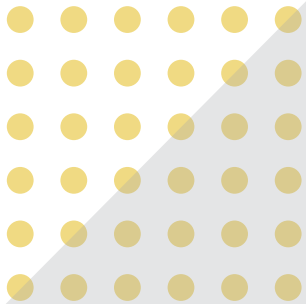


CARBON PRICING LEADERSHIP REPORT

2019/20



CARBON PRICING
LEADERSHIP COALITION



This report was prepared by the Secretariat of the Carbon Pricing Leadership Coalition under the leadership of Angela Churié Kallhaug. Isabel Saldarriaga managed the project and Seongeun Shim provided support. It covers the period ending May 31, 2020.

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ABOUT THIS REPORT

Welcome to the fourth Carbon Pricing Leadership Report, which showcases thought leadership and actions from the field of carbon pricing, together with the activities of the Carbon Pricing Leadership Coalition (CPLC) during 2019/20.

The CPLC is a voluntary initiative that brings together leaders from government, business, civil society, and academia to enhance global understanding of carbon pricing as a tool for accelerating and financing effective climate action.

We hope that this report will inspire governments and businesses worldwide to explore carbon pricing as a tool to assess climate risk and drive down greenhouse gas emissions for the benefit of the environment, economies, businesses, and people.

The CPLC Secretariat is administered by The World Bank Group.



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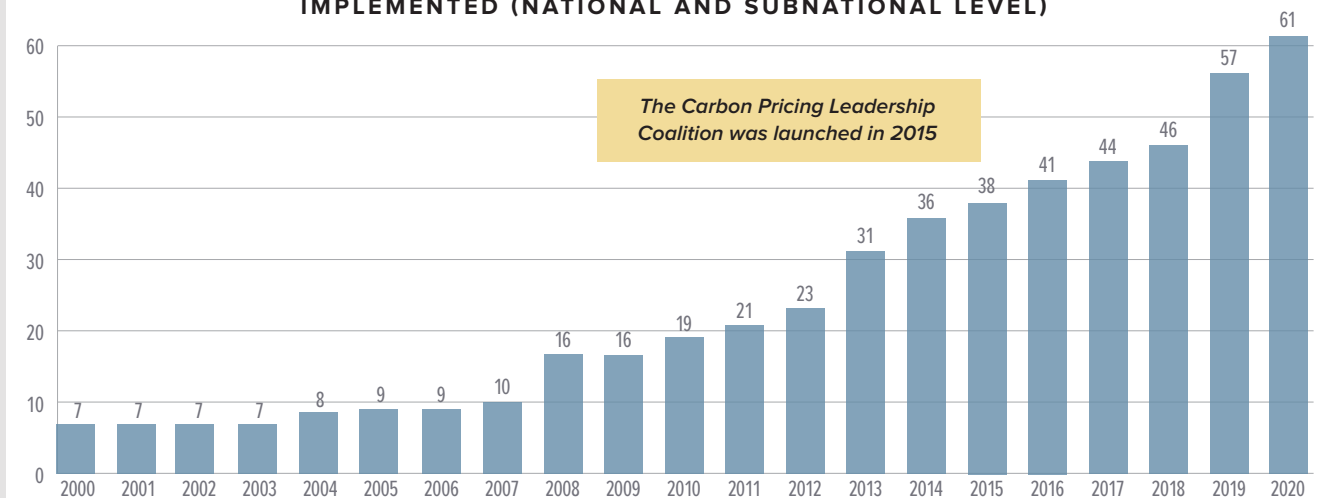
INTRODUCTION

Carbon pricing initiatives have gained more attention but seen slow progress over the past year as a tool for reducing GHG emissions in line with the Paris Agreement.



WHY CARBON PRICING?

NUMBER OF CARBON PRICING MECHANISMS IMPLEMENTED (NATIONAL AND SUBNATIONAL LEVEL)



Source: The World Bank Carbon Pricing Dashboard (as at May 2020)

STRENGTHS OF CARBON PRICING

1

PROVIDES AN INCENTIVE

Carbon pricing changes investment, production, and consumption patterns, while stimulating technological innovation to bring down the cost of emissions abatement measures.

2

FIT FOR PURPOSE

When carbon pricing forms part of a well-designed suite of policies, it is an indispensable tool for reducing emissions in an effective and cost-efficient way.

3

QUANTIFIES MARKET EXTERNALITIES

Putting a price on carbon gives decision-makers a tool to better assess the risks and opportunities presented by climate change.

4

GENERATES REVENUE

This revenue can be used to:



Support poorer sections of the population by funding household rebates.



Implement resilience-building measures.



Invest in low-carbon infrastructure and climate-smart technologies, so stimulating economic growth and creating jobs to replace those lost in the fossil fuel sector.

UNIFIED ACTION NEEDED TO LOCK DOWN CLIMATE



By Kristalina Georgieva,
Managing Director of the
International Monetary Fund

This year's Carbon Pricing Leadership Report comes at a challenging time in history. The battle against the pandemic caused by COVID-19 is in full force; governments are closing their borders to international travel; and hospitals are at capacity or preparing for the worst. Yet there is little doubt that humanity will, ultimately, prevail. And the world will have learned what committed, collective action can achieve in a relatively short period of time.

The unified and decisive socioeconomic actions undertaken to stem the coronavirus crisis clearly show that our institutions are capable of the same kind of urgent action needed to curb the climate crisis. Despite the need to deal with the pandemic, about 190 countries are submitting revised pledges to reduce their greenhouse gas emissions ahead of the United Nations' Conference of the Parties—COP 26—which is planned to take place in Glasgow next year. Well over half of them will commit to being carbon neutral by mid-century.

As discussed in the International Monetary Fund's recent Fiscal Monitor, carbon pricing can help countries meet these commitments as it provides the critical price signals for redirecting investment to low-emission technologies. It can also contribute to sustainable macro-fiscal frameworks that are urgently needed for funding social assistance and recovery programs for the present crisis. In many countries, carbon pricing also brings about significant domestic environmental co-benefits such as a reduced mortality rate due to local air pollution. Carbon pricing can be straightforward administratively, for example, as an extension to existing fuel taxes.

Carbon pricing mechanisms often struggle with political acceptability, not least because of opposition to higher energy prices. Now may be an opportune moment to address this as oil prices are low and governments may need to raise additional revenues in future years. Political acceptability can be improved by ensuring that policies are developed in consultation with a broad stakeholder base, producing policies that are equitable, transparent, and to the benefit of the economy while assisting vulnerable groups such as coal-mining communities (see pages 38–42). Introducing pricing mechanisms firmly, progressively, and predictably will also give businesses and households time to adjust. And reinforcing pricing with complementary instruments like feebates—which provide a sliding scale of fees on products or activities with above average emissions rates and rebates for products or activities with below average emissions rates—can enhance overall environmental effectiveness while limiting impacts on energy prices.

Acceptability challenges aside, carbon pricing is gaining momentum in the private sector at large. Globally, about 1,300 businesses voluntarily use internal or shadow carbon pricing to stress-test investments (see pages 27–28).

But we need to be honest about the enormous challenges ahead. From the 2017 Stern-Stiglitz report, we know that measures equivalent to a global carbon price of around \$75 per ton in 2030 are needed for containing global warming to 2 degrees Celsius (°C)—the upper-bound target of the Paris Agreement. Right now, the global average carbon price is only \$2 per ton. Failure to ramp up mitigation efforts and redirect investment towards clean energy and infrastructure over the next decade risks locking the planet into dangerous and unprecedented climate instability. Rolling out carbon pricing to new territories and extending existing mechanisms to include previously excluded sources such as the agricultural (see pages 47–48), maritime, and aviation sectors (see pages 53–54) are important steps towards achieving carbon neutrality.

But living up to the Paris commitments can only be a first step. Much more action will be needed going forward. A fundamental difficulty arises when countries act unilaterally and consequently have limited incentive to increase global mitigation ambition. To overcome this, our Fiscal Monitor proposed supplementing the Paris Agreement with a carbon price floor arrangement among a limited number of large emitting countries (see pages 67–69).

In short, there is so much to discuss on transition strategies for carbon neutrality, and the CPLC provides an excellent platform both for sharing perspectives and experiences across a broad range of countries, industries, and stakeholders, and for disseminating essential research. This year's leadership report highlights recent developments, trends, and challenges in carbon pricing across the globe, drawing on the real-world experiences of those who have seen first-hand how these mechanisms can drive down emissions. We hope their perspectives encourage decision-makers to consider including robust carbon pricing in their holistic decarbonization strategies. ■

GLOBAL DEVELOPMENTS IN CARBON PRICING



Greater awareness of climate risk

Investors signaled their strongest move away from carbon-intensive investments yet. The World Economic Forum's 2020 Global Risks Report ranks environmental risks as the five leading global risks in terms of likelihood.

TOP 5 GLOBAL RISKS IN TERMS OF LIKELIHOOD



TOP 5 GLOBAL RISKS IN TERMS OF IMPACT

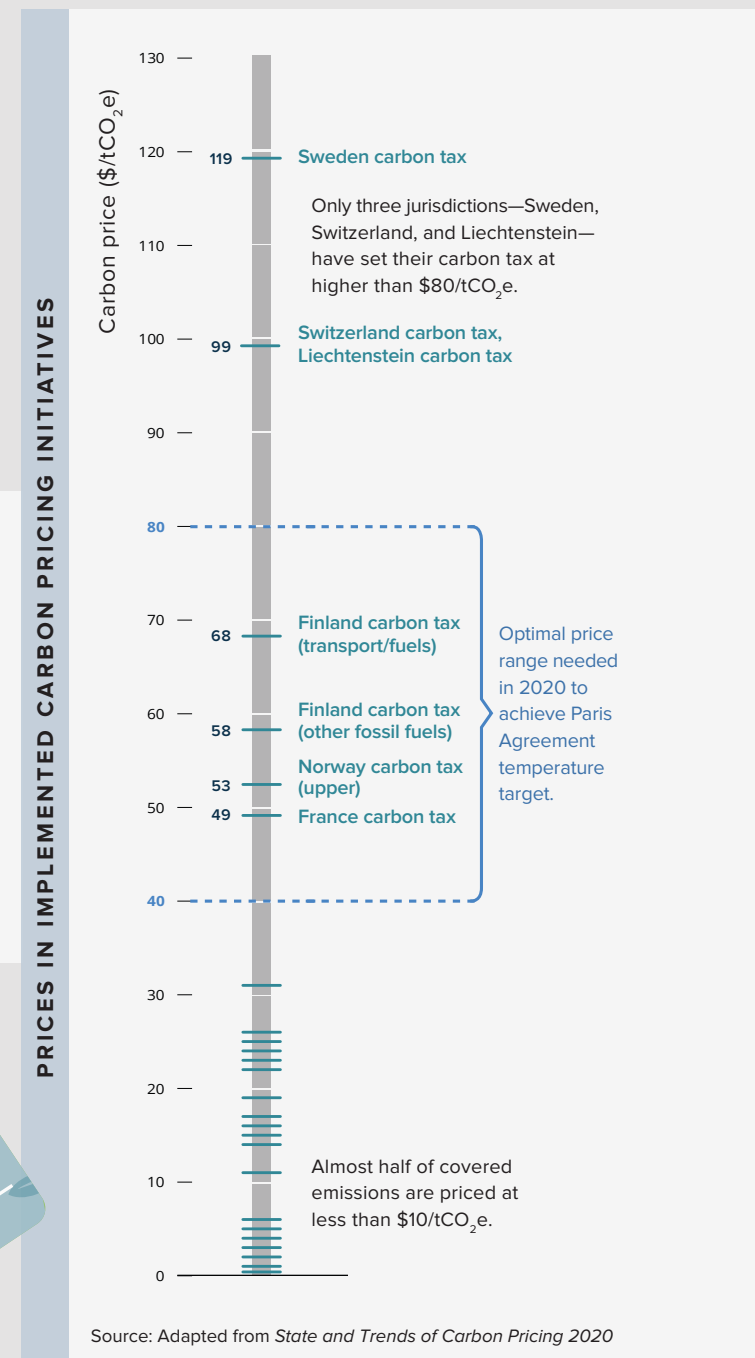


Source: The Global Risks Report 2020

Carbon pricing levels still too low

Despite carbon prices increasing in many jurisdictions, they remain substantially low, with almost half of the covered emissions priced at less than \$10/tCO₂e.

The appropriate carbon price should be determined by local conditions, the role the carbon pricing instrument should play, as well as the impact of other climate policies and technological progress.



ABOUT THE CPLC

The CPLC advocates for carbon pricing as an efficient, effective financial tool for achieving global carbon neutrality by 2050.

Carbon pricing spreads to new territories

Countries in the Middle East and Africa are displaying growing interest in carbon pricing as a mechanism to drive down emissions. In 2019, Jordan became the first country in the Middle East to establish a carbon emissions measuring, reporting, and verification system, while South Africa implemented the first carbon tax in Africa. See pages 55–61.

Climate projects are key recipients of carbon pricing revenue

On average, 41.72% of carbon pricing revenue goes to climate-related projects. Even though earmarking or hypothecating revenues for specific objectives can improve the political acceptability of carbon pricing, as much as 38.31% of revenue is allocated to the general fiscus. See page 40.

Source: PMR, Using Carbon Revenues, 2019



OUR APPROACH



We convene leaders from national and subnational governments, the private sector, academia, and civil society to debate, learn, share experiences, and collaborate on carbon pricing policy.



We facilitate partnerships to further the carbon pricing agenda.



We mobilize stakeholders, especially those in high-emissions sectors, to put a price on carbon as a tool to reduce their carbon footprint.



We stimulate discussion to encourage mainstreaming of carbon pricing.



We disseminate knowledge, placing the spotlight on seminal and emerging research so that leaders can make decisions based on the best available evidence.



The CPLC Secretariat

Front row, left to right: Chandni Dinakaran, Angela Churie Kallhauge, Thomas Erb.
 Second row: Suneira Rana, Isabel Saldarriaga Arango, Michael McCormick.
 Third row: Liberty Ramirez Espiritu, Mercedes Garcia Cano, Irina Likhachova.
 Back: Dominik Englert.
 Absent: Aditi Maheshwari, Ayesha Malik, and Erika Rhoades.

OUR LEADERSHIP

High-Level Assembly Co-chairs



Juan Carlos Jobet
 Minister of Energy, Chile
 CPLC co-chair since June 2019



Gérard Mestrallet
 Honorary Chair of Board of Engie,
 and Chair of Board of Suez
 CPLC co-chair since April 2018

Steering Committee

CO-CHAIRS



Felipe De León
 Adviser, Climate Change Directorate,
 Ministry of Environment, Costa Rica



Helen Mountford
 Vice President for Climate and Economics,
 World Resources Institute

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 Mahindra Group

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 Public Affairs and Government Relations,
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 Strategy, UK government

Jen Austin, Policy Director, We Mean Business

Juan Pedro Searle, Head of Climate Change
 Unit, Ministry of Energy, Chile

Katie Sullivan, Managing Director, International
 Emissions Trading Association

Marina Mattar, Director of Institutional Relations,
 Communications, and Sustainability, Abiquim

Ousmane Fall Sarr, Coordinator, West African
 Alliance on Carbon Markets and Climate Finance

Silke Karcher, Head of Division, EU Climate and
 Energy Policy, German Federal Ministry for the
 Environment, Nature Conservation, and Nuclear
 Safety (BMU)

Susan Shannon, Vice President, International
 Organisations and Policy, Government
 Relations, Shell

CPLC-HOSTED EVENTS

APRIL 2019: CPLC FOURTH ANNUAL HIGH-LEVEL ASSEMBLY, WASHINGTON, DC. Leaders from the public, private, and non-profit sectors met to discuss the opportunities and challenges of integrating carbon pricing into investment decision-making, and how to ensure carbon pricing policies consider broader social concerns.

SEPTEMBER 2019: LAUNCH OF "REPORT OF THE HIGH-LEVEL COMMISSION ON CARBON PRICING AND COMPETITIVENESS", NEW YORK. The report was launched at the United Nations Climate Action Summit with high-level experts from governments and the private sector in attendance. It was endorsed by 49 businesses, including those from high-emissions sectors.

