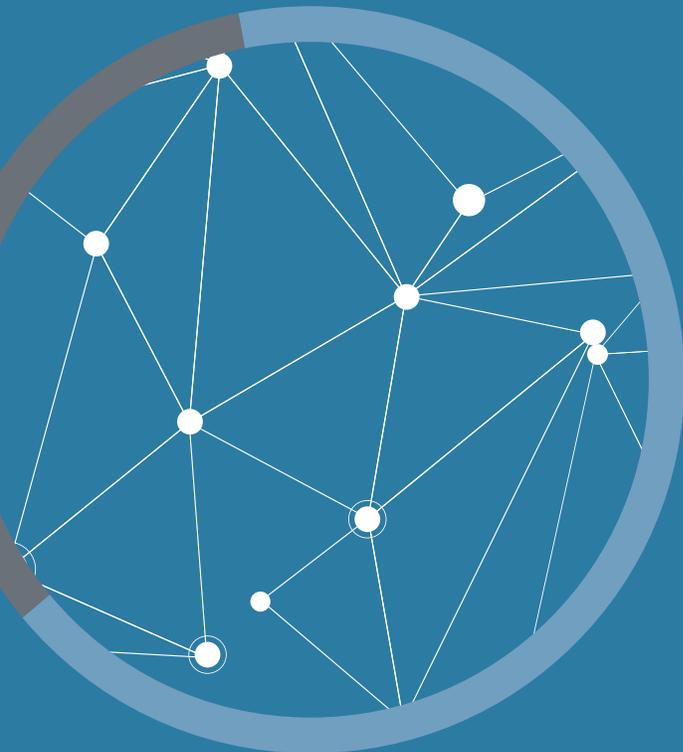
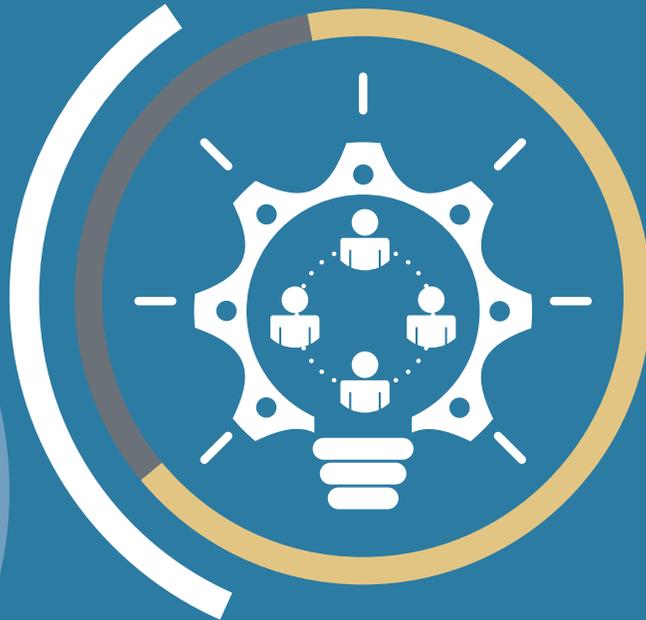




CARBON PRICING  
LEADERSHIP COALITION

# CARBON PRICING LEADERSHIP REPORT



2018 | 19

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# ACKNOWLEDGEMENTS

THANK  
YOU

The Carbon Pricing Leadership Coalition (CPLC) is a voluntary partnership of national and sub-national governments, businesses, and civil society organizations aiming to expand the use of carbon pricing across the globe. The CPLC Secretariat is administered by The World Bank Group.

This report acts as CPLC's 2018/19 annual report, providing an update on CPLC's activities over the last year. It also showcases articles from thought leaders to inspire and guide government and business leaders to increase their carbon pricing ambition.

We owe a special thanks to our partners from across all spheres for their contributions to this report.

The CPLC Secretariat team—including Angela Churie Kallhauge, Isabel Saldarriaga, Dominik Englert, Namrata Rastogi, Aditi Maheshwari, Ayesha Malik, Carlos Cordova, Smita Rana, and Celine Ramstein—provided further invaluable inputs, as did The World Bank's Carbon Markets and Innovation Team.

CPLC acknowledges the generous support provided by the Children's Investment Fund Foundation, the government of the Netherlands and Germany, and The World Bank Group.

The report was edited by Thomas Samuel Erb with the help of Clarity Editorial in Cape Town, South Africa. Graphic design by Clarity Editorial.

# ACRONYMS AND ABBREVIATIONS

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<b>B.C.</b>	British Columbia
<b>BMU</b>	German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety
<b>CEBDS</b>	Brazilian Business Council for Sustainable Development
<b>CI-ACA</b>	Collaborative Instruments for Ambitious Climate Action
<b>CORSIA</b>	Carbon Offsetting and Reduction Scheme for International Aviation
<b>CPLC</b>	Carbon Pricing Leadership Coalition
<b>EBRD</b>	European Bank for Reconstruction and Development
<b>EDF</b>	Environmental Defense Fund
<b>ETS</b>	Emissions trading system
<b>EU</b>	European Union
<b>GDP</b>	Gross domestic product
<b>GIZ</b>	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
<b>ICAP</b>	International Carbon Action Partnership
<b>IETA</b>	International Emissions Trading Association
<b>IFC</b>	International Finance Corporation
<b>IMF</b>	International Monetary Fund
<b>IMO</b>	International Maritime Organization
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>MEPC</b>	Marine Environment Protection Committee
<b>MO</b>	Mitigation outcomes
<b>NDC</b>	Nationally Determined Contribution
<b>PMR</b>	Partnership for Market Readiness
<b>TCFD</b>	Task Force on Climate-related Financial Disclosures
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>WRI</b>	World Resources Institute



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# FOREWORD BY CHRISTINE LAGARDE

MANAGING DIRECTOR, INTERNATIONAL MONETARY FUND

Climate change is the greatest threat facing our planet. Accordingly, the efforts of the Carbon Pricing Leadership Coalition (CPLC) to promote dialogue and action on carbon pricing are of utmost importance. Our own message at the International Monetary Fund (IMF) continues to be: “Price it right, smart, and now.”

Price it right, because carbon pricing is the most effective way to provide across-the-board incentives to conserve energy and switch to cleaner energy sources. Pricing also provides the essential signal for redirecting finance and private investment flows towards clean technologies, in the form of bank lending, project finance, and institutional and equity investing. Curbing fossil fuel combustion can also produce very large domestic environmental benefits, most importantly, reductions in deaths from exposure to local air pollution. In many countries, these benefits alone fully justify the economic costs of carbon pricing. Variations in pricing can also address broader emissions sources, for example, from forestry, international transportation, extractive activities, and industrial processes.

Price it smart means keeping it simple. For example, most finance ministries routinely collect royalties or excise taxes on fuel supply. Carbon charges can be readily incorporated into these. Smart also means making the most of the fiscal opportunities. For example, a carbon price of \$70 per ton in 2030 would, on average, raise revenue of around 1% to 3% of gross domestic product (GDP). These revenues can be used for lowering income and payroll taxes that distort economic activity, reducing debt, and financing the Sustainable Development Goals, all of which will help to maintain growth as economies decarbonize.

And price it now is important because we are running out of time. While 190 countries have submitted climate strategies for the Paris Agreement, nearly all of them with mitigation commitments, we need meaningful progress on these commitments because the window of opportunity for containing global warming to manageable levels is closing rapidly.



But we need to be realistic about the immense challenges. The roadmap laid out by the landmark Paris Agreement needs much strengthening and refining. Even if fully implemented, current mitigation pledges would be consistent with allowing global temperatures to rise by 3°C by the end of this century, rather than the 1.5°C to 2°C target of the Paris Agreement. Pledges differ greatly in their ambition and there is substantial cross-country dispersion in the emissions prices needed to implement them, implying potentially large benefits from international price coordination. And, despite numerous pricing initiatives at the national and sub-national level discussed in this report, the global average carbon price is still only \$2 per ton, a tiny fraction of what is needed for meaningful action.

So, how might we move forward in aligning carbon pricing with the Paris goals? First, and this has been a major focus at the International Monetary Fund, we need quantitative analysis of the emissions prices needed for countries to meet their mitigation pledges and of the resulting impacts on the economy, fiscal balances, ordinary citizens, particularly vulnerable groups, and tradeoffs with other instruments (such as emission rate standards). This information is needed to guide policy design, including the provision of assistance for vulnerable households and firms. And at an international level it informs dialogue on countries’ mitigation commitments.



Second, we need complementary investments to make carbon pricing more effective, such as research into clean technologies and infrastructure upgrades to accommodate renewable energy sources.

Third, at a collective level we should consider reinforcing the Paris process through carbon price floor arrangements among large emitters. These can help to ensure a minimum level of effort, provide some protection against competitiveness impacts, and allow flexibility for those who need to price more aggressively to achieve their commitments. Even countries for which the floor price exceeds what is needed to meet their pledge might benefit from trading excess mitigation credits to other countries.

The most difficult challenges, however, are those of making reform happen at the domestic level. This is more art than science. A comprehensive, gradually phased, and well-communicated pricing strategy is needed, with clearly specified use of revenues and measures to assist vulnerable groups. But even this may not be sufficient. It takes dynamic leadership to push reform through, and sometimes well-designed pricing reforms might be derailed for socio-political reasons.

In short, there is much to debate on how to move carbon pricing forward and we need to understand and share perspectives and experiences across a broad range of countries, industries, and stakeholders. An engaged leadership is critical. CPLC has a critical role to play. And in light of the great existential crisis of climate change, which looks more threatening with every passing year, its work has never been more important.

# NOW IS THE TIME TO ACT

HELEN MOUNTFORD AND ENRIQUE LENDO (CO-CHAIRS, CPLC STEERING COMMITTEE)

**Climate change is a defining issue of the 21st century—one that will significantly impact the lives of future generations.**

The scientific evidence for climate change is bold and undeniable. The Intergovernmental Panel on Climate Change's (IPCC's) recent *Special Report on Global Warming of 1.5°C* found that “climate change represents an urgent and potentially irreversible challenge to human societies and the planet.”<sup>1</sup> The impacts of global warming can be catastrophic—sea-level rise that could lead to the disappearance of island nations, increased frequency of extreme weather events, and structural changes in ecosystems, among others.

Climate change is also a poverty multiplier; its impacts will make the poor poorer and the total number of people living in poverty greater. Massive migrations in several regions are already taking place due to droughts, water scarcity, and difficulties in accessing basic resources. Extreme weather is damaging infrastructure such as power, roads, hospitals, clinics, and schools, exacerbating the risk to vulnerable communities. These threats and impacts will continue to grow unless urgent and collective action is taken to address climate change.

The good news is that acting on climate is not only an imperative, it is also an opportunity. The New Climate Economy's 2018 report finds that bold climate action could deliver \$26 trillion in economic benefits through to 2030, compared with a business-as-usual scenario.<sup>2</sup> And that is a conservative estimate. It could also generate more than 65 million new low-carbon jobs in 2030, equivalent to the current workforces of the



United Kingdom and Egypt combined, and more than offset any losses in other sectors; prevent more than 700,000 premature deaths from air pollution compared with business as usual in 2030; and increase women's participation in the labor force. So how do we unlock those benefits?

## THE PARIS AGREEMENT

The Paris Agreement, one of the most progressive international environmental cooperation agreements to date, was adopted in 2015 and has since been ratified by 185 parties. Its commitments are in line with science: to stabilize the increase in the global average temperature to well below 2°C and pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels. A key element of this agreement is the Nationally Determined Contributions (NDCs)—bottom-up, country-led efforts to reduce their emissions and adapt to climate change. While the sum of all mitigation commitments contained in NDCs is not enough to stabilize the increase of global temperature at 1.5°C, the agreement is dynamic, allowing for periodic enhancement of NDCs to reach such a target.

Even though the Paris Agreement provides countries with a flexible approach to meet their targets, the devil is in the detail, or in this case, the devil is in the “doing.” Significant challenges remain for effective implementation. In the face of much broader political transitions around the world, there is a pressing need to



keep parties engaged and committed to acting on climate change. As we recently witnessed, the protests in France reinforced the importance of implementing the Paris Agreement in line with the socioeconomic realities of a modern world. And there is increasing recognition of this reality. In the United States Congress, a bipartisan group of lawmakers is supporting the Energy Innovation and Carbon Dividend Act,<sup>3</sup> under which carbon fee revenues would be allocated in equal shares every month to the American public.

### THE ROLE OF CARBON PRICING

To meet the ambitious goals set by the Paris Agreement, all stakeholders must act. The Organisation for Economic Co-operation and Development estimates that infrastructure investment of \$6.9 trillion a year for the next 15 years is needed to limit global temperature increase to 2°C.<sup>4</sup> Resources from public sources will not be enough to finance this transformation. Innovative financing will be key. Active engagement by the private sector through investment, innovation, and corporate social responsibility will help accelerate the global transition to a low-carbon future.

For deep decarbonization of the economy and the unprecedented level of investment needed to support this, carbon pricing offers promising opportunities to mobilize support. Carbon pricing, when done right, provides a clear incentive to governments, businesses, and consumers to shift investments and expenditures to more efficient, low-carbon alternatives. Carbon pricing provides the predictability that businesses need to drive investments and spur innovation for low-carbon solutions to become a reality.

Carbon pricing can also help deliver on broader government priorities by providing much needed government revenues. In 2017, carbon pricing systems provided \$33 billion in revenues in countries around the world.<sup>5</sup> In the future, fossil fuel subsidy reform combined with carbon pricing could generate an estimated \$2.8 trillion in government revenues per year in 2030—equivalent to the total GDP of India today.<sup>6</sup> These funds can be used to invest in urgent public priorities. If well designed and implemented, governments can use carbon pricing to ensure no one is left behind during the shift to a low-carbon economy. Only by ensuring a well-managed and just transition can society—and, indeed, politicians—move at the pace and scale required to bend the emissions curve.

Already, carbon pricing has significant momentum around the world—today, 46 national jurisdictions and 28 sub-national jurisdictions are covered by initiatives that are putting a price on carbon. These cover an estimated 20% of greenhouse-gas emissions—a significant increase from under 1% just 15 years ago.<sup>7</sup> And as countries set ambitious emissions reduction targets, more and more countries are including carbon pricing in their climate action plans: 57 carbon pricing initiatives have been implemented or are scheduled for implementation, and a growing number of major companies around the world are adopting internal carbon pricing schemes.<sup>8</sup>

### THE ROLE OF THE CARBON PRICING LEADERSHIP COALITION

CPLC, an international advocacy coalition of over 270 governments, businesses, and civil society organizations, is playing a critical role in expanding the use of carbon pricing schemes around the world. By bringing together stakeholders from across different sectors, CPLC is successfully driving action through strategic public-private dialogues, knowledge sharing, and targeted technical analysis.

This last year saw a series of new, successful carbon pricing developments through CPLC. The growing momentum of carbon pricing in Asia led to the launch of CPLC's first local chapter in Singapore. At the 2018 United Nations Climate Change Conference, also known as COP24, CPLC hosted its annual Leadership Dialogue on carbon pricing revenues led by High-Level Assembly Co-Chairs Catherine McKenna (Minister of Environment and Climate Change, Canada) and Gérard Mestrallet (Chair of the Board, Suez, and Honorary Chair and former CEO, ENGIE), where ministers spoke about how carbon revenues can be used to accelerate the climate transition. Recognizing the concerns of the private sector on competitiveness related to carbon pricing, CPLC launched the High-Level Commission on Carbon Pricing and Competitiveness comprising leaders from the private sector and government to get a better understanding of competitiveness issues and



Catherine McKenna (Minister of Environment and Climate Change, Canada, right) speaks to Carlos Manuel Rodríguez (Minister of Environment and Energy, Costa Rica, middle) and George Heyman (Minister of Environment and Climate Change Strategy, British Columbia, left) at the CPLC Annual Leadership Dialogue at COP24.

how to address them. And most recently, a first-of-its-kind international research conference was hosted by CPLC in India, which convened over 150 researchers, policymakers, and practitioners from around the world to strengthen the carbon pricing knowledge base and foster an improved understanding of the evolving challenges to its successful implementation. “CPLC in 2018/19”, from page 14, contains more detail on the coalition’s recent activities.

