

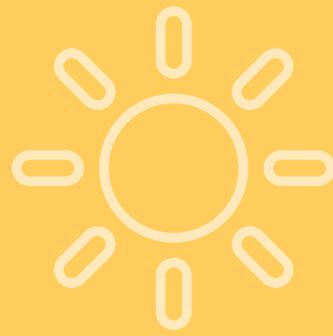
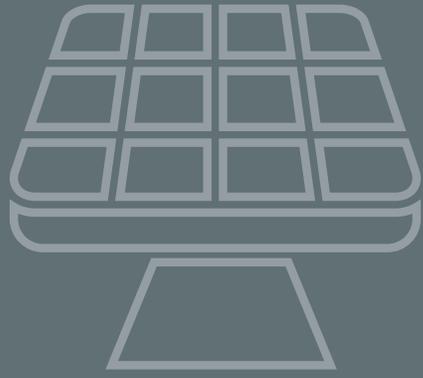
# CARBON PRICING FOR CLIMATE ACTION

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# CARBON PRICING FOR CLIMATE ACTION

## Key messages:

- Carbon prices are needed to incorporate climate change costs into economic decision-making. They create an incentive to reduce carbon emissions and can help to raise revenues in a more efficient and less distortive way than alternative sources.
- Carbon pricing should be included as part of a broader arsenal of tools to achieve domestic climate targets, but it is not a silver bullet: other policy instruments and investments (for example, public transport, power transmission infrastructure) are needed to complement carbon pricing and to enable consumers to respond to higher prices by switching to lower emission alternatives.
- Choice of carbon pricing instrument depends on the policy objectives and national circumstances. Carbon tax, emissions trading systems, and carbon crediting mechanisms have emerged as the common explicit carbon pricing instruments. Other measures are also needed to align energy prices with their true costs, particularly removing fossil fuel subsidies, and are an important and effective part of the solution.
- A carbon tax can be effective in smaller economies with human capacity constraints and in jurisdictions with well-established and transparent tax frameworks. Emission trading systems may be chosen by larger, more established, and market-linked economies with political economy barriers to tax reform. Experience gained and capacity built through crediting mechanisms and continued participation in international carbon markets can provide countries with an introduction to carbon pricing to build better understanding and increase their capacity.
- The most successful instrument will be the one that can be enduring. This requires a number of elements, including political support, institutional capacity, effective communication, and inclusive stakeholder engagement. Complementing carbon pricing with support for negatively impacted stakeholders, together with effective communication, are important elements of success.
- Countries are increasingly adopting carbon pricing, but current levels remain inconsistent with national and international climate objectives. Negotiating to establish minimum carbon prices among major global players would reduce the competitive pressures that diminish ambition in unilateral contributions and support increasing carbon prices gradually in ways consistent with climate targets. Such an agreement would need to be well coordinated, reflect equity and political economy considerations, and be transparent in its design and implementation.
- Successful carbon pricing reforms require integrating many stakeholders' considerations and increasing the capacity of governments and domestic businesses. The World Bank Group, through its Climate Change Action Plan, is well positioned to leverage its convening power, knowledge and research, and country program support to help countries make informed decisions on carbon pricing policies, their design, and implementation.



# CLIMATE CHANGE AND CARBON PRICING

**To avoid the most damaging effects of climate change, global average temperature must be limited to 1.5°C above preindustrial levels.** Recognizing the urgency for climate action, many countries are submitting enhanced 2030 national climate plans to the United Nations Framework Convention on Climate Change (UNFCCC) ahead of COP26 in Glasgow. In support of the long-term goal, 121 countries have now pledged to reach net-zero carbon emissions by around 2050, and many of these are stepping up their nationally determined contributions (NDCs) to align with this target.

**A gap remains between current policy ambition and the ambition required to meet the goals of the Paris Agreement.** The UN's Emissions Gap Report 2020 highlights that the current NDCs remain "seriously inadequate to achieve the climate goals of the Paris Agreement". While the recent increase in the number of net-zero pledges has provided a boost to global ambition, significantly more effort is required to decarbonize our economies. Decarbonizing our energy systems is a high priority, with the International Energy Agency emphasizing the need to urgently accelerate the transition to clean energy.

**While meeting the 1.5°C or net-zero emission targets entails economic costs, the overall costs would be lower than the costs of climate change if those targets are not met.** Early actions and allowing economies to gradually adjust to the adverse impacts of climate change mitigation would help lower the overall costs of meeting these targets. Achieving the Paris objectives will require all countries to implement a suite of climate policies, but a well-designed carbon price is a critical part of any strategy to reduce emissions in an efficient way.

# WHAT IS CARBON PRICING?

**A carbon price is a policy that places a price on greenhouse gas (GHG) emissions. Carbon pricing is the single most cost-effective policy tool that governments and companies can use as part of their broader climate strategy.** If well designed and sufficiently ambitious, carbon pricing can create strong economic incentives for the changes needed in investment, production, and consumption patterns, and to induce technological advancements, reducing the extent of additional public investment needed.

**Carbon pricing can be implemented in multiple ways, responding to a range of factors, circumstances, and policy objectives.** Emissions can be priced *explicitly*, for example through a carbon tax, an emissions trading system (ETS), or a crediting mechanism. A carbon price can also be *implicit*, such as through the removal of fossil fuel subsidies, or through differential energy pricing/taxation. Reducing fossil fuel subsidies, where they exist, is an essential first step toward implementing effective carbon pricing. The preferred choice of instrument may depend on a range of jurisdiction-specific objectives and circumstances, such as sectoral composition (for example, which sectors contribute the most GHGs), the ability to draw from existing institutions and frameworks, and—perhaps most importantly—political considerations and community views (Figure 1).

