost.

Implementing a carbon price that increases over time and is supported by credible commitments to reduce emissions ensures that the costs of carbon emissions are reflected in the price of goods and services, which influences consumer behaviour. It also sends a signal to industry to increase investment and innovation in low-carbon solutions for the future, erodes the advantage of incumbent fossil fuel technologies and lets the marketplace determine the best way forward.

Other critical components of core climate mitigation action include regulation that supports carbon pricing policy, along with research, development and demonstration (RD&D) and technology deployment policies (Box 1). Yet, measures beyond core climate policies are needed for decisive climate action. Governments must diagnose policy misalignments that arise from centuries of societal dependence on fossil fuels, which has shaped existing infrastructure as well as policy and regulatory frameworks that continue to facilitate fossil fuel development.

## KEY MESSAGES

- Achieving the goals of the Paris Agreement requires a global transition from fossil fuel-based economies to low-carbon economies.
- Carbon pricing is an essential strategy for unlocking investment in the transition to low-carbon economies. However, policy misalignments throughout economies built on fossil fuel development can hinder reform if no action is taken to address them.
- Some existing policies — notably energy taxes — implicitly price carbon. However, energy taxes often fail to reflect carbon content and overall climate costs. The majority of CO<sub>2</sub> emissions from fossil fuel use in Organisation for Economic Development and Cooperation (OECD) and G20 economies are not taxed at all.
- Eliminating government subsidies for environmentally harmful fossil fuel production and use can also help level the field for low-carbon development. In 2014, fossil fuel subsidies totalled an estimated \$160 billion to \$200 billion annually in OECD and BRIICS (Brazil, Russia, India, Indonesia, China and South Africa) economies alone, although oil price reductions have sparked important reform efforts since that time.
- Diagnosing the extent of misaligned policies requires a holistic, country specific approach across policy domains, from finance and innovation to regulatory frameworks governing activities such as urban mobility and land-use.



As discussed in the first section of this executive brief, energy taxes that raise revenue or pursue other fiscal or social objectives, such as gasoline taxes, can implicitly put a price on carbon. Such taxes help curb negative impacts associated with energy use, such as air pollution, in a similar way to how carbon taxes affect emissions. Yet, they often lack a direct correlation to the carbon content of the fuel and fail to send coherent price signals. In general, carbon prices faced by energy consumers do not reflect climate costs, particularly in sectors other than road transport. Better aligning energy taxes with carbon content while taking into account other policy objectives is an important way to introduce more stringent carbon pricing, together with robust pricing.

In the second section, it is shown that government subsidies and tax breaks that support the production and use of fossil fuels also undermine the goal of influencing producers, consumers and investors through carbon pricing. Elimination of this support, which remains substantial, is a high policy alignment priority.

The third section finally states that policy misalignments have been identified in finance, fiscal, innovation, skills, development and trade policies, as well as in sectoral policy frameworks in electricity, urban mobility and land-use. Realigning policy frameworks across economies helps advance reform and reduce costs associated with the transition to low-carbon development.

## **1** HOW CAN GOVERNMENTS MAXIMIZE COST-EFFECTIVE CARBON PRICING?

The use of carbon pricing mechanisms is increasing, but not fast enough for countries to reach the emissions reduction goals of the Paris Agreement or commitments to Nationally Determined Contributions (NDCs). Price levels so far are too low to have a significant economic impact in many jurisdictions.

To reduce carbon emissions at a sufficiently significant scale will require strengthening and expanding carbon pricing measures, along with a greater policy focus on the political challenges of transitioning to a low-carbon future.

