2017–2018

CARBON PRICING LEADERSHIP COALITION REPORT

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The Carbon Pricing Leadership Coalition Leadership Report serves as the Coalition's annual report by providing the latest on CPLC activities while also aiming to inspire government and business leaders to take more action. The Carbon Pricing Leadership Coalition (CPLC) is a voluntary partnership of national and sub-national governments, businesses, and civil society organizations that agree to advance the carbon pricing agenda. The CPLC secretariat is administered by The World Bank.

The report was edited by Isabel Saldarriaga Arango and the graphic design is by Brad Amburn.

ACKNOWLEDGEMENTS

The CPLC Leadership Report serves as the Coalition's annual report by providing the latest on CPLC activities while also aiming to inspire government and business leaders to take more action. In contrast to last year's report, this one features selected leadership profiles and includes more opinion pieces that challenge CPLC audiences to increase ambition and turn advocacy into action.

The report was edited by Isabel Saldarriaga Arango with the help from Yann Schinazi under the guidance of Angela Churie Kallhauge. Support was provided by the CPLC Secretariat team: Angela Churie Kallhauge, Usayd Casewit, Dominik Englert, Radhika Goyal, Thomas Kerr, Kelley Kizzier, Alexandre Kossoy, Ayesha Malik, Aditi Maheshwari, Céline Ramstein. Support was also provided by Elisabeth Mealey and teams from the World Bank's Climate Change Unit. Special thanks to Commissioners Emilio Lebre la Rovere and Harald Winkler for their contribution to this report.

The CPLC thanks partners for their contributions to this report. The Carbon Pricing Leadership Coalition acknowledges the generous support provided by the Children's Investment Fund Foundation (CIFF), the Government of the Netherlands and Germany, and the World Bank Group.

The report was designed by Brad Amburn.

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FOREWORD

by JIM YONG KIM

World Bank Group President

Franz Mahr / World Bank

Last year brought highs and lows in the global effort to confront climate change. On one hand, we saw an upsurge in international commitment to action, including deals announced at the extraordinary One Planet Summit that marked two years since the signing of the Paris Agreement. On the other, 2017 was marked by the devastation and loss that climate extremes continue to wreak on people and economies through more severe hurricanes, floods, drought, and wildfires. The fact remains: at the current rate of progress, we are not on track to achieve the Paris Agreement targets. And once again, we even see emissions back on the rise.

This is why innovative partnerships like the Carbon Pricing Leadership Coalition are so important. Through this coalition, we can inspire greater ambition and show—by example—how to overcome challenges. We are seeing this more and more as public and private stakeholders come together to drive sensible action on climate change. Now, many leaders in industry and government are looking to carbon pricing tools as cost-effective mechanisms for creating incentives for climate action. They see the triple dividend of carbon pricing: its contributions to the health of the environment and the public; the revenue it generates; and the innovation and critical investments in clean and low-emission technologies that it can drive.

An example of this far-sighted leadership came in late 2017. In a powerful demonstration of regional cooperation, the national governments of Canada, Chile, Colombia, Costa Rica, and Mexico joined with the provincial leadership in Alberta, British Columbia, Nova Scotia, and Quebec; and the Governors of California, Washington, and Ontario to launch the Carbon Pricing in the Americas initiative—a shared pledge to implement carbon pricing and create strong ties between their carbon markets.

We're seeing other high-impact action at the national, regional, and international levels. China, after piloting regional Emissions Trading Systems (ETS) for several years, recently launched a nationwide carbon market. The European Parliament recently approved reform of its ETS, while France, Germany, the

"It's through partnership that we can inspire greater ambition and show, by example, how to overcome challenges. We are seeing this more and more as public and private stakeholders come together to drive sensible climate action."

Netherlands, Sweden, and the United Kingdom are exploring – and in some cases already adopting – more robust prices and carbon pricing floor mechanisms in key sectors. After the adoption of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) in 2017, we now see nearly 40 countries pushing for the international shipping sector to take urgent action to reduce emissions.

Private companies are also displaying strong leadership. Nearly 1,400 companies are seeking to price their own carbon emissions. Carbon market simulations involving key companies are taking place in Mexico, Brazil, and soon in India. And throughout the global financial system, more and more companies are implementing the recommendations of the Task Force on Climate-related Financial Disclosures.

In 2017, policy experts and leaders throughout civil society also gave voice to the opportunities carbon pricing can bring. Leading economists co-chaired by Joseph Stiglitz and Lord Nicholas Stern reminded us of this in the Report of the High-Level Commission on Carbon Prices, which called for robust price levels if we are to meet the Paris Agreement objectives. Their report shows us that while carbon pricing initiatives continue to expand, prices and coverage remain limited, with only 1 percent of global emissions priced at the levels they recommend.

At the World Bank Group, we have continued moving our organization forward to reflect our principles, mission, and objectives. That's why we announced we would no longer finance upstream oil and gas after 2019, and it's why we will report greenhouse gas emissions from the investment projects we finance in key sectors. The World Bank Group also announced that it would progressively apply a shadow price of carbon to relevant investment projects, using a price level consistent with the recommendations of the High-Level Commission on Carbon Prices.

In this pivotal year for taking stock of progress and raising ambition, this latest CPLC report highlights crucial examples of carbon pricing leadership. I trust these stories will inspire many others.

RUNNING THE RACE TOGETHER

BY FEIKE SIJBESMA
DSM CEO, CPLC Co-Chair

Through the 2015 Paris Agreement, nearly 200 world leaders committed their countries to addressing climate change, recognizing that we could not allow the adverse effects of climate change to continue to grow, passing the bill to the next generation. It is clear that the public sector cannot successfully combat a challenge of this magnitude on its own, however, and that actors across our societies will have to step forward. That's why businesses are committing to do their part, alongside scientists and NGOs.

To succeed, the road ahead must be paved with more than good intentions. By putting a price on pollution and heat-trapping gases, governments can help unlock trillions of climate-finance from companies and investors in the private sector. Integrating real incentives into our economic system will allow us to take a critical step toward harnessing and optimizing the financial means, innovative power, and actions of the business world when it comes to funding the transition to a low-carbon future.

Over the course of this past year, we have seen tremendous progress on carbon pricing, culminating in the One Planet Summit convened by President Macron of France, World Bank Group President Kim and UN Secretary General Gutteres in Paris at the end of 2017. China's launch of an emissions trading system marked another milestone. To ensure more effective price levels, the European Union committed itself to, among other measures, a gradual withdrawal of excess emissions allowances. A promising initiative to align and link carbon pricing systems in the Americas has emerged *(see p. 34)*.

"Accelerated implementation of meaningful carbon prices across the globe can turn the notion of the 'tragedy of the commons' into an 'opportunity of the commons'".

As Xie Zhenhua, China's Special Representative on Climate Change Affairs, and I wrote last year: accelerated implementation of meaningful carbon prices across the globe can turn the notion of the "tragedy of the commons" into an "opportunity of the commons".

Three points on the role of business are key to making further progress:

First, the Carbon Disclosure Project (CDP) revealed that 1,400 companies are currently in the process of putting a price on carbon inside their company, essentially "future-proofing" their businesses. The CPLC remains committed to improving, co-creating, and aggregating essential materials and opportunities to help companies learn from their peers on best practices in the implementation of internal carbon prices.

More than 50 companies called for meaningful carbon prices at last year's One Planet Summit in Paris. —Bloomberg Philanthropies

Second, at a global level, last year's One Planet Summit in Paris saw over 50 companies calling for meaningful carbon prices that "provide direction towards a well-below 2-degree world". Similarly, the WEF CEO Climate Leaders called for a price towards (at least) $40 per ton. I urge all business leaders to echo this message in their policy engagement at national levels. Now is the time to engage visibly and constructively: in the run-up to COP24, governments are focusing on the implementation of the Paris Agreement and on raising their national ambition levels.

Why is this so vital? In the absence of a global entity to manage our atmosphere, a "universal price" won't emerge soon. It is therefore our collective responsibility to design a global patchwork of national carbon price policies. Fortunately, the CPLC is here to help us sew those patches through policy dialogue, knowledge development, and a variety of action-oriented projects across sectors and regions.

Third, the greater our coordination and the more governments catalyze one another's pace of action, the lower the competitiveness concerns will be for businesses. That said, we must ensure a well-informed conversation on the degree to which these concerns are likely to occur in the real economy, as well as on where and how they can be addressed. In the coming year, the issue of competitiveness will be a key topic that the CPLC will help convene valuable discussions on.

Indeed, accelerating our actions isn't about creating a race to the top rather than a race to the bottom. Rather, it's about unleashing a joint race forward. Not against each other, but against time. After all, Mother Earth is an uncompromising negotiation partner, and the clock is ticking relentlessly.

CARBON PRICING WORKS

by CATHERINE MCKENNA

Environment Minister, Canada, CPLC Co-Chair

The impacts of climate change are clear, from warming oceans and rising sea levels to worsening storms and droughts. Pricing carbon pollution is an important tool to help mitigate and prevent these impacts and the further effects they're having on millions worldwide. That's why the Carbon Pricing Leadership Coalition is catalyzing and supporting the adoption of carbon pricing globally, through collaboration among governments, businesses, and civil society.

Why are a growing number of countries pricing carbon pollution? Because it works. It lowers emissions and helps us meet our Paris Agreement goals at the lowest cost. By putting a price on what we don't want —pollution—it also allows us to invest in things we do want, like clean energy, schools, and healthcare. In short, it's a win-win for our environment and our economy.

Already, over 40 countries have a price on carbon pollution. In December 2017, China—the world`s second largest economy—finalized plans to create the world's largest carbon market. And in the past few years, Chile, Korea, Portugal, and Mexico have all launched carbon pricing systems. In 2016, Prime Minister Justin Trudeau announced a plan to price carbon pollution across Canada, with a minimum $10 per ton in 2018 rising to $50 per ton in 2022.

Subnational governments are also stepping up to the plate. An agreement between Ontario, Quebec, and California has created the world's second-largest carbon market. And we have seen cities like Tokyo, Beijing, Shanghai, and Singapore embrace carbon pricing. Together, governments at all levels are reducing carbon pollution to make our towns and cities cleaner to live, work, and play in.

We've come a long way. Prior to 2005, only a small handful of countries priced carbon. By 2017, 42 national and 25 subnational jurisdictions—which, combined, account for about half of the global economy—had plans to implement carbon pricing systems. This shift brings hope, but we must ratchet up our ambition if we are to limit global average temperature increase to below 1.5 degrees Celsius.

The CPLC Leadership Report details significant progress, and shines a light on the different paths we can take. But it is only the beginning. We need to continue working together to ensure the widespread deployment of carbon pricing is a foundational element of our collective efforts to address climate change and support the development of a prosperous and inclusive low-carbon economy.

STOCK TAKING: CARBON PRICING SYSTEMS AROUND THE WORLD

The year 2017 was marked by the launch of several major new or enhanced carbon pricing initiatives around the world, representing a key step forward in the international community's efforts to reach the targets set out in the Paris Agreement. Mobilizing many of the myriad forces working to confront the climate crisis, the One Planet Summit held in December 2017 ended the year with key new commitments on the part of stakeholders and momentum for the future.

We have seen significant progress since the release of the last CPLC Leadership Report. The Coalition and its partners—around the globe and in both the public and private sectors—are resolutely moving forward, driving the carbon pricing agenda through new forms of leadership. The Americas and China have been particularly active, while the international private sector continues to lead increasingly bold initiatives.

While the strides made throughout the year reflect a powerful international willingness to act, this momentum must be transferred into more rapid and robust action. Priorities should include expanding greenhouse gas (GHG) emissions coverage with a price on carbon and sending stronger price signals across the world economy (notably by raising prices to the levels recommended by the Stern-Stiglitz High-Level Commission on Carbon Prices and by increasing coordination on carbon pricing policies between countries).

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The number of carbon pricing initiatives scheduled for implementation or are currently being implemented.

According to the last State and Trends of Carbon Pricing Report, 2016 and 2017 were very active years for carbon pricing. At the time of publication, 47 carbon pricing initiatives were scheduled for implementation or being implemented around the world—covering about 15% of global GHG emissions—and the new edition of the report (to be released in May 2018) will present even more progress. Some of the additions in 2017 included Alberta, Ontario, Chile, and Colombia. Importantly, China officially launched its national ETS in December 2017. It will first undergo two phases (infrastructure development and simulation) and decide next steps depending on the results – when it starts, it will do so with the added possibility of expanding and deepening its coverage. It will initially cover only the power sector but, according to estimates, this should expand global carbon pricing coverage to about 20 percent of global GHG emissions.