**FIGURE 1: OVERVIEW OF FACTORS THAT INFLUENCE CHOICE OF A CARBON PRICING INSTRUMENT**



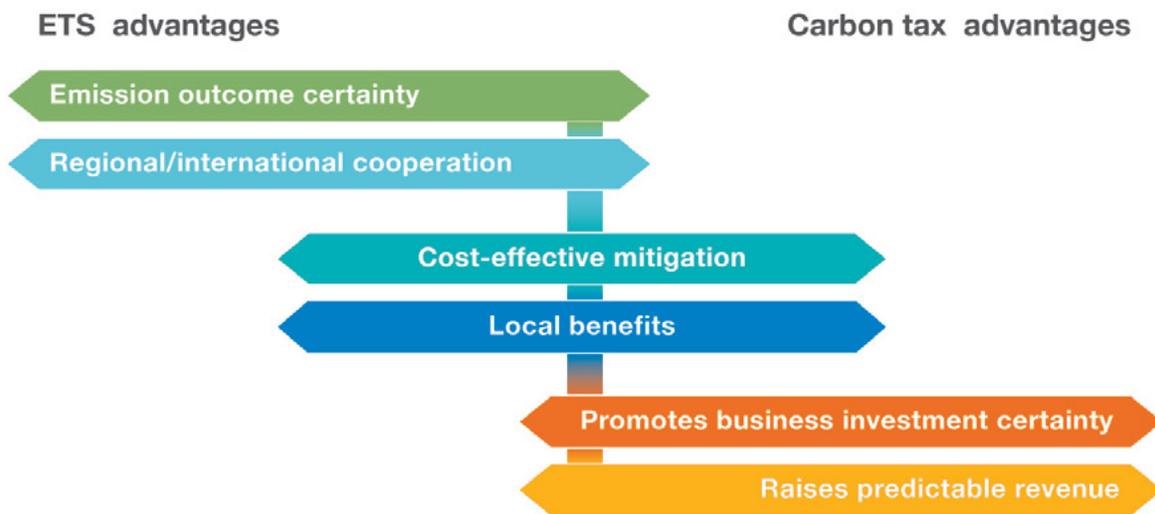
**TABLE 1: SUMMARY OF DIFFERENCES BETWEEN EXPLICIT CARBON PRICE INSTRUMENTS**

	CARBON TAX	EMISSIONS TRADING SYSTEM	CREDITING MECHANISM
Definition	Carbon taxes put a price on GHG emissions (e.g., fossil fuel combustion) and establish a direct link between the GHG emissions of a product or process and the tax that must be paid on it.	ETSs place a quantitative limit (a cap) on the amount of GHG emissions. Regulated entities are required to surrender one allowance for each unit of emissions for which they are responsible.	Crediting mechanism issue emissions reduction units ('credits') to eligible project activities to recognize quantified emissions reductions that are real, additional, permanent, and below a baseline scenario.
How price is established	The price is set by the government as a rate of tax on GHG emissions. Normally, a time schedule of tax increases are pre-determined or clear rules are established for adjusting the tax rate.	The price is the market price of emissions allowances and is thus determined by the stringency of the cap relative to demand for emissions. Allowance banking provisions allow for intertemporal smoothing and transmission of price expectations.	Credit price is determined by the market. Unlike carbon taxes and ETSs, for carbon credits to have value, crediting mechanisms require an external source of demand for the credits.
Levels of emission reductions that can be achieved	Less certainty, depends on market response to price change (price elasticity).	More certainty, maximum level established by setting trajectory of emissions cap.	Less certainty, depends on the number of projects and the robustness and integrity of quantified emissions reductions.
Compliance	Pay tax based on reported emissions (or selected proxy, such as the carbon content in fuel).	Through allowances and participation in direct allocation or secondary market.	Often used to complement carbon tax or ETS (e.g., used in lieu of tax payment or allowance surrender).
Role of market	Generally, does not require a market that needs to be regulated.	Mechanism for auctioning allowances and oversight of secondary market.	Mechanism for issuing credits and oversight of secondary market.
Typical lead agency	Finance ministries	Environment ministries	Environment ministries
Favorable conditions for the instrument's consideration	Smaller, low capacity economies, and jurisdictions with well-established and transparent tax frameworks.	Larger, more established and liberalized economies/sectors, political economy barriers to tax reform and/or economies looking for international linking opportunities.	For activities where other carbon pricing instruments face challenges (e.g., land sector) and/or where jurisdictions want to build capacity and unlock options for investments/finance from international carbon markets.

**While the choice of instrument is dependent on jurisdictional circumstances, each instrument has its advantages.**

A carbon tax is generally a preferred option if revenue certainty is a priority and/or where there are institutional or technical capacity constraints. An ETS is generally preferable where achieving an emissions target is a priority and/or where there are barriers to public acceptance of a carbon tax (Figure 2). Broad-based mandatory instruments, such as a carbon tax or an ETS, are better tools to incentivize reductions across the economy than crediting. However, carbon crediting has its advantages in some situations, including where there are barriers (for example, legal hurdles or political resistance) to implementing an ETS or a carbon tax.

**FIGURE 2: POTENTIAL ADVANTAGES FOR ETS OR CARBON TAX**



## ROLE OF CARBON PRICING

**Carbon pricing is a cost-effective policy tool to drive GHG mitigation and should be included as part of a broader policy package that can tackle other climate change challenges and market failures.**

Other policies are needed to drive research and development (for example, energy storage technologies, carbon capture and sequestration) and to unlock noneconomic barriers to mitigation (for example, institutional inertia or network effects) to create low-carbon alternatives and reduce abatement costs in the sectors that are the most difficult and expensive to decarbonize (See Table 2). Carbon pricing can minimize the economic cost of decarbonization but should be implemented in conjunction with public investment (for example, in infrastructure and targeted incentives for technology and innovation), regulatory changes (for example, for building norms and urban planning), and in the appropriate enabling environment (such as functioning capital markets). For example, investment in public transport to improve infrastructure and the availability of viable alternatives is essential to enable consumers to shift transportation modes in response to increased carbon prices.

**TABLE 2: SUMMARY OF KEY BARRIERS TO GHG MITIGATION**

PROBLEM	EXPLANATION	MARKET FAILURE	EXAMPLE INSTRUMENTS TO ADDRESS PROBLEM
<b>Lack of incentives</b>	Absence of incentives to change current (high-emissions) behavior. This may be due to the high costs of mitigation options and the fact that emitters are not responsible for the externalities caused by emissions.	Environmental externalities	Fiscal instruments (e.g., carbon tax, ETS); subsidies; and command and control.
<b>Insufficient information or technology</b>	Lack of understanding of the sources and causes of emissions, or absence of technologies to reduce emissions from these sources or strategies to address underlying causes.	Information creation/innovation as a public good	Research programs sponsored by government; research grants; and patent protection.
<b>Insufficient information distribution</b>	Although information exists, individual decision makers in the private and public sectors (consumers, producers, public administrators) do not have the information needed to make informed decisions.	Incomplete access to/possession of information	Public information campaigns; labeling requirements; energy efficiency standards; institutional support programs for technological best practice dissemination; and technology transfer schemes.

**Assessing and addressing the distributional impacts of carbon pricing through the design of carbon pricing instruments and/or complementary policies is critical to enable a transition that is equitable and to contribute to the long-term sustainability of the carbon pricing mechanism.** Further, to maximize the effectiveness and efficiency of carbon pricing, broader measures should be considered, such as preparatory energy market reform to facilitate the pass-through of carbon costs to energy consumers. Existing overlapping and countervailing policies should be consolidated, revised, or (where possible and appropriate) removed. For example, removing fossil fuel subsidies is an important step, which can in some circumstances offer bigger efficiency gains than introducing a new carbon price, depending on the jurisdictional context, incentive structures, and policy interactions. Similarly, once robust carbon pricing is in place, other, more costly regulatory policies (renewable energy mandate) may become redundant.