DECEMBER 2019: CPLC LEADERSHIP DIALOGUE ON CARBON PRICING AND A JUST TRANSITION AT COP 25, MADRID. Partners gathered to discuss how to advance the use of carbon pricing to support ambitious climate action and sustainable development, focusing on the role that carbon pricing can play in contributing to achieving a just transition.

JANUARY 2020: GETTING TO NET ZERO AND THE ROLE OF CARBON PRICING, ZURICH. Carbon pricing experts from all sectors gathered to explore the concept of carbon neutrality and the role carbon pricing plays in achieving these targets.

INTERNATIONAL CONFERENCES WITH CPLC ENGAGEMENT

JUNE 2019: Global Compact Network Carbon Pricing Roundtable, Singapore

SEPTEMBER 2019: The United Nations Climate Action Summit Workshop on Carbon Pricing

SEPTEMBER 2019: Side event on Sustainable Finance and Carbon Pricing, The World Energy Congress, Abu Dhabi

NOVEMBER 2019: Carbon Pricing Workshop (with CPLC-Singapore) during Global Compact National Summit, Singapore

DECEMBER 2019: CPLC partner-led side events at COP 25

JANUARY 2020: WEF Climate Leaders Panel on Carbon Pricing, World Economic Forum, Davos

CARBON PRICING DAYS

We co-hosted Carbon Pricing Days at the following regional climate weeks.

MARCH 2019: Africa Climate Week, Accra, Ghana

AUGUST 2019: Latin America and Caribbean Climate Week, Salvador, Brazil

SEPTEMBER 2019: Asia-Pacific Climate Week, Bangkok, Thailand

OUR ACTIVITIES IN 2019/20

We convened leaders

We facilitated partnerships

We mobilized stakeholder action

We stimulated discussion

We expanded the knowledge base

WEBINARS

JULY 2019: PUTTING A PRICE ON IT: Global Leadership on Carbon Pricing (in partnership with the Center for Climate and Energy Solutions)

SEPTEMBER 2019: Why Businesses are Backing Carbon Pricing (in partnership with Climate XChange)

OCTOBER AND NOVEMBER 2019: CPLC Carbon Pricing in Africa Webinar Series

MARCH 2020: Internal Carbon Pricing for Future-Proof Supply Chains (in partnership with the Generation Foundation and Guidehouse)

CPLC WORKSHOPS

MARCH 2019: Competitiveness Report Consultation Workshop, Lisbon

APRIL 2019: Carbon Pricing in the Americas Workshop and All Partner Technical Workshop, Washington, DC

MAY 2019: CPLC Carbon Pricing and Competitiveness Workshop, South Africa

CPLC PUBLICATIONS



MAY 2019: Greening Construction: The Role of Carbon Pricing



SEPTEMBER 2019: Report of the High-Level Commission on Carbon Pricing and Competitiveness



SEPTEMBER 2019: The Economic Potential of Article 6 of the Paris Agreement and Implementation Challenges (report and summary report, with the International Emissions Trading Association)



DECEMBER 2019: Carbon Pricing, Climate Change, and Air Quality (briefing note)

HARNESSING THE POWER OF MANY



By Gérard Mestrallet

Collaborative action and long-term thinking are key to developing a post-pandemic world that is resilient to climate change.

The COVID-19 crisis is highlighting the fissures of a globally interlinked economic model that focuses on short-term benefits without considering middle- to long-term effects, especially on society and the environment. It has interrupted all aspects of business, economic, and social productivity, and made us acutely aware of how interdependent our societies truly are—and, in this light, the importance of international and regional cooperation.

The pandemic will end. We will get our societies and economies back on track. But do we want to restart the system as it was before the crisis? Or should we take this opportunity to reflect on what we can change and reconfigure, now that everything is up in the air?

Any crisis represents a turning point. It sheds a different light on what is, and can trigger change in the way people do things. After the 2008 financial crisis, the financial system was changed to make it more secure and resilient. Similarly, we need to use this crisis to rebuild better and greener in preparation for a bigger crisis on the horizon, should we not act on climate change.

We also need to learn that cooperation works, and that we must keep working together to develop the kind of positive relationships that come in handy at a time like this.

A spirit of collaboration and leadership is clearly demonstrated in the CPLC. From my vantage point as the Coalition's outgoing chairperson, I have seen many stakeholders take action to demonstrate that putting a price on carbon is not only a smart decision, but a necessary one if we are to build resilience into our systems while shifting our economies towards low-carbon and sustainable production. I have also seen growing recognition of the important role that revenue raised by carbon pricing has in supporting key social and economic activities. This will continue being key as we work our way towards long-term recovery.

I have seen many stakeholders take action to demonstrate that putting a price on carbon is not only a smart decision, but a necessary one.

The COVID-19 crisis has shown us how quickly the global community can respond to a situation of magnitude. If we couple this potential to respond with the spirit of collaboration and leadership already within the CPLC, the future will be more promising, and the road to true recovery possible.

I thank the CPLC Secretariat for its action and permanent, efficient support. I also congratulate all its members for contributing to the momentum that is developing around carbon pricing. ■



Carbon Pricing in the Americas Workshop, Washington, DC, April 2019



Angela Churie Kallhauge (World Bank CPLC Secretariat).

Senator Paul Tonko (New York), Venkata Putti and Angela Churie Kallhauge (World Bank), and Dirk Forrister (IETA).

Fourth High-Level Assembly, Washington, DC, April 2019



Leaders from various sectors, countries, and development organizations gathered around the table at the fourth High-Level Assembly.

CPLC Carbon Pricing and Competitiveness Workshop, South Africa, May 2019



Angela Churie Kallhauge (World Bank), Joanne Yawitch (National Business Initiative), and Janet Peace (Bluesource).

Carbon Pricing Day at Latin America Climate Week, Brazil, August 2019



Guido Guimaraes (Partnership for Market Readiness Brazil), Katie Sullivan (IETA), Jose Francisco Charry (Ministry of Environment and Sustainable Development, Colombia), Rodrigo Pizzaro (COTA21), and Marcos Castro (World Bank).

GALLERY OF EVENTS

OUR PARTNERS

Canadian Tire Corporation	Eskom	Nestlé
Carbon Engineering	EY	Nouveau Energy Management
Catalyst Paper Corporation	Ferrovial	Novartis
Cement Association of Canada	Fortum	Novozymes
Cemex	Garanti Bank	Obrascón Huarte Lain (OHL)
Cenovus Energy Inc.	Get2C	Ontario Power Generation
CIBC	Global Environmental Markets	Origin Energy
CIFF	GODREJ & BOYCE Mfg. Co. Ltd.	Perspectives Climate Group GmbH
Climate Focus	Gol Linhas Aéreas Inteligentes	PG&E
Coca-Cola HBC AG	Groupe ADP	Poch (WSP)
Colbún	Grupo Financiero Banorte SAB de CV	Portafolio Verde
CommerzBank	Hindustan Construction Company	Predict Ability Limited (PAL)
Coway	HSBC	Redshaw Advisors
CPFL Energia	Iberdrola	Resolute Forest Products Inc.
DAI Global	ICF International	Royal Bank of Canada
Dalmia Cement	IKEA Canada	Royal DSM
Danfoss	Infigen Energy	Royal Philips
Daniels Power Corporation	Infinite Solutions	RUSAL
DAO Integral Platform for Climate Initiatives	Infosys	Scotiabank
Desjardins Group	Keyassociados	Şekerbank
DNV GL	Kruger Inc.	Shell
Drax Group	LafargeHolcim	Shell Canada
EcoAct Inc.	LATAM Airlines Group	Siemens AG
Ecofrotas	Libélula	Sindicatum
ECOTIERRA	Lloyd's Register	SkyPower
EDF (utility)	Loblaw Companies Limited	Sodimac
EDP - Energias de Portugal S.A.	Mahindra	Solvay
Ekbd Consult	Man Group	South Pole Group
EKI Energy Services Ltd.	MexiCO ₂	SSE
EllisDon	Michelin	Star Rapid
En+ Group	Milbank	Statkraft
Enaex	Mott MacDonald	Suez Environnement
Enagás	National Australia Bank	Suncor Energy
Enbridge	Natura	Tata Group
Enel	NatureBank	TC Energy (formerly TransCanada Corporation)
Engie	Naturgy Energy Group (formerly Gas Natural Fenosa)	Teck Resources
Eni	Navigant	TELUS
EnvironmentFirst Energy Services Private Limited (EESPL)	NaxRo	The Carbon Trust
Equinor (formerly Statoil)	NEAS Energy	The Climate Solutions Group
	NEI Investments	The Co-operators Group Limited

Toronto-Dominion Bank
Total
Trucost
Ukrasbank
Unilever
Vale SA
Vena Energy
Veolia
Vestas
Viña Concha y Toro
Visão Sustentável
Yes Bank
Zenith Bank

93 STRATEGIC PARTNERS

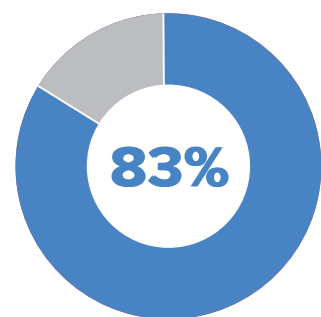
ABIQUIM	Cleantech21
American Sustainable Business Council	Climate Leadership Coalition (CLC)
Arbor Day Foundation	Climate Leadership Council
Asia Society Policy Institute	Climate Markets and Investment Association (CMIA)
Brazilian Agricultural Research Corporation (Embrapa)	Climate Neutral
Brazilian Sugarcane Industry Association (UNICA)	Climate Outreach
Brazilian Tree Industry (IBA)	Climate Solutions Group Ltd
BSR	Climate Strategies
B Team	Climate Transparency
Carbon Market Institute	Climate XChange
Carbon Market Watch	Coalition for Rainforest Nations
Caring for Climate	Columbia University SIPA Center on Global Energy Policy
CDP	Duke University Nicholas Institute for Environmental Policy Solutions (NIEPS)
CEBDS	East African Alliance on Carbon Markets and Climate Finance
Center for Clean Air Policy	Entreprises pour l'Environnement (EpE)
Center for Climate and Energy Solutions (C2ES)	Environmental Defense Fund (EDF)
Center for Global Energy Policy at Columbia University	ERCST
Centre for European Policy Studies (CEPS)	European Bank for Reconstruction and Development (EBRD)
Ceres	Fundación Natura
China Low Carbon Network	George Washington University, Environmental and Energy Management Institute (EEMI)
CII-ITC Centre of Excellence for Sustainable Development	Global Maritime Forum
Citizens' Climate Lobby	Gold Standard Foundation
	Groupe de Travail Climat REDD
	Haga Initiative
	I4CE
	ICAP
	IDEACarbon
	IETA
	IFC
	Institute for Global Environmental Strategies (IGES)
	Instituto Ethos
	International Center for Trade and Sustainable Development (ICTSD)
	International Monetary Fund (IMF)

Japan Climate Leaders Partnership (Japan-CLP)
Klimaatplein.com
MIT
OECD
Pembina Institute
Prince of Wales's Corporate Leaders Group
Put a Price on it
Russian Carbon Fund
Second Nature
Sekem Group
Shakti Sustainable Energy Foundation
Solutions for Our Climate (SFOC)
Stockholm Environment Institute
Svebio
Swarthmore College
The Climate Group
The Climate Trust
The Confederation of Danish Industry
The Generation Foundation
The Institutional Investors Group on Climate Change (IIGCC)
The Nature Conservancy
The Shift Project
The University of the South Pacific
Union of Concerned Scientists
United Cities and Local Governments of Africa
United Nations Foundation
United Nations Global Compact
University College London (UCL)
Verra
WBCSD
We Mean Business
West African Alliance on Carbon Markets and Climate Finance
World Bank Group
World Economic Forum (WEF)
World Resources Institute (WRI)
WWF
Yale University

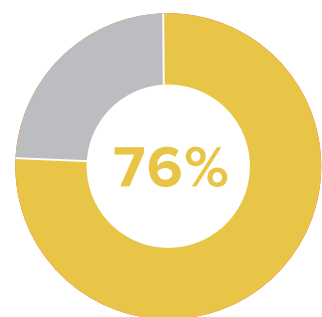
PARTNER SURVEY RESULTS

We conducted an online partner survey in 2019 to better understand our partners' priorities and needs.

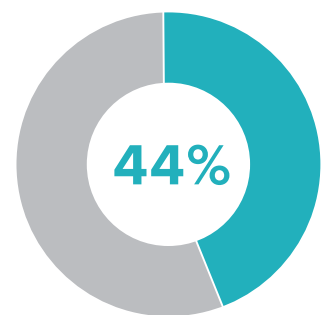
The survey was complemented by interviews and an internal review. Of the 60 partners that responded to the online survey, seven were governments, 22 were companies, and 13 were strategic partners. Overall, partners regard the CPLC as a powerful convener with valuable reach in the global public-private-academic space. However, there is a need for the CPLC to expand and diversify its membership and deepen and accelerate its activities, especially knowledge-sharing initiatives such as the High-Level Commission on Carbon Pricing and Competitiveness.



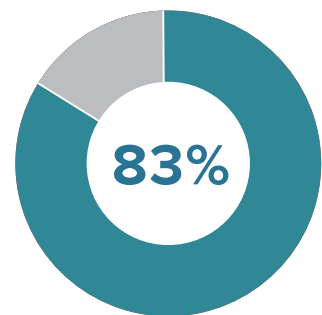
83% OF PARTNERS ARE SATISFIED WITH THE CPLC'S SUPPORT



76% OF PARTNERS RATE THE CPLC'S KNOWLEDGE PRODUCTS AS HIGH VALUE



44% OF PARTNERS WOULD LIKE TO EXPAND OR DEEPEN INVOLVEMENT WITH THE CPLC



83% OF PARTNERS REGARD THE CPLC'S RESPONSE AS APPROPRIATE

LEADERSHIP IN ACTION

International cooperation under Article 6, understanding the social aspects of carbon pricing, and addressing competitiveness concerns of industry were key themes this year.

THE ROLE OF CARBON PRICING IN GETTING TO NET ZERO

Carbon pricing has an important long-term role to play in helping jurisdictions and companies achieve net zero emissions.

The Paris Agreement calls for signatories to reduce greenhouse gases not to absolute zero, but to net zero emissions: the level where there is “a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases”.¹

To date, efforts to achieve net zero emissions, which is also known as carbon neutrality, have primarily focused on improving energy efficiency and using offsets to mitigate emissions that are difficult to abate. Yet global emissions have continued to grow, albeit at a slower pace, and the point of peak emissions is still on the horizon. With 2050 fast approaching, there is a need to decarbonize our economies by intensifying our efforts to improve energy efficiency, accelerating the shift to renewable energy and low-carbon technologies, and exploring and expanding ways to remove emissions from the atmosphere and store them—ideally permanently. There is a growing awareness that achieving “deep” decarbonization will require widespread use of carbon pricing and robust markets at all levels.

2019 saw the concept of carbon neutrality gain momentum:

- ▶ The United Nations Secretary-General, António Guterres, called on leaders to submit concrete plans to achieve net zero emissions by 2050 at the Climate Action Summit, held in New York in September 2019. At the time of writing, 20 countries had adopted net zero targets.²
- ▶ At COP 25, 177 companies announced their commitment to the Business Ambition for 1.5°C initiative, which commits companies to pursuing science-based targets, across their operation and value chains, that are compatible with a global temperature rise of 1.5°C. At the time of writing, a total of 201 companies had pledged their commitment to the initiative.³

- ▶ The United Nations-convened Net-Zero Asset Owner Alliance brought together 22 of the world’s largest pension funds and insurers in a pledge to decarbonize their investments by 2050.⁴

In January 2020, the CPLC hosted a meeting of experts from the public, private, financing, and academic sectors to unpack the concept of net zero, explore the various strategies being considered to help stakeholders achieve net zero, and discuss how carbon pricing can be best designed to support this target. Participants noted that to enable deep decarbonization, net zero measures, as well as the use of offsets and removals to address residual emissions, will be needed. In this context, they highlighted some important considerations when designing long-term strategies and policies towards net zero emissions:

- ▶ **The time to start is now.** Long-term decarbonization strategies will take a long time to develop, implement, and show benefits.
- ▶ **Short-term targets should align with the long-term vision via a continuum of policies and supporting measures.** This is critical to avoid tensions, maintain momentum, and sustain efforts over the long term. Such measures include carbon pricing instruments, regulations, sector-specific policies, and other general measures such as subsidies, research and development, and information for informed decision-making.
- ▶ **Metrics need to be fit for purpose.** Effective long-term decarbonization strategies need to be built on robust baseline measurements and targets with specified boundaries. Companies need to acknowledge the level and robustness of their decarbonization goals at the outset.
- ▶ **Rules need to be clear.** The rules on how to avoid double counting need to be thorough and clear.
- ▶ **Any effort to decarbonize should consider the whole supply chain** to determine the extent to which private sector players within a supply chain can be influenced by incentives, and to shape those incentives to ensure that all links in the value chain aim to achieve aligned decarbonization goals. Decarbonizing supply chains can be particularly challenging, and the path to net zero emissions looks different for different companies along the same supply chain.