We are also seeing the emergence of new forms of leadership combining subnational

The increase of companies who committed to using internal pricing last year

and national action (in the Americas) and regional and national action (notably in the case of the EU.). Indeed, while the European lawmakers recently approved reform of its Emissions Trading System, France, Germany, the Netherlands, Sweden, and the United Kingdom announced they would " implement or evaluate, the introduction of a meaningful carbon price in relevant sectors."[1] The Netherlands already led the way and put leadership into action by announcing its intention to introduce a carbon floor price in the electricity sector, set at EUR€18 per ton of CO_2 (€18/tCO_2) in 2020, rising to €43/tCO_2 in 2030.[2] The UK had already adopted a carbon price floor, and— in the midst of ongoing Brexit negotiations—the UK government has reiterated its commitment to establishing a Total Carbon Price (composed of the EU ETS and its carbon price floor), at least until unabated coal is no longer used.

Action in the private sector, driven by a widespread understanding of the gravity of the climate crisis and by the business opportunities it presents, has continued to grow. The Global Risks Report released by the World Economic Forum in early 2018 showed that for the second consecutive year, business and political leaders around the globe ranked "extreme weather resulting from climate change" as the greatest threat facing the world. As a result of this expanding awareness, an increasing number of companies are disclosing their climate-related risks and are integrating these risks into their operations and financial decisions. In a further encouraging sign, the number of companies that have committed to using internal carbon pricing increased by 11% between 2016 and 2017. Interestingly, companies have chosen to implement carbon pricing for a wide variety of reasons—from assessing the vulnerability of their assets (and avoiding stranded assets) and mitigating legal or reputational risks to shifting investments toward new opportunities in low-carbon sectors.

In 2017, essential contributions to combating the climate crisis also came from policy experts and leaders throughout civil society. The High-Level Commission on Carbon Prices, co-chaired by Joseph Stiglitz and Lord Nicholas Stern, released its report in May of 2017. The report identified pricing level ranges, which, combined with consistent climate policy packages, align with the objectives of the Paris Agreement: from US$40–$80/tCO_2e by 2020 and from US$50–$100/tCO_2e by 2030. In 2017, however, about three quarters of emissions covered by carbon pricing were still priced at less than US$10/$tCO_2e$, and significant effort will be needed to reach the aforementioned levels in time. Still, the rapid expansion of carbon pricing mechanisms globally speaks to the significance of the progress being made and to the role the climate crisis has come to occupy at the forefront of policymaking and in various sectors.

The World Bank Group also announced that it would progressively apply a shadow price on carbon to relevant investment projects, using a price level consistent with the recommendations of the High-Level Commission on Carbon Prices

Among the results of the One Planet Summit was the Tony de Brum Declaration … calling for the International Maritime Organization (IMO) to reduce greenhouse gas emissions stemming from the shipping sector

for maintaining temperature rise below 2 degrees. This process will notably entail reporting total net GHG emissions from the investment projects it finances in key emissions-producing sectors and publishing those results following the end of each fiscal year, beginning in 2018.

Amidst these encouraging trends, the international community has also faced some headwinds. In South Africa, the launch of the carbon tax has been delayed again, and a new start date has yet to be announced. And in June 2017, the US Federal Government announced its intention to withdraw from the Paris Agreement and is moving to rescind or review several Federal energy and climate-related policies, such as the Clean Power Plan. Even within that specific context, however, positive signs remain: the aforementioned Carbon Pricing in the Americas Cooperative Framework presents vital opportunities for pan-American cooperation, and the United States Climate Alliance has assembled a bipartisan coalition of Governors—whose states collectively represent over 40% of the total U.S. population and nearly $9 trillion in combined GDP—in shared commitment to reaching the targets set out in the Paris Agreement.

Progress has also taken the form of initiatives aimed at achieving results in sectors that were not previously known for their climate leadership. Among the results of the One Planet Summit was the Tony de Brum Declaration, issued by a coalition of over 35 countries, calling for the International Maritime Organization (IMO) to reduce greenhouse gas emissions stemming from the shipping sector. It asks the IMO to take action consistent with Paris Agreement temperature reduction targets. The Declaration references the "development of important mid to longer-term measures", implying the need for market-based measures such as carbon pricing, and the CPLC is proud to have contributed to facilitate the discussions and filling the knowledge gaps.

As we look ahead to 2018, we can expect to see multiple promising developments. In particular, the implementation of the Pan-Canadian Framework on Clean Growth and Climate Change will set a carbon price in every Canadian province and territory. This has already prompted action in several provinces, and we are expecting more initiatives in the near future: provinces and territories have until September 1, 2018, to develop their carbon pricing systems to meet the federal criteria (if they do not take action by this date, they will be regulated by the federal backstop system, beginning January 1, 2019). Elsewhere in the Americas, positive developments include the implementation of the Argentinian carbon tax and the launch of the Mexican ETS (after its one-year simulation phase). Colombia and Chile also continue to consider establishing an ETS following the introduction of their carbon taxes. We will see additional progress in Kazakhstan, which will re-launch its ETS in 2018 following a two-year suspension, and in Singapore, which is planning the implementation of a carbon pricing initiative in 2019.

Jonathan Ernst / World Bank

CPLC IN ACTION

CPLC Partners work together to achieve concrete progress in driving carbon pricing action forward in the public and private sectors, leading by example, and engaging with other key stakeholders to bring them into the conversation.

This past year, the CPLC continued to work toward the broader goal of achieving a carbon price applied throughout the global economy by making a conscious transition from an event-focused work program to one that takes a strategic outlook on the development and application of carbon pricing in specific sectors, regions, and by thought leaders in industry and civil society. The Secretariat has worked to increase partners' engagement and ownership of the activities undertaken under the umbrella of CPLC. New activities started in 2017 include a Maritime work stream, a Banking and Finance task group, and the recently launched Construction Value Chain work. Additionally, the Communications Working Group was established to improve the impact of the Coalition's messaging and expand the reach of knowledge products and briefs.

The accomplishments referenced below were only possible because of the collaborative work of the secretariat and partners. The CPLC remains open to new ideas, contributions, and leadership.

Putting the CPLC Work Plan Into Action

Since launching two years ago, the Carbon Pricing Leadership Coalition has worked to make a strong business, economic, and environmental case for carbon pricing across the globe. This past year, the Coalition set out to share and cross-fertilize experiences among partners and stakeholders on carbon pricing design and implementation at the global, regional and national/ sub-national levels; support peer-to-peer learning and outreach efforts; and support working groups that advance solutions to existing or emerging issues around carbon pricing.

Following the strategy outlined by the Carbon Pricing Panel in 2016, CPLC's work has been guided by the understanding that to achieve the carbon pricing goal set by the Coalition—doubling the percentage of global emissions covered by explicit carbon prices to 25% by 2020 and doubling it again to 50% within a decade—CPLC needs to focus on:

- → ***Broadening*** *carbon pricing, by supporting the implementation in jurisdictions and sectors that currently do not have a price on carbon;*
- → ***Deepening*** *carbon pricing where it already exists by strengthening ambition and ensuring clear long-term price signals for investment, consistent with the long-term goal of the Paris Agreement;*

OUR PARTNERS

31

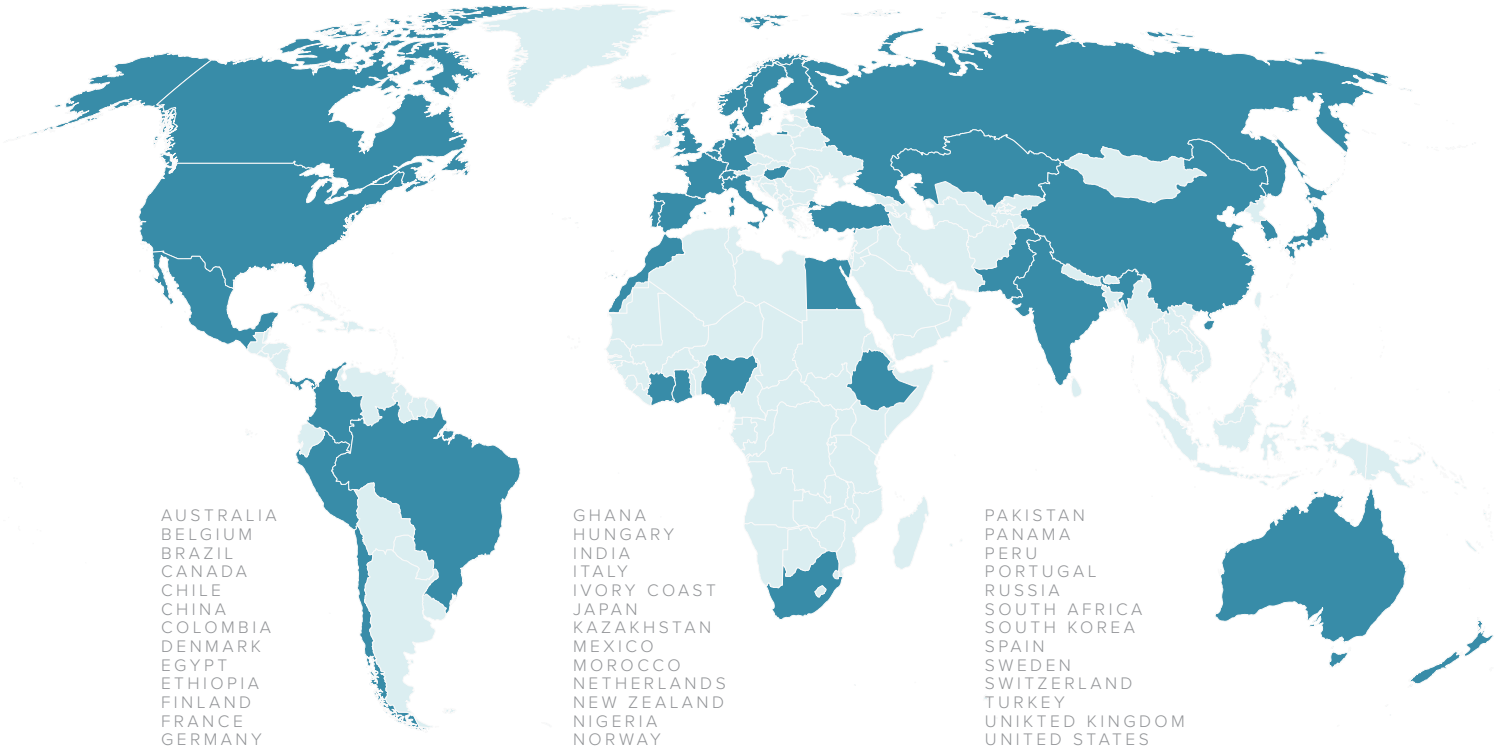
national and sub-national government partners

150+

private sector partners from a range of regions and sectors

65+

strategic partners representing NGOs, business organizations, and universities



→ ***Enhancing*** *international cooperation by facilitating and promoting the alignment or possible convergence of domestic carbon pricing programs.*

In 2017, the Work Plan was structured around four pillars, each with a corresponding Working Group: fostering government leadership, building and sharing the evidence base, mobilizing business support and communications.

Fostering Government Leadership

One of the core objectives of the CPLC is to provide a platform for regional, national, and subnational governments, investors, business, and civil society leaders to exchange experiences, showcase progress, and catalyze action on carbon pricing. Over the course of this past year, the Secretariat contributed to building these kinds of learning and leadership opportunities by hosting or providing support to Coalition partners for the following dialogues:

YEAR-ROUND

Regional Carbon Forums

→ *CPLC plays an active role supporting regional Carbon Forums throughout the year, convening dialogues that drive the carbon pricing conversation with local stakeholders and that benefit from the Coalition's unique structure and reach.*

APRIL

World Bank Group/ International Monetary Fund Spring Meetings

→ *At the Second Annual High-Level Assembly, where partners endorsed the Coalition's work, leaders gathered to take stock of climate change action and to discuss the role of the financial sector in delivering investment and mitigating climate risk. The HLA was followed by a technical workshop on Friday. To read more about the Assembly, see our story CPLC Nurtures Leadership on Carbon Pricing on our website.*

MAY

Innovate4Climate

→ *Partners attended a half-day strategic workshop to design the maritime work program and a Steering Committee Meeting. The Secretariat hosted a networking reception with an inspirational intervention by Jean Piccard, Explorer and Chairman of the Solar Impulse Foundation, on accomplishing the impossible, and Glen Murray, then Ontario's Minister of Environment. As part of the I4C Conference, CPLC supported the Carbon Pricing Plenary, and the panel on Carbon Pricing to Accelerate Climate Action.*

SEPTEMBER

Climate Week New York

→ *CPLC Partners hosted and participated in panels and dialogues around town, including the North America Carbon Forum, among many other panels and presentations. The Secretariat hosted a roundtable breakfast to discuss the recommendations from the High-Level Commission on Carbon Prices.*

NOVEMBER

COP23

→ *CPLC Partners led and attended side events covering a wide range of topics, from use of revenue to the role of carbon pricing in supporting low-carbon development in Africa and the role of carbon pricing in achieving NDCs. Many conversations around maritime shipping and carbon pricing also took place. The Secretariat hosted a high-level dialogue moderated by HLA Co-Chair Minister McKenna.*