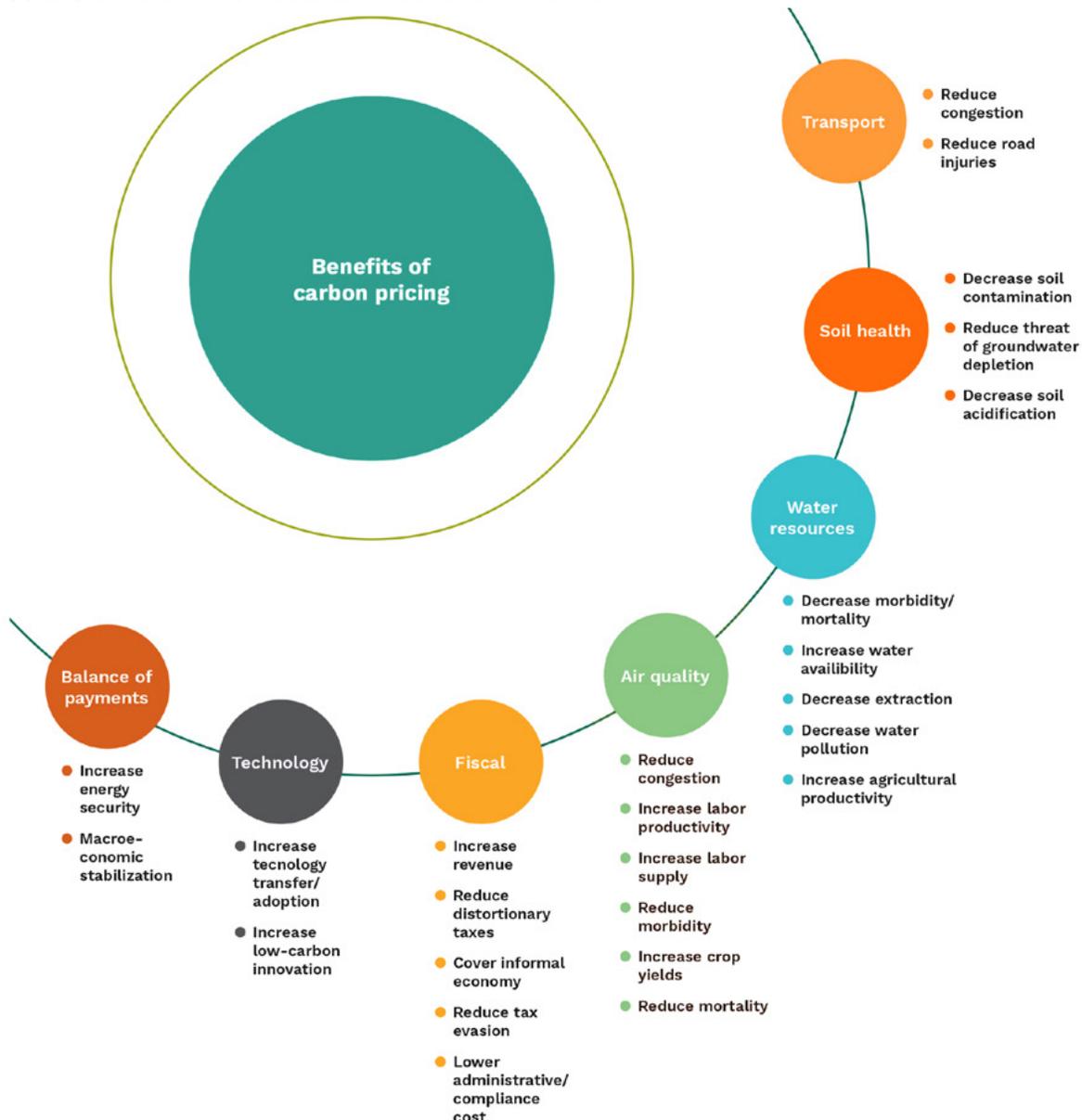
**Carbon pricing can yield numerous benefits to society beyond climate mitigation. Highlighting and communicating these benefits can improve the political economy of its implementation.** These benefits could include cleaner air and water, improvements in human health, safer and less congested roads, increased energy and food security, and enhanced macroeconomic stability through stronger fiscal and international payments balances (Figure 3).

**Well-designed carbon pricing systems (for example, carbon tax or an ETS with auctioning) can play a role in raising revenues, which can help finance decarbonization, address distributional and equity concerns, and potentially support a sustainable post-COVID recovery.** For example, raising carbon taxes to the level recommended by the Stiglitz-Stern Commission could add between 1 percent and 3 percent of gross domestic product in national tax revenues in 2030.

Carbon pricing revenues can be channeled to catalyze clean investment flows, ease transitions, and support poverty alleviation. Carbon revenue can be used for a range of purposes, depending on jurisdiction objectives and priorities, but broadly include: improving fiscal space and economic position (for example, reducing inefficient taxes or debt reduction); financing further climate mitigation; financing development priorities (for example, poverty reduction, education, or health); or promoting equity and maintaining competitiveness (for example, cash transfers to low-income households or carbon leakage prevention measures). In practice, a combination of uses may be implemented.

**Carbon pricing can be implemented through or as a part of environmental tax reforms, whereby policy reforms are introduced to combine and align with the planned introduction of carbon taxes with socially productive expenditure policies.** Through using existing fiscal frameworks, environmental tax reform can be a more efficient, simpler, and quicker way of applying a carbon price, particularly in the energy sector. It is particularly advantageous in low-income countries where environmental tax reform can reduce emissions while increasing economic activity, due to the ability to cover the informal sector, reduce more distortive taxes (for example, labor taxes), and increase revenue to fund growth-enhancing public investments. In addition to its positive effects on employment and growth, environmental tax reform can also provide a range of development benefits (Figure 3), which directly improve well-being.