In spite of the progress, challenges remain. In May 2017, the High-Level Commission on Carbon Prices concluded that the carbon price level consistent with achieving the Paris temperature target is at least \$40 to \$80/tCO<sub>2</sub> by 2020 and \$50 to \$100/tCO<sub>2</sub> by 2030.<sup>9</sup> This level is significantly higher than the average carbon price across existing systems. Higher carbon price levels will not only foster a reduction in emissions but also spur the investment required for a low-carbon economy. In the past two years we have seen some important progress, with Canadian provinces, the European Union (EU), and the United States Regional Greenhouse Gas Initiative states all agreeing to increase carbon tax prices or tighten emission allowances. Additionally, Chile, Colombia, and Singapore introduced carbon taxes, and China and Mexico are continuing their development of cap-and-trade systems.

But more is needed. Concerted efforts must still be made to broaden and deepen carbon pricing in different sectors and regions to align policies with the conclusions of the High-Level Commission on Carbon Prices. And as more developing countries implement carbon pricing schemes, the policies should ensure consistency with the broader development agenda. Inclusive stakeholder engagement will be vital to enable socially beneficial outcomes from pricing policies. There are many successful examples from around the world of how this can be done, and we need to learn from them.<sup>10</sup>

CPLC will continue to advocate for carbon pricing as a tool—both to reduce carbon pollution and further social and development goals. To do so, CPLC is strengthening its collaboration at the regional level and enhancing its engagement with the private sector to build an even more robust global coalition.

# ACHIEVEMENTS IN 2018/19

## RESEARCH CONFERENCE

We hosted our inaugural Research Conference in New Delhi, India, bringing together over 175 researchers, practitioners, and interested stakeholders from across the globe to share knowledge and learning.



## High-Level Commission on Carbon Pricing and Competitiveness held its first meeting

The High-Level Commission on Carbon Pricing and Competitiveness held its first meeting in February 2019. The commission was formed to get a better understanding of how carbon pricing will affect competitiveness and determine how to best address these concerns.

**Strengthened presence in Southeast Asia**  
The growing momentum of carbon pricing in Asia led to us launching our first local chapter in **Singapore**.



## 3rd CPLC HIGH-LEVEL ASSEMBLY HELD

Held in Washington, D.C., in April 2018, the 3rd CPLC High-Level Assembly brought together leaders from all spheres to discuss challenges and developments in carbon pricing.



**390 participants** took part in Carbon Pricing Workshops that we ran during regional Climate Weeks in Asia-Pacific (60 participants), Latin America and the Caribbean (80), and Africa (250).



# 16

New members joined the coalition in 2018/19, bringing our total number to **275**: 33 national and sub-national governments, 162 businesses, and 80 strategic partners.

07

**POSITIVE  
OUTCOMES  
IN CARBON  
PRICING**



**57**  
carbon pricing  
initiatives implemented  
or scheduled to  
implement  
globally

**28**  
of them are  
emissions trading  
systems

**29**  
of them are  
carbon taxes

# EXECUTIVE SUMMARY

Carbon pricing initiatives continue to gain momentum across the globe. At the time of writing, The World Bank's Carbon Pricing Dashboard indicated that there are 57 carbon pricing initiatives, covering 46 national and 28 sub-national jurisdictions.<sup>11</sup> This number has almost tripled in the last decade, with momentum recently building in the Americas, with Chile and Colombia introducing carbon taxes in 2017, and in Asia, with the development of the Chinese cap-and-trade program and the introduction of a carbon tax in Singapore.

To date, there have been several carbon pricing success stories. After British Columbia (B.C.) introduced a carbon tax in 2008, its carbon pollution has dropped while its GDP has increased. A little further south, California started its cap-and-trade program in 2012 and recently extended the program post-2020. In 2018, the state announced that it had reached its carbon emissions reduction goals four years ahead of schedule. In 2013, the United Kingdom introduced a carbon price floor, which corresponded with a significant reduction in coal use over the subsequent five years. (See "Governments and Regional Leadership" on page 24 for more updates on progress in various areas across the globe.)

In the private sector, companies are increasingly committing to climate action as they begin to understand the risks climate change poses to their supply chains and the financial and environmental benefits of low-carbon opportunities. At the Global Maritime Forum's Inaugural Annual Summit in Hong Kong in 2018, a new IMF Working Paper was launched on *Carbon Taxation on International Maritime Fuels* and dozens of shipping CEOs called for greater climate action, including carbon pricing. Towards the end of 2018, the International Finance Corporation (IFC)

released a report on how carbon pricing can reduce climate risk and encourage climate-smart construction in the construction industry value chain. In Canada, the Canadian Chamber of Commerce endorsed carbon pricing in a report, arguing that it is the most efficient approach to addressing climate change.<sup>12</sup> Finally, in late 2018, 415 investors released a statement urging leaders to advance the goals of the Paris Agreement. The group, representing \$32 trillion in assets, called for a "meaningful price on carbon" to "accelerate private sector investment into the low-carbon economy."<sup>13</sup> (See "Private Sector," page 42, for more stories from our private sector partners.)

In innovative sectors, CPLC partners encouraged greater carbon pricing adoption in 2019 and will continue to do so. The World Bank's Partnership for Market Readiness (PMR) and CPLC published the *Guide to Communicating Carbon Pricing* to help governments and businesses design effective communications strategies. The Environmental Defense Fund teamed up with other partners to provide technical workshops on carbon markets to students, governments, and interested stakeholders using its unique CarbonSim tool. Yale University and Swarthmore College collaborated with other colleges and universities to launch the *Internal Carbon Pricing in Higher Education Toolkit* for campuses looking to experiment with carbon pricing. ("Strategic Partnerships", page 57, contains more detail on these and other innovations.)

Despite these success stories, 2018 was a year of climate wake-up calls. The *IPCC Special Report on Global Warming of 1.5°C* outlined the significant negative consequences just a half-degree increase in warming could have.<sup>14</sup> The United States' Fourth National Climate Assessment<sup>15</sup> detailed the negative economic and health impacts that climate change poses, predicting hundreds of billions in annual costs to the U.S. economy under business-as-usual scenarios. *The New York Times* published "2018: The Year in Climate Change," which reported some of the dangers of a warmer planet and the impacts that are already occurring.<sup>16</sup>



Ian Parry (Principal Environmental Fiscal Policy Expert, International Monetary Fund) discusses carbon pricing at the Global Maritime Forum Summit.

At the same time, new research is revealing the real economic and health benefits of climate action. The New Climate Economy's 2018 report, as mentioned by the CPLC Co-Chairs, estimated that climate-smart growth would deliver \$26 trillion in economic benefits compared to business as usual between now and 2030. The report emphasized the importance of carbon pricing and climate-related financial disclosure in driving the necessary levels of low-carbon investment.<sup>17</sup> Additionally, IFC published *Climate Investment Opportunities in Cities*, which found that "cities in emerging markets around the globe have the potential to attract more than \$29.4 trillion in cumulative climate-related investments in six key sectors by 2030."<sup>18</sup>

Innovations in carbon pricing will be critical to determining the world's ability to meet the goals of the Paris Agreement and deliver the benefits of a clean energy transition. The future looks promising: Canada will implement its federal carbon pricing backstop, which includes a plan to tackle concerns regarding impacts on competitiveness and unfair distributional impacts. China is continuing to develop the world's largest carbon market. U.S. states such as Massachusetts, New York, and Oregon are exploring carbon pricing as a key part of their climate plans. And, nine northeastern U.S. states agreed to design a regional cap-and-trade program for transportation. Singapore implemented its carbon tax in 2019 and launched the first CPLC chapter focused on engaging the business community. Côte d'Ivoire has been exploring the potential of using carbon pricing to put the country on a low-carbon development pathway and to reach the objectives of its NDC (see page 28).

South Africa is planning to implement an economy-wide carbon tax in June 2019—the first policy of its kind in Africa. The EU's emissions trading system (ETS) is strengthening, while European leaders have doubled down on carbon pricing. Chile is considering an ETS in addition to its existing tax on air emissions, and other Latin American countries are looking into using carbon pricing.

Overall, 88 countries have already mentioned carbon pricing in their NDCs, and many more will likely turn to carbon pricing as a balanced approach to reducing carbon pollution and furthering other social, economic, and health goals.

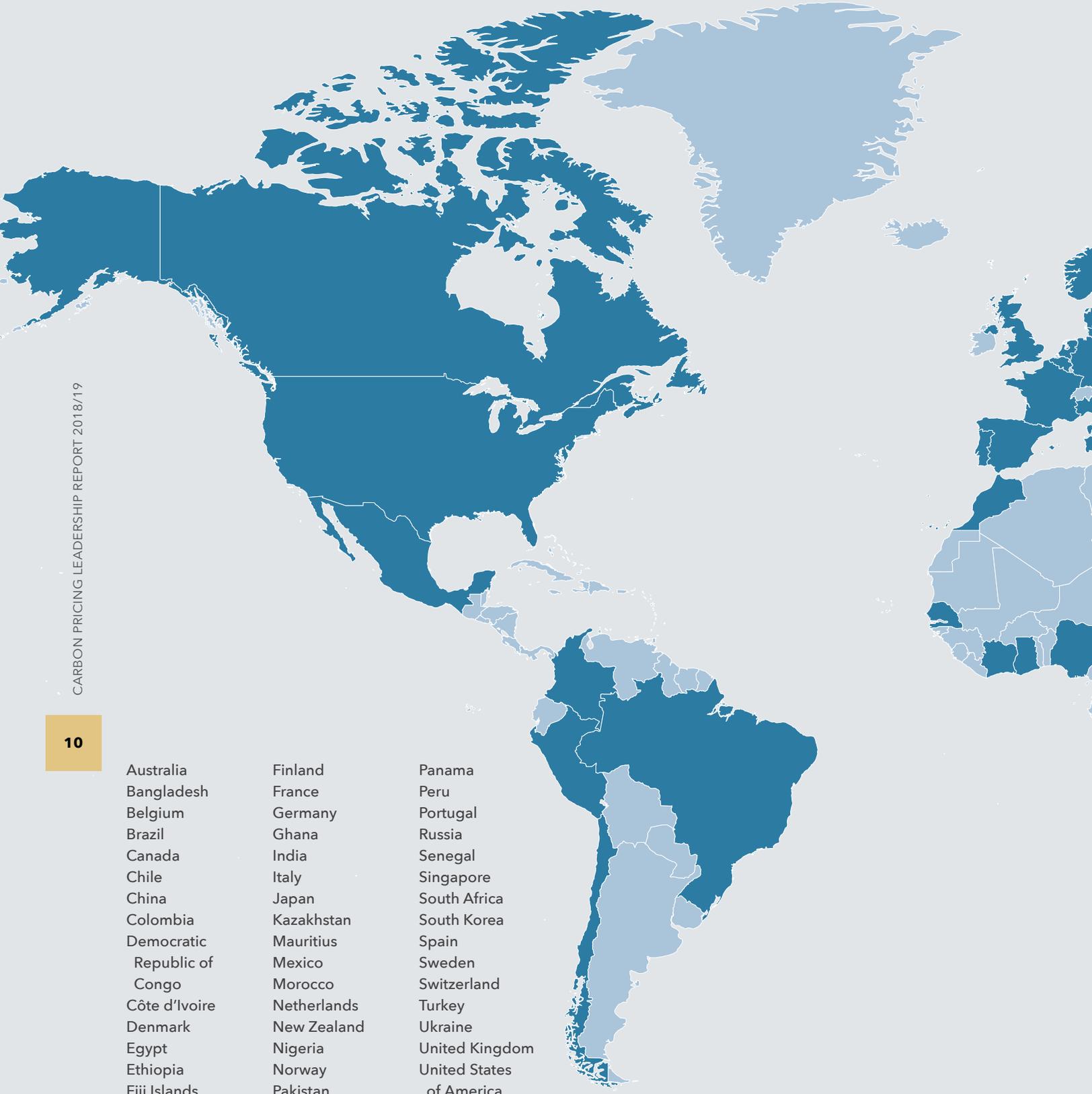
## CARBON PRICING DASHBOARD



Launched in May 2017, The World Bank's 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 analyses of the annual *State and Trends of Carbon Pricing* report series.<sup>19</sup> Users can navigate key statistics and information on carbon pricing initiatives implemented or scheduled for implementation using the interactive maps and graphs.

An updated Carbon Pricing Dashboard is available at: [carbonpricingdashboard.worldbank.org](http://carbonpricingdashboard.worldbank.org).

# OUR PARTNERS

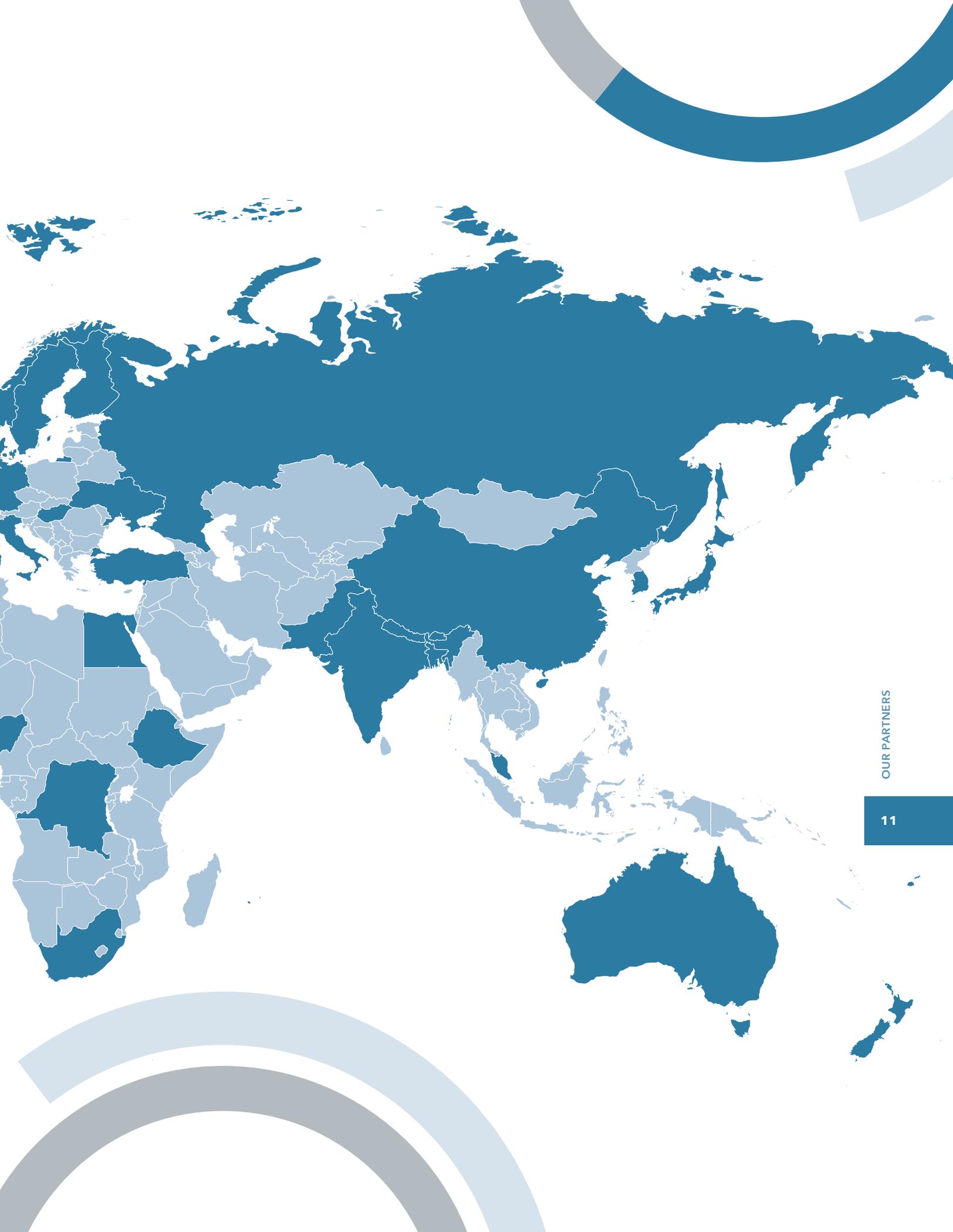


CARBON PRICING LEADERSHIP REPORT 2018/19

10

- |                              |             |                          |
|------------------------------|-------------|--------------------------|
| Australia                    | Finland     | Panama                   |
| Bangladesh                   | France      | Peru                     |
| Belgium                      | Germany     | Portugal                 |
| Brazil                       | Ghana       | Russia                   |
| Canada                       | India       | Senegal                  |
| Chile                        | Italy       | Singapore                |
| China                        | Japan       | South Africa             |
| Colombia                     | Kazakhstan  | South Korea              |
| Democratic Republic of Congo | Mauritius   | Spain                    |
| Côte d'Ivoire                | Mexico      | Sweden                   |
| Denmark                      | Morocco     | Switzerland              |
| Egypt                        | Netherlands | Turkey                   |
| Ethiopia                     | New Zealand | Ukraine                  |
| Fiji Islands                 | Nigeria     | United Kingdom           |
|                              | Norway      | United States of America |
|                              | Pakistan    |                          |

This map features the CPLC footprint of its government, private sector and strategic partners around the globe.