Effective long-term decarbonization strategies need to be built on robust baseline measurements and targets with specified boundaries.



The path to net zero emissions looks different for different companies along the same supply chain.



- ▶ **The financing and investor communities have a role to play** in incentivizing and financing the transition, especially in hard-to-abate sectors. A well-designed transition strategy is able to unlock new growth investment opportunities over the long term.
- ▶ **Sustained public support will determine long-term success.** Public support can be generated through sustained communication about the benefits, outcomes, and fairness of, and alternatives to, decarbonization strategies and policies, including those that put a price on carbon.

Carbon pricing will be an important part of the overall toolbox for achieving carbon neutrality. Well-designed and -deployed carbon pricing policies can provide effective incentives to shift the investment paradigms, address potential constraints (such as consumer preferences and perceptions about competitiveness), and ensure that revenue is used to fund long-term solutions. Currently only 6% of global taxes cover environmental pollution. There is significant scope to increase this—ideally without encouraging overreliance on carbon pricing revenue.

The meeting also noted that there is no “one size” approach to designing carbon pricing measures, as these have to be adapted to the particular circumstances and objectives, and complemented with other policy measures and instruments. ■

POTENTIAL POSTPONED: WHY WE NEED TO FINALIZE ARTICLE 6

The delay in reaching consensus on the rules for Article 6—which is, by extension, also a delay in establishing a global carbon market—will, over time, cost the world potential savings in the cost of emission reduction.

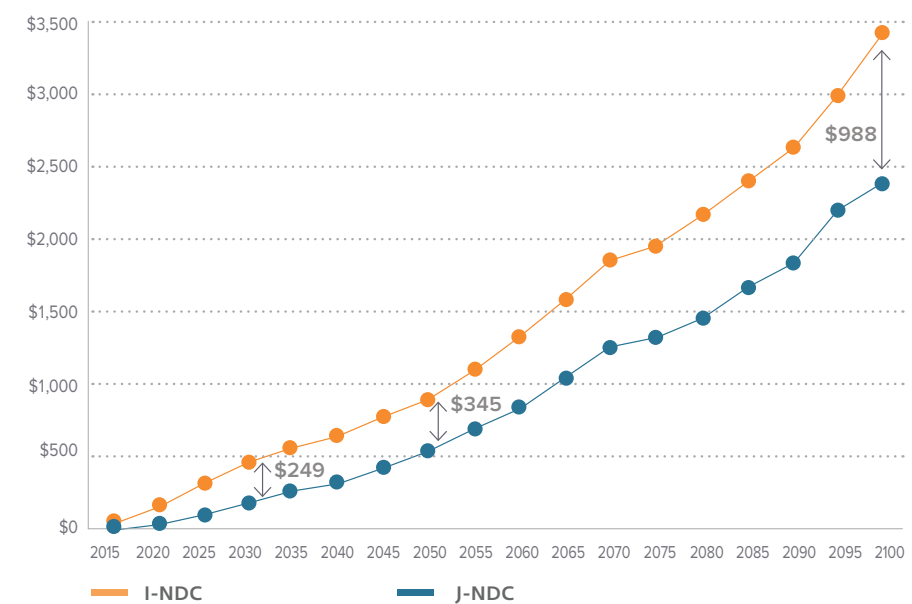
The 2019 United Nations Climate Change Conference (COP 25) ended without reaching consensus on the rules for Article 6. This is more than just a disappointment for those Paris Agreement signatories who are eager to see this item operationalized. It represents global losses in the form of missed opportunities to reduce mitigation costs through collaborative action, while at the same time increasing ambition.

According to a 2019 report jointly published by the CPLC and the International Emissions Trading Association (IETA), \$250 billion in emissions mitigation costs would be saved in 2030 if collaborative action were globally implemented now. These savings would increase to \$345 billion in 2050 (Figure 1).



\$250 billion in emissions mitigation costs would be saved in 2030 if collaborative action were globally implemented now.

FIGURE 1: EMISSIONS MITIGATION COST (2015 \$ BILLION/YR)



Source: IETA⁵



“Our research paints a blue-sky scenario of what could be achieved through international markets and collaboration.”

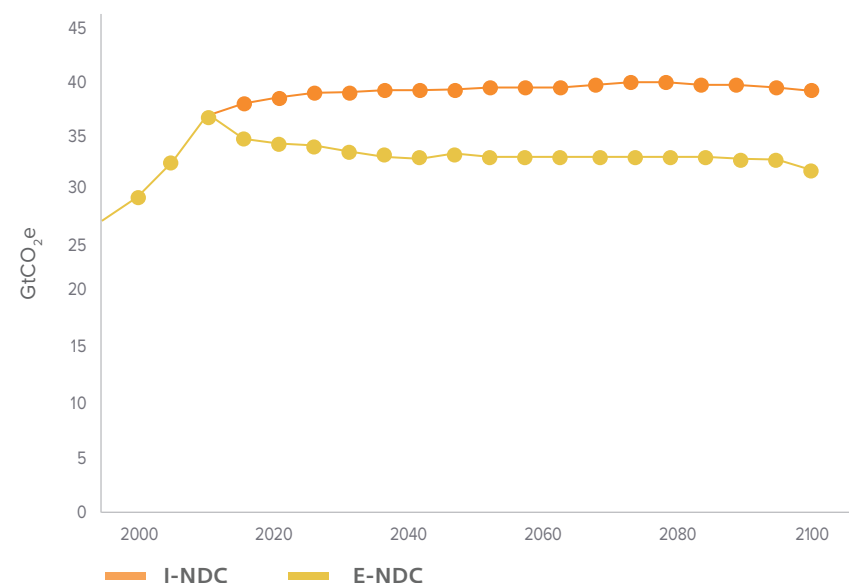
Stefano de Clara, IETA

If these savings were then fed back into emissions reduction strategies, the world would be able to reduce emissions by an additional 5 gigatons of CO₂e (GtCO₂e) a year by 2030—and this is only from the energy and industry sectors (Figure 2). This total would go up to 9 GtCO₂e if land use mitigation measures were included.⁶

The report draws on data from existing Nationally Determined Contribution (NDC) submissions and uses the same statistical model used by the Intergovernmental Panel on Climate Change (IPCC) in developing scenarios. It provides an assessment of the potential financial and emissions benefits of developing the next round of NDCs cooperatively, as envisioned in Article 6.

The key word here is “potential”. As Stefano de Clara, IETA’s International Policy Director and co-author of the report, notes: “Our research paints a blue-sky scenario of what could be achieved through international markets and collaboration. It gives us a maximum theoretical potential, a reference value against which we can measure progress.”

FIGURE 2: GLOBAL CO₂ EMISSIONS FROM ENERGY AND INDUSTRY



Source: IETA⁷

The delay in finalizing the rules for Article 6 means countries will not be able to fully incorporate collaborative action in their next NDC submission, which is due in 2020. That said, the Paris Agreement allows, in the absence of Article 6 rules, for countries to determine their own rules for bilateral and/or regional cooperation through markets or “carbon clubs”, and many countries already speak of carbon markets in their first-round NDCs. More than 20 governments have already allocated some \$345 million to six pilot carbon market projects—a relatively large amount given that the rulebook has not yet been finalized.⁸

The delay in finalizing the Article 6 rules has consequences beyond lost savings and forfeited ambition, De Clara notes. “As the pilot projects indicate, those countries that are able to explore carbon markets under Article 6.2 will do so. Provided their methods don’t allow double counting [of carbon], the Paris Agreement allows for this,” he says. “But the greatest potential for offsetting emissions is found in emerging economies. These are the ones that need a standardized emissions mitigation mechanism with clear and binding rules. They are also the ones who may be disadvantaged by the delay in finalizing the rules.”

The longer it takes for the Article 6 rulebook to be decided, the longer carbon markets will be fragmented and exclusionary. And the longer carbon markets are fragmented, the longer it will take for the world to realize the full economic and mitigation potential of Article 6. At COP 26, which has been postponed due to the COVID-19 pandemic, world leaders will gather to continue hammering out the Article 6 rulebook and, hopefully, sign in a new chapter of collaborative climate action. ■

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ARTICLE 6: A BRIEF EXPLAINER⁹

Depending on how the rules of Article 6 of the Paris Agreement are formulated, they could help avoid dangerous levels of global warming or let countries off the hook for not making meaningful emissions cuts. In question is how three key paragraphs should be implemented. Two of these relate to carbon markets:

- **Article 6.2** provides an accounting framework for bilateral or multilateral cooperation through market mechanisms, for example, linking the carbon pricing and market mechanisms of two or more countries. It allows for the international transfer of carbon credits between countries (“internationally transferred mitigation outcomes”, or ITMOs). Groups of countries that are piloting regional carbon market projects are acting under Article 6.2.
- **Article 6.4** establishes a central United Nations mechanism to trade carbon credits generated by specific emissions reduction projects. For example, one country could pay for another to build a wind farm instead of a fossil fuel plant. Emissions are reduced, the second country benefits from the clean energy, and the first gets credit for the reductions. Establishing the rules for Article 6.4 is crucial for enabling emerging economies—where the potential for emissions reductions is greatest—to access carbon markets.
- **Article 6.8** aims to establish a framework for international cooperation on mitigation and adaptation through non-market approaches.

ASSESSING CLIMATE RISK IN FINANCIAL DECISION-MAKING

Banks, insurers, and investors are increasingly prioritizing climate change in their financial planning, with internal carbon pricing emerging as a useful metric for forecasting related risks and opportunities.

With the trajectory of greenhouse gas emissions flattening but not declining and the effects of climate change already being felt, the world needs to plan for an uncertain future. In years to come, as now, the stability of the financial system will be crucial for maintaining economic and social cohesion while ensuring that resources are available to capitalize on new growth opportunities. Resilience will be defined as the ability not only to survive the effects of climate change, but to thrive through them.

Many financial institutions are turning to carbon pricing to provide insights into the long-term results of today's financial decisions. Carbon pricing is used to assess and manage both the carbon footprints of institutions' internal operations and to determine whether decisions to make investments, purchase assets, or approve loans are likely to yield dividends in a future where carbon emissions are more rigorously controlled through standards and regulations.

Internal carbon pricing provides a lens for such assessments and for identifying opportunities for more viable green investments and loans, such as renewable energy sources, green buildings, resilience-building infrastructure, or drought-resistant seeds and irrigation systems. Banks typically identify which carbon price level to use based on prevailing market and regulatory prices. These prices are then modeled along an expected growth trajectory to anticipate risk and calculate exposure.

Two CPLC partners from the banking sector—France's BNP Paribas and Turkey's T. Garanti Bankasi AS—have for several years been using internal carbon pricing to evaluate companies they finance (or are considering financing). “For Garanti, an

internal price has helped drive a strong and growing renewable energy portfolio, positioning the multibillion-dollar bank as the country's leading financial institution focusing on sustainability,” says Alzbeta Klein, the head of Climate Business with the International Finance Corporation (IFC).

In recent months, several leading banks and asset managers—among them BlackRock, Goldman Sachs, JP Morgan Chase, and the European Investment Bank—have announced their intention to phase out financing of fossil fuel projects. Such measures are facilitated and deepened when investees and clients include the key disclosures on **climate-related risks** in their reporting, as recommended by the Task Force on Climate-related Financial Disclosures (TCFD).

The Network for Greening the Financial System (NGFS), a collection of 36 central banks and supervisors from five continents, has lauded the TCFD for enabling “robust and internationally consistent climate- and environment-related disclosure”. Even though the uptake of TCFD recommendations has been slow thus far—only 25% of 1,126 companies assessed reported against more than five of the 11 prescribed disclosures in 2019¹⁰—the financial sector's growing interest in these disclosures could kick-start a virtuous cycle of improved monitoring and disclosure being rewarded by greater levels of investment and better-quality credit.

Influencing investees

Commitments to phase out fossil fuel financing, mounting public pressure for the financial sector to stop supporting brown energy, and increased carbon risk disclosure requirements from regulators are collectively driving more financial managers to assess their portfolios' exposure to a range of **transition risks**. Carbon pricing also offers financial managers a tool to engage investees and clients on the potential financial impact of their carbon footprints, translating abstract emissions data into bottom-line figures that decision-makers—both within and outside the organization—can use.

By the end of May 2020, 46 national jurisdictions and 32 subnational jurisdictions had implemented or were scheduled to implement carbon pricing.¹¹ As calls for a price or tax on carbon increase, banks, asset managers, and the companies they finance need to use whatever methods they can—including implementing an internal or **shadow carbon price**—to quantify and internalize the risks posed by climate change and the transition to a green economy. ■



Climate-related risks are divided into **physical risks** (those relating to the direct effects of extreme weather events related to climate change, such as droughts or floods) and **transition risks** (those relating to the cost of transitioning from a high-carbon to low-carbon enterprise or economy). Transition risks are particularly relevant for fossil-fuel-dependent industries.

Shadow carbon pricing is when a price is put on carbon in the absence of regulation requiring companies to limit and/or pay for emissions. Shadow carbon pricing is typically used to support informed long-term decision-making.

WHY CARBON PRICING IS KEY FOR FINANCIAL INSTITUTIONS



**By Alzbeta Klein,
Director and Global Head,
Climate Business, IFC**

Around the world, a growing number of businesses are leading the transition toward a low-carbon future. But to help meet the global climate challenge, they need governments to act more decisively on one key issue: assigning a cost to emissions.

Pricing carbon pollution creates a critical market signal that helps reduce emissions by incentivizing investments in clean, more efficient technologies, and reassuring investors of the increasing value of low-carbon investments.

In September 2019, Frank Elderson, the chair of the Network for Greening the Financial System (NGFS)—a group of leading central banks and supervisors—called on governments to implement effective carbon taxes to help combat climate change. The sooner governments clarify how they will respond to climate change, Elderson advised, the better it will be for global financial stability.

In January 2020, the outgoing governor of the Bank of England, Mark Carney, warned that ignoring climate risk was more costly than grappling with it, especially when it comes to pricing carbon. Banks, financial institutions, and industries that are overexposed to carbon-intensive sectors such as coal will cease to exist if they do not manage the climate risks associated with these sectors.

Financial institutions are paying attention: more and more banks are factoring climate risk into their decision-making, elevating internal carbon pricing as a tool to help assess risks and unlock opportunities. Some financial institutions are going even further: leading European bank BNP Paribas, for example, recently launched a social business initiative known as ClimateSeed. A simple, secure, and user-friendly digital platform, ClimateSeed allows businesses to offset their unavoidable greenhouse gas emissions by contributing to sustainable projects around the world.

This initiative highlights the opportunities for financial institutions to grow their climate business and manage climate risk. But policy frameworks to encourage capital markets to adjust efficiently to a low-carbon future matter too.

Climate risk disclosures are gathering pace across the sector. For example, the TCFD recommends using internal carbon pricing as a key metric to help banks and other financial institutions manage climate risk and identify climate investment opportunities. More than 900 companies, financial firms, and governments have already pledged their support for the TCFD. Mark Carney and other leaders in the sector expect these recommended disclosures to become mandatory in due course.

The business case is clear: putting a price on carbon will create more climate business opportunities and accelerate progress toward a low-carbon future. Financial institutions must step up to support climate action and carbon pricing. Delaying action on widespread carbon pricing is no longer an option if they are to become smarter about managing climate-related risks.

IFC will continue to work closely with our partners at the CPLC to increase the use of carbon pricing across the banking sector in emerging markets.

When it comes to “greening” the global financial system, we know that carbon pricing presents a clear opportunity. ■

Financial institutions are paying attention: more and more banks are factoring climate risk into their decision-making, elevating internal carbon pricing as a tool to help assess risks and unlock opportunities.