DECEMBER

One Planet Summit

→ *Thanks to the commitment of CPLC partners, carbon pricing was at the forefront of the discussions and announcements. Among the key ones was the announcement made by Mexican President Enrique Peña Nieto, founding partner of CPLC, on the Carbon Pricing in the Americas (read more about it in our Leadership Profile, p. 34)*

JANUARY

Paris

→ *In Partnership with the OECD's International Transport Forum (OECD-ITF) CPLC convened a workshop on the "Economic Impacts of Carbon Pricing in International Maritime Transport."*

Top: Bloomberg Philanthropies
Bottom: Simone McCourtie / World Bank + Curt Carnemark / World Bank

Carbon Pricing in the Americas

Zurich

→ *In partnership with the Government of Switzerland, and with the support of CDP and PRI, CPLC hosted a high-level interactive session on "Financial Institutions, Businesses and Climate Change: Addressing Risks and Opportunities in a Changing World". Convening business, financial sector, and government leaders, the gathering explored how companies, financial institutions, and investors are incorporating climate risk and opportunity into their business models and growth strategies.*

Chile

→ *ECLAC—Following the One Planet Summit, stakeholders met in Santiago to turn the Carbon Pricing in the Americas Declaration into action.*

Building and Sharing the Evidence Base

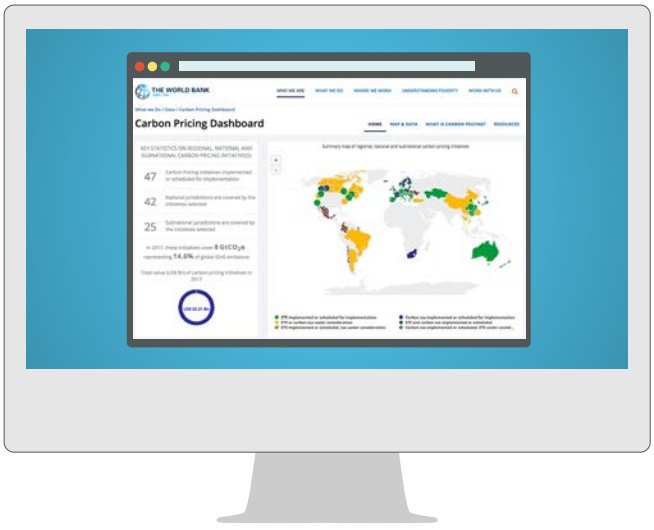
Developing and sharing evidence-based knowledge products is one of the key drivers of carbon pricing action. By building a repository of global experience on carbon pricing policy design and implementation, collecting best practices from different jurisdictions and businesses around the world, and synthesizing the latest analysis on key issues and sharing results with leaders and practitioners, CPLC is filling knowledge gaps and fostering new research.

CARBON PRICING DASHBOARD

Launched in May 2017, the Carbon Pricing Dashboard is an interactive online platform that provides up-to-date information on existing and emerging carbon pricing initiatives around the world. It builds on the data and analysis of the annual State and Trends of Carbon Pricing report series.

Users can navigate key statistics and information on carbon initiatives implemented or scheduled for implementation by using interactive mapping.

carbonpricingdashboard.worldbank.org



The High-Level Commission on Carbon Prices

In May 2017, the High-Level Commission on Carbon Prices report—led by two of the world's most prominent economists, Joseph E. Stiglitz and Lord Nicholas Stern—concluded that setting a "strong carbon price" is essential not only for reducing global emissions, but also for sustaining innovation and growth. The Commission was launched in November 2016 at COP22 in Morocco, at the invitation of then Co-Chairs of the Carbon Pricing Leadership Coalition (CPLC) High-Level Assembly, Ségolène Royal and Feike Sijbesma. It brought together 13 leading economists from nine developed and developing countries to identify the range of carbon prices, which would help deliver on the core goal of the Paris Agreement: keeping the rise in global temperatures below 2 degrees Celsius. Tasked to use its judgment and current literature to identify indicative corridors of carbon prices for policymaking purposes, the Commission concluded that the carbon prices currently in place are too low. They found that carbon prices in the range of US$40–$80/tCO_2e by 2020, rising to US$50–$1000/tCO_2e by 2030, when combined with supportive policies, would allow for meeting the targets set out in the Paris Agreement.

The carbon pricing corridors recommended by the High-Level Commission on Carbon Prices were particularly timely, as they serve to inform national governments and non-state actors to align their level of ambition. At the One Planet Summit in December 2017, environment and climate ministers from France, Germany, United Kingdom, Sweden and the Netherlands welcomed the report.[3] They committed to implement or evaluate the introduction of a meaningful carbon price in relevant sectors. The Dutch government is introducing a

LEARN MORE:
Visit the CPLC website: www.carbonpricingleadership.org/report-of-the-highlevel-commission-on-carbon-prices

REPORT OF HIGH-LEVEL COMMISSION ON CARBON PRICES

Powerfully setting the terms of the conversation, the Commission's report concluded that a carbon price of US$40–$80/tCO_2e by 2020, rising to US$50–$100/tCO_2e by 2030, when combined with supportive policies, would allow for achieving the Paris Agreement temperature goal.

INTERNATIONAL RESEARCH CONFERENCE

Launched in February, the International Research Conference on Carbon Pricing aims to drive innovative research and analysis from academics and practitioners on the effective design and implementation of carbon pricing policies.

carbon floor price initiative; Sweden has begun taxing previously exempted emissions from combined heat and power plants; France is in the process of setting up a commission to revise its internal carbon prices and is considering the recommendations of the High-level commission. In February 2018, while advocating for a carbon tax to achieve the national NDCs, the South African National Treasury also alluded to the carbon pricing corridors recommended by the Commission.[4]

In addition to national governments, some multilateral development banks are using these guidelines to revise their internal carbon prices used for the economic analysis of projects.

The High-Level Commission on Carbon Prices was:

CO-CHAIRS:

Nicholas Stern
Kt, PBA, FRS, Chairman of the Grantham Research Institute on Climate Change and the Environment; Professor, London School of Economics

Joseph E. Stiglitz
Professor at Columbia University, Chief Economist of The Roosevelt Institute

COMMISSIONERS:

Maosheng Duan
Director of China Carbon Market Center (CCMC) of Tsinghua University, China

Ottmar Edenhofer
Deputy Director and Chief Economist at the Potsdam Institute for Climate Impact Research, Germany

Gaël Giraud
Chief Economist and Executive Director of the Research and Knowledge Directorate of the Agence Française de Développement, France

Geoff Heal
Donald C. Waite III Professor of Social Enterprise Columbia Business School, USA

Emilio Lebre la Rovere
Executive Coordinator of the Center for Integrated Studies on Climate Change and the Environment, Federal University of Rio, Brazil

Adele Morris
Senior Fellow and Policy Director for Climate and Energy Economics at the Brookings Institution, USA

Elisabeth Moyer
Associate Professor, Atmospheric Science, University of Chicago, USA

Mari Pangestu
Senior Fellow at Columbia School of International and Public Affairs Columbia University, USA/Indonesia

Priyadarshi R. Shukla
Co-chair Intergovernmental Panel on Climate Change, India

Youba Sokona
Vice-Chair Intergovernmental Panel on Climate Change, Mali

Harald Winkler
Professor and Director of the Energy Research Centre (ERC) at the University of Cape Town (UCT), South Africa

EXECUTIVE BRIEFS

- → *The Role of Carbon Pricing in a Low-Carbon Transition*
- → *Preparing shipping banks for climate change: How can internal carbon pricing help ship-financing banks in risk management?*
- → *Regional carbon pricing for international maritime transport*

CARBON PRICING IN EMERGING AND LOW-INCOME ECONOMIES

by EMILIO LÈBRE LA ROVERE and HARALD WINKLER

The Paris Agreement reached in 2015 at COP21 of the UNFCCC calls for stabilizing global average temperature well below 2 ºC above pre-industrial levels while pursuing efforts to limit it to 1.5 ºC. Achieving this goal will require reaching net zero greenhouse gas (GHG) emissions globally at some point in the second half of this century.

The fulfillment of such a deep decarbonization of economies in a few decades will be particularly challenging for developing countries, as this transition must allow for simultaneously meeting other sustainable development goals: notably bridging the housing gap; raising living standards; ensuring food security; and improving access to education, water, sanitation, health, mobility, and energy.

Recent advances in renewable energy technologies have made them a least-cost option in many energy systems, and a number of mitigation options have become cost-effective across the globe. However, even in this new technological context—of increasingly accessible mitigation options with large potential at reasonable costs—some reduction in economic activity, employment, and household income would be expected in a 1.5ºC scenario, compared to the scenario of NDC implementation without increased ambition after 2030. Moreover, in the latter scenario, substantial increases in the investment rate would be required up to 2030 and into 2050.

"The fulfillment of such a deep decarbonization of economies in a few decades will be particularly challenging for developing countries, as this transition must allow for simultaneously meeting other sustainable development goals."

Investments in the transition to a low-carbon society are expected to reach 3 to 5 trillion US$/year in the next few decades, with two thirds of this global effort expected to take place in developing countries. As most of them have limited financial capacity to fund the necessary mitigation investments using domestic savings only, international financial flows to fund these investments must increase to reach the level required to meet this challenge.

While there is currently an excess of liquidity in global financial markets, investments in mitigation projects have to overcome significant barriers in order to become attractive to international finance—notably high upfront costs and large

Dar es Salaam Port, Tanzania
–Rob Beechey / World Bank

risks—particularly in developing countries. New financial mechanisms may help achieve this end, provided that they facilitate developing countries' access to international funding sources in order to increase public guarantees and reduce capital costs for investments in low-carbon infrastructure and technologies.

To accelerate the deployment of mitigation options, public policymakers must send a strong price signal to market forces. The High-Level Commission on Carbon Prices' recent report (Stiglitz & Stern et al, 2017) estimated that a corridor of carbon prices of US$40–$80/tCO_2e in 2020—ultimately scaling up to US$50–$100/tCO_2e in 2030—would be needed to meet Paris Agreement goals.

However, the same report also acknowledged that the adoption of high carbon taxes in developing countries may be slowed down by concerns about potential negative distributional impacts. Further work is needed to understand carbon tax revenue's potential to reduce poverty and achieve development objectives.

Additional research on developing countries is also needed particularly with regard to the role of public policies complementary to carbon pricing, as well as on the challenge of reducing subsidies for fossil fuel prices. Among these critical issues are: providing compensation to counter negative social effects (e.g. the impacts on vulnerable low-income households); designing and implementing smart financial mechanisms allowing for increased investment in low-carbon infrastructure with a lower explicit carbon price, alleviating the negative impacts on economic activity and vulnerable social groups.

Emilio Lebre la Rovere *is the Executive Coordinator of the Center for Integrated Studies on Climate Change and the Environment, Federal University of Rio, Brazil and* ***Harald Winkler*** *is Professor and Director of the Energy Research Centre (ERC) at the University of Cape Town (UCT), South Africa. Emilio and Harald were both members of the High-Level Commission on Carbon Prices.*

WORLD'S FIRST INTERNATIONAL RESEARCH CONFERENCE ON CARBON PRICING

Enhancing the evidence base around carbon pricing is one of the key pillars of the Carbon Pricing Leadership Coalition's (CPLC) action. In this capacity, the CPLC contributes to a growing body of knowledge on different approaches to pricing carbon, as well as on its effects and conditions for success.

As it scales up its work program, the CPLC has seen an increased interest in partnership from academic and other knowledge-focused institutions around the world, many of which have been influential in defining the carbon pricing agenda and advancing our understanding of this policy instrument. An active partnership between such institutions and practitioners from government and business is key for more informed decision-making on policy design and implementation. Improved dialogue between research and practice can also help identify concerns that impede the implementation of pricing policies, while also contributing to effective solutions.