# A CARBON PRICING SUCCESS STORY



GEORGE HEYMAN, MINISTER OF ENVIRONMENT AND CLIMATE CHANGE STRATEGY FOR BRITISH COLUMBIA

On December 5, 2018, the province of British Columbia announced CleanBC, our plan to put B.C. on the path to a cleaner, more prosperous future. The initiatives put forward in CleanBC work in conjunction with the B.C. carbon tax to provide an effective blueprint to build a low-carbon economy that creates opportunities for all while making things more efficient, using less energy, wasting less, and making sure that the energy we use is the cleanest possible and made-in-B.C.

These initiatives won't just protect our environment and clean our air—they will help create new economic opportunities for people and spur innovation to grow the world-leading technology and clean energy sectors in our low-carbon economy.

B.C. recognizes that carbon pricing is an integral element of a low-carbon economy. Our jurisdiction began to price carbon in 2008, the first in North America with such a broad-based tax. The tax on carbon is applied to the purchase and use of fuels in B.C. and covers about 70% of provincial emissions. The tax was introduced at \$10/ton in 2008 and increased \$5 each year until it reached \$30/ton in 2012, where it was frozen for five years.

In 2018, government began to increase the carbon by \$5/ton/year until B.C. reaches \$50/ton in 2021—a year earlier than the timeframe mandated by our national government. Between 2007 and 2016, B.C.'s net greenhouse-gas emissions declined by 3.7% while at the same time real GDP grew by 19%, demonstrating that carbon pricing and economic growth can go together.

Making these changes cannot leave anyone behind. While CleanBC will give people more affordable choices to save energy over the long run by helping with the upfront costs that come with home improvements, using cleaner energy, and zero-emission vehicles, new revenues generated from increasing the carbon tax will be used to provide carbon tax relief and protect affordability. One way we're doing this is by providing eligible British Columbians with a Climate Action Tax Credit which helps offset the impact of the carbon taxes paid by low- and moderate-income individuals or families. The annual amount British Columbians receive depends on

family size and net family income, up to a maximum of \$135 per person and \$40 per child in 2018.

Government also offers several carbon tax programs for businesses and local governments such as the Greenhouse Carbon Tax Relief Grant to help greenhouses cover a portion of the carbon tax paid, and the Climate Action Revenue Incentive Program to reimburse 100% of the carbon tax paid directly by local governments that have committed to becoming carbon neutral. It's also important that our energy-intensive, trade-exposed industries remain competitive—for the good-paying jobs they provide, and for the families and communities they support.

The CleanBC Program for Industry, a critical component of B.C.'s plan to reduce emissions while growing our economy, is designed to keep industries competitive as they innovate to cut emissions. The program, designed for traditional industries such as pulp and paper mills, large mines, or natural gas operations and refineries, directs a portion of B.C.'s carbon tax paid by industry into incentives for cleaner operations by using two approaches that work in tandem.

The first approach involves providing incentives for interested B.C. facilities that meet a performance benchmark based on the lowest-emitting facility globally—the cleanest in the world. The second approach, the Clean Industry Fund, invests some industrial carbon tax revenue directly into emission reduction projects, helping to make our traditional industries cleaner and stronger.

B.C. is proud to have one of the most broad-based carbon taxes in the world and to stand together with other jurisdictions that have or are planning their own approaches to putting a price on carbon pollution. We believe the only way for jurisdictions to fight climate change is to fight together, and each jurisdiction has a responsibility to take this crisis seriously by implementing a plan to adequately put a price on carbon pollution.

Through our experience with carbon pricing and our CleanBC plan, B.C. has demonstrated that it is possible to reduce emissions and grow the economy, all while providing support for families and industry to transition as we move towards a cleaner, healthier, and more sustainable future for ourselves and our children.



# CARBON PRICING AND ENVIRONMENTAL INTEGRITY: A KEY TO CLIMATE ACTION

CARLOS MANUEL RODRÍGUEZ, MINISTER OF ENERGY AND ENVIRONMENT, COSTA RICA

Our house is on fire and our civilization is at risk. We must step up to ensure we avoid the worst of the climate catastrophe. Science tells us that we need to achieve a global net carbon neutrality no later than 2050, which implies halving global emissions by around 2030. Anything short of that is simply not acceptable. These are scientific facts that should not need repeating as thousands of children remind us through the #FridaysforFuture movement led by Greta Thunberg.

There is a general global consensus among economists and policymakers that effective, environmentally integral carbon pricing instruments are necessary to achieve this goal. Costa Rica is already a clear example of how this might work. Our payment for the environmental services scheme, created more than 20 years ago, uses a portion of our fuel tax to pay land owners for water, scenic value, biodiversity, and carbon sequestration services. This tropical carbon pricing policy has been instrumental in reversing deforestation and achieving the 55% forest cover we currently enjoy. During this time we have invested more than \$400 million in rural areas and impacted 1,122,311 hectares of land and 15,735 families. Of this amount, \$60 million has been directed to indigenous territories with relevant socioeconomic benefits.

Looking forward, our recently launched National Decarbonization Plan 2018–2050 identifies green fiscal reform and carbon pricing as one of the cross-cutting strategies necessary to achieve an economic development model that is compatible with our planet's physical limits. Costa Rica aims to prove, once again, that we can achieve economic growth and social progress while being responsible stewards of our natural environment. What's more, it is the only way to sustain them in the long term.

These dual experience-based convictions—that effective carbon pricing is absolutely necessary, and that carbon pricing is effective only when it is uncompromisingly committed to environmental integrity—guide our internal policies and our positions abroad. I was personally involved in the Article 6 negotiations during COP24 in Poland, as were many other ministers. Although there is no denying that we would have

all preferred to finalize the guidance for cooperative approaches with the rest of the Rulebook, I am encouraged by the clear signal that the international community is committed to doing this right.

With market mechanisms, rules that are insufficient to incentivize the scale of transformation that science tells us the world requires are completely unacceptable, and I have no doubt that parties made the right choice in Katowice, deciding to take the time to come up with the right set of rules. Rules that guarantee robust accounting of every mitigation outcome, regardless of the mechanisms and the party from which they come. Rules that ensure strict limits on pre-2020 units and incentivize additional action, while recognizing the efforts of early movers from previous mechanisms as much as possible. In short, rules that are firmly grounded in the best available science and that hold environmental integrity as their core principle, that promote the necessary ambition, and that will mobilize the private sector with an unequivocal signal for decarbonization and zero deforestation and degradation.

Nature-based solutions will need to be a core strategy to meet the required scale of transformation. Our ecosystems could reduce the level of greenhouse-gas emissions by as much as 30% and are critical to generate resilience and guarantee the livelihoods of vulnerable communities in the developing world. Currently, investments in nature receive less than 3% of climate finance, which is not acceptable. Nature cannot continue to be the forgotten solution and cannot be treated as the cheapest one. This sector has other technical challenges and conditions, and we need to work with the economic and financial sector in order to catalyze investments in our natural capital.

I have no doubt the Chilean COP Presidency will navigate COP25 to a successful outcome with ambition and environmental integrity as its guiding principles. In this endeavor they can count on our unwavering commitment to action and, I am sure, yours as well. For, as the wise Ms Thunberg has taught us, “The one thing we need more than hope is action. Once we start to act, hope is everywhere.”

# CPLC IN 2018/19



CPLC intensified its advocacy role, facilitated new opportunities for sharing between carbon pricing researchers and knowledge creators, and responded to knowledge gaps to strengthen the argument in favor of climate action through carbon pricing.

## ABOUT CPLC

Climate change is the greatest challenge humanity has encountered, and it is one that no single jurisdiction, business, or organization can address alone. Effective climate action requires jurisdictions, businesses, and organizations across the globe to make a concerted effort to work towards one goal: that of limiting atmospheric carbon emissions in order to rein in global warming and lessen the effects of climate change.

Carbon pricing is a powerful policy tool to align the international will towards this one common purpose.

To secure the place of carbon pricing on the global agenda, the CPLC was launched in 2015 with the support of 21 governments and more than 90 businesses and strategic civil society partners. Since then, 275 national and sub-national jurisdictions, businesses and civil society organizations have joined us, benefiting from opportunities to learn about carbon pricing, staying up to date with new developments and research in the field, and sharing experiences relating to the challenges involved with implementing carbon pricing mechanisms.

## OUR STRUCTURES

### High-Level Assembly Chairs

The High-Level Assembly meets once a year to provide vision and strategic direction for CPLC's activities.



**Catherine McKenna**  
Minister of Environment and Climate Change, Canada



**Gérard Mestrallet**  
Chair, Suez; and Honorary Chair and Former CEO, ENGIE

### Steering Committee

The Steering Committee brings together leaders from government, business, and the nonprofit sector. The committee meets six times a year to: monitor the progress of the CPLC Secretariat; ensure that its activities align with the High-Level Assembly's vision and direction; and recommend new initiatives.



CO-CHAIR



CO-CHAIR



**Left to right: Helen Mountford**, Vice President, Climate & Economics, World Resources Institute & Program Director, New Climate Economy; **Enrique Lendo**, Former Head of the Unit of International Affairs, Ministry of Environment and Natural Resources, Mexico; **Jen Austin**, Policy Director, We Mean Business coalition; **Femke de Jong**, Policy Director, Carbon Market Watch—until Jan 2019.



**Left to right: Dirk Forrister**, CEO and President, International Emissions Trading Association; **Marina Grossi**, President, Brazilian Business Council for Sustainable Development; **Silke Karcher**, Head of Division, EU Climate and Energy Policy, European Climate Initiative, Carbon Markets, Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety, Germany; **Derya Yalgi**, Sustainability Manager, Garanti Bank.



# IT'S TIME TO FIRE UP THE COLLECTIVE WILL ON CARBON PRICING

GOH SWEE CHEN, PRESIDENT, GLOBAL COMPACT NETWORK SINGAPORE



Climate change is a pressing issue faced today. Its effects are already having measurable impacts worldwide, in the form of global warming or extreme weather events. This has, and will, bring about disruption to daily lives, cause adverse health impacts, and affect business operations.

As the impacts of climate change become increasingly evident, so do the obstacles that lie ahead. Three years after 195 countries pledged in the Paris Agreement to keep global warming below 2°C relative to pre-industrial levels, global emissions are rising.<sup>20</sup> There are signs that some nations may fail to live up to their pledges made in Paris. To meet the Paris goal of keeping rising global temperatures in check, global emissions need to reach net zero around 2050. We must act, and we must act now.

## THE NEED TO POWER UP PRIVATE SECTOR PARTICIPATION

Yet, there is some progress, as we witness the growing efforts of governments globally to tackle climate change. Regionally, the Association of Southeast Asian Nations aims to have renewable energy comprise 23% of the total primary energy supply by 2025: a significant increase from approximately 10% in 2015.<sup>21</sup> Locally, Singapore designated 2018 as the Year of Climate Action and has implemented a carbon tax from 2019, making it the first Southeast Asian country to do so.

Putting a price on carbon—through a tax or alternative mechanisms—captures externalities that help improve carbon efficiency. If such externalities are not factored financially, the public often ends up paying through other means such as increasing health care costs from extreme weather swings or loss of property from natural disasters. While Singapore is already among the 20 most carbon-efficient countries in the world,<sup>22</sup> reducing carbon emissions requires collective, sustained action from the government, civil society, and the private sector. Singapore is home to major manufacturing hubs, which alone contribute 60% of Singapore's greenhouse-gas emissions.<sup>23</sup> Tackling emissions reduction requires commitment from the private sector, whether through investments in innovative solutions or setting an internal price on carbon.

## CARBON: THE NEW LINE ITEM?

Internal carbon pricing refers to the factoring of an assumed (or projected) cost per ton of carbon emissions

into business operating costs or investment decisions. When carbon emissions are factored into companies' profit-and-loss statements, it can help to uncover and reduce existing inefficiencies and encourage low-carbon innovations, in turn cutting companies' emissions and energy costs.

## CARBON PRICING LEADERSHIP COALITION TAKING ROOT IN SINGAPORE

The first official chapter of the Carbon Pricing Leadership Coalition, CPLC Singapore, is a joint effort by Global Compact Network Singapore, the local chapter of the United Nations Global Compact, and CPLC, a coalition convened and supported by The World Bank Group. The coalition aims to reduce greenhouse-gas emissions worldwide through widespread carbon pricing. This initiative is supported by Singapore's National Climate Change Secretariat, which is housed within the Prime Minister's Office. Through this unique partnership, CPLC Singapore will encourage businesses to use internal carbon pricing as a mechanism to guide investment choices and, importantly, to run enduring and responsible corporations.

CPLC Singapore seeks to emphasize the business case for carbon pricing and will assist companies in two ways. First, the initiative helps the private sector manage challenges related to carbon pricing, through a deliberative space for companies to raise concerns, share best practices, and propose sustainable solutions. It will also facilitate multilogues between the public and private sectors, as well as academia, to contribute towards national climate change mitigation policies. Second, CPLC Singapore plans to provide tools that could help businesses assess and manage their climate risks and opportunities.

## TAKING THE LEAD

To be successful and sustainable in the medium to long term, businesses can take the lead in preparing for a low-carbon future through mechanisms like internal carbon pricing. On its part, CPLC Singapore will continue convening like-minded businesses to create progress towards actualizing the ideals of a low-carbon Singapore, and perhaps spur similar chapters in other parts of Asia. By working together as a community with a resolute purpose, we can build a more sustainable future for generations to come.

## Secretariat

The Secretariat is responsible for executing the strategic direction provided by the Steering Committee on a day-to-day basis. It is based at The World Bank Group in Washington, D.C., and facilitates the delivery of the CPLC Work Plan, including coordinating the activities of three regional Working Groups (Africa, Asia, and Latin America) and four sector-focused Task Teams (focusing on the construction value chain, the banking sector, the maritime sector, and higher education). The Secretariat also supports partner recruitment and engagement, and provides a communications hub for the latest developments, research, and thought leadership.



Left to right: Dominik Englert, Smita Rana, Liberty Espiritu, Angela Churie Kallhauge, Aditi Maheshwari, Suneira Rana, Ayesha Malik, and Tom Erb.



Left to right: Marissa Santikarn, Chandni Dinakaran, Carlos Cordova, Namrata Rastogi, and Mercedita Garcia Cano. Not pictured: Isabel Saldarriaga, Celine Ramstein, Oluwafemi Faleye, and Dirk Heine.

## OUR WORK PLAN

In 2018/19, our Work Plan was restructured around the following separate but interrelated pillars: Regional Advocacy; Private Sector Leadership; Fostering Partnerships; Knowledge Creation; and Outreach and Communications. The Regional Advocacy pillar is linked to three regional Working Groups, while the Private Sector Leadership is supported by the work of four Task Teams, as discussed in the next section.

### Regional Advocacy

CPLC has formed regional Working Groups in Africa, Asia, and Latin America to create opportunities for decision-makers, researchers, and influencers to share their findings and develop approaches to carbon pricing.

### Private Sector Leadership

The Paris Agreement's ambitious goals will not be achieved through political will alone. Any chance of stabilizing global warming at 1.5°C above pre-industrial average temperatures depends on the private sector taking a leadership role in climate action. CPLC's four Task Teams focus on the construction value chain,

the banking sector, the maritime sector, and higher education, providing support and advice to decision-makers within these sectors as they investigate and implement internal carbon pricing in their respective organizations and advocate for carbon pricing externally. CPLC also has partners outside of these sectors that show leadership in their own industries.

### Fostering Partnerships

CPLC facilitates partnerships between regional, private sector, and nonprofit stakeholders with the understanding that such relationships foster cross-pollination of knowledge, skills, and the will required to put a price on carbon.

### Knowledge Creation

Carbon pricing is a powerful mechanism for reducing greenhouse-gas emissions, but the form it should take, the methods for implementing it, and its likely effects once in place often require additional research. With this in mind, CPLC and its strategic partners strive to produce knowledge and research outputs that enable leaders to make practical, informed, and data-driven decisions.



## Outreach and Communications

Achieving the goals above rests on our ability to communicate with, and facilitate dialogue between, our partners and other stakeholders. Using all the communication tools available to us, we strive to make connections, maintain open channels of communication, and disseminate knowledge products to those who have a need for them.

## OUR ACTIVITIES IN 2018/19

Our key achievements for 2018/19, as assessed in terms of the pillars of our Work Plan, are set out below.