CARBON PRICING AND COMPETITIVENESS

Companies are often concerned that carbon pricing adds to the cost of doing business, undermining their competitiveness against companies in areas that don't face similar restrictions. But the CPLC High-Level Commission on Carbon Pricing and Competitiveness has found that these concerns are overstated.

The activities of the industry-led CPLC High-Level Commission on Carbon Pricing and Competitiveness concluded in September 2019 with the release of a report on carbon pricing's effect on competitiveness.

Based on months of dialogue and consultations with leaders from states, academia, and the private sector—especially emissions-intensive and trade-exposed (EITE) sectors—the Commission concluded that:

- ▶ **There is little evidence that carbon taxes and cap-and-trade schemes cause production and investments to relocate to other jurisdictions.** This could be because carbon prices are typically set at moderate levels; supporting policy measures are included; and investment decisions are more often influenced by non-environmental factors such as tax rates, the availability of labor, and strong infrastructure.
- ▶ **Well-tailored, predictable, stable, and data-driven policies can protect the competitiveness of at-risk sectors** and the jurisdictions that rely on them, and serve to shift away from high-emissions products to low-emissions products and processes.
- ▶ **Policy options to mitigate competitiveness concerns, risk of leakage, and other distributional impacts are often included when carbon pricing measures are implemented.** These range from free allocation of emission rights, tax exemptions, and support measures to international cooperation measures such as border adjustments (see page 69).

- ▶ **Carbon pricing and supporting policies should be periodically reviewed** to ensure their effectiveness and usefulness. Data-sharing between industry and government will be central to such review.
- ▶ **The effects of carbon pricing may become more significant as prices rise to achieve higher climate action ambitions, but they may also alleviate over time** as the carbon price increases and more jurisdictions use carbon pricing to limit their emissions.
- ▶ **Revenues generated from carbon pricing can be used to support those who might be negatively impacted,** channelled towards innovation and other green investments, and used to further national development objectives such as job creation.

These findings indicate that competitiveness concerns should not prevent jurisdictions from implementing carbon prices or increasing the rate at which these prices are set. Even though at-risk sectors may become slightly less competitive—and there is little evidence to suggest that this has happened to date—other sectors and low-carbon opportunities will rise in their place, creating more jobs and opportunities for growth.

The Commission's report will be used to continue to raise awareness and facilitate dialogue across stakeholder groups to support the development and use of carbon pricing policies and measures.

Internal carbon pricing

The need to reduce emissions through carbon pricing or some other policy will soon affect all sectors in all jurisdictions. The Paris Agreement, while not legally binding, remains a powerful contract and call to action. Its signatories are bound by climate science, international pressure, and social duty to make every effort to meet their emissions reduction targets. Given this backdrop, the competitive advantage will ultimately confer not to companies and sectors that do not experience legislated carbon pricing, but to those that transition to low-carbon operations in the smallest time period, and at the lowest cost.

When a company applies an internal carbon price, it is, in effect, factoring climate-related risks into its business processes. This enables it to make climate-smart decisions and boosts its resilience.



“Companies need to ask themselves ... how do you leverage carbon pricing to do better business? You just need to look for reasons why it does work, rather than reasons why it doesn’t.”

Anirban Ghosh,
Mahindra Group



Internal carbon pricing can help businesses achieve this transition. When a company applies an internal carbon price—that is, when it sets internal emissions targets for divisions or departments and adds a surcharge to any emissions that exceed these limits—it is, in effect, factoring climate-related risks into its business processes. This enables it to make climate-smart decisions and boosts its resilience.

One company that has been outspoken in its support for internal carbon pricing is Mahindra & Mahindra Ltd. (Mahindra), the flagship company for the multinational Mahindra Group. Mahindra implemented internal carbon pricing in 2016—a move that has, according to Anirban Ghosh, the Group’s Chief Sustainability Officer and a member of the CPLC Steering Committee, enhanced the company’s competitiveness. “The question companies need to ask themselves is, how do you leverage carbon pricing to do better business? It is entirely possible to do this,” says Ghosh. “You just need to look for reasons why it does work, rather than reasons why it doesn’t.”

Mahindra’s internal carbon price, set at \$10 per ton of emissions, has helped the company reduce emissions by 25% against a 2016 baseline.¹² It aims to be carbon neutral by 2040.

Implementing internal carbon pricing has allowed Mahindra to make better decisions about future projects and acquisitions while gathering revenue for internal decarbonization projects. The benefits to date have been tangible: in 2019, the company was able to use carbon pricing revenue to build three wind turbines, adding 6.3 megawatts (MW) of renewable energy to its energy mix, with a fourth turbine planned for 2020. It also invested in solar power, bringing Mahindra’s total installed solar capacity to nearly 9MW. “Carbon pricing gives us an ‘internal green bond’ to use for any project that contributes to our environmental and financial goals,” says Ghosh. “These can also be water or waste projects.” ■

CARBON PRICING AT WORK

Ferrovial

Ferrovial, a Spanish transport and urban infrastructure construction and management company and one of the CPLC’s partners, uses shadow carbon pricing when assessing the risks and opportunities inherent in new investments. Given the complexity and geographic spread of the organization, it has developed carbon pricing projections for each of the 13 countries, one subnational territory, and one region in which it has operations, over four different time horizons between now and 2050. This allows Ferrovial to consider both medium- and long-term risks.

Arçelik

Arçelik, a household appliances manufacturer based in Turkey, has for several years been using shadow pricing to promote energy efficiency in its manufacturing plants. Currently set at €30 (about \$32) per metric ton, Arçelik’s internal carbon price has driven capital expenditure on energy efficiency projects. Over the past 10 years, 1,980 such projects have collectively prevented 113,000 tons of greenhouse gas emissions. The company also uses carbon pricing for lifetime cost analysis of investments of €50,000 (about \$54,000) or more and with an installed power of 50kW and above. The company reviews and updates these values every year.

HYBRIT

The steel industry as a total today is responsible for 7% of the world’s CO₂ emissions. Increasing carbon prices contributed to SSAB, LKAB, and Vattenfall joining forces in 2016 to create HYBRIT—an initiative that aims to reduce the carbon footprint of steel by replacing coking coal, traditionally needed for ore-based steel making, with hydrogen. Existing production sites are being retrofitted and in 2018 construction of a pilot plant for this technology started in Luleå, Sweden. The aim is to ramp up to large-scale industrial production by 2025. If successful, HYBRIT will help reduce Sweden’s CO₂ emissions by 10% and Finland’s by 7%.¹³



PANDEMIC MUST NOT DERAIL CLIMATE ACTION



**By Feike Sijbesma,
Honorary Chairman
of Royal DSM and
CPLC champion**

The COVID-19 pandemic is having an unprecedented impact on all of us. The crisis affects our health and our economy, and it highlights the importance of international collaboration to manage issues that do not stop at borders—like climate change.

The necessarily strict measures to limit the spread of the coronavirus have brought many societies to almost a standstill. As the global economy has stopped in its tracks, greenhouse gases have declined. The resulting economic downturn—and possible recession—may dampen emissions enough for us to meet this year's climate targets, but it's a Pyrrhic victory that was otherwise unlikely and by no means a cause for celebration. The economic ramifications of combatting this virus risk diverting resources and focus from long-term climate change mitigation.

Early signals from the European Union (EU) are encouraging: Europe remains committed to addressing climate change, even in this unprecedented time. The European Commissioner for Internal Market and Services has stressed that the Green Deal is not over, despite delays. COVID-19 will inevitably change the discussion, he has said, but not at the expense of decarbonization.

It is critical that we avoid repeating the mistakes of the 2008/09 financial crash, when the resultant emergency fiscal stimulus boosted the use of fossil resources even further. Several heads of state have already stressed that economic stimulus should be used in such a way that we reform at the same time. With such an approach we can come out of this crisis both greener and cleaner.

In April 2020, the World Economic Forum issued six stakeholder principles¹⁴ to help businesses coordinate their response to the pandemic. These principles include continuing with sustainability efforts to bring the world closer to achieving the Paris Agreement. Some big asset owners and managers have confirmed the importance of this.

There is now a real opportunity to ensure that long-term investments are used to build a more resilient future. This requires aligning government spending with the most ambitious goals of the Paris Agreement. By continuing to embed emissions firmly in our financial systems and putting a meaningful price on carbon, we can avoid undoing the work of the past few years.

Despite sporadic calls to shut Europe's carbon-trading markets, commitment to develop the system to withstand shocks seems stronger. Current market conditions are testing the robustness of existing carbon pricing instruments and their development since the last financial crisis.

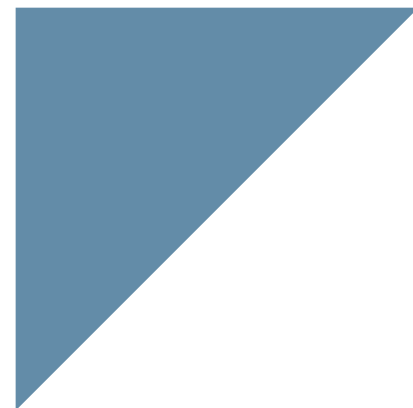
The EU carbon permit price has fallen below €20 (\$22) per ton for the first time in over a year, providing short-term relief to the most hard-hit industries. This follows a prolonged period of increases that have helped accelerate the phasing out of coal. But long-term price signals and opportunities to direct revenues raised from auctions or tax schemes to support economic recovery must be ensured. Automatic adjustment systems, or even price floors, allow flexibility and resilience against a sustained fall of prices, so it is imperative that such systems are further developed to maintain the green stimulus. As suggested by the World Bank-led Stern-Stiglitz Commission on Carbon Pricing a few years ago, carbon needs to be priced in the \$40 to \$80 range by 2020 to meet our Paris targets.

The number of countries, states, and provinces that use carbon pricing mechanisms has been slowly growing. New evidence from the High-Level Commission on Carbon Pricing and Competitiveness provides the confidence to accelerate adoption even further, concluding that the additional costs of carbon pricing are often small relative to other factors that affect competitiveness. At the same time, carbon pricing adds important clarity to investment decisions and provides stimulus for innovation.

Automatic adjustment systems, or even price floors, allow flexibility and resilience against a sustained fall of prices.



The immediate peril of the pandemic has shown how quickly the world can respond when needed. The climate crisis has the potential to be far more devastating.



Governments should lead by setting climate-smart policies, but they cannot address climate change alone. Putting an appropriate price on carbon helps ensure that the burden of dealing with the effects of climate change lies with those who can change the system and make the biggest impact on reducing emissions: the private sector. Instead of asking or dictating who should reduce emissions, a carbon price is by far the best instrument to trigger investors and companies to move faster, especially when combined with other supporting policies. A carbon price embeds addressing climate change in our own economic system. This is the way to go, as we see in the dozens of countries that have already implemented a price on carbon.

Business has the ability to innovate and the operational expertise to accelerate the shift to a low-carbon, climate-resilient economy. Already, many companies are demonstrating this by committing to achieve net zero emissions by 2050 or earlier. About 1,400 companies have adopted an internal carbon price or intend to do so within the next year to help decarbonize activities and investments, signaling that they want the policy agenda to move faster. In endorsing the World Economic Forum Stakeholder Principles in the COVID era, business leaders have indicated their willingness to serve society by helping to preserve and rebuild a viable society and economy in a post-COVID world.

The CPLC brings together businesses, organizations, and governments, allowing them to develop an ambitious, unified voice supported by shared resources that can galvanize the world to create a more sustainable future. We would like more countries to implement a more impactful price.

The immediate peril of the pandemic has shown how quickly the world can respond when needed. The climate crisis has the potential to be far more devastating. It is on the horizon and there may not be an emergency brake when we need it. The world has a chance to alter that outcome; the Twenties must be the decade of delivery. With COP 26 in Glasgow now delayed because of COVID-19, it is crucial that we recognize carbon pricing as a key tool for an accelerated, orderly transition to a net zero world. The platform and knowledge-sharing provided by the CPLC is needed now more than ever. ■

PUTTING PEOPLE AT THE CENTER OF CARBON PRICING POLICY

Any policy decision to decarbonize poses a threat to the livelihoods of workers and communities that rely on fossil fuels, with coal miners, coal power-plant workers, and their communities being the first and worst affected. Well-designed carbon pricing policies can help smooth the transition for these vulnerable groups.

The science is clear: the global economy needs to decarbonize to prevent catastrophic climate change—and that means moving away from fossil fuels such as oil, gas, and coal.

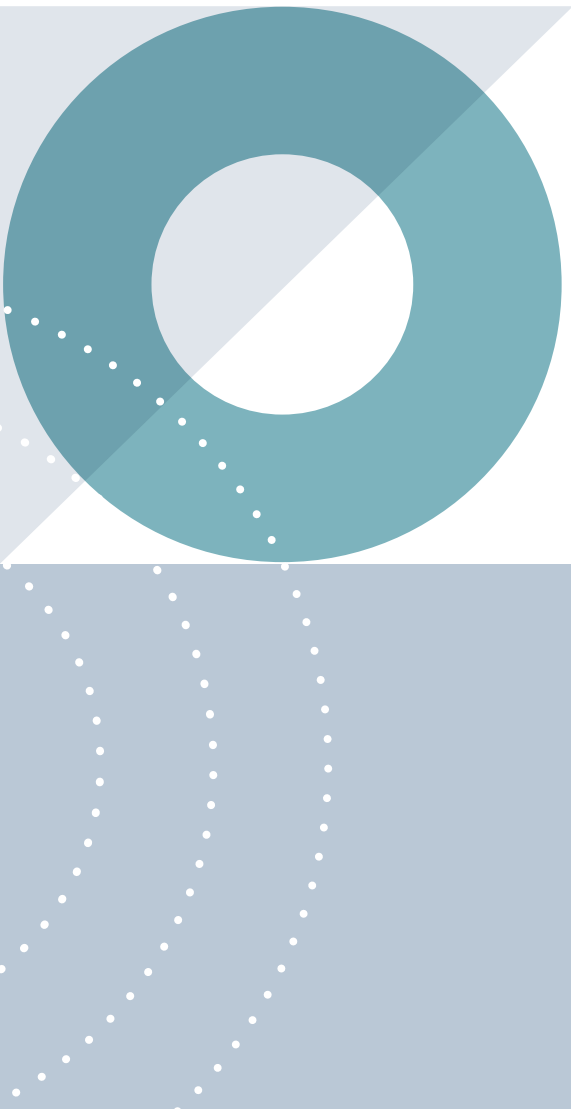
Of these, coal is the most susceptible to this shift. Once the backbone of economies and still the employer of millions worldwide, the coal sector tends to be squeezed out first when wind and solar power take over from fossil fuels. “Oil and gas are also under pressure, but are less at immediate risk because the demand for them is less elastic,” says Dr. Adele Morris, Policy Director with the Climate and Energy Economics Project at The Brookings Institution in the United States.

When a coal mine shuts down, it can be catastrophic for the workers and community that rely on it. Oil and gas workers tend to have skills like rigging, welding, and diving, which can be transferred to other sectors; coal miners, however, have a narrower set of skills and live in a community built around mining coal. Often, their families have been working in the mines for generations. “The miners lose their income, their pensions, and their health insurance. Their communities suffer. Even the water they drink could become polluted if the mine doesn’t have the funds to stabilize and reclaim the disturbed land,” says Morris. “Carbon pricing, unlike other decarbonization policies, is unique in that it raises revenue that can be used to ameliorate these burdens and ensure an orderly transition away from coal for these communities.”

“Carbon pricing, unlike other decarbonization policies, is unique in that it raises revenue that can be used to ameliorate these burdens and ensure an orderly transition away from coal for these communities.”

Adele Morris, Climate and Energy Economics Project





Refuting carbon pricing’s regressive reputation

In addition to threatening jobs in certain sectors, carbon pricing is often accused of being regressive, in that it places an unfair burden on poorer families by claiming a larger portion of their household income relative to wealthier households.

The CPLC-developed FASTER principles for successful carbon pricing place fairness at the top of the list of considerations for carbon pricing policies (see Figure 3). These principles are based on real-world experience of carbon pricing policy and provide a checklist for ensuring that a carbon pricing mechanism achieves its purpose in a cost-effective way without disadvantaging vulnerable communities.