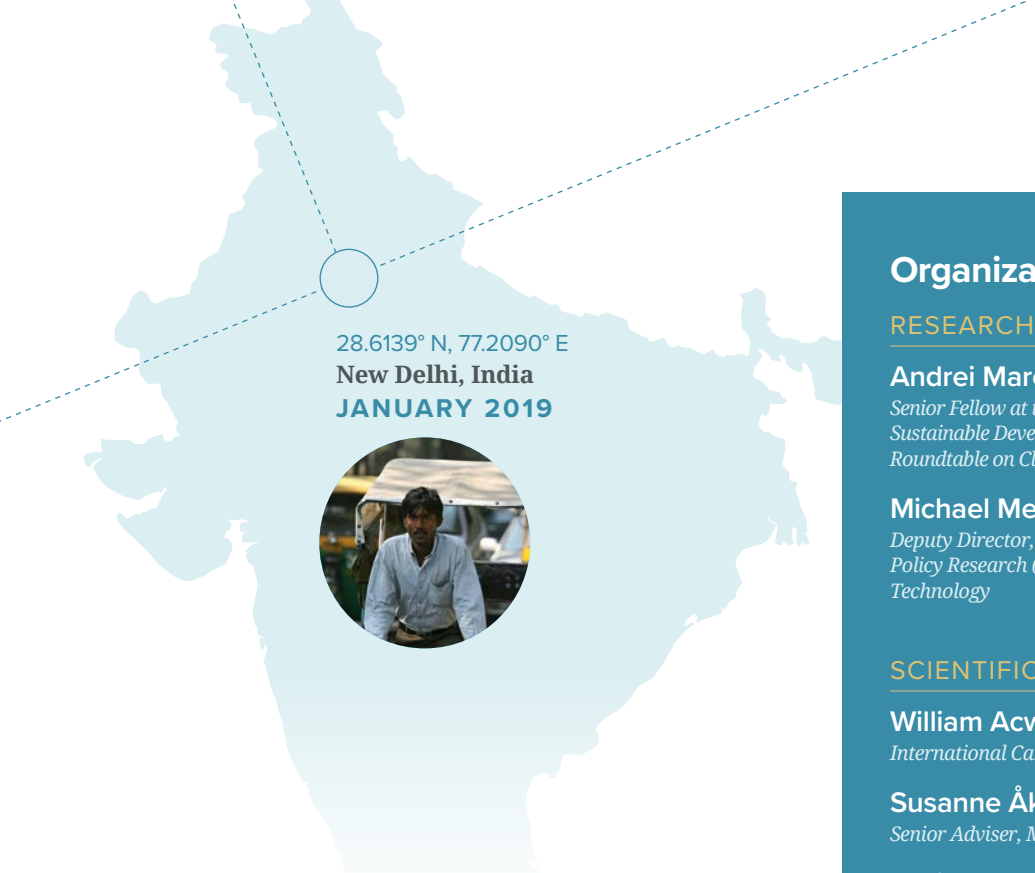
With the goal of strengthening the knowledge base on carbon pricing and fostering an improved understanding of the evolving challenges to its successful application, the CPLC will convene researchers and practitioners for an international research conference, scheduled to take place in New Delhi, India, in January 2019. This conference will serve to bring together researcher and practitioner perspectives from around the world and particularly from the global south, where a vibrant debate on carbon pricing is currently underway. The conference will be a starting point for strengthening research collaboration across regions and sectors, and will contribute to a broader understanding of the interaction between practice and theory. Listed below are the substantive themes the research conference will cover, as well as the scholars and practitioners supporting the conceptualization and implementation of the conference.

Research Themes

Relevant themes of the conference include, but are not limited to, the following:

- ***Learning from past and current experience:*** *Case studies on carbon pricing design and implementation, performance review and evaluation, comparing carbon pricing systems and their effects, understanding actors and affected markets, results of modeling to assess/compare environmental, macroeconomic, and distributional outcomes of different approaches;*

- ***Political economy of carbon pricing:*** *Political acceptance and feasibility of carbon pricing, use of carbon pricing revenue, distributional effects of carbon pricing, dealing with adverse impacts of carbon pricing;*



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New Delhi, India
JANUARY 2019

Simone D. McCourtie / World Bank

- → ***Carbon pricing and development:*** *Financing sustainable development with carbon pricing, fiscal aspects of carbon pricing, co-benefits of carbon pricing (indirect effects on pollution, employment implications, economic diversification), pathways to a just transition;*

- → ***Carbon pricing and competitiveness:*** *Understanding impacts of carbon pricing on competitiveness, effects and limitations of policy options in terms of addressing leakage and competitiveness concerns (free allocation, tax exemptions, alternative approaches);*

- → ***Role of carbon pricing in decarbonisation:*** *Complementary policies and policy interactions, hybrid approaches to carbon pricing, dynamic effects and climate policy ambition, role of carbon pricing in innovation and energy transition, internal carbon pricing;*

- → ***Emerging frontiers of carbon pricing:*** *Linkage and convergence of carbon pricing systems, policy transfer and diffusion across jurisdictions, extending carbon pricing to new sectors (aviation, shipping, agriculture and forestry), carbon pricing under the Paris Agreement (e.g. operationalisation of Art. 6 and NDC (Partnership) support).*

Organization

RESEARCH CONFERENCE CO-CHAIRS

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Senior Fellow at the International Center for Trade and Sustainable Development and Director of the European Roundtable on Climate Change and Sustainable Transition

Michael Mehling
Deputy Director, Center for Energy & Environmental Policy Research (CEEPR), Massachusetts Institute of Technology

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Youba Sokona
Special Advisor, Sustainable Development, South Centre

Robert N. Stavins
A. J. Meyer Professor of Energy & Economic Development, Harvard University

MOBILIZING BUSINESS SUPPORT

In a rapidly changing world, companies continue to seek opportunities to grow their business and manage risk, and carbon pricing is a key tool for helping companies navigate their transition to a low-carbon future. Businesses are advocating for more ambitious government carbon pricing policies, while at the same time preparing for the future by implementing internal carbon pricing programs. The CPLC contributes to facilitating private sector climate leadership through its Mobilizing Business Support Working Group, which helps companies actively develop their own internal carbon pricing strategies, advocate for governments to formulate business-friendly carbon pricing policies, and engage in peer exchanges across sectors and borders.

Through sector-specific deep dives, CPLC is helping companies better understand the opportunities and paths forward within their sectors and along the value chain. For example, CPLC is bringing together companies such as Rusal, LaFargeHolcim, and Acciona to explore opportunities in the construction value chain to implement carbon pricing as a tool to reduce embedded emissions. The CPLC Banking Task Team includes over 20 financial institutions that have joined together in the wake of the Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD) recommendations to understand the financial implications of climate change, discuss the application of a carbon price to their investment portfolios, and share best practices and lessons learned.

Similarly, shipping companies, financiers, and other stakeholders in the maritime industry are using the platform provided by CPLC to explore carbon pricing as a tool to manage climate risk and carbon exposure in the face of expected acceleration in the sector's emissions.

Companies are also showing leadership by collaborating in specific regions and countries, creating a strong "demand pull" for government carbon pricing policies. For example, private sector CPLC Partners in Canada have collected corporate experiences using carbon pricing for the Role of Carbon Pricing in a Low-Carbon Transition report that showcases how Canadian businesses are preparing for a low-carbon future. This report is providing a proactive example of how business can shape climate solutions, and is being shared with domestic and international audiences. The private sector has taken the lead on carbon pricing in Brazil, organizing a first-of-its-kind voluntary emissions trading system (ETS) simulation among over 40 major companies. This simulation has been running for over two years, and resulted in some key lessons on carbon market design. Based on this experience, the companies have issued a communiqué to the government with several principles for carbon pricing policy design. And in India, CPLC has helped share the Brazilian corporate leadership example, and over 20 companies from diverse sectors are now launching an ETS simulation of their own. The following section delves further into the Brazilian and Indian private sectors' successes in establishing local chapters of the CPLC.

Companies are demonstrating leadership by using internal carbon pricing to align their business

Interactive webcasts on internal carbon pricing

The private sector is at a tipping point and has a historic opportunity to take the lead on carbon pricing. But what does it take to convince an executive team to embrace the concept and operationalize a price? Which companies are shedding light on the carbon pricing pathway? How does industry apply lessons—borne out of both success and failure—to improve and expand the state of carbon pricing beyond the business arena?

In collaboration with the Carbon Pricing Leadership Coalition, **Yale University** and the **World Economic Forum** are hosting a series of live, interactive webcasts on Internal Carbon Pricing, featuring executives and practitioners from companies on the forefront of carbon pricing.

This webinar series aims to use leading edge examples to facilitate and stimulate an open dialogue around best practices, aimed at a global audience of business leaders, policy makers, and academic experts.

Find past webinars by visiting carbonpricingleadership.org or cbey.yale.edu/node/1975.

2017–18 WEBINARS

Carbon Pricing In Brazil: A conversation with CPFL, Itaú Unibanco and Vale

Luiz Osorio
Vice President, CPFL

Maria Eugenia Sosa Taborda
Sustainability Manager, Itaú Unibanco

Vivian Mac Knight
Climate Change Advisor, Vale

Hector Gomez Ang
Brazil Country Manager at IFC - International Finance Corporation (Moderator)

Best Practices on Integrating an Internal Price on Carbon

Thomas Lingard
Global Director, Climate & Environment, Unilever

Roger Seabrook
VP of Finance Marketing and Sustainability, Unilever

Long Lam
Senior Consultant, Ecofys

Alzbeta Klein
Director and Global Head of Climate Business, International Finance Corporation (World Bank Group) (Moderator)

models with a low-carbon pathway in many ways. During the past year, CPLC continued to co-host a global webinar series—Carbon Pricing: Gaining a Competitive Edge in a Climate-Constrained World—which features leading company executives from companies such as Vale, Itau Unibanco, CPFL, and Unilever speaking about the design and implementation of their carbon pricing programs. CPLC Partner CDP has also developed the investment-grade Carbon Pricing Corridors initiative, which provides reference scenarios for companies to benchmark their portfolios against to help implement the TCFD recommendations and highlights economic drivers that discourage high-carbon activities.

Communications Network

The newly launched Communications Network is made up of over 83 communications professionals from within the Coalition. The Network supports the Coalition's communications efforts by identifying effective carbon pricing messaging, developing a global narrative that supports the Coalition's strategy,

and working in unison to amplify each actor's communications efforts.

This past year, the focus in the communications area was on supporting the shift from an event-focused work program to one that helps advance the conversation on carbon pricing by developing and sharing key messages throughout the year and across the globe. Working in tandem with partners, the Coalition benefits from expertise and resources outside of the Secretariat; for example, coalition partners recently received a summary, developed in partnership with the New Climate Economy, highlighting the latest carbon pricing developments.

Relaunch of the #PriceOnCarbon Campaign

Expanding on the initial #PriceOnCarbon campaign that supported the launch of the Coalition in 2015, new products were developed to keep the campaign alive on social media. A 3-minute video explaining carbon pricing and introducing CPLC was developed as the main product of the campaign.

The #CarbonPricingLeaders is a series of short videos filmed on-site, produced, and released within the days following key events. The videos are social media-ready shorts that emphasize key takeaways from participants, making the issues more accessible to broader audiences, thus helping advance and expand the reach of the conversation.

To share these products and ready-for-social messages with partners, the Secretariat has open a Trello account www.trello.com/cplc for partners to find messages by the Secretariat and to provide their own messages, so that the entire Coalition can use them as well.

Renewed efforts around communications also include a refreshed look for the website with new content, a monthly e-newsletter that currently reaches all partners, as well as over three thousand subscribers from around the world.

Guide on Communicating Carbon Pricing

Together with the Partnership for Market Readiness (PMR), CPLC has commissioned a report to identify effective strategies for communicating on carbon pricing. The Guide is intended to share existing knowledge, experiences, and best practices with those involved in carbon pricing communications and to provide practical guidance on developing a communications strategy with regard to carbon pricing. This work will culminate in the launch of a comprehensive Guidebook and a series of Executive Briefs towards the end of 2018.

WHAT MAKES THE CPLC UNIQUE?

by ANGELA NANEU CHURIE KALLHAUGE
CPLC Lead

People often ask me what the CPLC does and what sets us apart among all those advocating for climate action. My response is that the CPLC is unique because of the myriad backgrounds, experiences, and perspectives of its partners, as well as the ways in which the richness of this diversity is incorporated into its leadership style. We are a coalition of leaders from across the international private and public sectors—as well as from civil society and the climate action community—dedicated to building a sustainable future through our own activities, as well as by inspiring others to get engaged.

Through the reach of our partners, the CPLC has brought the issue of carbon pricing and the opportunities it offers to the highest echelons of government and to the forefront of the corporate world. We look to, and analyze, examples of action around the globe in order to illustrate the applicability of different carbon pricing models. In doing so, we demonstrate that carbon pricing instruments should not be driven by "one-size-fits all" approaches, but should instead be tailored to reflect specific needs and circumstances, all while dispelling misconceptions on pricing and addressing real concerns from stakeholders. Under the CPLC's leadership, stakeholders spanning sectors have joined forces to call for raising ambition in climate action and to recognize the essential role carbon pricing must occupy in this effort.

CPLC SECRETARIAT TEAM

Angela Churie Kallhauge
Smita Rana
Isabel Saldarriaga Arango
Mercedita Cano
Usayd Casewit
Timila Dhakhwa
Dominik Englert
Dirk Heine
Thomas Kerr
Kelley Kizzier
Alexandre Kossoy
Ayesha Malik
Aditi Maheshwari
Venkata Ramana Putti
Céline Ramstein
Herman Sips

The Coalition is therefore intently focused on transforming advocacy into action. We draw on the collective knowledge and expertise of our partners to design business cases founded on strong analytics and research, and we respond to the specific questions of governments, businesses, and communities. Above all, we provide a forum in which stakeholders can come together on equal footing and in a non-politicized manner to discuss their ideas, experiences, and opportunities for implementing carbon pricing.