New research by the OECD shows the extent of the challenge. The first comprehensive assessment of how OECD and G20 countries price carbon emissions examines specific taxes on energy use, in addition to carbon taxes and tradable emission permit prices — the components that determine “effective carbon rates” in each country as expressed in euros per ton of CO<sub>2</sub> emissions. It shows that

### **Box 1:**

## **COMPLEMENTARY AND OVERLAPPING POLICIES**

Depending on design, regulatory measures such as emissions performance standards, “best-available” technology requirements and measures to encourage efficient resource use (e.g. fuel efficiency standards) may be less cost-effective than explicit pricing mechanisms. However, they can be important to advance reform where price signals are less effective due to market or behavioral barriers or transaction costs — particularly in the household sector — and in jurisdictions facing political opposition to tax increases.

RD&D and technology deployment policies such as renewable energy support premiums can play a major role in developing and lowering the cost of new and immature mitigation technologies and in testing their integration in existing systems. For some technologies, such as carbon capture and storage technologies, the carbon price required to drive development and deployment is too high to be politically acceptable or economically efficient.

The ultimate aim of RD&D and deployment policies is for carbon-intensive technologies to reduce the overall long-term costs of the low-carbon transition as well as the competitive gap. Getting the level of support right can be challenging, and potential interactions between instruments mean that complementary or potentially overlapping measures should be carefully scrutinized to ensure they are adding to — rather than undermining — the effectiveness of pricing mechanisms.

even when taking energy taxes into account, 60 percent of carbon emissions from energy use are unpriced in the 41 countries studied, which account for 80 percent of both global energy use and CO<sub>2</sub> emissions. In addition, carbon pricing so far leaves 90 percent of emissions priced at a level below a conservative, low-end estimate of the climate damage they cause (30 euros per tCO<sub>2</sub>).

Carbon prices also vary significantly across economic sectors (Figure 1), revealing the potential to increase rates or introduce pricing mechanisms where they do not currently exist. The OECD research shows that carbon prices are particularly low in sectors outside road transport across all 41 countries assessed, with 70 percent of emissions from industry, electricity, commercial and residential sectors, off-road transport, agriculture and fisheries not priced at all. Only four percent of emissions across these sectors are subject to carbon pricing levels above 30 euros per tCO<sub>2</sub>. Effective carbon rates on road transport are higher, with 46 percent of emissions priced above 30 euros per tCO<sub>2</sub> and only two percent of emissions unpriced. However, specific taxes on road transport fuel, which are generally not climate motivated, can be used to reflect air pollution, congestion and road infrastructure costs. These factors can justify rates well above 30 euros per tCO<sub>2</sub>, so that the relatively high rates in transport do not necessarily indicate particularly strong climate policy effort in transport. Tax rates also vary by fuel source within sectors — for example, emissions from coal use often get taxed at significantly lower rates than emissions from natural gas.

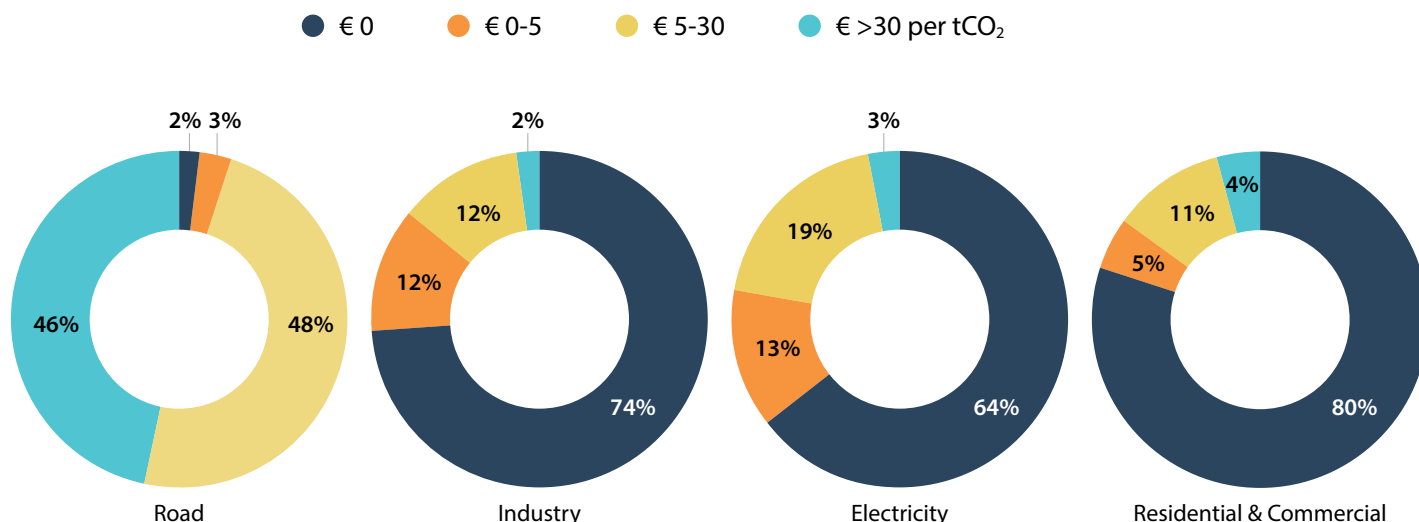
Such “carbon pricing gaps” demonstrate the opportunity for increasing carbon pricing efforts to support climate mitigation objectives, particularly in areas such as industry, electricity and commercial and residential sectors. It may also be worth noting that electricity prices can include other elements than the energy taxes included in the effective carbon rates, for example feed-in tariffs or network charges. These price components reduce demand and hence curb emissions, but do not directly incentivize the use of low carbon electricity.