FIGURE 3: THE FASTER PRINCIPLES FOR SUCCESSFUL CARBON PRICING

FASTER principles	Successful carbon pricing policies:
F airness	Distribute costs and benefits equitably, avoiding disproportionate burdens on vulnerable groups
A lignment of policy and objectives	Are supplemented by measures and other policies that support larger emissions reductions over time
S tability and predictability	Ensure carbon prices increase consistently and predictably over time
T ransparency	Are clear in design and implementation, with effective systems to monitor and verify emissions and mitigation efforts
E fficiency and cost-effectiveness	Improve economic efficiency and reduce the costs of emission reduction
R eliability and environmental integrity	Result in a measurable reduction in environmentally harmful behavior

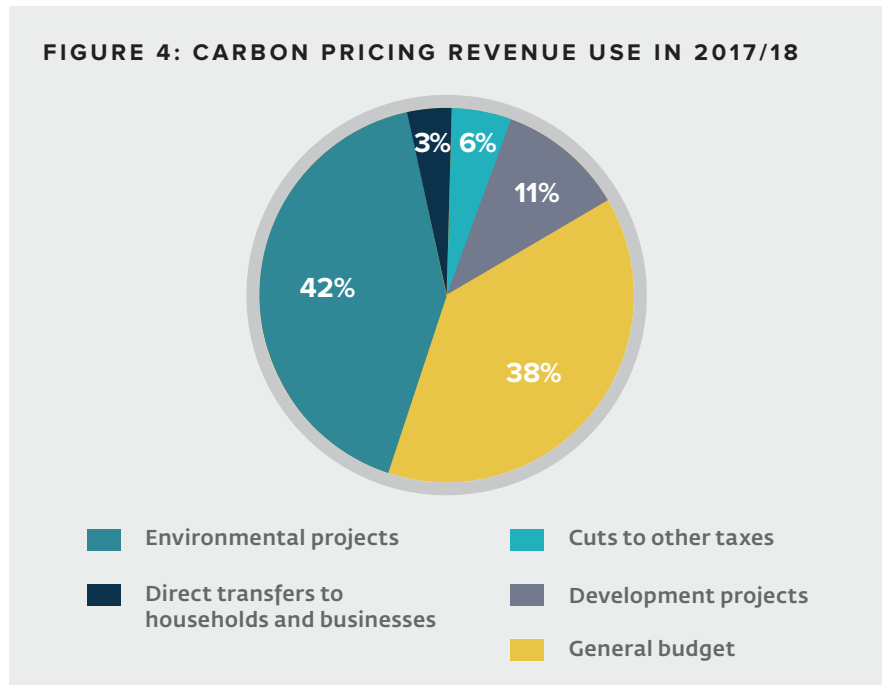
Recent research also indicates that carbon pricing is not as regressive as once thought.¹⁵ “In the United States, poor households typically receive government transfers that are linked to price levels, so when the price of fuel or energy goes up because of carbon pricing, so too does the government transfer,” says Morris, adding that carbon pricing is less likely to be regressive in those lower-income countries where wealthier people and businesses have disproportionate access to electricity and vehicles. Accordingly, they would bear the bulk of the incidence of carbon pricing levies. “We shouldn’t fixate on the regressivity of carbon pricing all the way up the income distribution,” Morris adds. “That said, the fact that the tax incidence isn’t zero for the poorest households is highly undesirable.”

Regressivity can be ameliorated by including a revenue return mechanism to provide poor households with short-term protections against carbon taxes, a 2019 report by CPLC partner Climate XChange points out. The report, which highlights lessons from California’s cap-and-trade system, suggests that revenue return mechanisms could even “create progressive outcomes by leaving low-income households with a net financial gain” and “actually raise more money for investment, if it in turn leads to higher carbon prices”.¹⁶

Shifting revenue use, shifting attitudes

Global income from carbon pricing mechanisms has grown from \$22 billion in 2016 to \$44.6 billion in 2019, and there is every indication that the trend will continue in the near term. According to the World Bank’s Partnership for Market Readiness, 42% of 2017/18’s carbon pricing revenue was allocated to environmental projects, while 20% was divided between development projects (11%), cuts to other taxes (6%), and direct government transfers to households and businesses (3%). The remaining 38% went to the general fiscus.¹⁷





Source: Using Carbon Revenues, PMR, 2019

This revenue allocation is likely to shift as awareness grows of the uneven burden that decarbonization places on coal-dependent communities. Germany is one of the leaders of this awakening. Having committed to phasing out coal by 2038, the country has recently pledged \$45 billion to compensate mines and power plants for lost revenue, fund new infrastructure projects in coal-dependent areas, and help the country’s 25,000 coal-sector workers reskill for alternative jobs in their local area.¹⁸ The EU is taking a similar approach with its European Green Deal, which includes a €4.8 billion (\$5.2 trillion) Just Transition Fund “to address societal, socio-economic and environmental impacts on workers and communities adversely affected by the transition from coal and carbon dependence”.¹⁹ At the time of writing, the European Parliament voted to support the deal and the proposal had been open for comment.

Using carbon pricing revenue to support coal-dependent communities and workers does more than support a just energy transition. It helps increase the political acceptability of carbon pricing, especially when revenue is transparently earmarked for environmental and developmental objectives—and this link is clearly communicated to a wide range of stakeholders. ■

CASE STUDY **PROTECTIONS FOR CANADIAN COAL WORKERS**

In 2018, the Canadian government sent a task team to ask coal workers and communities what a just transition to decarbonized energy would look like for them. The team made several recommendations that could apply to other geographies:²⁰

- Embed **just transition** principles in all steps during the phase-out of coal. These include supporting research into the impacts of decarbonization to ensure evidence-based decisions; consulting with communities when developing policies, regulations, agreements, and legislation; and regularly reporting back on progress.
- Provide support at the local level.
- Provide a pathway to retirement for those who will retire earlier than planned due to the coal phase-out.
- Transition workers to sustainable employment by, among other measures, helping them to reskill, providing income support while they seek new employment, and creating an inventory of possible alternative labor opportunities.
- Invest in priority infrastructure projects in affected communities.
- Fund a planning, collaboration, diversification, and stabilization program for affected communities that includes meeting communities to learn about their priorities and connecting them with government programs that could support their goals.



Just transition is a trade union term referring to the need to protect the rights and livelihoods of workers while shifting to low-carbon production.

CARBON PRICING REVENUES AND THE EU ETS

In Europe, it is understood that carbon emissions must have a price, and that the economy needs to internalize the cost of greenhouse gas emissions. The EU emissions trading system (ETS) is a core element of Europe's long-term response to climate change.

For 15 years, the EU's ETS has provided a carbon price signal across half of the European economy, contributing to reductions in emissions of around 30%. At the same time, overall EU GDP has grown substantially. After reforms agreed to in 2017 strengthened the ETS price signal, emissions from installations reduced by more than 8% in 2019 relative to 2018 levels. This took place before the onset of the COVID-19 public health emergency.

The proportion of auctioning in the EU ETS has increased over time, and most of the resulting revenues have been used to tackle climate change. Some of the revenue has been pooled to enhance effectiveness. One example of pooling is the Innovation Fund, through which more than €10 billion (\$10.8 billion) will be used to fund the widespread deployment of breakthrough technologies.

Between 2012 and mid-2019, member states received more than €42 billion from the EU ETS, more than three-quarters of which has been used for climate- and energy-related purposes. The EU ETS also supports solidarity and growth within certain member states, and is contributing to the Modernisation Fund, which is expected to deploy well over €10 billion (\$10.8 billion) to modernize their economies and ensure a fair transition to a low-carbon society.

The COVID-19 crisis has posed challenges across the global economy, and Europe is no exception. As a market-based instrument, the EU ETS has responded to the reduction in economic activity and lower demand for allowances by lowering carbon prices. However, the political necessity for the EU Green Deal remains as strong as it ever was. It is vital, both because we do not want to pay heavily for the costs of climate inaction, and for recovery from the coronavirus crisis. Climate change and global warming do not stop for a pandemic. Carbon pricing and the effective use of revenues will be part of a new model of society.

DOES NATURE HOLD THE KEY TO PARIS?

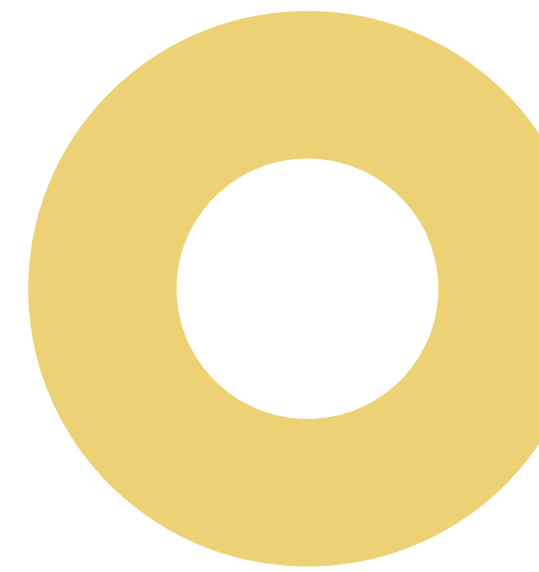
Interest in using nature as a key element in our efforts to reduce emissions is intensifying as the effects of climate change point to a need to raise global ambition.

Nature-based solutions to climate change (and, by extension, emissions reduction) can take many forms. If a company plants trees to capture CO₂ from the atmosphere—or buys offsets that achieve the same outcome—it's a nature-based solution. If a farmer plants cover crops or converts to no-till farming methods to increase organic matter in the soil (and, by extension, the soil's ability to sequester carbon), it's a nature-based solution. If an architect designs a roof garden where there would otherwise have been concrete, it's a nature-based solution. All these interventions have one thing in common: they increase the amount of biological material that can remove CO₂ from the atmosphere.

Nature-based solutions are particularly attractive for their co-benefits. In addition to removing CO₂, the added greenery expands the available habitat for wildlife, improves water retention while preventing runoff, and provides shade and protection from extreme weather events. It provides food and natural beauty.

Depending on how it is structured, a nature-based solution can also generate revenue for communities and support the Sustainable Development Goals (SDGs). For this reason, Tim Christophersen of the United Nations Environment Programme (UNEP) has for several years been championing nature-based solutions. "We must invest in nature so nature can bail us out of these multiple crises that we're in," he told one interviewer. "[Nature-based solutions] is not a term just for climate change; it's a term for describing nature's essential role for sustainable development, and for supporting humanity."²¹

The International Small Group and Tree Planting Program (TIST) neatly demonstrates how a solution that protects nature while fighting climate change can help nearby communities. TIST trains farmers in India, Kenya, Tanzania, and Uganda to plant and tend to trees, so creating decent employment (SDG 8) and enhancing climate action (SDG 13) while producing verified carbon credits that are sold on the offsets market. To date, TIST has helped more than 90,000 farmers plant and tend to more than 19 billion trees.



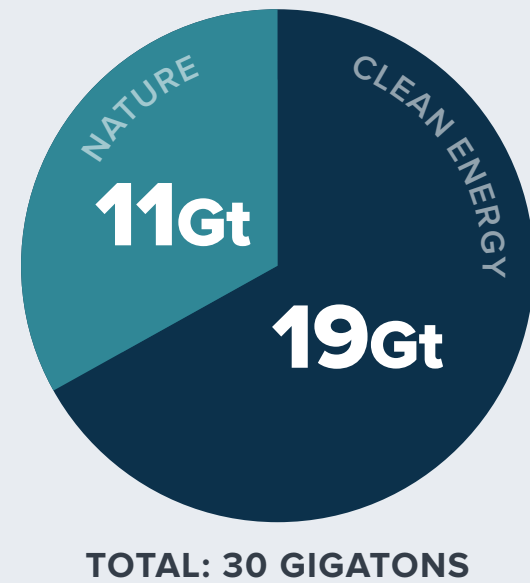
IT'S TIME TO LET NATURE DO WHAT IT DOES BEST

Nature-based solutions have the potential to remove a third of excess carbon released into the atmosphere each year.

For the past 3.8 billion years, forests, grasslands, and wetlands have been removing carbon from the atmosphere and storing it at little or no cost to humans. But unchecked manmade emissions and widespread land degradation have tipped the scales to the point that our once-hospitable global climate is becoming unstable and chaotic.

To date, mitigation action has primarily focused on cutting emissions. However, stabilizing the climate also requires investing in restoring degraded natural biomes (forests, wetlands, and grasslands), protecting the biomes that remain, and working with farmers to help them better manage their grazing, timber, and croplands. If successful, such investments have the potential to remove and store as much as 11 of the 30 excess gigatons of carbon emitted into the atmosphere each year—just less than half of the potential reductions from converting to clean energy. —Arbor Day Foundation

Of the 30 gigatons of excess carbon in the atmosphere each year, 11 gigatons could be removed using nature itself:



Source: The Nature Conservancy & Nature4Climate

Nature-based solutions and the Paris Agreement

Articles 4, 5, and 13 of the Paris Agreement explicitly refer to carbon sinks—which include forests and other vegetation²²—as being necessary for achieving carbon neutrality, and at least 66% of NDCs refer to nature-based solutions.²³ Despite mounting acknowledgement that nature needs to play a role in achieving carbon neutrality, the exact nature of this role is still uncertain.

“The main concern around nature-based solutions in the form of offsets has to do with permanence,” says Janet Peace, the Senior Vice President of Policy and Business Strategy at CPLC partner the Center for Climate and Energy Solutions (C2ES). “Forests can burn or be harvested, and agricultural practices such as no-till farming can quickly change back to conventional tillage, where increased organic material is lost. How do you ensure that a nature-based solution is permanent—or at least as permanent as the emissions it is supposed to offset?”

Several ways exist to address this risk of permanence. One is to view nature-based **carbon offsets** as temporary, such that at some future date they will expire, and the carbon will need to be recertified or replaced. A downside of this approach is that the additional administrative cost involved with the certification management process may yield a lower price tag than more permanent offsetting options.

The uncertainty around permanence is one of the reasons the EU’s ETS didn’t allow for forest carbon credits from the Clean Development Mechanism.²⁴ But banning is not the only option. California, for example, requires an insurance-like approach where extra credits are included in a “buffer pool” that can be used should an unintentional reversal occur. And in South Africa, temporary carbon credits can be issued for seven years with an option to renew (to a maximum of 21 years), or for 10 years without an option to renew.²⁵

On the face of it, nature-based solutions offer an attractive, low-cost tool for reducing emissions across the board. The aviation sector has long relied on offsets to mitigate the environmental cost of travel, for instance. And food retailers are exploring the option of paying farmers to adopt climate-smart farming practices to reduce the retailer’s **Scope 3 emissions** reductions, known as “**carbon insets**”.

The problem with carbon insets is that there is typically no system in place to formally monitor, report on, and verify these reductions, or a clear baseline from which to measure improvement. This makes it difficult to accurately assess their true contribution to reducing emissions. (Science Based Targets, a joint initiative by CDP, the United Nations Global Compact, WWF, and CPLC partner the World Resources Institute, aims to strengthen private sector emissions reporting by providing technical support and guidelines for setting science-based targets, including in the agricultural sector.)

Nature-based solutions are an integral part of the solution. “They are attractive because of their co-benefits and will play an increasingly important role in offsetting emissions that are hard to get rid of, such as aviation emissions,” says Peace, adding that they need greater investment if they are to realize their full potential.