As a—literal and figurative—meeting point for fostering leadership across stakeholder groups, the CPLC represents a critical component of global collaboration and partnership on carbon pricing. Through this work, we can ensure that the centrality of carbon pricing in climate action strategies is widely recognized and advanced.

By fostering engagement with partners and stakeholders in dialogues from across the world, the CPLC HLA Co-Chairs guide the Coalition and challenge world leaders to increase ambition to reach CPLC goals and tackle climate change. The Co-Chairs have co-authored an op-ed for the CPLC website Reaffirming our commitment to carbon pricing and climate action, moderated dialogues, and served as vocal advocates for carbon pricing in multiple forums.

Catherine McKenna
Minister of Environment, Canada

In her first year as Co-Chair, Minister McKenna, continued working to engage the private sector, as well as her peers, in carbon pricing discussions. During Climate Week in New York, she challenged the Coalition to work on broadening the reach of communications efforts to the youth and non-converted and, at COP23, she lead a panel of Canadian businesses where they shared their experiences in what later became The Role of Carbon Pricing in a Low-Carbon Transition Report.

Feike Sijbesma
Chief Executive Officer, Royal DSM

In his final year as Co-Chair, Feike Sijbesma, provided precious guidance to the Coalition, while challenging the partners for more ambitious action and leading significant engagement with governments and business alike. He spearheaded impactful business advocacy initiatives, among other through the World Economic Forum CEO Climate Leaders Alliance in Davos, through We Mean Business, and at the One Planet Summit organized by President Macron, to call for meaningful, directional carbon price levels. Mr. Sijbesma uses his media appearances (including a feature in The Economist, an interview with CNBC and joint op-ed for the China Daily with Xie Zhenhua, China's Special Representative on Climate Change Affairs) to explain and promote how putting a price on carbon is a way to future proof businesses, while protecting the environment.

STEERING COMMITTEE

→ *Formed by representatives from governments, businesses, and civil society, the Steering Committee aims to ensure that the Coalition's activities are aligned with the vision and goals laid out by the High-Level Assembly. The Committee, hosts virtual and in-person meetings to review progress on the CPLC Work Plan, recommends new activities, knowledge products, working groups or other necessary actions, and helps support CPLC activities among other duties.*

Christine Fedigan
Head of Corporate Climate Policy, ENGIE

Gonzalo Saenz de Miera
Director of Climate Change at the Chairman's office, Iberdrola

Luiz Osorio
Executive Director of Sustainability and Institutional Relations, Vale SA

Ulrika Raab
Senior Advisor, Swedish Energy Agency, Sweden

Enrique Lendo Fuentes
Chief of the International Affairs Office of the Mexican Ministry of Environment and Natural Resources (SEMARNAT), Mexico

Adrien Zakhartchouk
Head of Environment and Agriculture Unit, Directorate-General of the Treasury, France

Tom Lorber
Analyst, Climate Change, Children's Investment Fund Foundation

Dirk Forrister
CEO and President, International Emissions Trading Association

Helen Mountford
Director of Economics at WRI and the Program Director for the New Climate Economy (NCE) initiative, World Resources Institute (WRI)

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Alexa Kleysteuber
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WG 3- Mobilizing Business Support

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Institutional Affairs and Sustainability Director, Abiqium (Brazil)

Lance Pierce
CEO, CDP North America

Noémie Klein
Associate Director, Ecofys Navigant

WG 2- Building and Sharing Evidence Base

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Shaun Reidy
Special Advisor to the Director, Environment Directorate, OECD

Susanna Laaksonen-Craig
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Michael Grubb
Professor of International Energy and Climate Change Policy, University College London

WG 4—Communicators' Network

David Hone
Chief Climate Change Adviser, Shell International Ltd.

Anirban Ghosh
Chief Sustainability Officer, Mahindra

Juan Ramon Silva Ferrada
Chief Sustainability Officer, Acciona

THEMATIC LEADS

Carbon Pricing in the maritime sector

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Johannah Christensen
Director Global Maritime Forum

RESEARCH CONFERENCE

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Senior Fellow International Centre for Trade and Sustainable Development (ICTSD)

Michael Mehling
Deputy Director of the Center for Energy and Environmental Policy Research (CEEPR) MIT –Massachusetts Institute of Technology

FINANCE SECTOR TASK FORCE

Nikki Bartlett
Director, Carbon Pricing CDP

THE **FASTER** PRINCIPLES FOR SUCCESSFUL CARBON PRICING

In September of 2015, the WBG and the OECD published a joint report on the essential principles behind successful carbon pricing initiatives. These were identified as: Fairness, Alignment of Policy and Objectives, Stability and Predictability, Transparency, Efficiency and Cost-Effectiveness, and Reliability and Environmental Integrity.

When integrated and taken together, these concepts lead to carbon pricing initiatives that succeed in developing and expanding sustainable energy, providing a consistent regulatory framework, and reflecting the public interest. Critically, they are designed around the notion that those who profit the most from carbon-intensive industries should contribute the most to mitigating its effects and building the transition to a low-carbon future.

These past years, we have seen initiatives centered around these basic principles multiply around the world—on sub-national, national, and international levels. Quebec's cap-and-trade system, highlighted in this report, illustrates how the FASTER principles can help propel efficient and successful initiatives into action. Launched in 2013 at the province level, Quebec's ETS has since partnered with Ontario and the U.S. state of California to create the Western Climate Initiative carbon market.

These sub-national governments' innovative partnership—the first of its kind in the world—speaks to the enormous possibilities for creative leadership when it comes to advancing carbon pricing. We hope analysis of the initiative's success will lead others to follow its example.

F A S T E R

Fairness

Alignment of Policy and Objectives

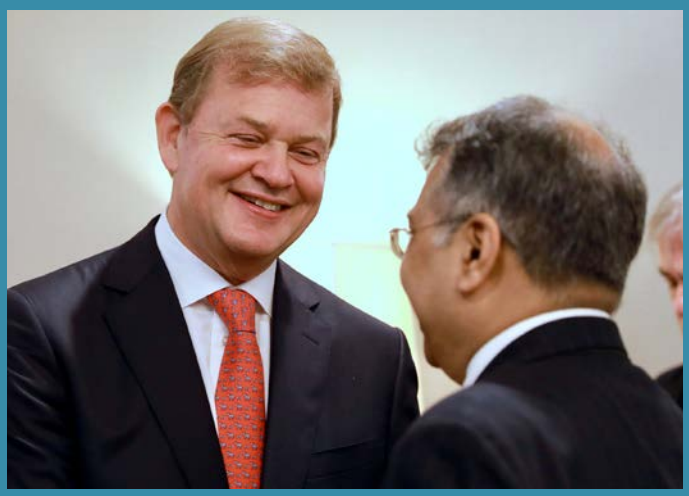
Stability and Predictability

Transparency

Efficiency and Cost-Effectiveness

Reliability and Environmental Integrity

LEADERSHIP IN ACTION



BRITISH COLUMBIA

British Columbia

Since 2008, British Columbia, Canada has had one of the most broad-based carbon taxes in the world. As a carbon-pricing pioneer, B.C. took an approach similar to the World Bank's FASTER principles. Between 2007 and 2015, its provincial real GDP grew more than 17 percent, while net emissions declined. This demonstrates how these principles can lead to a carbon pricing approach, which, when combined with a broader suite of polices, supports cleaner choices and a strong economy.

Fairness is a key concern when it comes to carbon pricing. B.C. is focusing on the need to maintain affordability and competitiveness. Starting April 2018, the province is raising its carbon tax by $\$5/tCO_2$ a year, until it reaches $\$50/tCO_2$ in 2021. New revenues from the carbon tax will be used to provide tax relief for families by increasing the Low-Income Climate Action tax credit. They will also be used to support businesses and enhance environmental integrity by funding green initiatives that address climate action commitments.

British Columbia is also committed to working with industry. As the tax goes up, B.C. helps large industries remain competitive through actions like the new Clean Growth Incentive Program. This program is being designed to direct incremental carbon tax revenue received from industry back into the sector. Incentives will be structured to provide support to industries based on how clean they are. Revenue generated will be available for industry to access as part of a technology fund to decrease emissions.

Transparent, stable, and predictable carbon pricing is essential to maintain a robust economy. B.C.'s price on carbon has been rising predictably over a period of time, and the changes have been communicated in a transparent way that offers businesses the stability they need to invest.

By taking a FASTER approach, B.C. is showing that efficient, cost-effective carbon pricing is one of the best ways to build a strong, sustainable economy that works for people and the environment.

17%

the growth of B.C.'s provincial real GDP between 2007 and 2015 using FASTER principles

40%

the percentage of emissions France is looking to reduce by 2040 (and 32% fossil fuels)

France

Carbon pricing has become an essential component of France's strategy to both mitigate climate change at home and mobilize public and private finance for climate action globally. At the One Planet Summit convened by French President Emmanuel Macron in December 2017, issues related to the policy featured prominently among the major themes of the event, notably through the announcement of several new carbon pricing initiatives. Previously, in June 2016, France hosted a High-Level Forum on Carbon Pricing with more than 200 government, business, and civil society leaders to explore best practices for effectively designing and implementing carbon pricing programs. Meanwhile, at the national level, France's Energy Transition for Green Growth Act of 2015 set a carbon price target of EUR€56/tCO_2 by 2020 and EUR€100/tCO_2 by 2030 to help channel long-term investments toward a low-carbon pathway and incentivize emissions-reducing innovation.

Fairness: France's carbon tax is part of a domestic tax on the consumption of energy products (Taxe Intérieure de Consommation sur les Produits Energétiques, also known as TICPE). It is factored into the price of fuel for transportation and for heating buildings. In the power and industry sectors, carbon is priced through the EU ETS. France has earmarked a portion of the tax revenue generated to provide financial assistance to low-income communities that could be adversely affected by certain aspects of the tax's implementation.

Alignment: Introduced in 2014, France's carbon tax was integrated into existing energy taxes on fuel, natural gas, and coal. Since it is broadly applied to sectors and activities not covered under the EU ETS, its role with regard to the ETS is a complementary one. The tax is aligned with France's broader climate goals to reduce emissions by 40% by 2030, to cut fossil fuel use by 30% by the same year, and to increase the share of renewables to 32% of overall energy consumption by 2040.

Stability: The Finance Act for 2018 sets carbon prices at EUR€44.6/tCO_2 in 2018, rising to EUR€65.4/tCO_2 in 2020 and EUR€86.2/tCO_2 in 2022. This upward trajectory reduces uncertainty, reinforces the long-term stability and predictability of carbon prices, and provides emitters with a consistent and credible investment signal.

Transparency: France's Ministère de la Transition écologique et Solidaire provides broad information on current and future carbon tax rates. Its website also provides clear guidelines on how carbon revenue is used.

Efficiency: France continually monitors and refines its carbon levels to account for changes in economic conditions, adjustments in the EU ETS, and technological advancements that reduce abatement costs. In order to enhance efficiency and boost competitiveness, a share of carbon tax revenue was used to finance labor tax cuts for employers in 2016. As France looks to the future, the country plans to raise long-term carbon price levels, especially the planned price of EUR€100/tCO_2, by 2030, which is currently enshrined in the law.

Reliability: Emissions reductions from France's carbon tax are projected to reach 3 $MtCO_2$ in 2018 and 6 $MtCO_2$ in 2022.

QUÉBEC

Québec

The Québec Cap-and-Trade system was launched in 2013 and has since linked its system with those of California (2014) and Ontario (2018) to form the Western Climate Initiative's carbon market, the first international emissions trading scheme conceived and operated by subnational governments. The systems were originally designed to ensure equal stringency prior to linkage and to preserve the environmental integrity of the scheme.

Fairness: Sectors covered by the Québec Cap-and-trade system represent about 85% of the GHG emissions of the province, including the transportation sector. Since close to 100% of Québec's electricity comes from renewable sources—mainly hydro and wind—transportation is the largest GHG emitting sector, with over 40% of total emissions. Québec has also recently expanded its system's coverage by permitting emitters below the 25,000 CO_2 eq./year threshold to voluntarily register in the system as covered entities. To protect trade-exposed industries, the Québec government has adopted a sophisticated approach to free allocation based on real output that does not impede ability and incentives for growth.

Alignment: The system is the centerpiece of Québec's climate change action strategy, which aims to reduce GHG emissions by 20% below 1990 levels by 2020 and by 37.5% below 1990 levels by 2030. All revenues from the sale of allowances, expected to reach more than CAD $3.3 billion by 2020, are deposited in a green fund exclusively dedicated to the implementation of mitigation, adaptation, and public awareness measures contained in the plan.

Stability: To provide stability and predictability to its covered entities, the Québec government recently set the annual declining emissions caps of its system from 2021 to 2030. The linear cap trajectory also informs the participants of the future relative scarcity of allowances in the system, thereby allowing them to develop a long-term in-house emissions-tackling

20%

The amount Québec wishes to reduce GHG emissions compared to 1990 levels

120€

Sweden's 2018 carbon tax rate has increased to SEK 1,150 since being introduced in 1991

strategy, alongside the banking opportunities the Cap-and-trade design provides.