## 2 ELIMINATING SUPPORT FOR FOSSIL FUELS

In 2009, G20 leaders made a commitment to “rationalize and phase out over the medium term inefficient fossil fuel subsidies that encourage wasteful consumption”. They called on the rest of the world to do the same. A similar commitment was made later that year by Asia-Pacific Economic Cooperation (APEC) leaders. In April 2015, the “Friends of Fossil Fuel Subsidy Reform,” a coalition of countries led by New Zealand, issued a communiqué calling for all countries, companies and civil society to support “accelerated action to eliminate inefficient fossil fuel subsidies in an ambitious and transparent manner as part of a major contribution to climate change mitigation”. In May 2016, G7 leaders pledged to eliminate inefficient fossil fuel subsidies and encouraged all countries to do so by 2025. Yet, environmentally harmful support for fossil fuels remains prevalent in OECD countries, major emerging economies and beyond.

The OECD’s Inventory of Support Measures for Fossil Fuels documents estimated budgetary transfers and tax breaks

Figure 1: Proportion of CO<sub>2</sub> emissions priced at different levels across sectors



## Box 2:

# RECENT FOSSIL FUEL SUBSIDY REFORM EFFORTS IN INDIA AND INDONESIA

Starting in late 2012, India's federal government decided to periodically increase retail prices by small amounts (about INR 0.50 a month, or \$0.008), which eventually led to the termination of the subsidies for diesel fuel in September 2014. The reform had a large impact on public finances, with total consumer support for petroleum products falling from about INR 970 billion (\$18 billion) in 2012 to INR 610 billion (\$10 billion) in 2014. Large subsidies remain for kerosene and liquefied petroleum gas, but the move represents a major step in the right direction. The savings amounted to about INR 200 billion between the years 2012 and 2014, representing roughly 10 percent of the revenues the country derives each year from all federal excise duties combined. India also doubled its tax on coal in its 2016 budget, to INR 400 per ton.

In the first quarter of 2015, the Indonesian government took decisive action in its revised budget for the year and scrapped all gasoline subsidies while also capping the subsidies it provides for diesel fuel at IDR 1 000 per litre (about \$0.08). Consumer subsidies for petroleum products and electricity (largely fossil fuel-based) accounted for almost 20 percent of all central government spending in 2011, an amount roughly equal to spending on education and much higher than all spending on health and infrastructure combined. However, further plans to raise fuel prices all the way to market levels stalled in May 2015. In October 2015, energy prices were cut for a range of fuels as Indonesia experienced its slowest economic growth in six years.