**FIGURE 3: CARBON PRICING BENEFITS BEYOND MITIGATION**



# STATE OF PLAY WITH CARBON PRICING

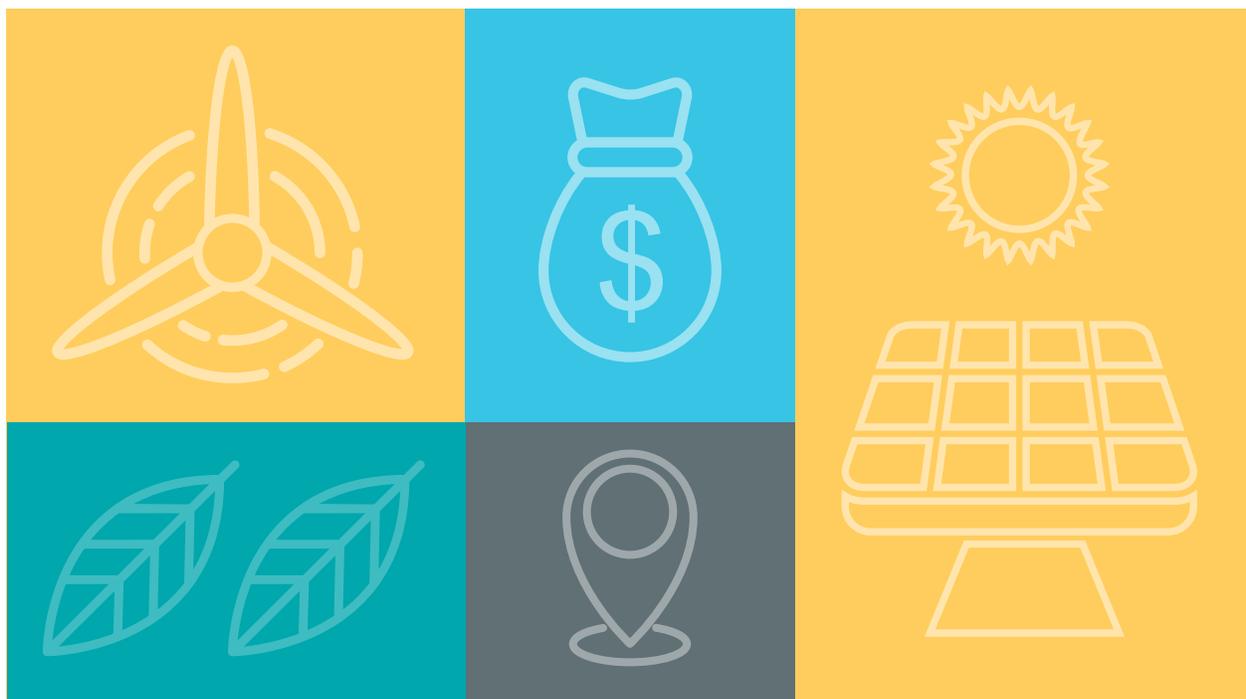
**A total of 64 carbon pricing instruments are now in operation around the world, covering over 20 percent of global GHG emissions and generating \$53 billion in revenue.**

According to the World Bank's "State and Trends of Carbon Pricing 2021" report, these advances represent a 17 percent increase in revenue from last year, however, the full potential of carbon pricing remains largely untapped. The report also

finds that the majority of carbon prices remain far below the \$40-80/tCO<sub>2</sub>e range [recommended](#) for 2020 to meet the 'well below 2°C' temperature goal of the Paris Agreement. Political ambition is required in order for prices to rise—for example, through increasing carbon tax rates, or through reducing ETS caps.

## BOX 1: SUMMARY OF CARBON PRICING IN VARIOUS JURISDICTIONS

- Most countries already tax fuel use through fuel excise systems. Although these taxes may implicitly tax carbon-intensive fuels, the tax rates are generally an artifact of history and are not consistently based on the carbon content of fuels. Thirty-five jurisdictions have changed this and have started making efforts to adjust existing tax frameworks—to a varying degree—to explicitly tax carbon (for example, Argentina, Colombia, Chile, Mexico, Poland, South Africa, Ukraine), which combines climate change mitigation with domestic resource mobilization.
- Twenty-nine jurisdictions instead or additionally use ETSs (for example, European Union (EU), Kazakhstan, California, and some Chinese regional pilot programs), which can provide greater certainty over the control of total emissions. Other countries have introduced carbon prices via market-based regulations like tradeable performance standards (for example, Canada, India, and China's national ETS) wherein entities required to meet a performance standard (such as energy intensity) are allowed to trade with other entities based on over/under achievement of the standard—or pay a carbon tax as an alternative compliance method.
- Some countries have sought to price carbon while simultaneously pursuing industrial policies to maintain the competitiveness of their energy-intensive industries. Many use mechanisms that rebate carbon revenues back to the industry per unit of output produced, providing incentives for minimizing emissions while encouraging production (for example, allowance allocation in New Zealand or California, and Canada's output-based pricing system). In some cases, rebates are conditioned on reducing emissions intensity (for example, British Columbia, United Kingdom (UK)).
- Others (24 jurisdictions) use carbon crediting mechanisms, which allow companies to finance a mitigation project in another sector (often forestry) in lieu of paying a carbon tax or emissions permit (for example, Australia, Kazakhstan, Japan). Such mechanisms can complement or extend pre-existing mandatory carbon pricing mechanisms.



**Countries are using a diversity of carbon pricing approaches, depending on their national objectives.**

These range from pricing carbon implicitly through taxing fossil fuels or subsidizing renewables; and explicitly through carbon taxes or ETSs. Some countries have also implemented crediting mechanisms to promote specific emissions reduction activities in an effort to complement or extend pre-existing mandatory carbon pricing mechanisms. All these choices and approaches reflect the priorities, policy objectives, jurisdictional circumstances, political reality, and capacity of countries to implement policies.