### Regional Advocacy

Our regional Working Groups created several opportunities for partners and interested stakeholders to discuss topics relating to carbon pricing and climate change:

- The **Latin America Working Group**, which was formed in November 2018, convened two calls to discuss areas of interest. Topics covered ranged from capacity building to engaging the private sector to monitoring and evaluation.
- The **Africa Working Group** convened three calls to discuss, among other issues, lessons learned from the South African carbon tax initiative; Article 6 of the Paris Agreement; the carbon pricing initiative in Ethiopia; and the East and West Africa Carbon Market Alliances. The group aims to expand participation in Africa.

- The **Asia Working Group** hosted two calls with public and private sector stakeholders from various countries in the region to stimulate debate about the policy challenges faced as decision-makers consider carbon pricing schemes.

### Private Sector Leadership

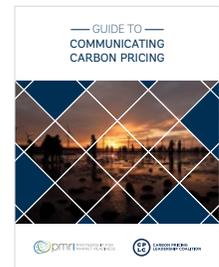
Even though we work to promote carbon pricing across all sectors, our four Task Teams focus on supporting their particular target sectors by producing knowledge, engaging with stakeholders, and organizing capacity-building activities. See the box on page 19 for progress highlights from our Working Groups.

### Knowledge Creation

Together with our partners, we produced several publications and policy briefs to stimulate informed discussions about climate change, carbon emissions, and carbon pricing policy.

#### Knowledge Products and Briefs Guide to Communicating Carbon Pricing

*Published by: Partnership for Market  
Readiness (PMR) and CPLC  
Date published: December 2018*



Broad support from stakeholders and the public is necessary for an enduring, robust carbon pricing policy. How jurisdictions communicate their carbon pricing policy plays a key role in creating and maintaining this support. To help governments, businesses, and other stakeholders design



The regional working groups in action.



and implement effective communications strategies around carbon pricing, the PMR and CPLC developed the *Guide to Communicating Carbon Pricing*. Key messages from the guide include:

- Communication needs to be part of the policymaking process.
- Communications strategies should be research-based and tailored to each country's needs.
- Strong communications can only be built on good, fair, and effective (carbon pricing) policy.
- Emphasizing non-climate-related benefits of carbon pricing may be more powerful than focusing on climate change.
- Visible use of carbon price revenues is often key.
- Good communications are built around values.

The guide was presented at COP24 by authors George Marshall (Co-Founder and Director of Projects, Climate Outreach)<sup>24</sup> and Darragh Conway (Lead Legal Counsel, Climate Focus),<sup>25</sup> together with Daniel Besley (Senior Climate Change Specialist, The World Bank). A webinar with the authors was also held in January 2019, drawing the highest participation numbers to date for a World Bank-hosted webinar.<sup>26</sup> The guide has received enormous interest from stakeholders since its release, with a renewed call to the PMR and CPLC to deepen this work to support governments as they build the capacity of policymakers to better integrate communications in their policies.

## Task Teams: 2018/19 highlights



The **Construction Value Chain Task Team** explores ways to consistently implement carbon pricing across the construction value chain. In 2018/19, the team published a report titled *Construction Industry Value Chain: How Companies Are Using Carbon Pricing to Address Climate Risk and Find New Opportunities*. The report explores industry perspectives on carbon pricing and proposes an integrated approach to carbon pricing across the value chain. See page 44 for more detail.



The **Banking Sector Task Team** works with commercial and multilateral banks across the world to help them understand the financial implications of climate change and how carbon pricing could affect their portfolios and risk assessments. The team also helps banks develop and apply internal carbon pricing to their operations. Among other activities, in 2018/19 the team produced a brief titled *Carbon Pricing and the TCFD* (discussed in the next section, "Knowledge Creation").



The **Maritime Task Team** works with governments, the private sector, and other stakeholders to chart a journey to a decarbonized shipping sector. Through general outreach, stakeholder engagement, and knowledge production, the team complements and informs the political decision-making processes of the International Maritime Organization. As a result of CPLC's maritime engagement, in 2018 IMF released a Working Paper titled *Carbon Taxation for International Maritime Fuels*, which assesses policy options and makes the case for a carbon tax.



The **Carbon Pricing in Higher Education Working Group** was founded to help tertiary education institutions implement an internal carbon price on campus. The group comprises colleges and universities from Canada, England, and the United States. Despite only being formed in 2018, the group has already produced the *Internal Carbon Pricing in Higher Education Toolkit* to guide higher education campuses towards implementing an internal carbon price (see page 62 for more detail).



### State and Trends of Carbon Pricing

*Published by: The World Bank and CPLC*

*Date published: May 2018*

The *State and Trends of Carbon Pricing* is an annual World Bank publication on the status of carbon pricing around the world. This widely cited report, which is available online,<sup>27</sup> is considered one of the leading publications on carbon pricing data.

### Brief: Carbon Pricing and the TCFD

*Published by: CDP and CPLC*

*Date published: May 2018*

This brief<sup>28</sup> discusses the value of carbon pricing as a metric to meet the recommendations of the Task Force

on Climate-related Financial Disclosures (TCFD) by assessing the materiality of climate risk at the portfolio level. While banks and other financial institutions tend to apply carbon pricing primarily at the operational level, they are most vulnerable through their financed emissions and should expand pricing accordingly.

### Fostering Partnerships

Among other highlights relating to this pillar, CPLC launched its first official chapter in Singapore in November 2018 to encourage collaboration on carbon pricing between the government and private sector, and to support businesses as they comply with, and hopefully exceed, the targets under Singapore's recently implemented carbon tax.



April 2018: CPLC High-Level Assembly



June 2018: Innovate4Climate



September 2018: Global Climate Action Summit



December 2018: COP24

## Outreach and Communications

CPLC used the communications tools at its disposal to raise awareness about, and support for, carbon pricing and CPLC's work. Noteworthy outreach and communication activities during 2018/19 include:

- Taking part in, hosting, or co-hosting various international events (see below).
- Producing videos on topics such as Article 6 of the Paris Agreement.
- Hosting various webinars, including one on the Guide to Communicating Carbon Pricing.
- Facilitating communications between partners by providing an online platform for them to publish blogs, news, and events.<sup>29</sup>

## Key events attended or hosted

CPLC routinely hosts, or takes an active part in, international events that create opportunities for engagement with partners and other stakeholders on carbon pricing. Some of the key events on our calendar during the year are discussed below.

### CPLC High-Level Assembly, April 2018

The CPLC High-Level Assembly took place in Washington, D.C. The President of The World Bank used the opportunity to launch the High-Level Commission on Carbon Pricing and Competitiveness to address competitiveness concerns. The commission, co-chaired by Feike Sijbesma (CEO, Royal DSM) and Anand Mahindra (Chair, Mahindra Group), brings together nearly 20 executive-level representatives from the private



September 2018: Global Climate Action Summit



September 2018: Global Climate Action Summit



February 2019: CPLC Research Conference



March 2019: Africa Climate Week



sector and governments to provide strategic guidance on how to address competitiveness concerns among industry partners in the context of carbon pricing.

#### **Sustainable Solutions Expo, June 2018**

We hosted an event with business, financial, and government leaders titled “Addressing Risks and Finding Opportunities in a Changing World,” which explored tools such as carbon pricing to help stakeholders prepare for a changing climate.

#### **Innovate4Climate, June 2018**

At Innovate4Climate, CPLC and the PMR co-hosted a technical workshop on effectively communicating carbon pricing.

#### **Global Climate Action Summit, September 2018**

Together with California, the European Commission, the International Emissions Trading Association, and other partners, we organized a carbon pricing day entitled Carbon Pricing Driving Climate Ambition.

To present the *Internal Carbon Pricing in Higher Education Toolkit* we co-hosted, together with Yale, Second Nature, and other partners in the Carbon Pricing in Higher Education Working Group, a side event with former U.S. Secretary of State John Kerry.

#### **COP24, December 2018**

In addition to launching the *Guide to Communicating Carbon Pricing* and providing coverage of the conference, we convened world leaders for a Leadership Dialogue on Carbon Pricing Revenues, and teamed up with the Belgian, French, Swedish, and German governments for a conversation on carbon taxation in the EU’s non-ETS sectors.

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#### **Regional Climate Weeks, July 2018 (Asia-Pacific), August 2018 (Latin America and Caribbean), and March 2019 (Africa)**

CPLC hosted carbon pricing workshops at three regional Climate Weeks, attracting 390 participants in total.

#### **CPLC Research Conference, February 2019**

We hosted the world’s first international Research Conference on Carbon Pricing in New Delhi, India. The conference attracted participants from diverse sectors across the globe to take stock of carbon pricing research and experiences to date and build a greater understanding of the emerging trends and best practices. See box for more detail.<sup>30</sup>

#### **First meeting of the High-Level Commission on Carbon Pricing and Competitiveness, February 2019**

The first meeting of commissioners provided strategic guidance and insights on the issue of competitiveness. CPLC will be hosting a series of regional consultations with private sector actors in 2019 to better understand the challenges around competitiveness and carbon pricing, and how best to address them. The commission will present its findings and key messages at the United Nations Secretary-General’s Climate Summit in New York in September 2019.



High-Level Assembly discussions

## CPLC hosts inaugural Research Conference

Collaboration between carbon pricing researchers and practitioners is critical to addressing common concerns about carbon pricing policies, such as competitiveness, social impacts, and revenue distribution. To facilitate collaboration, CPLC, together with The Energy and Resources Institute, hosted the first Carbon Pricing Leadership Coalition Research Conference in New Delhi, India, in February 2019. More than 30 researchers and dozens of high-level practitioners presented on six carbon pricing themes: Learning from Experience, Carbon Pricing Design, Concepts and Methods, Political Economy, Decarbonizing the Economy, and Emerging Frontiers.

Prior to the conference, John Roome (Senior Director for Climate Change, The World Bank) said: “Policymakers need



Members of the CPLC Research Conference Scientific Committee at the end of the conference.

balanced strategies—which should importantly include carbon pricing—to meet both their climate and development goals.” Susanne Åkerfeldt, a member of the CPLC Research Conference Scientific Committee and a Senior Adviser to the Swedish Ministry of Finance,

added: “We all need to join forces to ensure an effective carbon pricing design. Solid evidence of effective carbon pricing will help give policymakers the courage to introduce such measures.”

The conference emphasized the ongoing need for carbon pricing research, especially at country level, to improve the environmental and economic effectiveness of carbon pricing policies and measures. It also highlighted the importance of creating platforms to facilitate communication between researchers and practitioners—as CPLC remains committed to doing.

John Roome (Senior Director for Climate Change, World Bank) delivers a passionate speech at the CPLC Research Conference.



# GOVERNMENTS AND REGIONAL LEADERSHIP



We partner with decision-makers on all continents to develop and roll out evidence-based policies that support carbon pricing and other climate actions while still supporting economic development and competitiveness.

# Q & A WITH CATHERINE McKENNA



CATHERINE McKENNA, CPLC HIGH-LEVEL ASSEMBLY CO-CHAIR AND MINISTER OF

ENVIRONMENT AND CLIMATE CHANGE, CANADA

## How has Canada advanced carbon pricing since April 2018?

The government of Canada made significant advances in 2018. As a result, carbon pollution pricing will be in place throughout Canada in 2019, a major step in the government's plan to protect the environment and grow the economy.

In 2018, the government of Canada and provincial and territorial governments—along with numerous stakeholders—continued their efforts to implement the Pan-Canadian Approach to Pricing Pollution (the federal benchmark). Their goal was to ensure that carbon pollution pricing applies at a stringent level to a broad set of emissions sources throughout Canada either through the implementation of a provincial/territorial system or the federal system (see map overleaf).

The Pan-Canadian Approach gave provincial and territorial governments the flexibility to develop their own carbon pollution pricing system. It outlined criteria that all systems must meet to ensure they are stringent and apply broadly. The federal government also committed to implementing a carbon pollution pricing system in provinces and territories that requested it or did not have a system that met the federal benchmark.

In June 2018, the Canadian Parliament adopted the Greenhouse Gas Pollution Pricing Act. The federal carbon pollution pricing system contained in the act has two parts:

- A trading system for large industry, known as the output-based pricing system.
- A regulatory charge on fuel (fuel charge).

Alberta, B.C., and Québec continued to implement their existing carbon pollution pricing systems. B.C.'s carbon tax increased to \$35 per ton in April 2018 and will rise to \$40 per ton in April 2019.

New provincial systems started in January 2019 in Newfoundland and Labrador (carbon tax and output-based pricing system), Nova Scotia (cap-and-trade), and Saskatchewan (output-based pricing system for some industrial sectors). Carbon pollution pricing systems are on track to take effect in Prince Edward Island (carbon levy in

April 2019) and the Northwest Territories (carbon tax in July 2019).

The federal pricing system for large industry took effect on January 1, 2019, in Ontario, Manitoba, New Brunswick, Prince Edward Island, and partially in Saskatchewan (to cover industrial sectors not covered in its output-based system).

Starting in April 2019, the federal fuel charge will apply in Saskatchewan, Ontario, Manitoba, and New Brunswick. The federal carbon pollution pricing system will also apply in two territories—Yukon and Nunavut—starting on July 1, 2019.

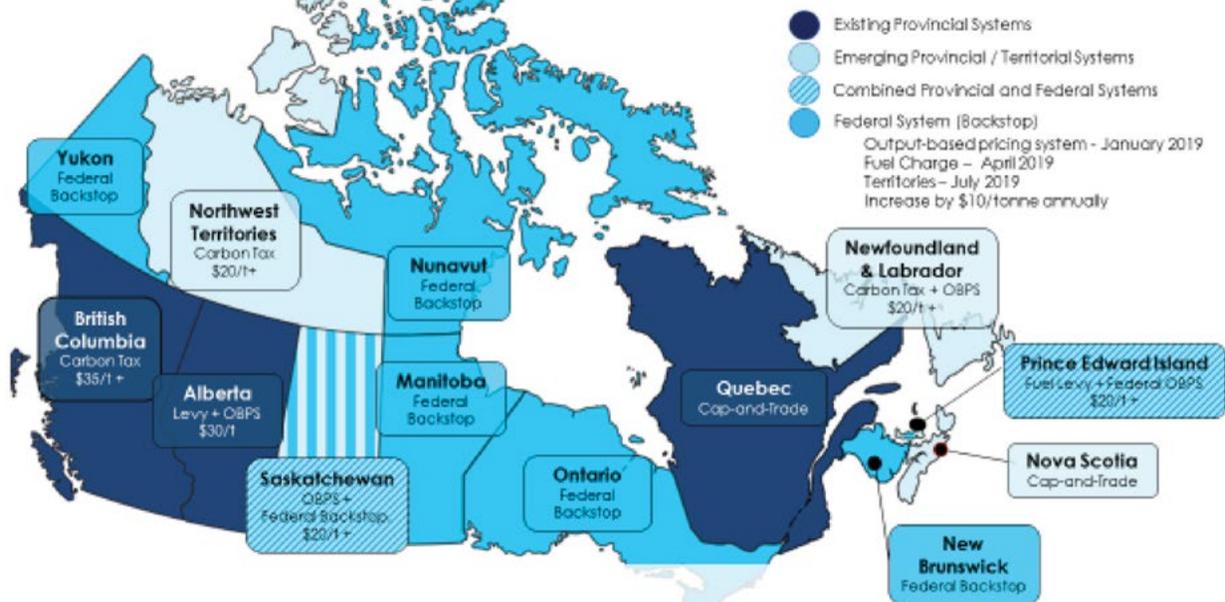
In December 2018, the government of Canada released for comment draft regulations on the federal carbon pollution pricing system for industry. The government will finalize those regulations this spring, and they will apply retroactively as of January 1, 2019. This represented another important step in an ongoing engagement process with the Canadian public and stakeholders to design and implement a federal carbon pollution pricing system that works for the entire country.

## What advice do you have for other governments that are considering using carbon pricing?

A wide range of stakeholders agree that putting a price on carbon pollution works. It is an efficient and effective tool to mitigate emissions, trigger innovation, and support a country's transition to a low-carbon economy. Canada welcomes sharing its experience with interested parties, including through forums such as CPLC. Any country considering carbon pollution pricing can benefit from an exchange of lessons learned, policies, and best practices. The Canadian approach may provide useful lessons about how to develop a coherent pricing regime while allowing for different system designs.

## Why does carbon pricing make sense for Canada, both as a climate policy and as a key component to fulfilling Canada's economic and social agenda?

## Carbon pollution pricing in Canada



Simply put, because it works. Pricing carbon pollution is the most efficient way to reduce greenhouse-gas emissions and stimulate investments in clean innovation.