Source: Extracts from OECD (2015), *OECD Companion to the Inventory of Support Measures for Fossil Fuels 2015*, OECD Publishing, Paris. DOI: <http://dx.doi.org/10.1787/9789264239616-en>; [www.oecd.org/site/tadffss/data/](http://www.oecd.org/site/tadffss/data/).

that support the production or consumption of fossil fuels in 40 OECD and key partner countries. Total support for producers and consumers amounted to between \$160 billion and \$200 billion a year over the period 2010-14 (Figure 2), although recent signs show declines in countries such as India, Indonesia and Mexico. In addition, the 2015 IEA World Energy Outlook estimated that subsidies for consumption of fossil fuels in mainly emerging and developing countries were \$493 billion in 2014, but would have been \$610 billion without reforms enacted since 2009.

Eliminating support for incumbent fossil fuel technologies is a threshold measure to align economies for the low-carbon transition (Box 2). Around two-thirds of subsidies and other measures identified in OECD and key partner economies were introduced prior to 2000. Since then, the urgency of climate change mitigation efforts and the economic circumstances have shifted, adding to the case for governments to reconsider the relevance of fossil fuel subsidies. In addition, more appropriate policy alternatives exist to address social aims that may have motivated implementation, such as assisting low-income households or easing the transition of declining sectors or industries.

## 3 HOW CAN GOVERNMENTS ENSURE POLICY ALIGNMENT TO SUPPORT CARBON PRICING?

The scale and urgency of the low-carbon transition means that all government policies must be consistent in sending signals to consumers, producers and investors on the need to mitigate climate change. However, coal, oil and natural gas have fueled global economic development over the past century, as reflected in existing policy frameworks and economic interests. This misalignment between policy frameworks and climate objectives risks hindering core climate policies, including carbon pricing instruments – especially if the new policies are simply implemented on top of existing frameworks. Misalignments exist in all areas of the policy environment: from policy domains such as finance, fiscal, innovation, skills, development, and trade policies to sector specific frameworks such as those governing electricity, urban mobility and land-use.

An example of fiscal measures that counter climate objectives is the favorable personal income tax treatment



of company cars, which encourages the purchase and use of less efficient vehicles than the average. All OECD countries tax the use of company cars for personal purposes more favorably than wage income, with only Canada and Norway approaching equal treatment.