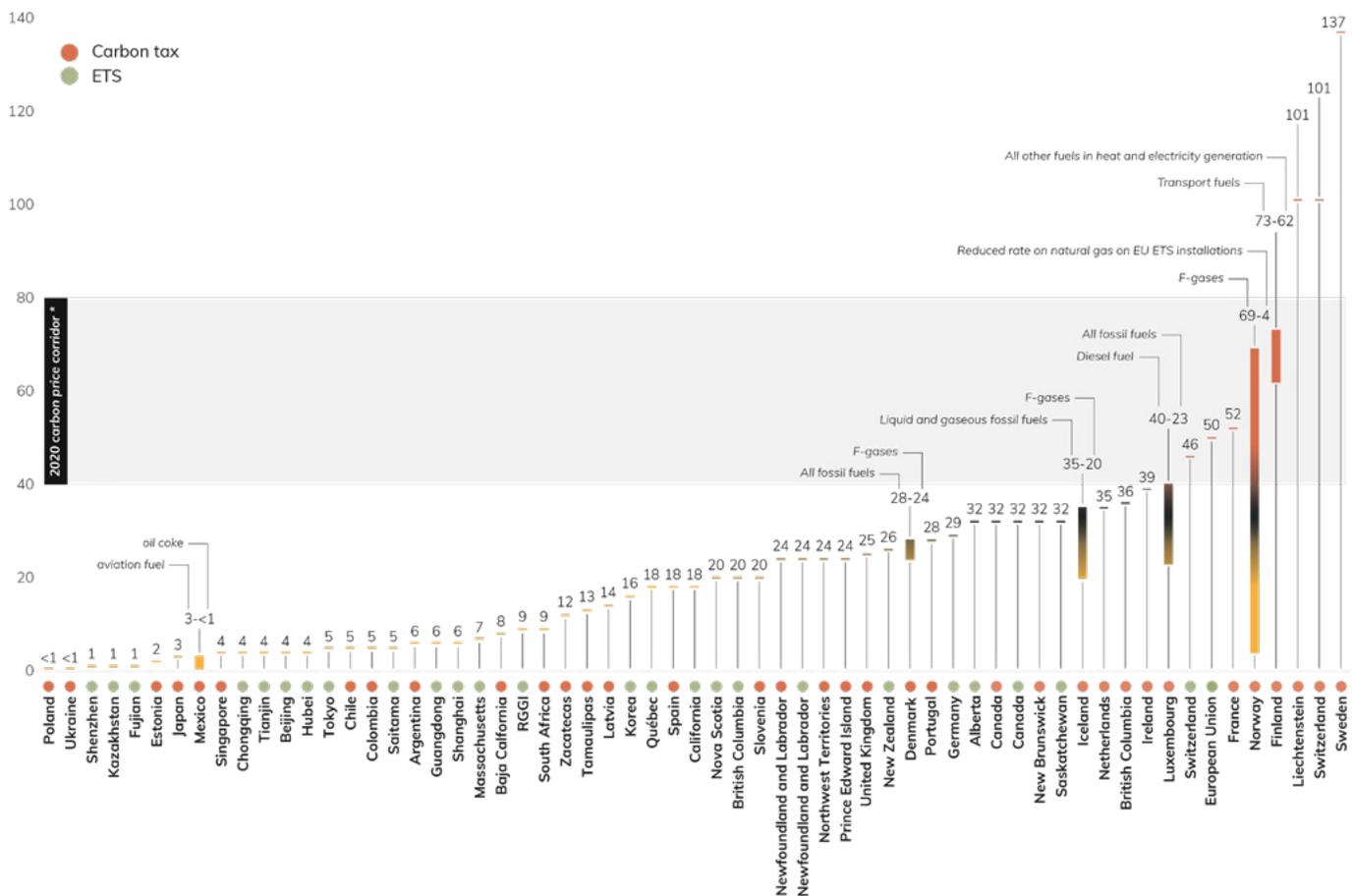
**Recognizing the urgency of climate action and the benefits carbon pricing could bring, more countries have recently started undertaking reforms to account for the cost of carbon emissions.** In East Asia Pacific, China introduced its national ETS—the largest globally. Thailand and Vietnam are preparing ETSs, too. In South Asia, Pakistan is considering a carbon tax, and India has introduced tradeable performance standards in energy-intensive industries and the power sector besides reforming its coal tax. In Africa, Senegal, Côte d'Ivoire, Togo, and Ghana are evaluating options to introduce carbon taxes. South Africa is preparing an extension of its carbon tax to land uses through a carbon-crediting scheme. Nigeria and Sudan are undertaking major reductions in fuel subsidies. Kenya is phasing out tax exemptions for the extractives and petroleum sectors. In Europe and Central Asia, Northern Macedonia partially financed its COVID-related stimulus with an interim (nonpermanent) increase in fuel taxes, and Ukraine is preparing an ETS. In Latin America, Argentina, Chile, Colombia, and Mexico already have carbon taxes and are considering additional ETSs.

# CARBON PRICE LEVELS

**Most carbon prices today remain far below the \$40-80/tCO<sub>2</sub>e range needed to help meet the 2°C temperature goal of the Paris Agreement —less than 4 percent of global emissions are covered by a carbon price in this range (Figure 4). Prices above the \$40-80 carbon pricing corridor will be needed to reach the 1.5°C target. Of the 29 countries that have adopted net-zero targets, 22 already have carbon pricing programs in place. A number of jurisdictions are in the process of defining the role of carbon pricing in achieving the net-zero strategies,**

including the EU, individual EU Member States, New Zealand, and Canada. For instance, to facilitate its updated GHG mitigation target, Canada announced in December 2020 that it will increase the price of its federal carbon tax by Can\$15/tCO<sub>2</sub>e (\$11.94/tCO<sub>2</sub>e) annually to reach Can\$170/tCO<sub>2</sub>e (\$135.30/tCO<sub>2</sub>e) by 2030.

**FIGURE 4: CARBON PRICES AS OF APRIL 1, 2021**



Nominal prices on April 1, 2021, shown for illustrative purpose only. China national ETS, Mexico pilot ETS and UK ETS are not shown in this graph as price information is not available for those initiatives. Prices are not necessarily comparable between carbon pricing initiatives because of differences in the sectors covered and allocation methods applied, specific exemptions, and different compensation methods.

## BOX 2: GLOBAL MINIMUM CARBON PRICE

There is a growing call for an agreement on global minimum carbon prices to recognize the multiple potential benefits from expanding the use of carbon pricing as a central measure to combat climate change. For example, the International Monetary Fund in its recently released proposal for establishing minimum carbon prices suggests initially focusing on obtaining a common price floor agreement based on explicit carbon prices across a small number of key large-emitting countries. To address equity concerns, the International Monetary Fund proposal also includes the potential to allow for differentiation in countries' floor prices according to jurisdiction characteristics, such as level of development.

Proposals and adoption of carbon price floors at different jurisdictional levels are not new. Auction reserve prices are used in California, the UK and the Netherlands have introduced carbon levies to make up the difference between the price floor and prevailing ETS price, and the EU is considering a regional price floor as part of its EU ETS reform to make it responsive to the ambitious climate agenda. International experience reveals multiple ways to ensure carbon prices meet minimum standards. Importantly, a global minimum carbon price is not policy prescriptive and acts as a price floor, not a ceiling. Therefore, countries could continue to increase ambition beyond any minimum and could determine the most appropriate policy instrument to achieve the minimum price (for example, carbon tax or ETS).

The driver for a minimum carbon price is to encourage cost-effective emissions reductions, support jurisdiction's climate ambition, promote greater consistency in ambition across jurisdictions, and potentially help level the playing field and manage carbon leakage risks. A minimum carbon price would also provide a transparent metric for evaluating ambition and progress toward national targets. In this way, it could complement the Paris Agreement and UNFCCC framework by allowing for 'mini-lateral' negotiations and agreements to strengthen and supplement NDC ambition. However, the design and implementation of a global minimum carbon price that provides sufficient incentives would need to be well coordinated, transparent with compliance assessment, flexible to accommodate domestic circumstances in implementation, and respectful of global equity considerations and the principles of 'common but differentiated responsibilities' that is at the core of the UNFCCC. Such considerations might help increased enforceability and support increasing a carbon price gradually that is consistent with climate targets.

**Ambitious mitigation targets and the presence of price support mechanisms are guiding the high price levels in many ETS jurisdictions, and several jurisdictions are adopting trajectories that define periodic carbon tax increases.** Almost all ETS jurisdictions have established some kind of cost-containing reserves, auction price reserves, or market stability reserves to establish predictable and effective carbon markets. Despite several jurisdictions' planned price increases in their carbon tax systems, many postponed such an increase due to the COVID-19 situation.