Clarifying the rules of Article 6 will enable those countries rich in natural endowments—good soil, sunshine, and water—to maximize nature-based solutions to reduce global emissions. However, this will only be possible if the offsets produced have credibility. “Fortunately, we can learn what makes a ‘good’ offset from the carbon markets that are already in existence,” says Peace. “They have been going for a long time.” ■

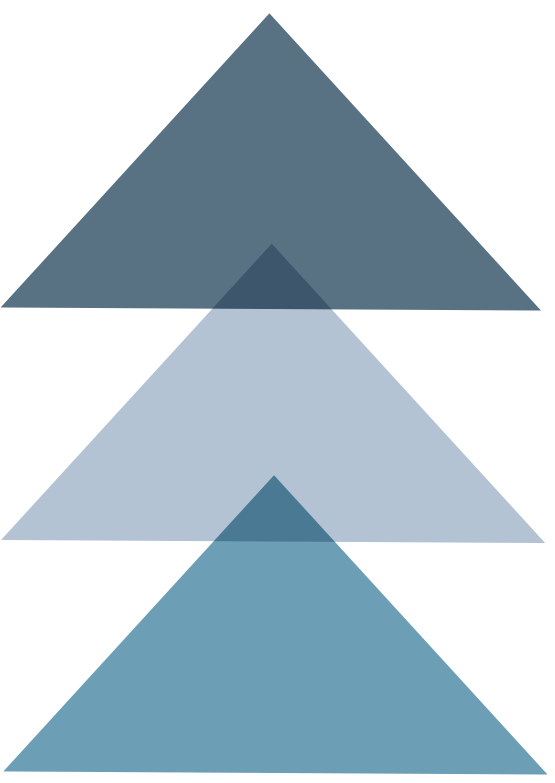


SCOPE 1, 2, AND 3 EMISSIONS

- **Scope 1 emissions** are direct emissions from owned or controlled sources.
- **Scope 2 emissions** are indirect emissions from the generation of purchased energy.
- **Scope 3 emissions** are all indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions.²⁶

CARBON OFFSETS AND INSETS

- **Carbon offsets** are carbon emission reduction credits purchased from a verified emissions reduction project.
- **Carbon insets** refer to emissions reductions that result from a company’s influence over its value chain rather than some other kind of voluntary or involuntary mechanism.²⁷



AGRICULTURE “NEEDS TO BE PART OF THE SOLUTION”

New Zealand’s government has reached a groundbreaking agreement with primary-sector leaders to price agricultural emissions from 2025.

Methane and nitrous oxide from synthetic fertilizers together accounted for nearly half (48.1%) of New Zealand’s gross greenhouse gas emissions in 2017,²⁸ yet the agriculture sector contributed only 7% to national GDP.^{29, 30} Any viable plan for the country to reach carbon neutrality must, therefore, address agricultural emissions while ensuring that the farming sector remains profitable. In the words of New Zealand’s Minister of Climate Change, James Shaw, “Agriculture is incredibly important to New Zealand, but it also needs to be part of the solution.”³¹

Agricultural emissions are already part of the country’s plan to become carbon neutral. In November 2019, New Zealand’s Parliament gave royal assent to the Climate Change Response (Zero Carbon) Amendment Act, which sets a net zero target for CO₂ together with a target of reducing biogenic methane by 10% by 2030, and by 24% to 47% by 2050, against a 2017 baseline.³² Biogenic methane is methane that is produced by bacteria in the digestive tracts of livestock, which includes cows, pigs, horses, and poultry.

New Zealand’s government has long intended to put a price on all agricultural emissions, preferably at farm level. To this end, the current Climate Change Response (Emissions Trading Reform) Amendment Bill (ETR Bill) proposes, among other measures, to “price [animal] emissions at farm level, and fertilizer emissions at processor level, from 2025”,³³ with voluntary reporting of on-farm emissions from 2023 and mandatory reporting from January 2024.³⁴

For the interim period until 2025, the government considered two options: the first option, proposed by the Interim Climate Change Committee (ICCC), involved putting a price on emissions from meat and dairy processors as soon as possible. The benefit of this approach was that it would be quick to implement because processors already report on emissions under New Zealand’s ETS.³⁵ The second option, which the government has committed to pursue, is a formal agreement with key primary-sector

organizations to reduce agricultural emissions by implementing on-farm behavioral changes and by designing an effective on-farm pricing scheme for animal emissions that will come into effect in 2025. This option allows for more direct engagement with the industry and farmers, ensuring a collaborative approach with key stakeholders in designing the pricing mechanism.

In both scenarios, a carbon price would be placed on fertilizer emissions at the processor level. This is because the only currently accepted way to meaningfully reduce fertilizer emissions is to use less fertilizer. The price incentive remains the same at the processor and the farm level, making a processor-level price the simplest solution to implement.

A work program named *He Waka Eke Noa* has been put in place to deliver the agreement with the primary sector, with milestones legislated through the ETR Bill. These milestones include achieving nationwide emissions reporting, providing farm planning guidance ahead of putting a price on emissions, and designing a farm-level pricing mechanism for animal emissions from 2025. This approach is being jointly funded by the government and industry.

At the time of writing, *He Waka Eke Noa* was in the process of developing recommendations for an on-farm pricing mechanism. Options under consideration were a levy/rebate scheme, which the ICCC put forward as a “simpler and less costly approach than including the 20,000 to 30,000 small farm businesses in the NZ ETS as it would avoid the need for farmers to trade emissions units”.³⁶ A levy/rebate system would be flexible, allowing for different targets and prices to be set for the different gaseous emissions. However, as a solution it presents logistical constraints that could delay implementation.

Under the ETR Bill, the ministers of Climate Change and Agriculture have been tasked with reviewing *He Waka Eke Noa*’s progress, with a final report due in 2022. If progress is deemed insufficient, all agricultural emissions will be priced via New Zealand’s ETS at processor level from 2022 to provide a clear price signal to reduce emissions.

Technological developments such as biofuel harvesting and methane-suppressing dietary livestock supplements have made it easier than ever for the agriculture sector to reduce emissions from livestock. Several work streams within *He Waka Eke Noa* are in place to encourage farmers to investigate these options—coupled with a government pledge of 95% free allocations for agricultural emissions—which will, it is hoped, incentivize and build capability in the emissions-intensive agriculture sector to contribute more substantially to the country’s climate change efforts. ■



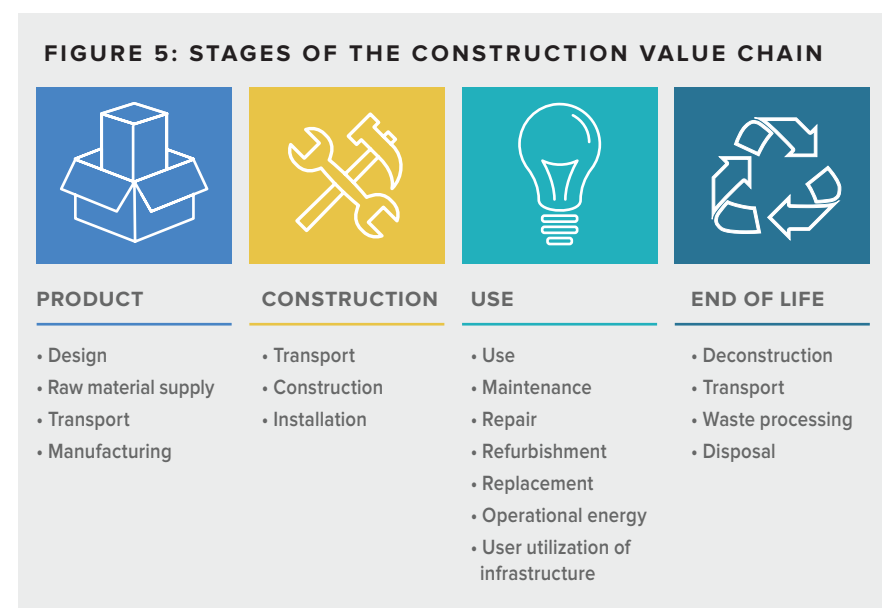
BRINGING EMISSIONS TO THE DESIGN TABLE

Carbon pricing may help effectively decarbonize the construction value chain.

It may be possible to see the lights of big cities from outer space, but our planet’s built environment is far from complete. Between now and 2050, the urban construction footprint is expected to more than double to accommodate the world’s total population, 70% of which will live in cities, which offer better livelihoods, infrastructure, services, and advancement opportunities.

This growth trajectory creates an urgent need to reduce emissions from the construction industry, which currently accounts for 25% to 40% of global emissions. But it also presents an opportunity to reduce a substantial portion of global emissions by focusing on a single sector.

Construction projects produce most of their emissions at two points: where raw materials are extracted and, after the construction is complete, when operational emissions are produced (see Figure 5). To date, standards and certification systems have focused on energy efficiency to address operational emissions, while carbon



pricing has primarily focused on reducing emissions from the manufacturing of construction materials (see box). However, there is room for carbon pricing to strengthen its role by extending its scope to cover the entire construction value chain, including the important design stage.

To determine where along the construction value chain carbon pricing would be most effective—and what kind of mechanism would be best suited to the task—the CPLC and IFC recently completed an exercise to determine the effects of different carbon pricing methods on different types of construction projects. The pricing mechanisms considered were:

- ▶ Internal carbon pricing
- ▶ An emission reduction credit scheme
- ▶ An emissions trading system (ETS)
- ▶ A hybrid scheme that, as an example, combines an ETS with a tax or threshold
- ▶ A carbon tax
- ▶ A command-and-control mechanism (not strictly a carbon pricing mechanism, but included because the mechanism could help regulate new markets and minimize inequitable burden-shifting from misaligned incentives).

Four existing projects with different scales, asset classes, and markets were used as case studies: a road project in Spain and a railway system in Ethiopia, both of which followed traditional design-bid-build delivery methods; a housing complex in South Africa that used the build-operate-transfer delivery method; and a commercial building in the United Kingdom that followed a design-construct delivery method.

The exercise concluded that:

- ▶ **There is no one solution for all situations.** However, hybrid methods offer the greatest flexibility for capturing emissions from all stages of the construction value chain and across all project delivery types, while reducing the impact on welfare and competitiveness.
- ▶ **The carbon pricing mechanism should ideally be applied at the early stages of the project—at the design stage—to maximize impact across the construction value chain.** This is because those who design a

building have influence over how much energy that building will consume during its functional lifespan, while those who plan and fund building projects have influence over the materials and methods used for delivery.

- ▶ **Integrated project design and financing mechanisms are better suited for reducing emissions** from the lifecycle of a project by reducing the split incentives that are common in more fragmented project delivery models. For example, the contractor in a traditional design-bid-build model has little influence over the design of a project and no incentive to maximize carbon reduction. Conversely, in an integrated model, each party (designer, builder, investor, operator, and manager) can be incentivized to maximize carbon reduction at every stage to ensure the overall project is delivered most efficiently.³⁷

In the long term, a construction's operational emissions will become less significant as the global energy sector progressively decarbonizes and electricity grids become clean, at which point emissions from use will decrease relative to emissions from materials production. But in the short to medium term, carbon pricing mechanisms are needed to incentivize actors at all stages of the construction value chain to improve efficiency and reduce emissions. ■

GERMANY TARGETS BUILDINGS AND TRANSPORT IN NATIONWIDE ETS

Germany's recently adopted Climate Protection Programme 2030—which includes, among other decarbonization measures, a national ETS for emissions from the transport and building sectors—will start in 2021. Like all EU member states, Germany already takes part in the EU ETS. However, this is the first time a nationwide ETS has been applied to transportation and buildings, both of which rely heavily on fossil fuels such as gasoline, diesel, and heating oil.

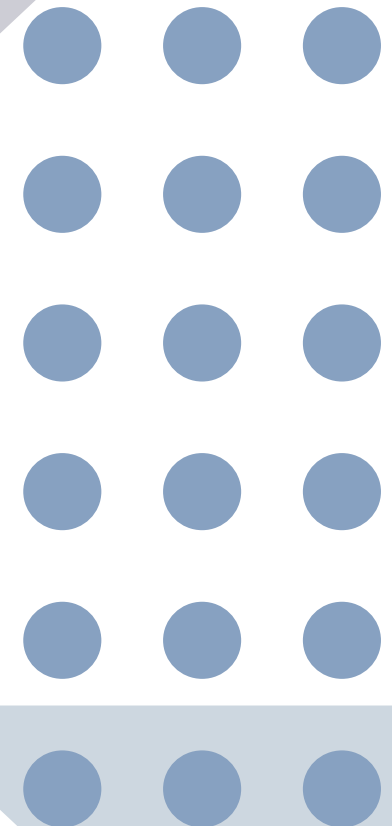
SETTING UP A VIRTUOUS CYCLE

Multinational building materials company LafargeHolcim has long been an outspoken supporter of carbon pricing as a tool for driving down emissions in the construction sector. To reduce its contribution to greenhouse gas emissions, the company recently announced an investment of CHF160 million (\$165 million) in low-carbon initiatives that will reduce its annual CO₂ emissions in Europe by an additional 15% on top of its existing commitments by 2022.

This move comes at a time when the EU—which already prices emissions from the energy, heavy industry, and aviation sectors through its ETS—is deliberating imposing a border carbon tax (see page 69). The EU aims to become the world's first climate-neutral continent by 2050. Over the next three years, LafargeHolcim will work on more than 80 projects across 19 European countries.

LafargeHolcim has a reputation for pioneering climate-smart building products and processes. One of its innovations, low-clinker cement, limits the proportion of clinker in its cement products. (Clinker is the main component of cement and the largest emitter in the emissions-heavy cement-production process.) However, despite the environmental benefits, uptake of low-carbon products has been slow in the highly price-sensitive construction industry; in 2019, only a third of sales came from its sustainable solutions portfolio.

Introducing a value-chain-wide carbon price at the inception stage of a construction project, as proposed in a report jointly published by the CPLC and IFC in 2019,³⁸ might encourage procurement decision-makers to choose low-carbon materials that are slightly more expensive to balance the impact of carbon pricing and enable better financial decisions in longer-term projects. This is the reason LafargeHolcim is a proponent of carbon pricing: “We are not only investing to reduce CO₂ in our own operations,” Marcel Cobuz, the Region Head for Europe, noted at the launch of the low-carbon project investments, “but are also seeking the collaboration of our customers across the value chain to improve the carbon efficiency of buildings and infrastructure throughout their lifecycle.”³⁹



BY AIR AND BY SEA

Carbon taxes and fuel levies on the aviation and maritime sectors could play an important part in mitigating emissions from the transport sector.

While carbon pricing attracts growing attention in the shipping sector, the aviation sector continues pioneering innovative technologies, contributing to regional emissions trading systems, and voluntarily buying carbon offsets to reduce greenhouse gas emissions. But further measures are needed.

Together, aviation and shipping account for about 5% of global greenhouse gas emissions—and this figure is growing rapidly. Collective climate action, potentially catalyzed by carbon pricing mechanisms, could hold the key to reducing emissions from the world’s aviation and maritime sectors.

Aviation

With air traffic forecast to grow by more than 4% a year between now and 2045, innovative measures to reduce the aviation industry’s carbon footprint—such as opening more direct air-traffic corridors and using biofuels—will be insufficient to balance out the resulting increase in emissions.

More urgent action is required. In October 2016, the International Civil Aviation Organization adopted the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). CORSIA signatories have pledged to keep emissions from international aviation at 2020 levels and purchase offsets to compensate for any emissions over this baseline. By February 2020, 82 states, representing 77% of international aviation activity, had pledged to voluntarily participate in CORSIA’s pilot phase,⁴⁰ scheduled to take place from 2021 to 2023.⁴¹

Other regional initiatives such as the EU’s ETS require companies to purchase an allowance for each ton of greenhouse gases they emit within the bloc, making airlines among the ETS’s top contributors. Some airlines—such as EasyJet, Air France, and JetBlue—are taking things a step further, choosing to voluntarily offset emissions on top of their existing domestic, regional, and international obligations.

Some observers argue that these measures are not ambitious enough: that the current price of offsets is marginal compared with, for example, even a modest increase in the cost of aviation kerosene, and therefore unlikely to move the needle on investments in cleaner technology. Taxes on jet fuel are also minimal, if not completely absent. Stronger financial signals are needed to encourage the airline industry to invest in, and switch to, biofuels.

Maritime

Renewed global discussions on using carbon market mechanisms to drive down maritime emissions are resuming at the International Maritime Organization (IMO). Contributing to agenda-setting at the IMO are submissions from the United Kingdom, which set out options for carbon pricing,⁴² and a joint submission by major industry associations calling for ships to pay a mandatory \$2 levy per ton of heavy-fuel oil purchased and consumed to fund the establishment of an International Maritime Research Fund.⁴³ While not officially labeled a market-based measure, this mechanism would be equivalent to a carbon levy on shipping fuels (though at a very low \$0.63/tCO₂), with carbon revenues earmarked for in-sector climate change mitigation.