Transparency: The Québec government engages in extensive consultations with industry regarding proposed system regulations. It also provides both the public and participants with broad information on the system's technical specificities, implementation, and progress via the Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques website. In particular, an aggregated summary of transactions is issued yearly to provide transparency on allowance price averages for potential buyers and sellers.

Efficiency: Québec's system sets a meaningful carbon price signal across the economy, allowing economic agents to better internalize carbon costs. All Québec-covered entities complied with their obligations during the first compliance period (2013-2014), achieving a success rate of 100%. From 2012 to 2016, Québec-covered industrial emitters globally reduced their emissions by about 7 %. In addition, linking with California and Ontario's system has provided covered emitters with a larger pool of low-cost emission reduction potential.

Reliability: All aspects of Québec's system—from cap setting to covered emitters' reporting process for ensuring that they are meeting their compliance obligations—are based on independently verified data informed by the use of rigorous protocols and standards.

Sweden

To describe the following example from Sweden, "A for Alignment" was chosen, but really, "F for Fairness" or "S for Stability and Predictability" would have been equally fitting titles. This proves a key point: the FASTER principles are interlinked and, in successful policy design, you don't just focus on one principle at a time—you try to keep them all in mind.

The Swedish carbon tax was introduced in 1991 at a rate corresponding to SEK 250 (EUR 26) per ton fossil carbon dioxide emitted, and has been gradually increased to SEK 1,150 (EUR 120) in 2018.[5] It is strongly rooted in the Polluters Pay Principle, a principle of Fairness ("F"). In its clear design and implementation, the system is also deeply Transparent ("T").

By increasing the tax level in an incremental manner, policymakers have given households and businesses time to adapt. Additionally, the Stability and Predictability ("S") that have characterized the system have improved the political feasibility of tax increases.

A lower tax rate has historically been applied to industries outside the EU Emissions Trading System (EU ETS), while industries covered by the system have been entirely exempt from carbon tax. As of 2018, however, the industry rate outside the EU ETS is the same as the general rate. The general level and the industry level of carbon tax have therefore been Aligned ("A").

Through its comprehensive application of FASTER principles, the Swedish carbon tax ensures that emissions are reduced in an Efficient and Cost-Effective way ("E") and provides tangible emission reductions. It is a Reliable system with high Environmental Integrity ("R").

For more information on the Swedish Carbon Tax, please see www.government.se/carbontax.

LEADERSHIP IN ACTION

Leadership on carbon pricing, coming from a variety of economic sectors and geographic areas, has kept the issue at the forefront of the climate change conversation. From its inception, the CPLC has brought together leaders already showing the way on carbon pricing, as well as emerging leaders who are new to the issue but nevertheless committed to making progress. A critical part of the Coalition's mission involves shining a light on those leading the way on carbon pricing and learning from their experience. The selected stories of leadership that follow are proof of the growing momentum that new—and maturing—carbon pricing schemes are experiencing and are presented here with the hope that they will inspire others to discover their own solutions.

Increasing Regional Cooperation on Carbon Pricing in the Americas

In the past two years, the Americas have been at the forefront of carbon pricing developments, particularly in Canada and the Pacific Alliance countries. Carbon taxes and/or emission trading systems are being implemented in Chile, Colombia, Mexico, California, the nine states of the US' Regional Greenhouse Gas Initiative (RGGI), Washington, Alberta, British Columbia, Quebec, Ontario, and Massachusetts. New carbon pricing instruments are also under discussion in additional countries, states, and provinces, including Argentina and Manitoba. In Brazil, where the Federal Government is evaluating options, we are seeing strong support for carbon pricing from major private sector companies and civil society organizations.

Following the Climate Action Statement from the Climate Summit of the Americas, the Ministerial Declaration on Carbon Markets, the Cali Declaration of the Pacific Alliance Presidents of 2017, and the regional events hosted by the CPLC in Mexico in January of 2017 and October of 2017, growing collaboration between the Pacific Alliance countries and across the entire region facilitated the emergence of a more coordinated approach in the design of regional policy frameworks.

This collaboration led to the Declaration on Carbon Pricing in the Americas announced at the One Planet Summit in Paris. The government leaders of Canada, Colombia, Costa Rica, Chile, Mexico, Alberta, California, British Columbia, Ontario, Oregon, Quebec and the U.S. state of Washington reaffirmed their commitment to the Paris Agreement by pledging to implement carbon pricing as a central policy instrument for climate change action; deepen regional integration of carbon pricing instruments across the hemisphere; and develop carbon policies that support competitiveness, encourage innovation, create jobs, provide healthy environment for their citizens, and deliver meaningful emissions reductions.

In the Declaration, countries and seven subnational governments [note: there was a comma here that should also be removed] agreed to collaborate on monitoring, reporting, and verifying (MRV) greenhouse gas emissions in the region; designing common standards to ensure environmental integrity; creating the cooperative platform on Carbon Pricing in the Americas (CPA); and strengthening international

and regional collaboration. By aiming to involve financial institutions, NGOs, and other civil society organizations—and by encouraging the support of jurisdictions outside the Americas—the Declaration constitutes a powerful foundational element of integrated action and is open to other jurisdictions if they seek to join.

Côte d'Ivoire: Getting serious about a national carbon price

In November 2015, even before the adoption of the Paris Agreement, Côte d'Ivoire organized its first national workshop to explore the idea of implementing a carbon price. Shortly after that, the West African country became a member of the Carbon Pricing Leadership Coalition. At the High-Level Assemblies of the Coalition, Côte d'Ivoire, consistently represented by the Prime Minister and the Minister of Environment, regularly reaffirmed its commitment to carbon pricing. This commitment has been incorporated into the country's Nationally Determined Contribution (NDC), and there has been interest in the policy across both the Ministry of Environment and the Ministry of Finance.

Through its leadership, Côte d'Ivoire has become a major advocate for carbon pricing not only on the African continent, but among lower middle-income countries in general. At high-

BRAZIL

Mobilizing Brazilian Business Support to Price Carbon

While a mandatory carbon pricing mechanism has not yet been established in Brazil, the Brazilian Federal Government is exploring and analyzing various instruments to achieve carbon pricing. This work is being led by Brazil's Ministry of Finance, under the Partnership for Market Readiness (PMR) work program.[6] While the private sector and civil society have been supportive of the Federal Government's technical assessments, they are demanding a swift decision regarding the type of carbon pricing mechanism that will ultimately be adopted. This demand is twofold: first, it is based on the recognition of major regional developments (see the Carbon Pricing in the Americas). Secondly, it stems from widespread concern that, if Brazil is not fully engaged in the ongoing regional dialogue and initiatives, businesses will not have access to the technological innovation and financial resources expected for the region's transition to low-carbon economies—a matter of business competitiveness.

Among existing private sector-led initiatives, the Emission Trading System Simulation of Business for Climate Platform (known as EPC ETS) is entering its fourth year of operations. The simulation—conducted with over 30 major Brazilian companies—includes auctioning and bonds markets, assessment of company emissions submissions, and penalties for non-compliance. It provides substantial information for the key stakeholders, including the Federal Government, on critical aspects to consider with regard to the establishment of a mandatory ETS. It has been managed by the Center for Sustainability Studies of the Business Management School at the Getulio Vargas Foundation (FGV-EASP), and the CPLC Secretariat has been represented on the advisory board of the initiative since its early stages.

Beyond the ETS simulation and envisioning of coherent messaging and coordinated action, a vital development has been the creation of the Business Climate Initiative (also known as IEC, from the name in Portuguese) by leading companies and civil society groups. Among their participants, the Brazilian Business Council for Sustainable Development (CEBDS) includes companies and corporations responsible for over 40% of the Brazilian annual GDP.[7]

CEBDS and several other Brazilian companies and associations are active members of the CPLC. The financial sector has also been active, including through the engagement of major banks such as Itaú Unibanco—the largest bank in Latin America.[8] In addition, ABIQUIM—the association of all chemical and pharmaceutical companies in Brazil—is a co-chair of the CPLC Mobilizing Business Support Working Group, while Companhia Vale do Rio Doce (Vale) has served as a co-chair of the CPLC Steering Committee. It is expected that Brazil—as the largest economic power and GHG emitter in the region—will remain well-represented in the CPLC. This collaboration has notably resulted in:

- *A 2017 series of joint meetings between CEBDS and CPLC with senior government officials, leading to an alignment between public and private sector agendas and work plan;*

- *An open letter demonstrating Private Sector Support Carbon Pricing in Brazil, led by the IEC in 2017;*

- *A webinar session Internal Carbon Pricing: Practical Experiences from the Private Sector in 2017, with representatives from Itaú Unibanco, CPFL, and Vale as part of the YALE, WEF, CPLC series on internal carbon pricing.*

- *The report Carbon Pricing: what the business sector needs to know to position itself, launched in 2016 by CDP, We Mean Business, and CEBEDS, which provides an in-depth evaluation of carbon finance in the Brazilian private sector;*[9]

- *The paper Carbon Pricing Positioning, launched in 2016 by IEC in support of carbon pricing;*[10]

Moving forward, the CPLC will continue promoting coordination between its partners, other interested players in the international climate community, and private and public-sector leaders in Brazil to support the design and implementation of an effective carbon pricing mechanism at the national level, as along with Brazilian engagement in the regional and international carbon pricing dialogue.

level fora such as the Conferences of the Parties, the World Bank/IMF Spring Meetings, and the Africa Carbon Forum, Ivorian ministers have repeatedly explained their view of carbon pricing as an effective mechanism in terms of its ability to both lower emissions and yield important development co-benefits. This includes, but is not limited to, the recycling of carbon revenues, which could be used to fund renewable energy supply and low-emissions activities in Côte d'Ivoire and make low-carbon development a reality in the country.

Côte d'Ivoire has also been very active on the technical level from a national, regional, and continental perspective. In 2017, the government conducted a self-funded feasibility study on establishing a national carbon tax. Together with subsequent extensive stakeholder consultations, this study will serve as the analytical basis for the design of the country's future carbon tax. Cooperating closely with neighboring states, Côte d'Ivoire also served as a co-founder of the West African Alliance on Climate Finance and Carbon Markets, which came to life at COP23 in Bonn. Furthermore, the country participated in and actively contributed to the CPLC's African Consultative Expert Dialogue, held in Nairobi in October 2018.

Since making a very convincing case for its carbon pricing plans at the Partnership for Market Readiness (PMR) Partnership Assembly in Tokyo in October 2018, Côte d'Ivoire has become a new technical partner of the PMR. This partnership enables the country to receive a significant grant in order to undertake the necessary analytical work of designing its national carbon tax. In this effort, Côte d'Ivoire will also benefit from a large network of international government partners providing regular opportunities for peer-exchange and capacity building. Just recently, the government's detailed plan of activities for making the best use

of the PMR resources was approved. This way, the country has taken another important step toward becoming the first lower middle-income nation to introduce an explicit carbon price within its jurisdiction.

The Reform of the EU ETS

The European Parliament and Council have agreed on the second major reform the EU Emissions Trading System (EU ETS) after two years of intense negotiation. The EU emissions trading system (EU ETS) is still the largest international carbon market by volume and value. It includes over 11,000 installations and airlines and covers nearly half of the EU's greenhouse gas emissions. The agreed changes will impact the EU ETS's fourth trading period (2021-2030) and represents a significant piece of the EU's plan to achieve its commitment under the Paris Agreement. The reform not only increases the ambition in the system but also addresses competitiveness concerns and puts in place measures to smooth the transition to a low-carbon economy. It also includes measures to manage the oversupply of EU allowances, which were adversely impacting the carbon price.

The reform of the EU ETS maintains auctioning as the main allocation method used in the EU ETS. In Phase 3 (2013-2020), 57% of allowances are expected to be auctioned. The reform increases this percentage while protecting the most exposed European industries from carbon leakage through free allocation. In the reform, a portion of the auction revenue has been alllocated to specific funds established to support low-carbon innovation and modernization. A fund initially consisting of 400-450 allowances provides continued support for renewable energy, carbon capture and storage projects, and industrial sectors. Two percent of the total allowances will be auctioned in order to foster energy efficiency and bolster the modernization of the energy sector in EU Member States that have per capita GDP rates which are 60% lower than the EU average. The auction revenue from the EU ETS is substantial. Auctions from 2013 to 2016 have generated nearly EUR€16 billion, and over 80% of this revenue has gone toward climate and energy programmes and projects. Although most of the reported revenue use has been for domestic climate and energy purposes, EU Member States also channel a significant portion of the revenue into international initiatives. In the first three years of the the EU ETS' third phase nearly EUR€900 million was invested in international climate and energy finance.

The EU ETS is the cornerstone of EU climate policy and will contribute a 43% reduction on 2005 emissions by 2030. The reform ensures that the provisions of the new ETS law will be kept under regular review including an assessment of the need for additional policies or measures in the context of each stocktake under the Paris Agreement.