# CARBON PRICING CHALLENGES AND OPPORTUNITIES



**Despite the progress countries have made thus far, carbon pricing has not yet lived up to its full potential to drive emission reductions, and countries are not fully embracing carbon pricing policies as part of broader economic reform efforts to meet multiple goals.** This

is likely due to multiple factors, including low carbon prices, limited sectoral coverage of existing carbon pricing programs, a lack of long-term carbon price signals, and the existence of political and public resistance driven by ineffective communication. Carbon taxes led to substantial emission reductions in countries like Sweden and British Columbia, while other countries with carbon taxes have low or ineffective prices (for example, in the Ukraine); experience in the EU, California, and the Regional Greenhouse Gas Initiative states demonstrate the importance of a complementary policies and how carbon revenues can be useful for achieving other policy objectives. Further, technological constraints, switching costs, and labor market rigidities can dampen the effects of carbon prices in the short run. As a result, the level of the carbon prices currently politically palatable are not sufficient to drive emission reductions or innovation at the scale and pace necessary.

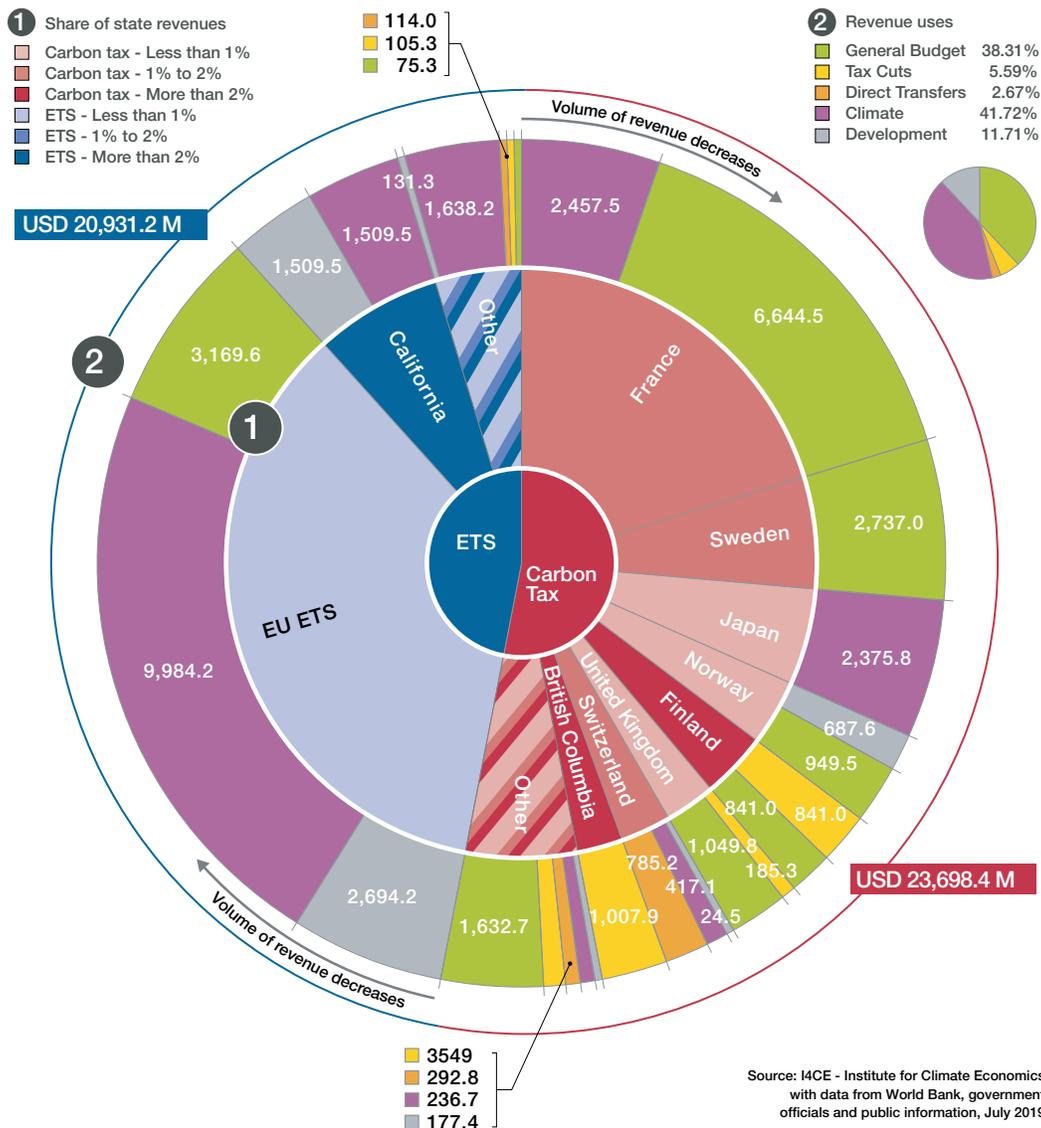
**Despite public demands for stronger climate action and growing business support for carbon pricing, limited public support continues to hinder the introduction of ambitious carbon prices.** Carbon pricing tends to receive relatively increased public support in high-income countries. While private companies have also actively opposed carbon pricing in many countries, business associations are increasingly singling out carbon pricing as their preferred policy as climate regulation becomes inevitable. Public concerns over carbon pricing are leading to an emphasis on fairness, political economy, and strategic communications in designing carbon prices. To build support for carbon pricing, jurisdictions are placing renewed emphasis on ensuring policies are fair (and visibly demonstrating these aspects), and using revenue in ways that provide tangible benefits, such as rebates or investments in clean technology. For instance, reforms to Ireland's carbon tax in late 2020 saw additional revenues being directed toward social protection initiatives, while revenues from Germany's new ETS for heating and transport fuels will be dedicated to decarbonization and to lowering electricity rates and transport costs for commuters.

**The effectiveness of carbon pricing in reducing emissions is dependent on the level of ambition and is mostly hindered by political economy and jurisdictional priorities.** Where carbon pricing is already in place, this is normally reflected in the carbon tax rate or the ETS cap; and design fundamentals (for example, breadth of coverage). There are examples of both taxes and ETSs lacking ambition (for example, low tax rate/tax exemptions like in South Africa where the power sector is exempted from phase I; nonstringent ETS caps like in the first phase of EU ETS) and examples of both having high ambition and effectiveness (for example, high tax rates in Nordic countries like Sweden, Finland, and Québec; the South Korea ETS covering more than 70 percent of emissions of the economy; and the Regional Greenhouse Gas Initiative with 100 percent auctioning). These limitations reflect the jurisdictions' approaches to address stakeholder concerns, manage political economy, and in some cases build confidence in the system functioning.

**Using a share of the carbon price revenues to increase social spending could ensure net reductions in poverty.**

In 2020, carbon pricing instruments generated \$53 billion in revenue globally, an increase of around \$8 billion compared to 2019. Jurisdictions adopted different mechanisms to utilize the revenues raised from carbon pricing ranging from investing in climate-friendly measures to channeling general budgets for different uses (Figure 5). Assessing and addressing the distributional impacts of carbon pricing through the design of carbon pricing instruments and/or complementary policies is critical to enable a socially just transition and to contribute to the long-term sustainability of the carbon pricing mechanism. An important consideration is the potential impact on income distribution and poverty, noting that these impacts mostly depend on the amount and type of energy consumed by household groups and how the ensuing revenues are used. In low-income countries, carbon prices tend to improve equity due to the concentration of fuel consumption among higher-income groups. Clear, transparent, and socially accepted use of proceeds are key drivers of social acceptance of carbon pricing where fuel price changes might have a significant regressive impact.