Canada has a plan—the Pan-Canadian Framework on Clean Growth and Climate Change—that protects the environment while growing the economy. According to Clean Energy Canada, a think tank that studies climate change, an average of 118,000 annual jobs will be created between now and 2030 due to economic activity associated with energy efficiency measures. The three provinces that already have carbon pollution pricing systems—B.C., Alberta, and Québec—were also among the top producers in GDP growth across Canada in 2017.

For Canadian families, climate change means worrying about what kind of planet we are leaving for our kids. Canadians know pollution isn't free. They are paying that price today in terms of record storms, wildfires, floods, and heat waves—all of which carry real economic costs.

Canadians tell us they don't want more carbon pollution. They want to be able to support their families while also protecting the environment. Pricing carbon pollution works for the environment and the economy. It creates incentives for individuals, households, and businesses

to choose cleaner options. It is not about raising revenues, but recognizing that pollution has a cost, and encouraging cleaner growth and a more sustainable future.

All direct proceeds from the federal carbon pollution pricing system will be returned to the province or territory of origin. All households in the four Canadian provinces where the federal carbon pollution pricing system is being imposed (Ontario, Manitoba, New Brunswick, and Saskatchewan) will get a Climate Action Incentive payment when they file their taxes this year.

Together with many federal and provincial programs, the Climate Action Incentive will mean Canadians will have more money to make clean choices: renovate their homes, buy a smart thermostat, or switch to a more fuel-efficient car.

### here are a number of different climate policies. What role does carbon pricing play?

A price on carbon pollution is an essential part of Canada's plan to fight climate change and grow the economy. Pricing carbon pollution is the most efficient way to reduce greenhouse-gas emissions and stimulate

investments in clean innovation. A price on carbon pollution creates incentives for individuals, households, and businesses to choose cleaner options.

While pricing carbon pollution is key, it is not the only thing Canada is doing to fight climate change. The country's clean growth and climate plan includes more than 50 concrete measures to reduce carbon pollution, help us adapt and become more resilient to the impacts of a changing climate, foster clean technology solutions, and create good jobs that contribute to a stronger economy.

### **Why is CPLC important to advancing carbon pricing around the world?**

CPLC is a forum for governments, businesses, non-governmental organizations, and civil society leaders to share knowledge. Whether potential members are experienced or new to carbon pricing or simply considering the measure as a tool to achieve emissions reductions, they can gain valuable knowledge by becoming part of the CPLC initiative. Membership can inform decisions and policy design, as well as advance research related to key carbon pricing issues.

At COP24 in Katowice, Poland, I joined members of CPLC for an in-depth discussion on how proceeds from carbon pollution pricing can play a powerful role in fighting climate change and supporting sustainable development.

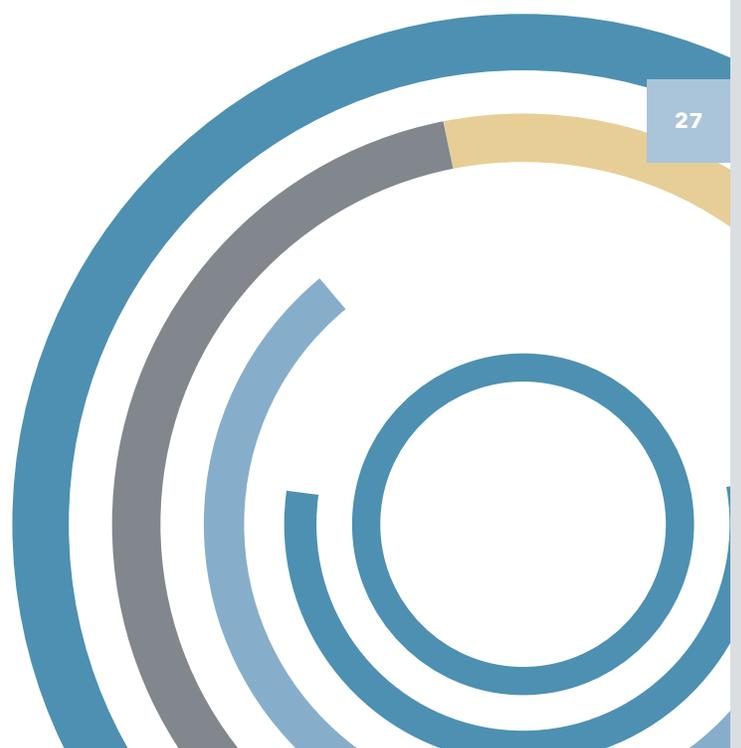
Canada's climate change policy has benefited from CPLC. Major Canadian businesses are longtime supporters of the initiative. On December 12, 2017, at the One Planet Summit in Paris, France, the government of Canada, and the governments of Alberta, B.C., Nova Scotia, and Québec, joined other CPLC members in announcing the creation of the Declaration on Carbon Pricing in the Americas (see page 40). These steps bring CPLC members from business and governments together to promote the use of effective carbon pollution pricing.

### **What is next for carbon pricing?**

In Canada, the coming year will be about implementing carbon pollution pricing throughout the country. This will include implementing the federal carbon pollution pricing system in provinces and territories where it applies, and returning all direct proceeds to the jurisdictions where they originated.

As committed to in Canada's climate plan, the Pan-Canadian Framework on Clean Growth and Climate Change, the government will also continue its commitment to conduct reviews. Federal, provincial, and territorial governments will complete an assessment of carbon pricing approaches and best practices. This will address competitiveness and carbon leakage risks for emissions-intensive, trade-exposed sectors. This will help inform the broad assessment of carbon pricing across Canada in 2022 as well as the interim report in 2020.

Also, as part of ongoing collaborative work through the Canadian Council of Ministers of the Environment, federal, provincial, and territorial governments worked together to look at options for a pan-Canadian greenhouse-gas offsets framework. In 2018, the council worked to support governments in the development and implementation of their offset programs. It examined specific elements of offset program design and encouraged opportunities for shared infrastructure, with a view to enabling greater alignment and transferability of offsets across Canada. The council developed guidance and recommendations for consideration by jurisdictions in developing offset programs or refining their existing programs. Jurisdictions will consider those recommendations in the coming years.



## PERSPECTIVES CLIMATE GROUP

**[Senegal]** With the support of the United Nations Framework Convention on Climate Change's (UNFCCC's) Collaborative Instruments for Ambitious Climate Action (CI-ACA), Perspectives Climate Group and Dakar-based Afrique Energie Environnement engaged with key stakeholders to identify the most appropriate types of carbon pricing instruments for Senegal.

Between August and December 2018, the team conducted a study evaluating the various carbon pricing options. An analysis of the generic strengths, weaknesses, opportunities, and threats related to the introduction of a carbon tax, a baseline and credit system, a cap-and-trade scheme, or fiscal reform was linked to an in-depth assessment of the characteristics of emissions in the key sectors of the Senegalese economy. Based on this information, various sector-specific working groups, consisting of public and private sector representatives, then ranked the different carbon pricing instruments.

Due to the small number of large emitters in Senegal, a national cap-and-trade scheme was ruled out; at best, such a scheme could be introduced at the regional level. Fiscal reform was regarded as politically challenging. The discussions thus focused on a carbon tax and the way revenue recycling should be undertaken. Private sector representatives favored redistributing the revenue to companies carrying the carbon tax burden, while public sector representatives preferred redistributing the revenue to the population or earmarking it for emission reduction projects. To deepen these discussions, the study recommends defining the tax base (ideally, electricity and fossil fuel production as well as solid and liquid waste management institutions) and discussing the applicable tax rates, revenue recycling, and enforcement. A baseline and credit system was also viewed positively, especially if it can generate revenues from selling carbon credits abroad.



## CÔTE D'IVOIRE

Côte d'Ivoire is exploring the potential of a carbon tax to put the country on a low-carbon development pathway. With the support of the PMR and CPLC, Côte d'Ivoire held an inter-ministerial dialogue on a carbon tax<sup>31</sup> in October 2018. The event showcased the political will to consider carbon pricing as a cost-effective policy instrument in West Africa. Since then, three key sectors that are particularly critical for the country's NDC targets have been identified: energy, transport, and land use/forestry.

Studies analyzing various options to incorporate sustainable development considerations within fiscal policies in these key sectors are starting in spring 2019. This fiscal policy approach, which is also being explored in Ethiopia and Senegal, has the potential to become a game changer as it will be the first time that carbon pricing is applied in a lower-middle-income country. The coming year will show whether the unique potential of carbon pricing to both curb emissions growth and yield significant benefits such as clean air can also be leveraged in low- and lower-middle-income countries.

## MÉXICO<sub>2</sub>

**[Mexico]** The Mexican Carbon Markets Platform, MÉXICO<sub>2</sub>, helps public and private entities in Mexico, Latin America, and the Caribbean transition towards a low-carbon economy, increase their productivity, and address climate change. MÉXICO<sub>2</sub> is at the forefront of promoting the adoption of carbon pricing mechanisms in different countries, which last year included Mexico, the Dominican Republic, and Peru.

From December 2017 to June 2018, MÉXICO<sub>2</sub>, in partnership with the Mexican Stock Exchange and the Ministry of Environment and Natural Resources, and with technical assistance from the Environmental Defense Fund, ran the Mexican Carbon Market Simulation Exercise to encourage emissions reductions in the public and private sector. This exercise, which replicates a real-life ETS, runs through a digital platform and simulates all the elements of a real market, including auctions, regulated exchange markets, over-the-counter markets, flexibility, and price control mechanisms.



Mexico



Dominican Republic

More than 200 people, representing 24 subsectors and more than 100 private and public organizations, as well as non-governmental organizations, and academia participated in the exercise. Together, the companies accounted for over 67.8% of the greenhouse-gas emissions of the country.<sup>32</sup> The results of the simulation were presented at a closing ceremony, where the participants with the best performance were awarded prizes.

Following its success, the Carbon Market Simulation Exercise was presented at the Latin American Carbon Pricing Forum hosted in São Paulo in June 2018.

**[Dominican Republic]** Developed by MÉXICO<sub>2</sub>, the CI-ACA Dominican Republic project, a UNFCCC initiative, aimed to provide the government of the Dominican Republic with a solid understanding of the theory and experience of carbon pricing worldwide and to explore the feasibility of implementing the most widely used carbon pricing market-based mechanisms (namely, carbon taxes, ETSs, and hybrid schemes), as well as other instruments related to renewable energy use like green certificates, to contribute to the achievement of the country's NDCs.

In November 2018, the consulting team presented the results of the project in a validation session held in Santo Domingo. This included an assessment of the technical and political feasibility of each mechanism; an assessment of the acceptance from the public and private sector for each of the mechanisms; and recommendations regarding the possible implementation of each mechanism.

**[Peru]** Between July and November 2018, MÉXICO<sub>2</sub> worked together with the British Embassy in Lima and other public and private stakeholders to identify the most suitable carbon pricing options for Peru within the framework of the country's Climate Change Law. Activities included a review of carbon taxes implemented in Latin America and a review of public policies and other environmental actions that have been implemented or are under consideration by the Peruvian government related to reducing emissions and carbon pricing. Based on this work, a brief roadmap for the adoption of carbon-related market mechanisms—as well as recommendations and considerations for the implementation of a monitoring, reporting, and verification system, a carbon tax, an ETS, or hybrid schemes—was presented to public sector stakeholders.

In November 2018, a dialogue on establishing a carbon price in Peru was held with the government, businesses, independent advisers, and other stakeholders. All participants agreed on the need to establish carbon pricing instruments and expressed their interest in continuing to learn about the subject. Notably, Peruvian government officials spoke in favor of promoting these mechanisms internally.



The UNFCCC Regional Collaboration Centre in Kampala, Uganda, in partnership with the United Nations Environment Programme and GIZ, is conducting a regional carbon pricing study that explores the feasibility and readiness of implementing different carbon pricing instruments in Ethiopia, Kenya, Mauritius, Rwanda, and Uganda. This includes identifying elements of carbon pricing and related instruments that are already in place; spotting opportunities for implementing various approaches; identifying barriers

to implementation, gaps, and solutions; and analyzing links to NDC mitigation targets, economic priorities, and sustainable growth.

As carbon pricing is rooted in a jurisdiction's legal framework and relies on the quantification of emissions, assessing the readiness of carbon pricing will largely focus on existing monitoring, reporting, and verification infrastructure and legal and policy frameworks. Potential scenarios and use of carbon pricing revenues to reduce adverse impacts may also be analyzed.

This study will also act as a decision-making guide for donors interested in supporting the implementation of carbon pricing instruments in line with country needs and priorities to achieve their NDC targets and Sustainable Development Goals.

The study is being conducted under the CI-ACA work stream, which helps parties develop ideas and build capacities to explore collaborative instruments for accelerating climate action. For more information on the CI-ACA work stream, please go to the UNFCCC website.<sup>33</sup>





## BELGIUM

From January 2017 to June 2018, the Belgian Federal Climate Change Service organized a national debate to discuss the design and implementation of carbon pricing in Belgium. This debate focused on the sectors not covered by the European ETS (mainly the transport and housing sectors).

The final report integrates the results of the discussions and the feedback received from stakeholders during workshops and suggests options for implementing a carbon price in the Belgian non-ETS sectors. The results were also presented<sup>34</sup> at COP24.

This participative approach was unanimously praised and helped build a large consensus around the measure in the country. In 2019, the Belgian government will continue working on implementing this important measure. This includes finding solutions to identified barriers and conducting research on, for example, the potential impact on social justice and how to communicate on carbon pricing. This work will feed the Belgian political debate with fact-based analysis.<sup>35</sup>



## Italy: Eliminating environmentally harmful subsidies

To design ambitious and efficient climate and fiscal policies, information on both environmentally harmful and environmentally friendly subsidies, with particular emphasis on fossil fuel subsidies, is needed. Removing fossil fuel subsidies helps restore fair carbon prices and eliminates privileged treatment, which distorts the market and hides the true cost of carbon and climate change. Countries such as Italy, France, and Germany have compiled analytical reports (such as inventories) of environmentally harmful subsidies to help inform the drafting and adoption of policies by decision-makers.

### ***Inventories of environmentally harmful subsidies***

The Italian Parliament asked the Ministry of Environment to prepare an annual national catalogue of environmentally harmful subsidies and environmentally friendly subsidies. The Parliament adopted a broad definition of subsidies, including “among others, incentives, tax benefits, preferential financial treatments, and exemptions.”<sup>36</sup> The first edition of the catalogue classifies subsidies in five sectors: agriculture, energy, transport, value-added tax, and “other,” considering both tax expenditures and direct subsidies, with reference to the financial effect in 2016.

The total estimates for 2016 suggest that environmentally harmful subsidies and environmentally friendly subsidies have a yearly financial effect of €16.2 billion and €15.7 billion, respectively. The bulk of environmentally harmful

subsidies is represented by fossil fuel subsidies, totaling €12 billion.

The catalogue of environmentally relevant subsidies is part of a general effort to analyze and evaluate fiscal erosion, tax expenditures, and existing tax breaks and incentives. Moreover, it supports the attempts of reform for a “fairer, transparent, and growth-oriented tax system.”

Other countries have launched similar inventories. In 2011, France compiled a catalogue on biodiversity harmful subsidies. The report identifies and classifies subsidies harmful to biodiversity according to their drivers of pressure (such as subsidies encouraging habitat destruction, overexploitation of natural resources, and climate change).

In 2016, the German Federal Environment Agency (Umweltbundesamt) published an updated report on environmentally harmful subsidies in Germany, worth over €57 billion. In addition, the Federal Nature Agency is preparing a report on biodiversity harmful subsidies.

In February 2018, the Organisation for Economic Co-operation and Development published an updated *Inventory for Support Measures for Fossil Fuel Subsidies*<sup>37</sup> applied on a global scale. This unique database, developed together with the International Energy Agency, provides data on tax expenditures and direct subsidies related to fossil fuels for 76 countries around the world that contribute 94% of global emissions.<sup>38</sup>

### ***G20 peer review on fossil fuel subsidies***

In 2009, G20 partners decided to start phasing out fossil fuel subsidies as they encourage wasteful consumption and undermine efforts to deal with the threat of climate change. The impact of eliminating fossil fuel subsidies on carbon prices is direct and immediate; their removal would help restore fairer carbon prices on the market.

China and the United States were the first two countries to be peer reviewed just after the ratification of the Paris Agreement. The commitment of two of the largest polluters to transparently report their plans on phasing out fossil fuel subsidies in the medium term sent out a strong signal to the rest of the world. This paved the way for two other G20 partners, Mexico and Germany. Their peer reviews were released in 2017. In 2018, it was Indonesia and Italy's turn (reports are expected to be published in spring 2019). Argentina and Canada have announced that they will be peer reviewed in 2019. It is possible that other countries may join the exercise in 2019 as well.