Emissions Trading Systems of the EU and Switzerland

In 2017, the EU and Switzerland signed an agreement to link their emissions trading systems—the first partnership of this kind for the EU and the first between two Parties to the Paris Agreement. This coordination will allow participants in both systems to use allowances from either system for compliance.

Carbon Pricing in India: Tailored Risk Management

Operating in an increasingly attractive hub for clean investment, India's expanding private sector has begun to acknowledge the role businesses must play in the fight against climate change, as well as the reciprocal risk that climate change poses to their interests and prospects.

With more than 65 jurisdictions across the globe using carbon pricing as a tool to incentivize low-carbon activities—and the expectation that this number will continue to grow as countries move towards their climate commitments—companies

Financial Sector Leadership

In the wake of the Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD), banks and other financial institutions are increasingly prioritizing climate-related risks and opportunities as part of their financial planning and budding climate strategies. In 2017, the Carbon Pricing Leadership Coalition convened around 30 private and multilateral development banks to form the Banking Sector Task Team, with the objective of monitoring the development of the TCFD and exploring the role of using internal carbon pricing as a metric for managing climate-related risks.

Financial institutions are contending with how to manage the carbon risk of both their operations and investment portfolios. While many of these banks and non-bank financial institutions are applying a carbon price to their operations, governments and other stakeholders are increasingly expecting them to "stress test" their investment portfolios against carbon risk, including by applying a carbon price to individual projects.

While the TCFD cites internal carbon pricing as a metric for managing climate-related risks, it does not expand upon what this means for the banking sector specifically. Going forward, the CPLC will be publishing a series of executive briefings covering the TCFD Recommendations, and how a bank can benefit from, and practically implement, an internal carbon price to manage traditional risks and identify new opportunities.

The Task Team has also been advancing the work of the Carbon Pricing Corridors, which provides a range of carbon price levels to meet a 2°C scenario at five-year intervals. Through the Corridors Initiative, CDP and the We Mean Business Coalition are working with industry leaders to develop reference scenarios for specific sectors to provide a carbon price companies can apply to risk assessment decisions. This is applicable not only to companies evaluating the appropriate price for their own operations, but also for banks who can apply this price in evaluating their clients' risk exposures. Complementing the TCFD Recommendations, the Corridors can be used as a tool in scenario analysis, as organizations consider the potential financial, strategic, and business impacts resulting from the Paris Agreement in their decisions.

are recognizing the business case for internal carbon pricing. Indian companies are moving forward with carbon pricing as a climate-risk management tool, with 14 businesses already pricing carbon in 2017—up from 8 the previous year—and another 26 intending to implement carbon pricing within the next two years, as per their CDP disclosures. India's private sector companies are joining the Carbon Pricing Leadership Coalition (CPLC) to engage with one another, the government, and other stakeholders on this issue.

The CPLC's India partners are learning more about carbon pricing, advocating for well-designed carbon pricing policies, and sharing their experiences and best practices with other like-minded companies looking to price their

carbon footprint. Although carbon pricing is being recognized for its business benefits consistently, companies are engaging with the concept in varied ways. For instance, the Mahindra Group is using a hybrid combination of shadow and explicit pricing, set at US$10/$tCO_2$, to evaluate its projects and investments, reduce exposure to transition risk, and prioritize low-carbon alternatives and innovations. It calculated this price through an internal assessment of its outstanding energy efficiency and green investment commitments, as well as policy exposure, arriving at an abatement cost for GHG emissions that would have a material impact on decision-making. Infosys is using a US$10.5/$tCO_2$ price as a tool to achieve its stated goal of carbon neutrality. This price, designed around the cost of carbon offsets, is intended to encourage the company's business units to manage their Scope 2 emissions and invest in renewable energy and efficient processes. Dalmia Cement piloted an internal carbon fees scheme, which helped set and implement a carbon price that incentivized the adoption of low-carbon activities, procurement, and projects. The fees generated were funneled into a credit line for investing in climate-smart projects to manage Scope 1 and 2 emissions. The success of the program, implemented in 2015, has led the company to explore avenues for investment in low-carbon technology using the fees collected from a US$11/$tCO_2$ price.

Others implementing a carbon price include the Tata Group, Arvind Limited and Essar Oil, with each company following an approach tailored to its specific needs and goals. Inspired by the successful work in Brazil, CPLC partners are also developing an ETS simulation that will be launched in mid-2018. This innovative pilot is being led by the World Resources Institute and will include over 20 companies voluntarily working in coordination to test a cap-and-trade approach; the results can then help to inform the potential design, registry, reporting and other important aspects.

Mexican Climate Initiative and Environmental Defense Fund

With support from a wide variety of stakeholders, the Ministry of Environment of Mexico has been working toward the design and implementation of an emissions trading system (ETS). In early 2017, EDF was invited by the Mexican Climate Initiative (ICM) to join discussions on engaging academic experts and key stakeholders from Mexican non-profit organizations on further developing national climate policy, particularly with regard to carbon pricing. This collaboration has created a unique synergy: ICM contributes its profound knowledge of Mexico's environmental and energy policy and the domestic context for policy implementation, as well as an extensive network of experts; EDF puts forward its deep expertise on carbon pricing and emissions trading policy broadly, as well as the experience of having advanced state, national, and global carbon pricing policy and initiatives.

Our organizations share a common vision, centered on the crucial role of harnessing the expertise and involvement of a broad array of non-government stakeholders in crafting robust environmental policies. We also recognize the key role of actors

across civil society in ensuring sustained ambition and continuity of processes when government administrations change. With this brief case study, we aim to share some of our experience so far and suggestions on best practices:

→ ***Begin on common ground and assess interests and needs to engage on carbon pricing policy.***
A map of influential stakeholders from academia, think tanks, and NGOs informed the initial outreach on beginning discussions on carbon pricing and its place in Mexican mitigation policy. Shared interest in achieving Mexico's nationally determined contribution (NDC) was the organizing principle for first bringing together this group of stakeholders. After an initial discussion, we surveyed participants to assess specific interests, areas of expertise, and perceptions around carbon pricing—as well as needs.

→ ***Keep information flowing and build an agenda based on expertise and interests.***
Given the interest in continuing the dialogue, ICM offered to carry out administrative functions to keep the group active and organized. Participants shared relevant updates and self-selected different roles to move policy development forward in multiple areas, including advocacy, expert knowledge, and communications and media.

→ ***Respond to needs identified by partners.***
Based on interest and needs assessed during initial discussions, EDF and ICM offered a two-day interactive workshop tailored to the environmental experts participating in these group discussions, some of whom had less familiarity with ETS mechanics and policy design. This workshop took place early in the group's formation and was attended by most participants, resulting in a group of stakeholders that was largely aligned in terms of familiarity with the topic. The agenda included presentations on ETS basics, ETS design, Mexico´s climate policy, and California's Cap and Trade program, with expert contributions from both government regulators and private sector entities. We also included an interactive market simulation exercise using EDF´s ETS software platform (CarbonSim). The group emerged with a better understanding of how ETS design choices can be used flexibly to address each country's goals, needs, challenges, and priorities.

→ ***Recognition from the regulator further fuels the group's engagement***
The working group participants were also invited to a high-level meeting hosted by the Ministry of Environment to discuss the role and expectations of civil society in developing a Mexican ETS. The group expressed interest in engaging and supporting the policymaking process. Direct engagement by the regulator, as well as clarity on the deliverables and timeline ahead, helped give the group an impetus to make it a priority.

→ ***Adapt the agenda to current policy processes and needs***
Given the interest raised by the stakeholder group and the current plans of the Ministry of Environment, we expect to focus on advancing the pilot ETS regulation the Ministry is working on, developing a clear stance from key stakeholders regarding the need for a concrete policy mechanism and the conditions under which an ETS will be desirable for Mexico, creating a favorable political environment for the policy's implementation under the current administration, as well as looking toward the upcoming government transition. The development of informed policy positions and communications is seen as a key component of shaping Mexico's domestic environmental policy agenda as the country heads into national elections and prepares for a government transition in late 2018 and early 2019, even while it continues to engage in the national and international carbon pricing agenda.

Heading for New Shores with the Shipping Sector

International maritime transport accounts for the lion's share of global freight transport: ships carry around 80% of the volume of all world trade and 70% of its value. If the shipping industry was a country of its own, it would rank as the 6th largest greenhouse gas (GHG) emitter worldwide. While the sector's share in global emissions is currently at 2-3%, the demand for maritime transport is soaring—and so are its emissions. Unlike other sectors, international shipping has not been part of the climate change commitments secured under the Paris Agreement. And without further action, the sector risks being unengaged in the fight against climate change.

Now, however, the situation is on the cusp of change. Since May 2017, the Coalition's maritime leads, the University College London (UCL), and the Global Maritime Forum (GMF) have been working to establish the CPLC as a new player in shaping the shipping sector's climate change agenda. Within this context, UCL and GMF have successfully launched within the Coalition a forum for open dialogue where ideas for decarbonizing the sector can be explored and discussed. The outcomes of these dialogues are being used to inform the decision-making process under the International Maritime Organization (IMO) and among its key stakeholders, especially regarding carbon pricing and market-based mechanisms.

A dedication to being progressive, inclusive, and transparent has guided the CPLC's maritime work. In less than a year, this approach has led to the creation of an extensive network of governments (e.g. Germany, France, Finland, and the Marshall Islands), businesses (including Lloyd's register, Maersk, and Cargill Transportation), and leading think tanks (e.g. UNCTAD, CE Delft, and Transport & Environment) from both inside and outside the CPLC. By closely cooperating with numerous partners from the international transport sector, UCL and GMF have made major progress in terms of outreach, stakeholder engagement, and knowledge production.

With four CPLC shipping events at COP23 in Bonn (two of those organized with the Fijian COP Presidency), maritime transport was featured prominently during the international climate negotiations in November 2017. Also in November 2017, a CPLC Executive Briefing on internal carbon pricing for ship-financing banks, supported by Carbon War Room and released at a Citibank luncheon in November 2017, engaged financial institutions. A month later, a joint blogpost series was started with the World Bank's Sustainable Mobility for All initiative. Hosted by the OECD International Transport Forum, the Coalition gathered 25 renowned shipping experts in Paris early January 2018 to discuss economic modeling approaches to shipping. This analysis has been a crucial component of properly assessing the impacts of carbon pricing on maritime transport costs, as well as on trade flows and individual states—a key issue in the IMO negotiations.

Although the IMO's initial GHG reduction strategy might lead some observers shout "Land ahoy", it should be clear that the actual work of defining specific policies to decarbonize the shipping sector has just began. Building on the political momentum gained and the forum and network established, UCL and GMF are committed to supporting the sector in beginning to sail to new shores.

Multilateral Development Banks and Internal Carbon Pricing

Multilateral development banks (MDBs) are on the cutting edge of addressing climate change in their own operations and in helping their clients to do the same. Most MDBs have established targets for lending to qualifying climate projects, and they collectively track and report on their investments. A growing number are also beginning to use internal carbon pricing

"Multilateral development banks (MDBs) are on the cutting edge of addressing climate change in their own operations and in helping their clients to do the same."

to influence their investment decision-making and address climate risk. The price levels being used across the MDBs are roughly consistent, even though the institutions are using different approaches when it comes to application. The following summarizes the current state of play of internal carbon pricing for the MDBs that are actively using a carbon price today:

- ***Asian Development Bank*** *incorporates a social cost of carbon as part of the economic analysis of projects in the energy and transport sectors and projects with a GHG emissions mitigation focus. In valuing GHG emissions, the initial carbon price used is US$36.30/$tCO_2e$ in 2016 prices, increasing annually by 2% in real terms to allow for increasing marginal damage of global warming over time. The approach identifies and values the net change in emissions resulting from a given project through a 'with and without project' comparison. ADB publicly discloses a summary of the economic analysis as part of the report and recommendation of their President.*

- ***European Bank for Reconstruction and Development*** *(EBRD) has publicly disclosed its carbon pricing methodology, which is applicable to coal-fired power generation projects. The coal-fired methodology is based on calculating a levelized cost of electricity (as a cost per MWh) to compare different feasible alternatives. The cost of emissions is factored in as part of the lifetime costs of the options considered, along with other relevant externalities. The carbon price being applied starts at EUR€35/tCO_2e for emissions (in 2014 prices) for emissions released in 2014, rising by 2% per year in real terms. Since the introduction of the methodology, the EBRD has not financed any coal-fired power projects.*

- ***European Investment Bank*** *began incorporating environmental externalities, including carbon and local air pollutants, into its economic appraisal of projects in the mid-1990s. In order to ensure consistency across sectors, in 2007, carbon values out to 2030 were formally approved by the Bank's Board of Directors. In 2015, as part of the Bank's wider climate action strategy, these values were further extended out to 2050. The central EIB value for carbon emissions in 2018 is EUR€38/tCO_2e, rising to EUR€121/tCO_2e by 2050 (in real 2016 euros). The rate of annual increase in real terms increases over time. The Bank also has a low and high CO_2 price scenario which is used in sensitivity testing.*

- ***The World Bank*** *updated its approach in September 2017 based on the report led by Nicholas Stern and Joseph Stiglitz. The use of a shadow price of carbon in the economic analysis is a corporate commitment for all IDA/IBRD investment project financing in sectors that are subject to Greenhouse Gas (GHG) accounting (energy, forestry, agriculture, transport, water, and urban) and that have concept notes approved on or after July 1, 2017. Economic analyses of projects are required to use low and high estimates of the shadow carbon price. These will start at levels of, respectively, US$40 and $80 t/$CO_2e$ in 2020, will then increase to US$50 and $100 by 2030, and beyond that, will rise at a rate of 2.25% per year, leading to values of US$78 and $156 by 2050. If a project that increases emissions is viable with the low shadow price of carbon estimate but not with the high estimate, the price that makes the project viable (switching value) shall be provided. Similarly, if a project that reduces emissions is viable with the high*

shadow price of carbon estimate but not with the low estimate, the switching value shall be provided. The results of the economic analyses with and without shadow carbon prices will then be reported in project documentation to allow management and the Board to take this information into consideration.