**FIGURE 5: CARBON REVENUES BY REVENUE USE AND JURISDICTION, 2017/18**



Note: Figures represented here are for calendar year 2018 or fiscal year 2017/18. If no data were available, calendar year 2017 was taken into account. Source: I4CE (2019)

**Linkage of ETSs between countries, when implemented effectively, can reduce the overall cost of emission abatement.** Linking occurs when ETSs allow regulated entities to use allowances from one or more other systems for compliance purposes. Linking ETSs effectively broadens the potential access to low-cost abatement opportunities and can enable more aggressive abatement across linked jurisdictions. For instance, studies suggest that a globally linked carbon pricing system could almost double emission abatement at the same cost as countries acting alone.

**Finally, unequal carbon prices across countries create an unlevel competitive field, although empirical evidence shows that 'carbon leakage' and competitiveness effects to date have been small.** The carbon leakage pressures that may rise with greater carbon price disparity can be mitigated by output-based rebating or carbon border adjustments (as being discussed in the EU, US, and UK)—see Box 3. However, when considering policy design to address business competitiveness and leakage, policy makers must be careful not to introduce suboptimal policy design that undermines overall effectiveness or efficiency of the carbon pricing instrument. This further highlights the importance of complementary policies and linking systems with other jurisdictions (mainly ETS).

### **BOX 3: CARBON BORDER ADJUSTMENTS**

A carbon border adjustment is a mechanism used by a jurisdiction to address carbon leakage and help its industries maintain international competitiveness. A carbon border adjustment (or border carbon tax or levy) is primarily aimed at leveling the playing field by imposing a comparable CO<sub>2</sub> charge on a measure of the carbon content embodied in imported goods and/or potentially exempting carbon costs for exported goods. It is also potentially a tool to incentivize climate action in other countries.

Several jurisdictions are discussing the role carbon border adjustment measures could play, noting that they are relatively novel and their technical, legal, and political challenges remain largely untested. For example, the EU is proposing to introduce a carbon border adjustment on emissions-intensive, trade-exposed products from 2023 (likely to initially include aluminum, cement, fertilizers, steel, and electricity). Similarly, the majority of carbon pricing bills introduced in the US Congress consider border carbon taxes. These measures will likely reduce demand for emissions-intensive products, as will other drivers, such as compliance with country import regulations and changing consumer preferences. Countries reliant on exports to these jurisdictions are particularly exposed. At the same time, it will increase the demand for low emissions products—giving an advantage to exporting businesses and countries with low (or an ability to improve) the emissions-intensity of their exports.



# EXPERIENCE WITH CARBON PRICING AND LESSONS LEARNED

Experiences with carbon pricing to date highlight a number of lessons learned that can increase the effectiveness, acceptance, and durability of carbon pricing:

**Alignment and interaction with broader policies is critical to ensure successful design and implementation of any carbon pricing instrument (CPI).** While countries may implement multiple climate policies

—including CPIs—to meet their climate needs as specified in their NDCs, it is important to identify the role of each measure and define its relationship with other strategies in order to maximize synergies and mitigate any trade-offs. This applies especially for emission allowance and credit trading. For example, if energy efficiency or renewable energy policies affect the energy use of firms covered by an ETS, they can reduce the demand for allowances and depress the carbon price. This interaction can be problematic both because the cost of the overlapping policies can easily exceed the cost savings from meeting the cap in the short run and because low prices discourage the kinds of investments needed to prepare for long-run goals.

**Stakeholder engagement along with a solid communications strategy is critical for confidence building, data collection, and design and implementation of CPIs.** It is important to develop a strong rapport with key users and those that are likely impacted by the proposed systems associated with an envisioned CPI. In addition to sound policy choice and design, a CPI strategy should involve clear communications to the public, including examples of its outcomes, how the CPI will be implemented, how revenues will be utilized, and that its objectives are aligned with the concerns, values, and motivations of the society. Jurisdictions, such as Colombia and Mexico, have recently adopted comprehensive communication strategies that aim to increase public support for their carbon prices, while Pakistan is also taking steps to strategically communicate its carbon pricing processes.

## BOX 4: COMMUNICATING CARBON PRICING

**California:** California's targeted communication campaign provided clear evidence of how carbon revenue was being used. This included showcasing expenditures on visible solutions with broad popular support, such as electric school buses, electric cars and trucks, new light rail stations, car sharing programs, and investments in low-income communities. This helped garner support with the community (especially low-income households) and protected the carbon pricing policy against concerted industry lobbying to destabilize its introduction.

**Australia:** The Australian experience provides important lessons for other countries. Carbon pricing communication following introduction of the carbon pricing mechanism was late, insufficient, and (most importantly) overly complex. Despite solid policy design, extensive stakeholder engagement, and the introduction of a range of household and business assistance measures, the policy was not able to withstand a concerted, targeted campaign to repeal the legislation. Advice from then Minister for Climate Change was: Don't overcomplicate the messaging.

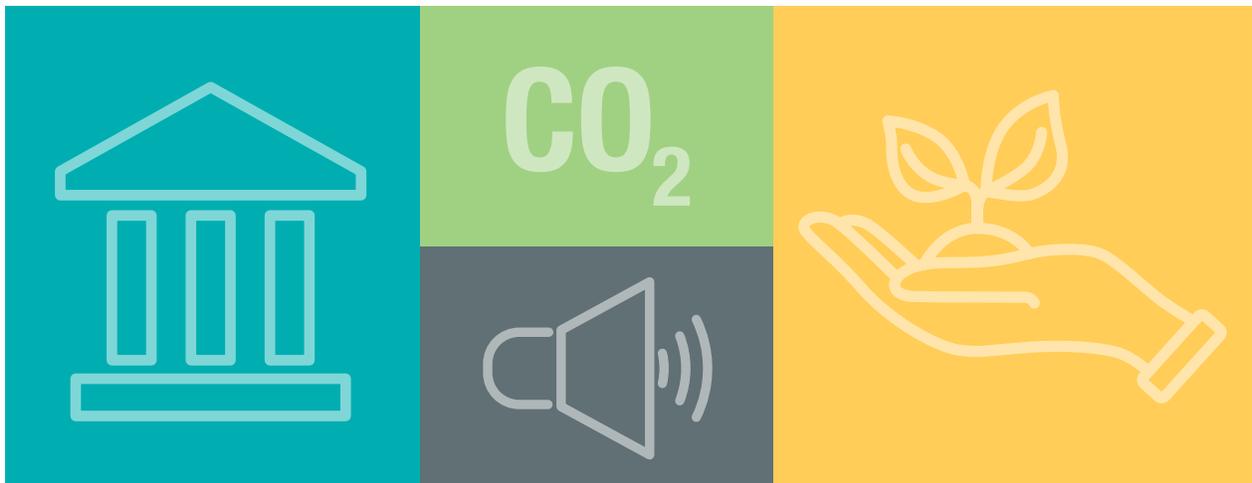
**Policy flexibility should be preserved to allow decision-makers to adjust the overall target, the schedule for CPIs, and specific design features in response to changing conditions.** Measures like the Market Stability Reserve was introduced in the EU ETS to address the unexpected over- or undersupply of allowances, which will in turn provide greater price certainty. In the case of the carbon tax, countries tend to allow regular changes to the tax levels (starting low and increasing gradually over a period of time), tax coverage (often to avoid double taxation) and use of tax revenues (from earmarking to general budget provisions).