The exercise aims to involve as many countries as possible and highlight the efforts of countries that have already undergone peer review to track progress towards the 2°C goal and the phasing-out of fossil fuel subsidies. This process is essential to increasing the effectiveness and efficiency of carbon pricing mechanisms.<sup>39</sup>

## ICF

**[China]** China's government is just over a year into a three-year staged introduction of its national ETS for the power sector. ICF is actively engaged in helping the Chinese government and industry stakeholders prepare for the rollout of the ETS across the nation. Once established, China's ETS will be the world's largest carbon market.

To prepare environmental protection agencies for the introduction of the ETS, Chinese consultancy SinoCarbon, which is implementing the EU-China ETS Platform together with ICF, conducted training for provincial and city-level Ministry for Ecology and the Environment officials and representatives from the power sector in December 2018. In particular, the training aimed to improve their knowledge of the carbon market, its principles, design, and operation, as well as the role and function of government in the ETS. It also involved trial allocation training for power companies to support the Climate Change Department in testing and improving the national allocation plan. At the same time, the training was intended to engage the companies required to comply with the ETS and prepare for the future allocation of allowances.

The EU-China ETS Platform has launched joint research work, involving Chinese and European experts, to provide practical advice to the Chinese government on transitioning from pilot carbon markets to a fully functioning national ETS, as well as on market oversight. At the launch meeting on November 16, 2018, three expert subgroups were created to lead on the transition of allowances from the regional markets to the national ETS; the supplementary role of pilots to the national ETS during the transition period; and the proposal of a feasible roadmap and associated policy recommendations.

In July 2018, ICF, together with the China Carbon Forum, launched the report of the 2018 China Carbon Pricing Survey. Conducted regularly since 2013, the survey represents the most in-depth and extensive summary of stakeholder views on China's carbon market development. The project provides useful insights for policymakers and market participants about the development of China's carbon market.

In conjunction with the 2018 survey, the project team convened three industry roundtable events to share views from key stakeholders and industrial sectors. The topics were "Monitoring, Reporting, and Verification in the Power Sector," "Preparing to Join the ETS" for other key greenhouse-gas emitting sectors, and "Monitoring, Reporting, and Verification in the Cement and Aluminum Sectors."

On November 15, 2018, the EU-China ETS Platform, together with the China Carbon Forum, hosted a public event in Beijing on "The Future of Emissions Trading in China and the EU" to coincide with a visit by a delegation from the EU's Climate Action Department.

## INTERNATIONAL EMISSIONS TRADING ASSOCIATION (IETA)

**[Canada]** For over a decade, Canada has solidified its reputation as a leader in carbon pricing. Since 2007, provinces such as Alberta, B.C., and Québec have introduced various carbon pricing mechanisms. Overlaying these active sub-national carbon pricing activities is Canada's new federal carbon pricing backstop program.

Canada launched the Pan-Canadian Framework on Clean Growth and Climate Change in 2016. Pricing carbon pollution is a central component of the framework, which required every province and territory to have a carbon pricing system in place by January 1, 2019, otherwise a federal "backstop" system would be applied. This federal system includes a carbon levy on fossil fuels and an output-based pricing system for large industrials, defined as those emitting more than 50,000 tons of CO<sub>2</sub>e per year (smaller emitters can opt in).

The price of the federal program started at C\$20 per ton of CO<sub>2</sub>e and will increase by C\$10 per ton of CO<sub>2</sub>e each year until reaching C\$50 per ton of CO<sub>2</sub>e in 2022, at which point the program will be reviewed. Canada's federal program is "carbon neutral," meaning that revenue from the mechanism will be returned to Canadians living in the province or territory of origin.

It is important to highlight that Canada's backstop output-based pricing system is a federally mandated and administered emissions trading and offsets program to ensure economic competitiveness across major industrial and power sectors. Through the



output-based pricing system, covered entities can pay into a fund or use tradable units (that is, surplus and offset credits) to meet annual compliance obligations. Although elements of the output-based pricing system are still being developed, the compliance system came into force on January 1, 2019, and the fuel levy will come into effect across most jurisdictions on April 1, 2019.

IETA has been working closely with the Canadian government and other stakeholders to support flexible, fair, and well-designed pricing measures, underpinned by environmental integrity, for two decades. In 2019, it will continue to support the federal government as it continues to design and implement its innovative hybrid approach to carbon pricing. IETA will also continue to advocate for Canadian business and clean export opportunities through smart operationalization of Article 6, the market provisions under the Paris Agreement. Despite the absence of a formal decision at COP24 in 2018, Article 6 continues to be a priority for both Canadian business and governments, which will work together in 2019 to support a successful Article 6 decision at COP25.

### **Carbon Market Platform**

The Carbon Market Platform brings together a diverse group of countries and non-state actors to discuss how to develop and implement market-based approaches to reducing greenhouse-gas emissions, including by putting a price on carbon pollution. In September 2018, Canada hosted, and co-chaired with Germany, the third annual Strategic Dialogue of the Carbon Market Platform in Halifax, Nova Scotia. Participants shared knowledge and best practices on implementing carbon pricing and explored solutions to common political, technical, and institutional challenges. Participants identified the need to promote the opportunities of carbon pricing, expand economic modeling, and enhance carbon pricing coordination among governments. This year, France will host the fourth Strategic Dialogue and co-chair with Canada. Both countries will work to develop an agenda that complements the outcomes from last year's meeting and reflects current trends in carbon pricing.

## **CARBON CREDIT SOLUTIONS INC.**

**[Alberta]** Alberta's carbon market is undeniably one of the best in the world. Other jurisdictions are replicating Alberta's model at a rapidly growing rate—from Brazil and Colombia to Oregon and China. Alberta's market has resulted in technological innovation and millions of measurable greenhouse-gas reductions. Today, the value of tradable compliance units active in the Alberta market exceeds \$680 million. Its success is impressive but unheralded.

Alberta's emission reduction market, the first compliance market in the Americas, is reducing greenhouse-gas emissions while increasing investment in technological innovation. Since its inception the market has generated 50 million verified emission reductions;<sup>40</sup> 25 million emission performance credits;<sup>41</sup> and investment of \$375 million in 128 emission reduction technology projects that have added \$1.8 billion to Alberta's GDP.<sup>42</sup> This has occurred because Alberta has an effective, results-oriented, market-based climate policy that builds wealth, creates jobs, and diversifies the region's economy, while respecting citizens' quality of life, the environment, and its economy and industrial competitiveness. This has created tremendous opportunities for project developers that have invested in Alberta.

Carbon Credit Solutions is helping Alberta lead the way in reducing emissions from two of Canada's most important business sectors: oil and gas, and agriculture. It started as an aggregator developing verified emission reductions on behalf of Albertan farmers in 2008. Its first project had 16 participants and generated 7,265 verified emission reductions for the 2008 crop year. Since then, it has generated over \$44 million in revenue for 3,156 clients, who have generated 4,077,348 verified emission reductions. In 2018, it was ranked 28th on Deloitte's Technology Fast 50 list in Canada and 140th on Deloitte's North America Fast 500 list, demonstrating that it is possible to create a highly successful business in an efficient carbon market.

Carbon Credit Solutions is also helping oil and gas producers profit from greenhouse-gas emission reductions by providing them with mechanical chemical injection pumps and controllers that eliminate methane emissions, which are paid for with their verified emission reductions. Once the equipment is paid for, it can continue to generate verified emission reductions and a new revenue stream for its owners.

Tetra Tech, a multinational engineering firm, received funding from Emissions Reduction Alberta to pilot a new landfill cap technology called Evapotranspirative: Landfill Biocover. This innovative landfill cover creates an environment that favors the growth of methanotrophs, a naturally occurring bacteria that “eats” methane and turns it into carbon dioxide. A pilot project in Alberta is reducing methane emissions by 90%. Carbon Credit Solutions is developing a joint venture with Tetra Tech to implement these caps on landfills and generate verified emission reductions.<sup>43</sup> The credits will cover the cost of the cap and produce a healthy return for the landfill owners. This project is a great example of Alberta’s market success. Compliance revenues collected by the government were used to create this new technology that reduces greenhouse-gas emissions. The same market framework made the implementation of the technology economically viable.

Carbon Credit Solutions and its partners are committed to supporting Alberta’s success and, in doing so, sharing these best practices with other provinces and jurisdictions. It is only through committed collaboration for mutual benefit that long-lasting greenhouse-gas emission reductions will occur.

## CALIFORNIA

California’s cap-and-trade program is a key element to ensuring that the state meets its greenhouse-gas reduction targets and does so in a cost-effective manner. In AB 398, the legislature clarified the role of the cap-and-trade program in achieving the emissions reduction target of 40% below 1990 levels by 2030 and added specific requirements for aspects of the program. In December 2018, the California Air Resources Board adopted amendments to define the program through 2030 and provide investment certainty to business. Key amendments include:

- Establishing a hard price ceiling that escalates each year, reaching \$91 in 2030.
- Adding two reserve tiers below the hard price ceiling.
- Reducing the offset usage limit.
- Establishing criteria so that at least half of the allowable quantitative offset usage limits after 2020 result in direct environmental benefits in California.
- Delinking the program from Ontario’s program, which has been revoked.

California Air Resources Board staff also began public discussions on achieving carbon neutrality by mid-century, as called for in Governor Brown’s Executive Order B-55-18 signed in September 2018.

In 2018, California also:

- Hosted the successful Global Climate Action Summit in September, which generated over 500 commitments to international climate action.
- Announced an enhanced bilateral collaboration with the EU on carbon pricing.
- Continued implementing over 50 partnership agreements with international jurisdictions.
- Co-chaired the U.S. Climate Alliance and America’s Pledge efforts—aimed at elevating California and state leadership abroad.
- Took over co-chair of the International Climate Action Partnership (ICAP).
- Recruited additional members to the Under2 Coalition—now representing over 1.3 billion people and 43% of the global economy.
- Highlighted its effective programs and policies through multilateral forums, international conferences, and over 100 visiting delegations to the California Air Resources Board.
- Collaborated with international partners on carbon markets, zero-emission-vehicle policies, and short-lived climate pollutant strategies, among other California Air Resources Board priorities.



## QUÉBEC

Québec's cap-and-trade system, which has been linked to California's for the past five years, is going strong. On November 1, 2018, all of the system's 118 covered emitters fulfilled their compliance obligation for the second compliance period (2015-17)—a 100% success rate identical to the one registered at the end of the first compliance period (2013-14). Despite steady economic growth, the annual greenhouse-gas emissions from the industrial sector in the second compliance period decreased by an average of 2% compared with the first period. The Québec government interprets this positive result as meaning that Québec's largest emitters are fully engaged in the carbon market and considers it an effective economic instrument to reduce greenhouse-gas emissions.

To date, the system has generated more than C\$2.9 billion in revenue, which has all been deposited in the Québec Green Fund, a fund dedicated to the protection of the environment. All cap-and-trade revenues are invested in mitigation and adaptation measures to fight climate change. At the November 2018 joint auction with California, the price of allowances reached C\$20 for the first time, more than a dollar above the minimum price, sending the strongest carbon price signal ever recorded throughout the Québec economy. Moreover, for the first time, Québec businesses emitting between 10,000 and 25,000 tons of CO<sub>2</sub>e per year were allowed to voluntarily register in the system. This measure added an element of fairness to the system in favor of medium-size emitters.

In 2019, Québec plans to draft its post-2023 free allocation rules and, along with California, will continue to look for opportunities to expand the Western Climate Initiative carbon market to include jurisdictions with similar ambitions to put a price on carbon.

## EUROPEAN UNION

### *Long-Term Strategy and Carbon Neutrality*

On November 28, 2018, the European Commission called for a climate-neutral Europe by 2050. The commission presented its strategic long-term vision for a prosperous, modern, competitive, and climate-neutral economy by 2050. The strategy shows how Europe can lead the way to climate neutrality by investing in realistic technological solutions, empowering citizens, and aligning action in key areas such as industrial policy, finance, and research—while ensuring social fairness for a just transition. The commission's vision for a climate-neutral future covers nearly all EU policies and is in line with the Paris Agreement<sup>44</sup> objective of limiting global temperature increase to below 2°C.

### *Emissions Trading Phase 4: Implementing the EU's NDC*

On February 27, 2018, the European Council formally approved the reform of the EU ETS after 2020. The revised ETS directive is a significant step towards the EU reaching its target of cutting greenhouse-gas emissions by at least 40% by 2030, as agreed under the EU's 2030 climate and energy framework, and fulfilling its commitments under the Paris Agreement.

The revised ETS introduces the following elements:

- The cap on the total volume of emissions will be reduced each year by 2.2%.
- The number of allowances to be placed in the market stability reserve will be doubled temporarily until the end of 2023 (feeding rate).
- A new mechanism to limit the validity of allowances in the market stability reserve above a certain level will take effect in 2023.

The revised ETS directive also contains several new provisions to protect industry against the risk of carbon leakage and the risk of applying a cross-sectoral correction factor. For example:

- Revised free allocation rules will enable better alignment with the actual production levels of companies, and the benchmark values used to determine free allocation will be updated.
- Sectors at the highest risk of relocating their production outside the EU will receive full free allocation. The free allocation rate for sectors less exposed to carbon leakage will amount to 30%. A gradual phase-out of the free allocation for the less exposed sectors will start after 2026, with the exception of the district heating sector.
- Member states can continue to provide compensation for indirect carbon costs in line with state aid rules. Reporting and transparency provisions are also enhanced.

### *Florence Process*

In May 2018, the Carbon Market Workshop, organized by the European Commission and the European University Institute, brought together policymakers from carbon markets worldwide—California, Canada, China, the EU, and New Zealand—as well as academics and non-governmental organizations to exchange experiences with ETSs and enhance collaboration.

The workshop falls under the Florence Process, which aims to collect and disseminate empirical knowledge and information on the functioning of

ETSs worldwide, establish a network of ETS experts, and create a forum enabling interaction among policymakers and ETS experts.

Jos Delbeke, the European Commission's Senior Adviser for Relations with the Florence European University Institute, said of the Florence Process: "There is a lot of scope for exchange, mutual learning, and enhanced cooperation between carbon markets."

Beatriz Yordi, the director responsible for European and international carbon markets at the European Commission's Directorate-General for Climate Action, added: "The Florence Process offers a unique forum for such exchange with a view to fully exploit the potential for further development, strengthening, and convergence of carbon markets worldwide."

### ***The EU's International Collaboration on Emissions Trading***

In 2018, the EU explored further bilateral cooperation with major economies also pursuing emissions trading, built on its existing relationship with China, and forged new collaborations with California and New Zealand. It also participated in various conferences and meetings: the European Commissioner co-hosted a major conference on carbon pricing with California as an official affiliate event of the Global Climate Action Summit in San Francisco. The EU also continues to host an informal meeting of senior administrators of the ETSs through the Florence Process (see above).

Following a breakdown in negotiations at United Nations level at COP24, the EU is planning a conference to look at how to deliver robust rules and standards for international carbon markets, in an effort to resolve the deadlock.

### **China**

The memorandum of understanding on EU-China cooperation on emissions trading establishes a policy dialogue and foresees the joint organization of seminars and workshops, as well as joint research activities.

Commissioner for Climate Action and Energy Miguel Arias Cañete said: "Further developing cooperation between the two largest ETSs of the world is not only in our mutual interest but also necessary to tackle common challenges in the mid and longer term. The newly established policy dialogue will be instrumental in this context."

### **California**

The EU and California have a successful track record of technical exchange and mutual support on climate action and carbon markets. Commissioner Arias Cañete and Governor Jerry Brown renewed and deepened their joint commitment and confirmed their view that greater alignment of carbon markets is in the interests of both regions. Aligning carbon markets could maximize and leverage climate action for economic transformation while ensuring real progress in reducing greenhouse-gas emissions. The leaders also emphasized the need to engage other jurisdictions with similar and emerging programs to foster broader dialogue.

In 2019, officials from the EU and California will increase the frequency of exchanges, including on principles for alignment and the role of carbon pricing in:

- Sending near- and long-term investment signals for transformative technologies.
- Addressing economic competitiveness.
- Maximizing the public benefits of using program revenues.

They also agreed to review and report on progress in these exchanges in 12 months.