→ ***IFC** has operated a carbon pricing pilot since November 2016 using price levels of US$30 t/$CO_2$e in 2016, increasing to US$80 by 2050. The price is applied to the economic rate of return analysis of project finance investments in three emissions-intensive sectors (cement, thermal power, and chemicals), and is considered as one of several inputs into the investment decision. The price is applied to gross Scope 1 and 2 emissions only. IFC is moving to full implementation in project finance deals in the 3 sectors listed above, and will also pilot the application of a carbon price to project finance investments in other sectors with annual emissions above 25,000 tCO_2e. IFC will also pioneer the application of carbon pricing to corporate loans with known use of proceeds, and will continue to align with the World Bank on the price levels to be used.*

Carbon Pricing as a Catalyst for a Sustainable Energy Transition

Portugal launched its carbon tax in 2015 as part of a broader package of green fiscal reforms, affirming the government's dedication to incorporating climate and sustainability issues into the country's fiscal system. The carbon tax serves as a complimentary measure to the EU ETS, with the taxation rate adjusted annually based on EU ETS allowance levels from the previous year.

At around US$8/$tCO_2$, Portugal's carbon pricing scheme generated roughly US$133 million in revenues in 2016. The tax applies primarily to entities in the industrial, construction, and transport sectors, and covers approximately 29% of the country's total GHG emissions.

$133M

The 2016 revenue generated by Portugal's carbon pricing scheme (US$)

Carbon pricing is expected to continue playing an essential role in achieving Portugal's ambitious climate goals. The country's 'Roadmap for Carbon Neutrality', announced by Prime Minister António Costa in 2017, prioritizes a set of key objectives as part of an overall effort to facilitate a transition toward achieving carbon neutrality by 2050 through sustainable public and private investments. In the long-term, there are expectations that coal-based products will also be included in a forthcoming 'fuel escalator' tax, set to rise incrementally until 2021. In parallel, there are plans to re-evaluate the carbon tax rate and set a carbon price floor as the government seeks to accelerate the rate of emissions reductions.

Singapore—An Emerging Leader for Carbon Pricing in Southeast Asia

Singapore recently became the CPLC's newest government partner, joining in March 2018. This followed Minister of Finance Heng Swee Keat's announcement of plans to implement a carbon tax starting in 2019. The carbon tax will levy a US$3.8/$tCO_2e$ (S$5) tax on GHG emissions on 30–40 energy-intensive companies, covering 80% of Singapore's emissions, and the Government of Singapore intends to increase the tax to US$7.6–11.4/$tCO_2e$ by 2030.

As a small, low-lying city-state, Singapore faces distinct challenges and threats to its economic activities from climate change. Last year was the country's warmest on record, with torrential rains increasing in intensity and frequency. By introducing a tax directly on large emitters

Singapore. –IMF Staff Photo/Stephen Jaffe

and without sectoral exemptions, Singapore is aiming to provide a uniform financial incentive for reducing GHG emissions and improving energy efficiency.

The country's decision to put a price on carbon did not occur overnight. The Government of Singapore had been considering carbon pricing as a policy option for achieving its 2020 climate goals as early as 2007. Recognizing the importance of gradually 'socializing' carbon pricing, Singapore first communicated the need to price carbon at the 2010 Singapore International Energy Week. Following that event, the government held multiple consultations with key industry players and with the broader public, as part of a collaborative approach to build momentum, develop robust MRV mechanisms, and openly discuss carbon leakage and competitiveness concerns.

In 2013, Singapore introduced favorable energy policy measures—aligned with the FASTER principles for successful carbon pricing design—coupled with financial support designed to help companies improve their energy efficiency. A competitiveness study was subsequently launched in 2014 to assess the impact a carbon price would have on the manufacturing sector.

Today, as Singapore marks its 'Year of Climate Action', it is prioritizing low-carbon policies and enhancing inter-agency coordination aimed at tackling climate change collaboratively. Singapore's Inter-Ministerial Committee on Climate Change (IMCCC) put forward a Climate Action Plan that outlines four key cross-cutting climate objectives:

- *Improve Energy Efficiency*
- *Reduce Carbon Emissions from Power Generation*
- *Develop and Deploy Low-Carbon Technology*
- *Encourage Collective Climate Action*

The implementation of a carbon tax, as an integral part of Singapore's broader Climate Action plan, is expected to support and complement a suite of other climate change mitigation measures. As the first country in Southeast Asia to announce plans to introduce a carbon tax, Singapore has emerged as a leader in carefully and collaboratively designing carbon pricing programs.

GOING FORWARD

Carbon pricing has been gaining stronger momentum as the climate change discourse progresses—and 2017 was no exception. We witnessed a great year for the carbon pricing agenda with several schemes around the world being either established or enhanced—such developments inspire the Coalition to increase the ambition and widen the scope of the work plan.

Carbon pricing is a key step—one with growing public and private support— in comprehensively addressing climate change, ending poverty, and furthering sustainable development. Carbon pricing can be well aligned with economic growth—after all "it is the growth story of the future" as Nicholas Stern said in the 2017 HLA.

Going forward, CPLC will continue to work toward the goal of putting effective carbon pricing policies that maintain competitiveness, create jobs, encourage innovation, and deliver meaningful emissions reductions. To do this, in addition to the four pillars that have grounded CPLC so far—fostering government leadership, building and sharing the evidence base, mobilizing business support and communications—the Coalition will increase activity in focused work streams that will look into key economic sectors and regions, and aim to continue reaching to new audiences.

Partners are the center of the Coalition's work—their leadership and action drives carbon pricing forward and inspires others to join the conversation. Together, we remain committed to our strategy for broadening our engagement with a wider and more diverse coalition that will help us expand the implementation of carbon pricing schemes around the world, deepen our efforts toward meaningful price levels, and support efforts to create cooperation and links between carbon pricing systems across jurisdictions.

"CPLC will continue to work toward the goal of putting effective carbon pricing policies that maintain competitiveness, create jobs, encourage innovation, and deliver meaningful emissions reductions."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ENDNOTES

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5. Currency conversion based on an exchange rate of SEK 9.61 per EUR

6. PMR provided Brazil US$ 3 million in August 2014 to conduct analytical studies, covering carbon tax, and ETS policy options.

7. CEBDS' president is a member of the Council of Economic and Social Development (SEDES, from the name in Portuguese – http://www.cdes.gov.br/) within the presidency of Brazil.

8. The financial sector faces risks associated with the transition to a low-carbon economy, and wants to know the impact of carbon pricing on sectoral competitiveness and their investments. IFC has been instrumental in supporting the Brazilian financial sector.

9. The sole acknowledgment in the report was provided to the CPLC Secretariat.

10. IEC acknowledged the support in this process ("IEC is grateful for Carbon Pricing Leadership Coalition's support and participation in developing its carbon pricing statement.").

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Indian Railways
Italy
Ivory Coast
Japan
Kazakhstan
Mexico
Morocco
Netherlands
New Zealand
Northwest Territories
Norway
Ontario
Panama
Portugal
Quebec
Singapore
Spain
Sweden
Switzerland
United Kingdom

PRIVATE SECTOR

Abengoa
Acciona
AGL Energy
Aimia
Air Canada
ALLCOT Group
AMATA
American Sustainable Business Council
AP4
Arvind
Atmoterra
Atos SE
AXA
Baker & McKenzie
Bank Australia
Barco NV
Barrick Gold Corporation
BG Group
BHP Billiton
Blackstone Energy Services Inc
BMO Financial Group
BNP Paribas
BP
Braskem
Broad Group
BT Group
Calidda
Canadian Tire Corporation
Carbon Engineering
Carrefour
Catalyst Paper Corporation
Cement Association of Canada
Cemex
Cenovus Energy Inc.
CIBC
CIFF
Climate Focus
Coca Cola HBC AG
CommerzBank
Coway
CPFL
DAI Global
Dalmia Cement
Danfoss
Daniels Power Corporation
DAO Integral Platform for Climate Initiatives
Desjardins Group
DNVGL
EcoAct Inc.
Ecofrotas
Ecofys – A Navigant Company
Ecotierra
EDF (Utility)
EDP-Engias de Portugal
Ekbd Consult
EKI Energy Services Ltd.
EllisDon
En+ Group
Enagas
Enbridge
Enel
Engie
Eni
Environmentfirst Energy Services Private Limited (EESPL)
Eskom
EY
Ferrovial
Fortum
Garanti Bank
Gas Natural Fenosa
Get2C
Global Environmental Markets
GODREJ & BOYCE Mfg. Co. Ltd.
Gol Linhas Aéreas Inteligentes
Groupe ADP
Grupo Financiero Banorte
Hindustan Construction Company
HSBC
Iberdrola
IKEA Canada
Infigen Energy
Infosys
Keyassociados
Kruger Inc
LafargeHolcim
LATAM Airlines Group
Lloyd's Register
Loblaw Companies Limited
Mahindra
Man Group
Michelin
Milbank
Mott MacDonald
National Bank Australia
Natura
Nature Bank
NEAS Energy
NEI Investments
Nestle
Nordea Bank
Nouveau Energy Management
Novartis
Novozymes
OHL Group
Ontario Power Generation
Origin Energy
Perspectives Climate Group GmbH
PG&E
Portafolio Verde
Predict Ability Limited (PAL)
Redshaw Advisors
Resolute Forest Products Inc.
Royal Bank of Canada
Royal DSM
Royal Philips
Rusal
Saint-Goabin
Schneider Electric
Scotiabank
Sekerbank
Shell
Shell Canada
Siemens
Sindicatum
SkyPower
Solvay
South Pole Group
SSE
Star Rapid
Statkraft
Statoil
Suez Environnement
Suncor Energy
Tata Group
TD Bank
Teck Resources
TELUS
The Carbon Trust
The Co-operators Group Limited
The Toronto Dominion Bank Group
Total
TransCanada Corporation
Trucost
Unilever
Vale SA
Veolia
Vestas
Viña Concha y Toro
Visao Sustentavel
Yes Bank
Zenith Bank

STRATEGIC

ABIQUIM
Asia Society Policy Institute
Brazilian Tree Industry (IBA)
Brazilian Agricultural Research Corporation (Embrapa)
BSR
BTeam
C2ES Center for Climate and Energy Solutions
Carbon Market Watch
Caring for Climate
CDP
CEBDS
CEPS Centre for European Policy Studies
Ceres
CII-ITC Centre of Excellence for Sustainable Development
Citizen's Climate Lobby
Cleantech21 Foundation
Climate Leadership Coalition (CLC)
Climate Outreach
Climate Solutions Group Limited
Climate Strategies
Climate Transparency Initiative
CMIA The Climate Markets and Investment Association
Coalition for Rainforest Nations
Danish Industry
EBRD - European Bank for Reconstruction and Development
EDF Environmental Defense Fund
EpE Entreprises pour l'environnement
Fundación Natura
George Washington University, Environmental and Energy Management Institute (EEMI)
Global Maritime Forum
Gold Standard Foundation
I4CE
ICAP
ICTSD International Center for Trade and Sustainable Development
IDEAcarbon
IETA
IFC
IGES Institute for Global Environmental Strategies
IIGCC The Institutional Investors Group on Climate Change
IMF - International Monetary Fund
Instituto Ethos
Japan Climate Leaders' Partnership (CLP)
Klimaatplein.com
MIT
OECD
Prince of Wales Corp Leadership Group
Put a Price on it
Russian Carbon Fund
Sekem Group
Shakti Sustainable Energy Foundation
Solutions for our Climate (SFOC)
Stockholm Environment Institute
The Climate Group
The Climate Trust
The Nature Conservancy
The Shift Project
UCL
UN Foundation
UN Global Compact
Union of Concerned Scientists
Verra
WBCSD
We Mean Business
WEF
World Bank Group
WRI
WWF
Yale