**Implementing carbon pricing needs a strong enabling environment, including appropriate authority (for example, legislation), robust oversight (for example, to enforce compliance), and a strong institutional framework.** This can be achieved through leveraging existing systems and institutions (for example, a tax framework) and/or by establishing new frameworks.

**Carbon revenues can be crucial in supporting cost-effective climate mitigation, industrial competitiveness, and other economic and development objectives.** How these revenues are used and how these uses are communicated are critical for public and stakeholder acceptability of carbon pricing. The revenues can be used as a safety net for the poorest; they can be invested in clean sectors with the largest economic multipliers; they can be used to lower income tax or value-added tax rates, which often face problems of tax evasion; and they can be used to promote green and clean technologies in both supply and demand sectors. A mix of revenue recycling schemes can make a carbon tax both progressive and politically palatable.

**Compensation to industrial sectors should be targeted to those that truly need protection, based on data-driven evaluation, and should not exceed the share of carbon costs that are not passed on to customers.** Economic assessments using different tools can provide objective information to form the basis to start economy-wide dialogues towards the drafting of relevant regulations. Specific provisions related to compensations such as tax exemptions, lower rebates, flexibility to use carbon offsets can minimize risks to competitiveness but should be circumscribed to target carbon leakage and avoid undermining the larger objective of reducing emissions.

**Free market structures support carbon pricing instruments achieving emission reductions at least cost.** Absence of, or restrictions on, market structures limit market players' ability to pass through carbon pricing costs to consumers, which could be fundamental for triggering abatement along the value chain. This is especially the case for ETSs operating in nonliberalized electricity markets and countries with vertically integrated and monopolistic utilities.





# THE WORLD BANK GROUP'S ROLE

## MAINSTREAM CLIMATE POLICY, INCLUDING CARBON PRICING

**There has been a significant increase in client demand for the World Bank Group's (WBG's) technical support on carbon pricing, including its mainstreaming into countries' wider fiscal policy and long-term decarbonization strategies.** Countries are seeking an integrated perspective of how carbon pricing policies can simultaneously advance environmental, fiscal, sectoral, and macroeconomic objectives. The WBG, through its combination of carbon pricing, macrofiscal, sectoral, and technical expertise, along with its convening power, is uniquely placed to provide this support. The WBG's new Climate Change Action Plan will play a catalytic role in transforming the work that it does to support implementing countries' climate change agendas.

**Special attention should be given to the interaction between poverty and climate change mitigation and to the potential role for carbon pricing revenue to support achieving the WBG's twin objectives of poverty reduction and increasing shared prosperity.** Developing impact assessment and monitoring tools along with international cooperation in designing such tools is important to effective utilization of carbon revenues. The trade-offs between the impacts of carbon prices consistent with limiting warming to 1.5°C on low-income households and the benefits of recycling revenues generated from carbon prices still need to be better understood.

## PROVIDE CROSS-CUTTING TECHNICAL ADVICE AND ANALYSIS

**Since carbon pricing is an economy-wide, cross-sectoral lever, central to the climate role of fiscal policy, the WBG's work on carbon pricing will be integrated more as part of the deeper country engagement work on decarbonization, just transition, and fiscal management.** The WBG is leading work to help countries in assessing the role and appropriateness of carbon pricing, taking into account the country context, structure of economy and sectors, policy objectives, decarbonization strategies, using different country work programs, and trust fund activities.

## DEVELOP COUNTRY-TESTED TOOLS AND GUIDANCE

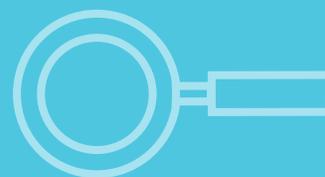
**Multiple country support work programs under the WBG's Climate Change Action Plan and the work under different initiatives offer opportunities to shape the climate dialogue at country level.** The broader decarbonization work on long-term climate strategies, identification of sectoral mitigation instruments and necessary sector reforms, its relation to accessing international climate finance, and the work on global and country analyses of the relative growth and welfare impacts of environmental and conventional taxes will present opportunities for the WBG to look into the role of carbon pricing instruments, their impact and how such an integrated approach can help countries on carbon pricing. In addition, the work on fuel subsidy reforms for carbon pricing and how to include carbon pricing within existing commodity taxation systems is expected to become a crucial part of the dialogue with client countries pursuing carbon pricing.

**Successful carbon pricing reforms require integrating many stakeholders' considerations and increasing the capacity of both businesses and government.** The WBG is hosting several initiatives to support the development of mutually beneficial policies and implementation of carbon pricing in countries. The Partnership for Market Readiness has been helping 23 countries to build the readiness needed to introduce different CPIs such as carbon tax, ETS, domestic crediting mechanisms depending on the policy assessments that countries performed to identify the most appropriate CPI(s), their priorities and policy objectives, with the successor facility (the Partnership for Market Implementation) gearing up to support more than 30 countries. The Energy Subsidy Reform Facility supports country programs to reduce negative carbon prices through fuel subsidy reforms. The Coalition of Finance Ministers for Climate Action supports the mainstreaming of carbon pricing into fiscal policy. The Carbon Pricing Leadership Coalition is convening dialogues between the private sector and governments on carbon pricing.

**Finally, the WBG can be particularly transformational when programs in support of decarbonization combine policy and investment lending.** Low-carbon infrastructure investments and carbon pricing can be mutually reinforcing. On the one hand, carbon pricing policy reforms can become politically easier and more effective at reducing emissions if they are accompanied by investments building low-carbon infrastructure. On the other hand, low-carbon investment projects are more successful at crowding in the private sector when carbon pricing is present to signal advantages to building clean. As the WBG is using Development Policy Financing to support carbon price reforms and Investment Project Financing to support low-carbon infrastructure, the next step is to combine these instruments systematically, for example, by providing priority access to climate finance investments to countries that undertake carbon pricing reforms. The new Country Climate and Development Report, the Country Economic Memorandum (fully considering climate issues), and the Carbon Pricing Assessment Tool can provide opportunities to reap such synergies for including carbon pricing in operations.



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