### **New Zealand**

Regarding the collaboration between the EU and New Zealand, Commissioner Arias Cañete said: "Both the EU and New Zealand are committed to ambitious action on climate change and to a low-carbon economy. We both have successfully put in place ETSs since many years. Our respective systems are key pillars of our climate policies, and we are keen to intensify our cooperation on carbon markets to best contribute to the objectives of the Paris Agreement and together contribute to the promotion of emissions trading as a climate mitigation policy."

New Zealand Minister for Climate Change James Shaw acknowledged the importance of developing high-integrity carbon markets and the value of cooperation, saying: "Cooperation with other partners takes on even greater importance following COP24. We have enormous respect for the EU's experience and expertise and look forward to deepening our connections as we implement our commitments under the Paris Agreement."



## GERMANY

The German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety (BMU) supports partner countries in developing and implementing domestic mitigation instruments and is involved in the technical design of international climate policy instruments. To this end, the German federal government, together with its partners, has launched numerous initiatives in the area of international market-based cooperation and carbon pricing. Germany also supports research activities and forums to spur the development of innovative approaches in the carbon market. Below is an overview of the diverse initiatives supported by BMU.

### **Further Development of New Market Mechanisms**

The Wuppertal Institute for Climate, Environment, and Energy supports BMU through scientific advice and public relations work related to cooperative climate action. It develops policy papers and reports on UNFCCC negotiations and meetings. In addition, it designs and organizes workshops to discuss selected topics with experts.<sup>45</sup>

The Wuppertal Institute also helps BMU disseminate information and network with the professional public. This includes the publication of the *Carbon Mechanisms Review*, a specialist journal focusing on cooperative market-based climate action. The journal's website<sup>46</sup> provides information on the German federal government's initiatives, presents the findings of other research projects supported by BMU, and provides information on current developments in the field.<sup>47</sup>

## Market development initiatives

Carbon Market Platform<sup>48</sup> • Partnership for Market Readiness<sup>49</sup> • Carbon Pricing Leadership Coalition<sup>50</sup> • Pilot Auction Facility<sup>51</sup> • Transformative Carbon Asset Facility<sup>52</sup> • Nitric Acid Climate Action Group<sup>53</sup> • International Carbon Action Partnership<sup>54</sup> • PoA Working Group<sup>55</sup> • Foundation "Future of the Carbon Market"<sup>56</sup> • Emissions offsetting for the German government's business travel<sup>57</sup> • Innovate4Climate<sup>58</sup> • West African Alliance on Carbon Markets and Climate Finance<sup>59</sup> • Article 6 Support Facility<sup>60</sup>

### **Global Carbon Market**

The Global Carbon Market program,<sup>61</sup> implemented on behalf of BMU by the German development agency GIZ, supports public and private stakeholders in partner countries to effectively use existing and new market-based instruments for the implementation of their national climate change activities. Through capacity building and innovative exchange and networking formats, the program helps partner governments develop new market instruments for climate change mitigation and exploit the opportunities that are likely to arise from Article 6 of the Paris Agreement. It helps private sector stakeholders to participate in market-based approaches to tackle climate change and to set an internal price on carbon. Program partners are Chile, India, Tunisia, and Uganda/East Africa. Through this program, BMU is reinforcing cooperation with developing countries. In addition, the program supports BMU in the UNFCCC negotiations on Article 6 and in its international outreach activities concerning carbon pricing and market-based mechanisms.

### **Linking Market Mechanisms and Climate Finance in Africa**

Through its International Climate Initiative, BMU is promoting a climate finance initiative<sup>62</sup> from Perspectives Climate Group. The initiative is piloting replicable climate finance models in Ethiopia, Senegal, and Uganda that can support the countries in achieving their NDC targets. The project team works with the governments and the private sector to formulate climate finance proposals that leverage the potential of the host countries' existing climate policies and activities.

### **German Federal Authorities Travel Climate Neutral<sup>63</sup>**

The German government aims wherever possible not to fly but to use video conferencing or to go by train instead. Where this is not possible, all greenhouse-gas emissions from car journeys and air travel of the government's 121 ministries and federal authorities are offset. In 2017, credits for about 300,000 tons of CO<sub>2</sub> emissions were bought and cancelled. The credits come exclusively from projects that have been certified according to United Nations rules under the Clean Development Mechanism and meet additional quality criteria. By voluntarily offsetting unavoidable emissions, the government hopes to motivate the private sector to follow suit.

### **Nitric Acid Climate Auctions Program**

In 2015, BMU launched the Nitric Acid Climate Action Group, which provides technical and financial assistance to countries to incentivize the installation

of effective nitrous oxide abatement technology in nitric acid plants across the globe. The initiative provides funding to projects that abate nitrous oxide from nitric acid production in countries that have signed a letter of commitment with the Nitric Acid Climate Action Group, thus committing to effectively regulate nitrous oxide emissions in the future.

The initiative offers two types of financial support: grants for plant operators to buy and operate greenhouse-gas abatement technology and the Nitric Acid Climate Auctions Program. The program will allow private sector companies to compete in an auction to buy price guarantees that will give them the right but not the obligation to deliver eligible nitrous oxide emission reductions to the program in the future at a predetermined price.

The program is based on the experiences of The World Bank-implemented Pilot Auction Facility for Methane and Climate Change Mitigation, the first auctioning program of the broader Climate Auctions Program. Along with other countries, Germany provided funding to the facility. Climate auctions offer and competitively allocate price guarantee contracts to companies for reducing greenhouse-gas emissions. The auction winners buy contracts that allow them to be paid a guaranteed price, determined by the auction, for eligible future mitigation outcomes.

The price guarantees offered by the Nitric Acid Climate Auctions Program will help finance abatement projects and help companies build capacity ahead of regulations. They can reveal the incremental cost of mitigation activities and thereby help companies become familiar with pricing mitigation investments. Furthermore, repeated auctions and greater uptake of mitigation activities will reduce the cost of the mitigation technology, paving the way for further investments.

As more countries move towards regulating emissions, the early financial and technical incentives provided by BMU-supported initiatives can help remove some of the industry's resistance to carbon pricing and help countries achieve and increase the ambition of their NDCs.

### **Carbon Markets and Carbon Pricing in East Africa**

A workshop organized by the GIZ's Global Carbon Markets program in Uganda and East Africa brought together more than 40 participants from East Africa—



including stakeholders from Uganda, Ethiopia, Burundi, Rwanda, and Tanzania—in the run-up to COP24 in Poland. The aim of the workshop was to prepare negotiators and public and private sector representatives for Article 6 negotiations during COP24, and to discuss carbon pricing.

Workshop participants shared their insights on carbon pricing approaches, expected benefits, and the possible role of carbon pricing in implementing NDCs. Even though most of the participants viewed carbon pricing as important, they felt their countries were poorly equipped to implement it. The types of carbon pricing mostly under consideration in the sub-region are Clean Development Mechanism-type crediting schemes, taxation of high-emission products and sources, and subsidies for low-emission alternatives.

In a welcome development, the East African countries embraced the idea of an East African Alliance on carbon markets and climate finance and are currently, with GIZ's support, working on refining this concept and how it might be structured. Once these steps have been finalized, a work program to strategically guide the alliance's activities will be developed. Once in place, an alliance could create an avenue for additional carbon pricing activities while promoting a low-emissions, green-development pathway for the region.



## Regional collaboration on carbon pricing in the Americas

The Declaration on Carbon Pricing in the Americas reaffirms members' support for the Paris Agreement and commits national and sub-national government members to implement carbon pricing as a central economic and environmental policy instrument for reducing greenhouse-gas emissions. Over the past year, the declaration's collaborative platform focused on expanding visibility and membership, solidifying its governance structure, and refining its work streams. Canada and other members of the platform participated in several panel discussions to promote the declaration, including at the Global Climate Action Summit and at COP24. The Mexican state of Sonora joined as the newest member and the Citizens' Climate Lobby joined as the newest partner.

The platform also recently completed its *Governance Guidelines* and *Progress Report*. The *Governance Guidelines* will enhance the legitimacy and structure of the platform's work by outlining roles and responsibilities for members, partners, observers, and endorsers, as well as decision-making authorities. The *Progress Report* highlights the platform's work to date and outlines next steps for each of its five work streams. In 2019, the platform will continue to engage with national and sub-national jurisdictions across the Americas to expand membership and promote carbon pricing as a cost-effective tool for reducing greenhouse-gas emissions. By working together under the declaration, members can achieve targets more efficiently and enhance ambition.

### CITIZENS' CLIMATE LOBBY [United States]

Citizens' Climate Lobby<sup>64</sup> is a nonpartisan, nonprofit organization that educates and empowers citizen volunteers to establish ongoing working relationships with their lawmakers to build political will for carbon pricing. These citizen volunteers have had about 5,000 meetings with members of the U.S. Congress in the past 11 years.

In 2017 and 2018, Citizens' Climate Lobby volunteers published 7,244 letters to the editor in U.S. newspapers as well as 1,228 full-length op-eds. In addition, volunteers secured 158 editorials from newspaper editorial boards.

The lobby's volunteers also worked with members of the U.S. House of Representatives to launch the Bipartisan Climate Solutions Caucus, which expanded to 90 members (45 Republicans and 45 Democrats) before the November 2018 midterm elections changed the makeup of Congress.

All this work led to the introduction of the Energy Innovation and Carbon Dividend Act<sup>65</sup> in the U.S. House

of Representatives on November 26, 2018. It was the first bipartisan carbon tax bill introduced in the U.S. House of Representatives. In December, it was introduced in the U.S. Senate, again with bipartisan support.

The bill puts a fee on carbon-emitting fuels at the point where they enter the economy, making it administratively simpler and creating economy-wide coverage. The fee starts at \$15 per ton and rises by \$10 per ton per year. All net revenues are returned to households in equal shares, as monthly dividend checks. The plan is projected to reduce U.S. emissions by 40% by 2030 and by 90% by 2050.

From November 2018 to January 2019, Citizens' Climate Lobby volunteers sent 9,359 personal messages to members of Congress and published 824 letters to the editor and 123 full-length op-eds in the U.S. Twenty-one newspaper editorials have also endorsed the bill. On January 24, 2019, the Energy Innovation and Carbon Dividend Act was reintroduced as H.R. 763, again with bipartisan co-sponsorship, in the U.S. House of Representatives.



## OUR CLIMATE

**[United States]** Our Climate is a U.S. millennial-led organization that empowers young leaders to effectively advocate for science-based and equitable climate policies. In 2016, Our Climate partnered with the National Geographic documentary series *Years of Living Dangerously* to launch the national Put A Price On It campaign, which mobilizes youth support for carbon pricing policies at the state, regional, and federal level.

Over the past two years, proposed carbon pricing policies have advanced significantly in several U.S. states. Our Climate is an active member of six state coalitions that are backing these policies; its leaders energize coalition efforts through legislative advocacy, media engagement, and campus organizing. In 2018, its 170 student leaders mobilized 10,000 students, organized 135 outreach events, and published 45 media pieces to build public support for carbon pricing and advance proposed policies.

2019 promises to be an exciting year for carbon pricing in the United States. In the Northwest, lawmakers in Oregon have made carbon pricing a legislative priority, while Washington State continues to consider the best path forward for comprehensive climate action. In the Northeast, 65 House members in the Massachusetts legislature have signed on as co-sponsors for carbon pricing legislation, while regional cap-and-trade programs continue to welcome new states and expand their scope to cover transportation emissions. Various states are considering policies to price carbon, including Colorado, New Mexico, and Utah.

Our Climate leaders aim to solidify concrete state-level wins this year. They have hired teams of paid fellows in each priority state—Massachusetts, New York, Oregon, and Washington—and plan to hold a series of Youth Lobby Days that draw hundreds of students to state capitols. To amplify youth support for immediate climate action, student leaders are publishing media pieces, creating social media content, and organizing creative initiatives that build a larger and more inclusive movement to #PutAPriceOnIt.

Follow Our Climate's work on its website, [www.ourclimate.us](http://www.ourclimate.us).<sup>66</sup>



# PRIVATE SECTOR



Our partners in the private sector are taking a leadership role in climate action by implementing internal carbon pricing and other mitigation actions within their organizations while advocating for broader climate action within their industries and countries.

# THE FINANCIAL CASE FOR CARBON PRICING

GÉRARD MESTRALLET, CPLC HIGH-LEVEL ASSEMBLY CO-CHAIR; CHAIR, SUEZ;



AND HONORARY CHAIR AND FORMER CEO, ENGIE

As a business leader, I support carbon pricing because it is the most cost-effective way to reach the desired environmental outcome and achieve the low-carbon transition. A carbon price also stimulates clean technology and market innovation, fueling new, low-carbon drivers of economic growth. ENGIE has implemented an internal carbon pricing system that reflects a medium- to long-term assessment of forthcoming regulatory changes, as well as switching to low-carbon power generation and developing renewables. To do so, the strategy division draws up sensitivity analysis to carbon pricing for the company. Businesses use these analyses as part of their studies on investment projects that are presented to the investment committee. The adoption of these internal carbon pricing systems eventually led to our ceasing of coal development capacities in late 2015.

For companies that are considering using carbon pricing, here is my advice: it is key to be clear on why a carbon price is set and what the purpose of it is. The company needs to understand where their emissions are coming from and which sources have the highest potential emissions reduction. This is where an internal price might be applied. It is then important to review the policies and strategies that are already in place and are targeting these sources because overlapping policies and measures might be counter-effective.

Before setting and deciding to apply an internal price, it is important to communicate the idea internally, so

that everybody understands the why and the how and can contribute to the effort. Carbon pricing makes sense for businesses both as a climate policy and as a key component of fulfilling their financial goals. Carbon pricing creates a level playing field between competitors but also between all economic players. At the company level, carbon pricing helps factor in the long-term risks to company activities and assets in relation to climate change. Additionally, it reduces the risks linked to decarbonizing investments, increases the profitability of clean projects, and reduces the use of fossil fuels.

Carbon pricing is a decision-making tool: it helps companies assess the resilience of their projected investments against the risk of future domestic and regional regulations related to climate change. It also reassures investors by making them more confident that the company is indeed testing its choices in a climate-affected future.

The private sector is particularly in favor of carbon pricing as a policy instrument because instead of dictating who should reduce emissions where and how, a carbon price gives an economic signal that allows companies to decide for themselves where/when/how to invest and develop activities, reduce emissions, or continue emitting and pay for it. In this way, the overall environmental goal is achieved in the most flexible and least-cost way to society.

For all these reasons, I believe that CPLC is critical to advancing carbon pricing around the world. We need to execute the low-carbon transition now. We should do this in a collaborative coalition advocating for an instrument that gives a level playing field, avoids transfer of polluting activities, and pushes for decarbonized solutions.

# CONSTRUCTION: SEEKING AN INTEGRATED APPROACH TO CARBON PRICING

CPLC'S CONSTRUCTION VALUE CHAIN TASK TEAM

The construction industry is hugely fragmented, with a variety of actors, and accounts for 25% to 40% of global emissions. Individual actors are making commendable efforts to reduce their own carbon emissions: a recent CPLC report<sup>67</sup> highlights that of the 1,400 companies implementing or looking to implement a carbon price before 2019, about 100 are from sectors along the construction value chain, including infrastructure, construction services, and materials. However, the lack of coordination and consistent application across the industry reduces their effectiveness. Realizing industry-wide emissions reductions requires an integrated approach to sustainability that will influence decision-making across the value chain, CPLC partners such as Acciona, LafargeHolcim, and Rusal supported the Construction Value Chain Task Team in developing such an integrated approach through an analysis piece in 2018/19.

The research aimed to develop a shared understanding of what the construction value chain is, discuss broad approaches to sustainability from sectors along the value chain, and showcase approaches to carbon pricing by CPLC partner companies in the industry. Twelve CPLC member companies from sectors across the value chain, including aluminum, cement, glass, steel, infrastructure, construction services, and equipment manufacturing, were interviewed, and their attitudes, initiatives, and plans for carbon pricing were documented in the report, *Construction Industry Value Chain: How Companies Are Using Carbon Pricing to Address Climate Risk and Find New Opportunities*. There are currently no forest and wood production companies that are part of CPLC, hence wood products are missing from the discussion, even though these are a core part of the industry's value chain.

This report outlines some of the unique approaches to carbon pricing and supply chain emissions management that firms are currently taking, as well as common experiences and concerns. Most companies initially faced the challenge of “socializing” executives to mainstreaming the concept of climate change and carbon pricing into their financial considerations, but a change in culture has been brought about by developments such as the Paris Agreement and the recommendations of the TCFD. Companies lack clarity on how to operationalize and

standardize the implementation of a carbon price and were interested in learning from the experiences of their peers. A key concern was the need for a level playing field, and companies saw jurisdictional carbon pricing as a preferred solution. Companies also acknowledged the need for an integrated approach to carbon pricing in the industry at large, so that sustainability efforts could be coordinated to maximize effectiveness.