Another think piece, presented by a group of industry CEOs at the Global Maritime Forum’s annual summit in October 2019, evaluated the key aspects of a future carbon levy in shipping.⁴⁴ The paper attracted attention, placing the climate and carbon pricing at the center of the summit. To underline the collective’s commitment, Andreas Sohmen-Pao, chairman of leading tanker operator BW Group, explained at the summit’s closing plenary: “The clear consensus in our group was yes, it is coming, and we should shape it. The IMO has set the trajectory, politicians are demanding it, this train is leaving the station.”⁴⁵

The IMO has pledged to reduce emissions from ships by at least 50% compared to 2008 levels. To date, there has been little improvement, and the pressure to act is growing. In the EU, the President of the European Commission, Ursula von der Leyen, personally urged the European Executive Vice-President for the European Green Deal to extend the EU ETS to the maritime sector.⁴⁶ Such an inclusion could happen from as early as 2021. If implemented, all ships calling on EU ports would be required to submit EU emission allowances for their carbon emissions.

At the same time, the World Bank and University College London, have jointly convened a workshop and two panel discussions at Innovate4Climate in Singapore in June 2019, and a side event at COP 25 in December 2019 in Madrid.

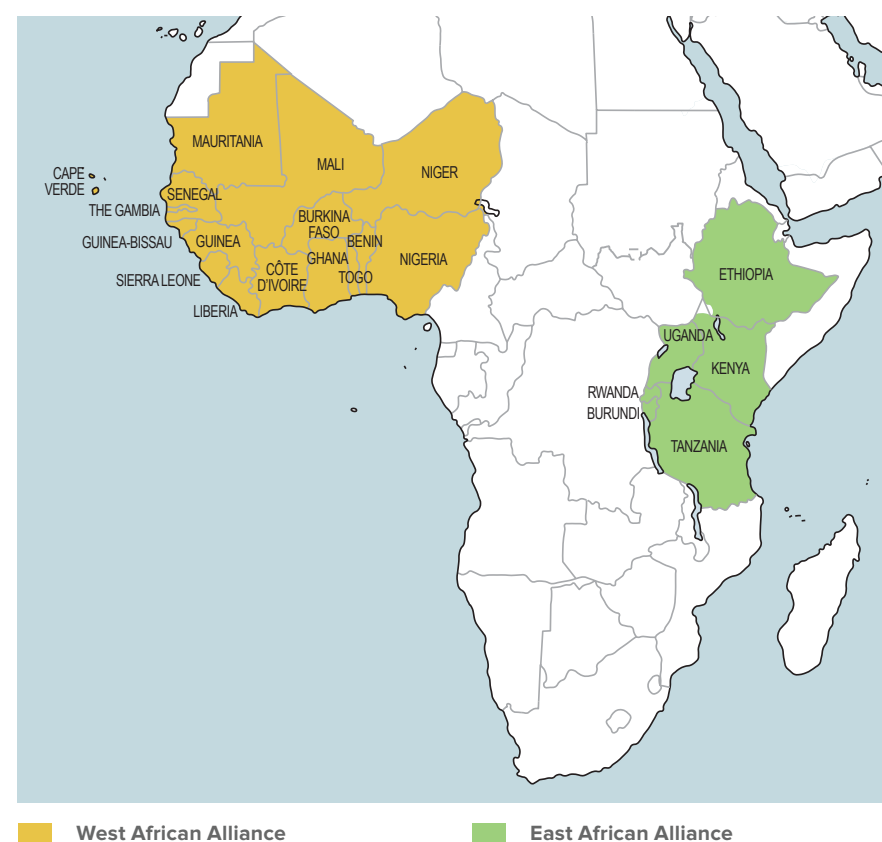
If set at the right price, carbon pricing mechanisms help internalize the cost of emissions from fossil fuels and steer investment towards research and development of clean fuel technologies. To be fair and obtain as much political support as possible, revenues generated from such mechanisms may be used for pursuing a dual objective: accelerate the production and deployments of such fuels in the sector and allow for a just transition in developing countries that are highly reliant on maritime transport such as small island developing states and least developed countries. ■

CARBON PRICING IN AFRICA

Although carbon pricing is rarely mentioned in Sub-Saharan policies, in practice many countries already apply an implicit carbon price in the form of fuel taxes, subsidies, feed-in tariffs, and other green incentives.

Sub-Saharan Africa is a relatively new arrival to the carbon pricing arena: of the 61 carbon pricing initiatives implemented or scheduled for implementation across the world, only one—the carbon tax in South Africa—is in Africa. But the tide is slowly turning with the help of two key regional alliances.

FIGURE 6: AFRICA'S REGIONAL CLIMATE ALLIANCES



“Progress around Article 6 has been slow, but there is a lot at stake that needs to be addressed at the highest level.”

Ousmane Fall Sarr, West African Alliance coordinator

The West African Alliance on Carbon Markets and Climate Finance (West African Alliance) has been active in the region since 2016 and has 16 members, including carbon pricing front-runners Senegal and Côte d'Ivoire (see Figure 6). Both countries are considering design options for a national carbon tax, and whichever one gets there first will become only the second on the continent to implement carbon pricing, after South Africa.

The West African Alliance is helping countries prepare for participation in global carbon markets. This involves providing technical and advisory assistance to support the transition from the Kyoto Protocol's Clean Development Mechanism to the requirements of the Paris Agreement; actively representing negotiations on market mechanisms and climate finance at the UNFCCC; and mobilizing climate financing at national and regional level.

“In our region, there are many challenges relating to lack of capacity, access to finance, and procedures and rules,” says Ousmane Fall Sarr, coordinator for the West African Alliance. “The alliance aims to help West African countries take advantage of opportunities around carbon markets and to be part of defining their rules. Progress around Article 6 has been slow, but there is a lot at stake that needs to be addressed at the highest level.”

The East African Alliance on Carbon Markets and Climate Finance (East African Alliance) was formed more recently, in June 2019, and shares similar aims. Although most of the countries within the East African Alliance are aware of carbon pricing as a potential method for reducing emissions, it is not regarded as a politically acceptable option. “Taxes in East Africa are already quite high,” says the coordinator of the East African Alliance, Bianca Gichangi. “Taxes on top of taxes often get rejected.”

Key to the success of the work of both alliances is building the technical capacity of focal points within member states and developing trust with the private sector. The West African Alliance also aims to explore mutually beneficial partnerships with the region's active trade bloc, the Economic Community of West African States (ECOWAS). “ECOWAS and the West African Alliance have the same members, except for Mauritania,” says Sarr. “ECOWAS is an economic zone with freedom

SOUTH AFRICA: CARBON TAX PIONEER

South Africa accounts for 7% of Sub-Saharan Africa's emissions, which in turn account for 9% of global greenhouse gas emissions. In June 2019, the country became the first on the continent to implement a carbon price.

South Africa's public power utility, Eskom, has seen primary energy costs increase by 300% in real terms over the past 20 years.⁴⁷ The country's most recent electricity plan has confirmed a move away from coal toward more affordable renewable energy.⁴⁸ And in June 2019, South Africa became the first country in Africa to implement a carbon price.

The carbon price has a low starting price, but it is a promising step in the right direction. “If other developing countries follow South Africa's example and price carbon, it will incentivize them to build more sustainable infrastructure and avoid ending up with stranded assets,” says Ngozi Okonjo-Iweala, author of the opinion piece on carbon pricing in Africa on pages 58–59.

of movement, one passport, one strategy regarding renewable energy, and one interconnected grid system with a regulatory body overseeing the electricity trade. There are definitely opportunities to leverage this bloc to achieve the NDCs of member states.”

Most of the 32 Sub-Saharan countries that explicitly refer to carbon pricing or carbon markets in their NDCs do so in the context of accessing international carbon markets to obtain finance for mitigation.⁴⁹ Many countries already apply **implicit carbon prices**. However, these implicit carbon taxes are typically far lower than the true cost of carbon, so inadvertently encouraging carbon use. (The same is true of countries that do employ an explicit carbon price, more than half of which are still priced below \$10/tCO₂e.) Aligning implicit carbon taxes with existing decarbonization policies could be one way to roll out carbon pricing on the continent.⁵⁰

According to Nigerian-born economist and international development expert Ngozi Okonjo-Iweala, carbon pricing is an attractive option for developing countries because so much of their infrastructure is yet to be built. “Carbon pricing can help them make the right decisions and avoid building fossil fuel-dependent infrastructure that will later become stranded assets,” says Okonjo-Iweala. “Markets for fossil fuels—especially coal and oil—are shrinking. Even when we consider gas as a transition fuel, we have to be mindful that gas assets are also increasingly at risk.

“For countries that have historically relied on fossil fuel revenues, carbon pricing could provide the push they need to help them change incentives, encourage green businesses, and diversify their economies. And it can provide a new source of revenues to invest in other public priorities.” ■

PLACING DEVELOPING COUNTRIES ON A PATH TO NET ZERO EMISSIONS



By Ngozi Okonjo-Iweala,
Board Chair: Gavi, the Vaccine
Alliance; co-chair of the Global
Commission on the Economy
and Climate; and former
Finance Minister of Nigeria

Developing countries are leading the way in raising global ambition to meet the goals of the Paris Agreement. Carbon pricing is one of the best ways for them to align with a net zero carbon future and chart a course for sustainable economic development.

In the lead-up to COP 26, now scheduled to take place in 2021, more than 100 primarily developing and low-income countries have stated their intention to increase ambition in their NDCs under the Paris Agreement.⁵¹ Developing countries such as Costa Rica, Chile, and Ethiopia have already set long-term net zero emissions targets.⁵² Achieving net zero emissions by 2050 will be essential to limit the negative effects of climate change, so it is inspiring to see low-emitting countries leading the way.

As developing countries move to turn their goals into reality, more of them are implementing carbon pricing. Mexico has had carbon pricing in place for six years, and Colombia for three. China’s national emissions trading system is being rolled out. Argentina, Singapore, and South Africa all recently started pricing carbon. Others like Côte d’Ivoire, Senegal, and Vietnam are considering it.⁵³



Implicit carbon pricing refers to other policies that implicitly price greenhouse gas emissions, such as the removal of fossil fuel subsidies and fuel taxation.

According to the International Energy Agency, the best way for Africa to achieve universal energy access is through renewables, with solar PV forecast to overtake other sources to have the most electricity capacity by 2040.⁵⁴ Carbon pricing improves the competitiveness of renewables and offers the policy certainty that will be essential to attract investment, enabling more rapid progress on electricity access.

Introducing carbon pricing can also help reduce air pollution, which causes more deaths than HIV, tuberculosis, and malaria combined.⁵⁵ In Africa, about half a million people die each year from outdoor air pollution, while in both China and India, the figure is over 1 million. To address this health crisis, we need a strong emphasis on carbon pricing to help us take the social costs of burning fossil fuels into account when making policy and investment decisions.

Another benefit of carbon pricing is that it generates revenue. In 2018, it generated \$45 billion in revenues globally. Extending carbon pricing around the world, and combining it with fossil fuel subsidy reforms, could generate \$2.8 trillion in government revenues by 2030—more than India's GDP today.⁵⁶ This money could be invested in other priorities like public health, education, and sustainable infrastructure. It could also be used to ensure that there is a just energy transition, supporting low-income households, workers, and companies affected by the reforms.

We must build on the promising first steps being taken and accelerate action on carbon pricing. We need to raise awareness in developing countries on how to adapt carbon pricing to their circumstances. We need to build the capacity of policymakers and institutions to effectively implement carbon pricing. We need to bring the finance and investor communities into the fold, so policy and finance can transition to a low-carbon world together. We also need to get the youth to champion carbon pricing to their governments.

In the next year, I encourage more developing countries to expand their carbon pricing initiatives. In a zero carbon emissions world in 2050, the goal is for developing countries to be healthier and wealthier, with universal electricity access and thriving economies based on clean technologies. By enacting carbon pricing today, we will ensure that every economy is in the best possible position to succeed. ■

WELCOMING MENA'S COMMITMENT TO CARBON TRADING

A growing number of Middle East and North African countries are considering using carbon pricing and offset markets to meet emissions reduction goals and reduce the impacts of adverse climate patterns in the region, while creating opportunities for economic diversification and development.

Middle East and North African (MENA) countries are particularly vulnerable to climate change. Research by the Max Planck Institute has found that by 2050, average temperatures in the region will be 4°C higher, and by 2100, daytime highs could reach 50°C, with 200 days of exceptional heat every year.⁵⁷ Countries in the region are seeking innovative methods to decarbonize their economies, with a wide range of possible solutions on the table—including the use of carbon pricing and markets.

In January 2020, the CPLC hosted a side event at the World Energy Congress in Abu Dhabi to facilitate discussion on the options for accelerating mitigating action. It was noted that carbon pricing is an important element of an integrated approach to diversifying economies away from reliance on oil and gas, accelerating the adoption of clean energy plans, and creating a knowledge-based economy. Continued reform of fossil fuel subsidies, coupled with carbon pricing initiatives, could also help ensure that cleaner technologies become more cost competitive at scale, creating new business opportunities and jobs in the Gulf Cooperation Council.

Several carbon pricing and offsetting initiatives—such as the Global Carbon Council and the Dubai Carbon Centre of Excellence—are already being rolled out, and various countries have already seen developments.

The Global Carbon Council

The Global Carbon Council, the first voluntary carbon offsetting program in the region, aims to help economies diversify by adopting low-carbon pathways and support organizations in reducing their carbon footprints. To date, it has received

“The Global Carbon Council has been a slow entrant in carbon markets, but leveraged its dynamic entrepreneurship to quickly become a participant in the different platforms whilst pursuing a private sector-led culture of business excellence.”

Ivano Iannelli, CEO, Dubai Carbon Centre of Excellence

interest from 20 projects that are developing submissions to use offsets to help countries and organizations to achieve their carbon neutrality targets. These projects focus on various sectors, including oil and gas, renewable energy, waste, buildings, industry, and transport. The Global Carbon Council is also putting in place a system to supply emissions reduction credits to offset emissions from the 2022 FIFA World Cup, set to take place in Qatar.

Last year, the council applied for eligibility under CORSIA. After some adjustments, it now meets CORSIA criteria and has been conditionally approved to offer carbon reductions to international airlines committed to carbon-neutral growth under CORSIA.

The Dubai Carbon Centre of Excellence

The Dubai Carbon Centre of Excellence was established in 2011 to support the low-carbon transition in the region by consolidating knowledge.⁵⁸ It helps governments, businesses, investors, and other regional and international stakeholders assess their carbon footprints, develop sustainability strategies, and engage in carbon markets. The Dubai Carbon Centre has emerged as a regional authority on carbon pricing and offsets, helping to raise awareness and build capacity around such activities in response to growing interest in the region.

Country level

Several MENA countries have showed a heightened interest in carbon pricing and markets.

Leading the way is Jordan, which has become the first country in the region to take concrete steps to prepare for carbon pricing and offset markets. These include implementing a Climate Action Plan to make its capital city, Amman, carbon neutral by 2050, and legislating, developing, and piloting a measuring, reporting, and verification system to assess emissions and track progress on reductions. The system is a key building block for future emissions trading, and was of such high quality that the Secretariat of the World Bank’s Partnership for Market Readiness is standardizing it to enable implementation in other countries.

Other MENA countries are also taking initial steps to prepare for carbon markets. In October 2019, the Saudi Minister of Energy, Prince Abdul-Aziz bin Salman, announced plans to implement a domestic carbon trading system. “We will come soon with a suggestion on carbon trading that would be a fair carbon trading system ... And I think it will work,” he said.⁵⁹ ■

CARBON PRICING IN THE UNITED STATES

Even though the United States federal government sets the trajectory for national emissions goals, individual state governments still have the freedom to put in place their own climate policies.