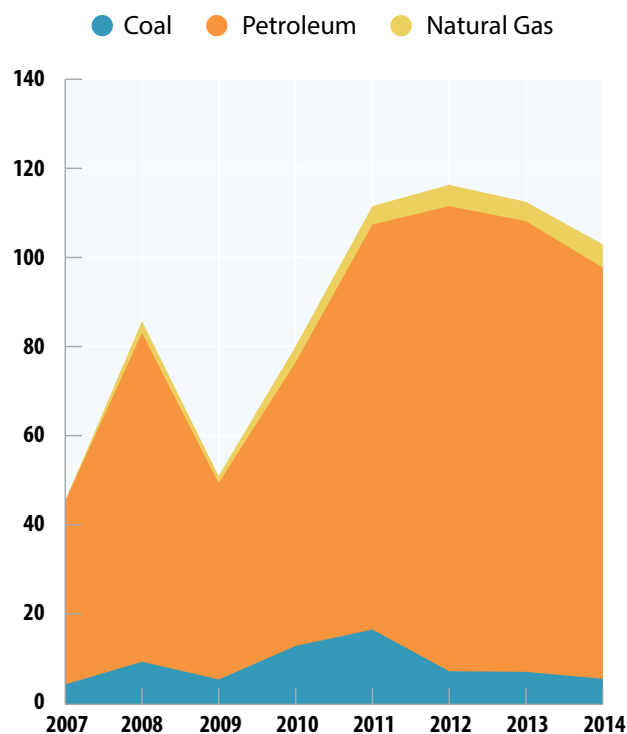
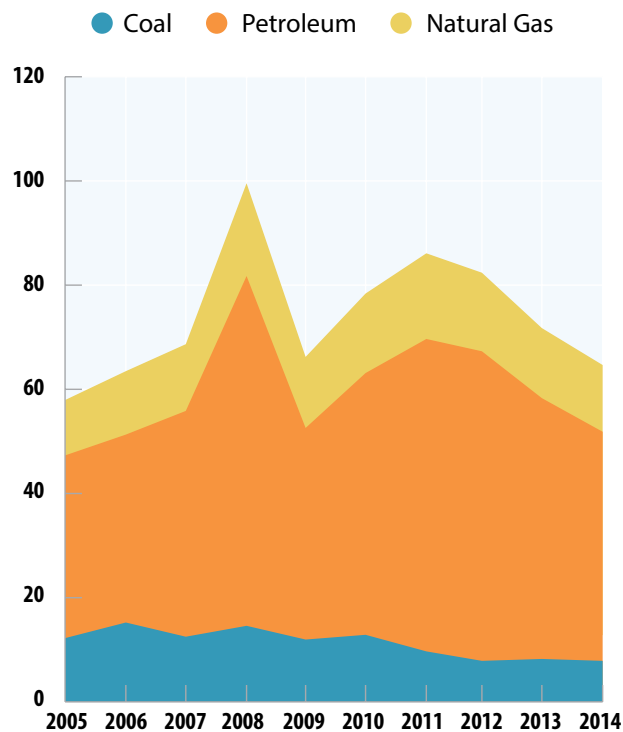
In the electricity sector, current wholesale electricity markets lack the long-term price signal needed to ensure adequate returns for investment in capital-intensive, low-carbon technologies. New market arrangements are needed to send the right investment signals, such as an auction system in Brazil in which winners can be awarded a price for their electricity in a long-term contract to provide some certainty on expected returns during the lifetime of the investment. Other options include temporary price support through feed-in tariffs, feed-in premiums, renewable portfolio standards or more market-friendly contracts for differences between the feed-in price and the market price. In addition, strict carbon emission performance standards can be introduced, such as in the United Kingdom, to additionally steer investment decisions toward new low-carbon sources. In jurisdictions where electricity supply is a planned activity, the introduction of emissions trading systems may not be as cost-effective if planners or plant managers cannot use the flexibility provided by these systems and respond to price signals.

Promoting climate-friendly trade also has a role to play. For example, countries promoting greener growth by favoring domestic manufacturers of low-carbon technologies must be wary of local regulations that restrict trade, which can undermine investment and uptake of sustainable technologies. OECD research shows that local-content requirements linked to wind and solar photovoltaic energy have been planned or implemented in at least 21 countries, mostly since 2009.

Climate policy can be significantly more effective if all government ministries assess their portfolios for potential misalignments with the low-carbon transition and formulate practical recommendations for reform. The total extent of misaligned policies risks hindering reform, and diagnosis should take a holistic, country-specific approach across all relevant policy domains.

**Figure 2: Government support for fossil fuels remains high**

**Total support for fossil fuels in OECD countries (top) and BRICS economies (bottom) by year and type of fuel (in \$billion)**



Source: OECD (2015), *OECD Companion to the Inventory of Support Measures for Fossil Fuels 2015*, OECD Publishing, Paris. DOI: <http://dx.doi.org/10.1787/9789264239616-en>



## FOR MORE INFORMATION

This Executive Briefing was prepared by the Carbon Pricing Leadership Coalition, which includes governments, businesses and civil society groups working together to identify and address the key challenges to successful use of carbon pricing as a way to combat climate change. Serving as a basis for further discussion, the content of this brief is a synthesis of ideas and literature derived from the key references on carbon pricing listed here, which are also available at the CPLC website: [www.carbonpricingleadership.org](http://www.carbonpricingleadership.org).

For more information on this topic, visit:  
<http://www.carbonpricingleadership.org/resource-library/>



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