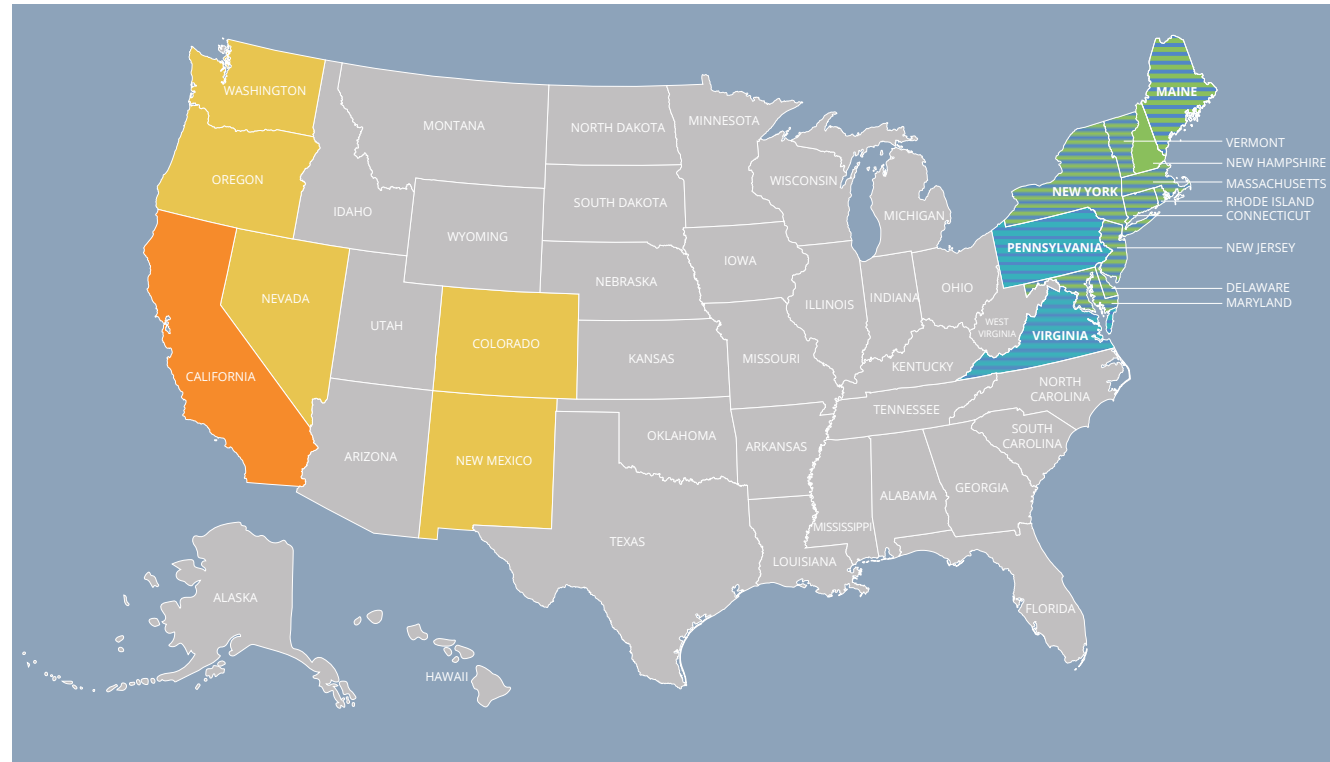
Until recently, only 11 states used carbon pricing to drive down their emissions: California, founding state of the economy-wide Western Climate Initiative (WCI), and the 10 northeastern states that make up the Regional Greenhouse Gas Initiative (RGGI).⁶⁰ Both these regional groups have been active for more than 10 years, with little indication that other states may wish to join them. But in 2019, with an increasing number of states pledging to achieve carbon neutrality by 2050, the landscape shifted. After a relatively uneventful decade, 17 state governments introduced carbon pricing measures. Many of these were already part of the RGGI, but expanded the scope of their market to extend beyond the electricity sector.

Of these states, Washington and Oregon are establishing state-level tax policies. Hawaii converted its existing fuel tax (an implicit carbon tax) into an explicit carbon tax that better incorporates the aviation and energy sectors. New Mexico and Nevada have both announced their intention to assess market-based programs such as WCI as potential avenues for reducing their emissions.

Since it was established in 2008, the East Coast’s RGGI has helped drive down emissions from the region’s electricity sector by about 47%. At the same time, electricity prices have fallen almost 6%. More than 80% of auction revenue has been invested back into energy efficiency programs and other measures to reduce greenhouse gas emissions.⁶¹

To add to these achievements, the region is now developing a Transportation and Climate Initiative (TCI), a cap-and-invest program that aims to reduce transportation emissions across 12 states.⁶² The cap is expected to be implemented from 2022 to 2032. Although reduction targets are still being discussed, there is potential for the initiative to reduce emissions by as much as 45% below 1990 levels. Revenue will be invested in low-carbon forms of transport to further drive down emissions.⁶³ ■

FIGURE 7: STATES CONSIDERING IMPLEMENTING OR EXPANDING CARBON PRICING MECHANISMS



- States participating in Western Climate Initiative
- States publicly considering cap-and-invest
- States participating in Regional Greenhouse Gas Initiative
- States considering joining Regional Greenhouse Gas Initiative
- States taking part in the Transportation and Climate Initiative

Source: Climate XChange⁶⁴

KEY FACTS: RGGI AND WCI

Regional Greenhouse Gas Initiative

- Approved 2008, implemented 2009
- The first mandatory cap-and-trade program in the United States
- Targets electricity sector
- Program will run to 2030
- In 2019, the cap was reduced to 58.47 million tons of CO₂ – about 30% less than the initial cap in 2009

Western Climate Initiative

- Approved 2007, implemented 2013
- Currently covers California, but initially conceptualized to include multiple US, Canadian, and Mexican states
- One of the largest global carbon markets by tonnage
- Helped California achieve emissions reduction goals ahead of schedule
- Has generated almost \$12 billion in auction revenue to date
- Revenue has been used for resident rebates and further greenhouse gas emissions reduction programs through California Climate Investments

LOOKING AHEAD

Several countries are preparing to implement carbon pricing mechanisms, analysts are pondering the possible benefits of a global carbon price floor, and new platforms are bringing together the private and public sector to take a targeted approach to reducing emissions in hard-to-abate sectors.

ADVANCING CARBON PRICING INTO THE FUTURE



By Angela Churie Kallhauge,
Head of the CPLC Secretariat

The stories in this report show that carbon pricing continues to gain momentum. Since the CPLC was launched in 2015, we have seen the global discussion on carbon pricing evolve. It is especially encouraging to see the actions and leadership demonstrated by our partners.

Growing attention to the climate crisis—compounded by calls for action from all spheres of society, particularly the youth—has added urgency to the need to find ways to drive down greenhouse gas emissions. Carbon pricing is, and will continue to be, an important element of any climate mitigation strategy.

At the time of writing, the global dialogue was dominated by calls to green the economic recovery plans expected in the wake of the COVID-19 pandemic. At this juncture in history, it is imperative that the CPLC strengthens its leadership role. We need to target regions and sectors that have yet to employ carbon pricing, concentrating on pertinent issues that underpin action. We need to use our convening power to deepen our engagement with the private sector and civil society organizations. And we need to leverage these organizations to bring more national and subnational governments into the carbon pricing fold.

Translating these objectives into practical terms, we need to:

- ▶ **Broaden engagement with emerging and developing economies in Asia, the Middle East, and Africa.** This will be particularly important for those economies that are emissions-intensive and trade-exposed. For our advocacy to succeed in these areas, we need to develop the case for carbon pricing, keeping in mind each jurisdiction's political context and prevailing priorities.
- ▶ **Strengthen the leadership of the private sector and civil society organizations** as key partners to government in climate action and development. Peer-to-peer learning will be crucial for showcasing options for pricing carbon in different contexts. This is particularly relevant for private and public sector entities whose value and supply chains extend across sectors and regions.
- ▶ **Actively engage in knowledge-sharing and communication.** Social media allows for news and opinion to be propagated with unprecedented ease. It is important to ensure that information on climate action and carbon pricing is presented in science-based, relatable ways to ensure that stakeholders engage on an informed basis.

The recently established Coalition of Finance Ministers for Climate Action is a valuable platform for building consensual understanding of the important role of carbon pricing in fiscal policies and driving collective action between governments. CPLC partners should strive to engage with these finance ministers, presenting them with information on challenges, solutions, and opportunities. The interaction between this group of critical stakeholders and the broader community of the public sector, business, and civil society will ensure coherent, mutually supportive action, which is essential if we are to address climate change.

The Paris Agreement sets the direction of where we need to go. At the CPLC Secretariat, we strongly believe that collective action and commitment is the vehicle to get us there. The leadership shown by our partners has already provided promising ground to build on. ■

SETTING A FLOOR TO CLEAN THE SKIES

An International Monetary Fund (IMF) study highlights the need for a mechanism to scale up global mitigation action—and recommends complementing the Paris Agreement with a carbon price floor among large emitters.

In 2017, the Report of the High-Level Commission on Carbon Pricing found that measures equivalent to a global carbon price rising rapidly to \$50–\$100/tCO₂e by 2030, and progressively ramping up thereafter, were needed to meet climate stabilization goals.

But the global average carbon price currently hovers at a mere \$2/tCO₂e, and even if countries met the pledges made for the 2015 Paris Agreement, this would only be cutting global emissions in 2030 by about a third of the needed reductions.

There is still hope that the world can get on track, and that the needed carbon neutrality by 2050 can be achieved, but the window of opportunity is closing quickly. With every passing day, the cost and effort required to achieve this goal increases.

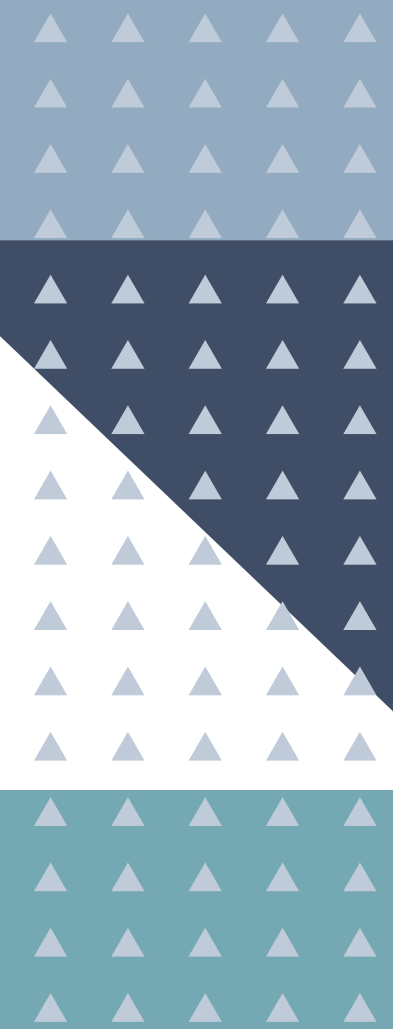
There are many opportunities for reducing emissions, particularly in countries like China, the United States, and India. Including these and other large emitting countries in a price floor agreement—even a modest one—could provide the incentive needed to sway emissions in the right direction. “A global carbon price of \$75/tCO₂e is unlikely right now, given limits on the acceptability of higher energy prices, but modeling does provide a value for what we need to work towards,” notes Ian Parry, Principal Environmental Fiscal Policy Expert in the IMF’s Fiscal Affairs Department and the study’s lead author.

To scale up action, the IMF recommends a carbon price floor arrangement that would provide a strong foundation on which to build the needed suite of policies. “We need to develop innovative mechanisms to complement the Paris Agreement,” says Parry. “In practice, many countries may rely on a policy package that combines some level of pricing with other measures that are less efficient, but which avoid significant impacts on energy prices.”

A price floor arrangement need only cover a limited number of large emitters—in fact, under a globally applied carbon price in 2030, nearly two-thirds of the emissions reductions would be in China, India, and the United States alone. In addition to incentivizing heavy emitters to reduce their carbon output, a price floor requirement could provide a common unit of measure for countries to assess mitigation efforts (something that is currently lacking) and is the best approach for addressing cross-border competitiveness concerns, one of the key stumbling blocks to greater mitigation ambition.

The price floor could be designed equitably, in line with the key principle of common but differentiated responsibilities and respective capabilities, with lower requirements for emerging market economies to reflect their lower per capita income and small contribution to historical accumulations of greenhouse gases. It could also be designed flexibly to accommodate carbon taxes and trading systems at the national level, or any policy package that achieved equivalent impacts on nationwide emissions as implementing the price floor.

And the price floor is strikingly effective. “Our modelling indicates that even if advanced G20 countries (who collectively account for 80% of global emissions) were subject to a modest price floor of \$50 per ton, and emerging market G20 economies a price floor of only \$25 per ton, this would still double emissions reductions in G20 countries over and above that implied by meeting their current pledges.” Additional actions would be needed to prevent dangerous climate change—but the illustration shows that a mechanism to scale up action by the big emitters has a large impact.



The scene is set for carbon pricing to play an increasingly central role in incentivizing mitigation action over the next decade. However, as noted elsewhere, the success of any carbon pricing mechanism relies on its political and social acceptability. This, in turn, requires designing a suite of supporting implementation and revenue-use policies to ensure that carbon pricing is implemented with fairness, justice, and competitiveness in mind. ■

ACHIEVING PARIS AGREEMENT IS MISSION: POSSIBLE

The Mission Possible Platform aims to commit companies to ambitious emissions reduction targets, foster collaborations to scale innovative solutions, and create an environment that supports low-carbon investment. It focuses on seven carbon-intensive value chains through the following coalitions:

- **Clean Skies for Tomorrow** aims to accelerate the transition to sustainable aviation fuels and carbon-neutral flying.
- **The Clean Road Freight Coalition** focuses on the trucking value chain.
- **The Getting to Zero Shipping Coalition** encompasses the maritime, fuels, and infrastructure value chains committed to getting commercially viable zero-emissions vessels into operation by 2030. It has more than 100 members.
- The **Circular Cars Initiative** works across several industries to advance shared, electric, and automated mobility.
- The **Clean Cement and Concrete Coalition** focuses on a sector where half the emissions stem from the production process itself.
- **Collaborative Innovation for Low-Carbon Emitting Technologies in Chemicals** aims to reduce chemical industry emissions.
- The **Net-Zero Steel Initiative** mobilizes corporate leadership to shape a favorable policy, market, and finance environment for low-carbon investment, and unlock pathways to zero-emissions steel.
- **Aluminium for Climate** aims to develop low-carbon smelting and refining processes while increasing recycling and the use of renewable energy. Led by the En+ Group, this initiative aims to increase stakeholder knowledge on the steps that can be taken to reach net zero, including putting a price on carbon to motivate lower-carbon choices. Aluminium for Climate is currently working with key stakeholders to jointly develop a roadmap with milestones to get to net zero.

<https://www.weforum.org/mission-possible>

FROM READINESS TO ROLLOUT

Several new global initiatives plan to draw on carbon pricing to stabilize greenhouse gas emissions at levels recommended by the Paris Agreement.

 PARTNERSHIP FOR MARKET READINESS	 PARTNERSHIP FOR MARKET IMPLEMENTATION
LAUNCH DATE	LAUNCH DATE
2011	July 2020
DURATION	DURATION
10 years	10 years
COVERAGE	COVERAGE
23 countries, accounting for 46% of global emissions	30 or more countries
CAPITALIZATION	CAPITALIZATION
\$127 million	\$250 million (target)
AIM	AIM
Help emerging economies to design and deploy carbon pricing and market instruments to facilitate emissions reduction.	Help countries embarking on carbon pricing move from readiness to rollout.
SOME SUCCESSFUL PROJECTS	GOALS
<p>Helped China pilot emissions trading systems in two provinces and five cities.</p> <p>Helped Jordan pass a climate change by-law on how to measure, report, and verify GHG emissions, a prerequisite for carbon pricing.</p> <p>Helped Kazakhstan implement a national ETS, making it the only central Asian country with a carbon pricing system in place.</p> <p>Helping Colombia design a hybrid pricing system that combines an ETS with the existing carbon tax.</p> <p>Helping Indonesia, Thailand, Turkey, and Vietnam determine which instrument is best suited to their economies and emissions profiles.</p> <p>Engaged in capacity building for more than 3,000 professionals in developing countries.</p> <p>Published several authoritative, in-depth guides and reports on designing and implementing carbon pricing instruments. These are catalogued online at www.thepmr.org.</p>	<p>Support participation in, and operationalization of, Article 6.</p> <p>Help countries identify and implement best practice approaches when designing carbon pricing instruments, with an eye to ensuring compatibility with global markets.</p> <p>Provide a platform for partners to share lessons learned and collaborate on innovation.</p> <p>Develop a comprehensive knowledge base on carbon pricing instruments and market mechanisms.</p> <p>Facilitate information exchanges through technical discussions and dissemination of knowledge products.</p> <p>Activities will be tailored to meet local needs and could include advisory and analytical support; institutional capacity building; design and improvement of monitoring, reporting, and verification frameworks; knowledge generation; piloting and testing; and facilitating discussion.</p>

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