The analysis has highlighted the need to bring together decision-makers operating within the value chain to influence and help implement carbon pricing at the design and project structuring phases to reduce use-phase emissions without adverse welfare impacts. The Construction Value Chain Task Team has begun to work with organizations such as the World Business Council for Sustainable Development to find effective synergies between carbon pricing in the construction industry and other tools such as Science-Based Targets, thus assisting the industry's transition to a low-carbon future.

The work of some of our partners in the construction value chain is highlighted in this section.



## LAFARGEHOLCIM

LafargeHolcim, the leading global building materials and solutions company, is committed to reducing carbon emissions from its production activities and throughout the entire lifecycle of its products and services. It also develops and provides solutions to reduce the carbon emissions of buildings and infrastructure. Although carbon pricing can be a powerful tool for transitioning towards carbon-neutral construction, existing regulatory frameworks need to evolve towards more integrated carbon pricing mechanisms that apply across value chains to achieve larger-scale results.

The fragmented nature of the construction value chain leads to a disconnection between immediate project-based priorities and long-term lifecycle impacts. Carbon pricing mechanisms can address both short- and long-term prerogatives, leading to a stronger connection between the providers of carbon-performant products and solutions and their valuation, and thus demand, further down the chain. Mechanisms that enable carbon prices to become relevant across a value chain (versus a sole focus on the supply side) become effective demand-pull levers.

LafargeHolcim fully supports carbon pricing policies that are transparent, simple, and send a stable price signal while ensuring a level playing field across geographies and between sectors. Furthermore, it supports a more comprehensive integration of carbon pricing across value chains in order to accelerate the demand for climate-efficient products and solutions.

## DALMIA CEMENT (BHARAT) LIMITED

Dalmia Cement (Bharat) Limited, a subsidiary of Dalmia Bharat Limited, is a major cement group in India, with a production capacity of over 27 million tons. CDP<sup>68</sup> has rated Dalmia Cement as the world's best performer in low-carbon cement manufacturing. To reduce the company's carbon footprint and climate risk exposure, Dalmia Cement applies the following strategies:

- Substituting clinker.
- Increasing electric and thermal efficiency.
- Using pharmaceutical, rubber, and other industrial waste material as fuel for its cement kilns.
- Researching and developing carbon capture, use, and storage technologies.

In addition, the company regularly monitors progressive targets and is open to piloting new technological solutions at its plants. Managing Director

and CEO Mahendra Singhi recently announced that the company aims to become carbon negative by 2040. Dalmia Cement is the only company from the heavy manufacturing sector to set such an ambitious goal. It is also the only company in the world to commit to both EP 100 and RE 100 initiatives.

Carbon pricing is one of the tools in Dalmia Cement's strategy to increase electric and thermal energy efficiency. Explicit carbon pricing regulations are not available in India. However, there are other implicit carbon pricing mechanisms applicable to the industry, including cement. Dalmia Cement is participating in Perform Achieve Trade, an energy efficiency scheme,<sup>69</sup> and a renewable purchase obligation for solar energy,<sup>70</sup> among others. These regulations, coupled with membership in CPLC, encouraged Dalmia Cement to develop an internal shadow carbon price that is applied on a project-by-project basis depending on their greenhouse-gas-saving potential.

This shadow price was piloted on a waste-heat recovery plant, earlier considered financially unviable due to cheap access to energy from Dalmia Cement's captive power plants. However, the application of a shadow price increases the viability of the waste-heat recovery plant, which was then approved as an alternative to another fossil fuel-based captive power plant. The company's internal shadow carbon price has paved the way for the development of two more waste-heat recovery plants and a line of green cement, which comes with a commitment to produce only blended cements with a low carbon footprint.

The ultimate goal is to apply carbon pricing to every project. The current level, \$11 per ton, was calculated using scenario analysis that considered the expected cost of regulatory compliance as well as competitiveness concerns in the short to medium term. Re-evaluating and increasing this price will depend on a favorable future policy environment, including market-based mechanisms and incentives that will make low-carbon projects such as the waste-heat recovery plant more economically viable.

In addition to applying a carbon price, Dalmia Cement engages its supply chain on sustainability using guidelines developed in collaboration with the Cement Sustainability Initiative. Given that the construction industry in India comprises both the organized and unorganized sector, Dalmia Cement is conducting awareness campaigns on climate impact for its suppliers and stakeholders at large. This sensitization is essential before tools such as carbon pricing can be applied to the construction value chain.



## RUSAL

Aluminum is a crucial component of the eco-friendly buildings of the future. It is high time for manufacturers to develop basic materials such as steel, cement, primary aluminum, and glass with a low carbon footprint and for governments to take measures to stimulate the consumption of such materials on a global scale in order to combat climate change.

To this end, RUSAL has launched a new low-emission product, ALLOW. This new type of aluminum uses clean hydroelectricity to deliver the metal to market with a lower carbon footprint. As a result, less than 4 tons of CO<sub>2</sub>e per ton of aluminum created accounts for all scope 1 and 2 emissions from the smelter process. This is far lower than the average carbon footprint in the global aluminum industry.

Moreover, since 2017, RUSAL has applied an internal carbon price when assessing new investment projects. The internal carbon price is set at \$20 per ton. Should the cost make a project unprofitable, RUSAL will either find a low-carbon alternative to make the project more profitable or reject it altogether. The carbon price is also used to evaluate strategic decisions such as expansion, acquisitions and mergers, new buildings, decommissioning, and divestments. RUSAL presented its approach to carbon pricing at the International Research Conference on Carbon Pricing in February 2019.

In addition, RUSAL is implementing the Aluminum Stewardship Initiative Standard and the ASI Chain of Custody Standard to be independently audited and certified. The company also recently developed and put in place a Business Partner Code to encourage suppliers to consider sustainability in their operations.

## SAINT-GOBAIN

To reduce the building sector's contribution to worldwide greenhouse-gas emissions, Saint-Gobain manufactures and distributes building materials—including glass, insulation, and plasterboard—that improve energy efficiency in existing and new buildings.

In 2016, an internal carbon price was set up within the company, helping to refocus investments in manufacturing and research and development towards a lower-carbon economy. The first price is fixed at €30 per ton and applies to industrial investments above a certain threshold. The second price level of €100 per ton is used for researching and developing breakthrough technology. The company is still receiving feedback on this initiative and will assess how it should evolve in the future.

Saint-Gobain is also working together with other stakeholders to set up a recognized methodology to assess its products' sustainability by including the carbon emissions over the value chain, as well as the benefits of using the products in terms of the reduction in carbon emitted during the building's operation, in particular for heating and cooling. Indeed, once they have been in use for an average of three months, Saint-Gobain's insulation solutions offset the emissions linked to their entire lifecycle.

This methodology will also be translated into carbon pricing: this is the goal of Saint-Gobain's collaboration with CPLC.

## MAHINDRA GROUP

Mahindra & Mahindra Limited, a utility vehicle and farm solutions provider, is the flagship company of the Mahindra Group. It became the first Indian company to announce an internal carbon price of \$10 per ton of carbon emitted. It has committed to reduce its carbon intensity by 25% by 2019 against 2016 levels and the investments through the company's carbon pricing mechanism will help it achieve this goal.

Determining the carbon price required understanding the carbon price that was embedded in the business; what it would cost to buy more renewable energy and implement measures to become more energy efficient; and what were accepted carbon prices across the world, the company discovered that an implicit carbon price of about \$7 was embedded in the business, but Mahindra scaled up its ambition by declaring a \$10 carbon price.

The process of adopting and implementing a carbon price involved extensive consultations between experts, senior management, and individuals who would play a key role in implementing the carbon price. Workshops, dialogues, webinars, and other forms of engagement helped the company get clarity on possibilities and processes. Key partners in this capability-building journey included CPLC, the World Resources Institute (WRI), and the Environmental Defense Fund.

Mahindra made the carbon price commitment on October 7, 2016. Capital budgeting for green projects has been completed and the company is on

course to meet its commitment. The company is also using a shadow carbon price along with the “real” price announced as it plays a complementary role in reducing the business’s carbon footprint.

Mahindra is happy to share its perspective and experience to enable other corporations to enhance their competitiveness by using carbon pricing appropriately. The carbon pricing primer on CPLC’s website is a good place to start for someone trying to unravel the mystery of carbon pricing.

## TATA GROUP

In August 2015, the Tata Group formed a cross-sectoral working group to explore internal carbon pricing. The working group subsequently presented its recommendations to the Tata Group Sustainability Council (consisting of CEOs of 15 major Tata companies) and came out with a primer on internal carbon pricing for its companies.

Since then, two of its largest companies (Tata Steel and Tata Chemicals) have adopted an internal carbon price to evaluate large, capital-intensive projects. As of 2017/18, Tata Steel is using a carbon price of \$15 per ton of carbon emitted. In addition, Tata Motors is piloting an internal carbon price and will review and revise the price every year.

## BRASKEM

In 2016, the petrochemical company Braskem started using an internal carbon price in its operations in Brazil. The price was based on the shadow price method and became a criterion when making investment decisions after a revision of project evaluation procedures. All the leaders and professionals involved in the process of calculating the economic attractiveness of each project were trained in the new methodology, as an emission impact assessment is a prerequisite for a project to be implemented. To support stakeholders and avoid any process deviation, an annual audit is carried out to ensure that all the submitted projects used the methodology. The initial price value was set at a level that allows and improves the eligibility of projects that reduce emissions. Every year, Braskem reviews the effectiveness of the price value based on the amount of reduced emissions from the approved project. Between 2016 and 2018, 37 projects that reduce greenhouse-gas emissions were approved using the new methodology, corresponding to 136,738.96 tons of CO<sub>2</sub>e emissions avoided.





## CPLC'S BANKING SECTOR TASK TEAM

Following the Paris Agreement in 2015 and the launch of the Financial Stability Board's TCFD in 2017, there has been a significant push from investors and regulators for companies to assess their carbon footprint and exposure to climate risk. The Bank of England's directive to commercial banks to appoint a senior executive to manage climate risk and disclosure to the board is just one in a spate of new and expected policies across the globe that will mandate greater awareness of systemic financial risks posed by climate change.

Recognizing the need to reduce and manage climate risk through well-developed carbon regulation, 415 investors managing over \$32 trillion worth of assets

called on governments at COP24 to bridge the ambitious gap between countries' targets and the Paris Agreement's goals and help accelerate private sector investment in the low-carbon transition by putting a meaningful price on carbon.

Carbon pricing has emerged as a preferred tool for banks to quantify a company's carbon risk exposure. Only 25 financial institutions reported using an internal carbon price in 2014; this number grew to 69 in 2017 and is expected to reach 147 in 2019. Banks are building this momentum in various ways. For example, Crédit Agricole, which is committed to being carbon neutral by 2040, has developed a methodology to quantify and map the carbon footprint of its corporate

investment banking through a risk index, using carbon pricing as a variable for scenario analysis and a proxy for risk. BNP Paribas incorporates carbon risk in the financial analysis of corporate and project finance transactions using quantitative and qualitative approaches. Its carbon price band of \$25 to \$40 per ton of CO<sub>2</sub> is based on three factors: the median of price levels reported by the CDP; the social cost of carbon; and the price at which power plants will be motivated to switch from coal to gas. Itaú Unibanco uses carbon pricing as a tool for both risk management and innovation, and applies prices ranging from \$10 to \$60 per ton of CO<sub>2</sub> differently in each of its three units: credit, investments, and operations.

Despite these initiatives and the framework for carbon risk management provided by the TCFD recommendations, financial institutions still lack clarity on standardizing and institutionalizing these measures. The Banking Sector Task Team has brought together both observer and CPLC partner commercial and multilateral banks to understand how carbon pricing can be implemented in and applied to investment portfolios in addition to operations. In the past year, CPLC partner CDP released a series of executive briefs in collaboration with the Banking Sector Task Team that discuss the challenges faced by financial institutions as they contend with carbon pricing and the TCFD recommendations. In a recent brief, banks such as Crédit Agricole, TD Bank, Itaú Unibanco, Yes Bank, and Garanti Bank discuss their approach to implementing a carbon price and the issues they have faced. This can serve as a guide to other financial institutions considering applying similar approaches.

As banks prioritize identifying a broader set of tools that will enable them to meet either regulatory or internal carbon risk management requirements, it is important to partner with initiatives that provide ongoing support on TCFD implementation. In this regard, CPLC can help to bring an emphasis on carbon pricing. CPLC's ability to support regional convenings and engage with banks in different geographies can help such initiatives extend the reach of their conversations on TCFD in different regions and combine this with carbon pricing, thus enabling localized solutions to managing carbon risk and directing credit towards low-carbon investments. This approach would help banks with their efforts to develop internal carbon pricing approaches for their lending portfolios to prioritize greener investments, projects, and companies, as well as advocate for well-designed policies to build a predictable regulatory environment that manages risk and incentivizes climate action.

## EUROPEAN BANK FOR RECONSTRUCTION AND DEVELOPMENT

The European Bank for Reconstruction and Development (EBRD) updated its approach to carbon pricing in December 2018 following the release of its *Energy Sector Strategy 2019–2023*. From January 2019, the EBRD will undertake an economic assessment of projects with high greenhouse-gas emissions. The results of the assessment will help senior management decide whether to approve a project and share it with the board. They can also provide useful information on better alternatives or different designs that would maximize impact.

The EBRD will use the range of shadow carbon prices recommended by the High-Level Commission on Carbon Prices: a range of \$40 to \$80 per ton CO<sub>2</sub>e in 2020, rising to \$50 to \$100 per ton CO<sub>2</sub>e by 2030. Beyond 2030, the prices will be increased by 2.25% per year, leading to a range of \$78 to \$156 per ton CO<sub>2</sub>e by 2050. The EBRD will test the economic viability of projects against the low and the high value and will also calculate a “switching value” carbon price to better understand what level would change the economic merits of the project. The EBRD's approach will also account for other environmental externalities (such as air pollution impacts) and other relevant assumptions (such as the price of input and taxes/subsidies).

## INTERNATIONAL FINANCE CORPORATION

Since May 1, 2018, IFC has been implementing its own internal carbon pricing measures and reporting these in board papers. Its initial pilot on pricing carbon in select investments demonstrated that it can do this successfully to better inform investment decision-makers within the institution. IFC has moved beyond the pilot and is now applying a carbon price to all project finance investments in the cement, chemicals, and thermal power sectors.



The price is applied to the economic rate of return calculations and the analysis is included in the board papers for all project finance deals in the three high-emitting sectors.

The price levels being applied are in line with the 2016 report of the High-Level Commission on Carbon Prices and are consistent with those used by The World Bank, with both the low and high carbon price values being used in project analysis. The low value will start at \$40 in 2020 and increase to \$78 in 2050. The high value will start at \$80 in 2020 and reach \$156 by 2050. For IFC projects these carbon price levels are adjustable within specified bands, depending on the host country income grouping as classified by The World Bank. In addition, IFC is piloting extended application to other sectors and deal types to better understand how carbon pricing could be applied.

IFC is also the first multilateral development bank to disclose how it handles climate-related financial risk using the TCFD guidelines. Understanding how to address climate-related financial risk is a process and IFC joins other financial institutions in their collective journey to understand the risks, as well as develop ways to mitigate them and disclose what they are doing. As such, IFC's disclosure in its FY2018 annual report is a first step and it will continue this work next year. IFC is working with CPLC to engage other financial institutions and share IFC's experience with the broader private sector group.

## UKRGASBANK

UkrGasbank was the first Ukrainian partner of CPLC when it joined in May 2018. It is the leading eco-bank in Ukraine according to the State-Owned Bank Development Strategy, approved by the government in February 2018. In order to provide institutional support to the strategy, the bank has established a specialized green-finance department. In cooperation with IFC, criteria for eco-projects have been implemented. The department confirms compliance with the eligibility criteria and then calculates emission reductions for each project. In addition, the bank has made several changes to decrease emissions and better evaluate environmental and social risks:

- Since January 2019, the bank has started reducing lending rates depending on the efficiency of credit facilities. This will increase the volume of lending and direct them to finance emission reductions.
- Launched in April 2018, the Division for the Assessment and Analysis of Social and

Environmental Risks's main task is to assess the environmental and social risks of providing loans to eco-projects and identify any potential liability for the bank. In addition, the division analyzes and identifies possible ways to reduce the identified risks and provides advice to customers on limiting their effects.

- Since the end of 2018, the bank has incorporated into its annual reporting a report on the social and environmental risk management of its activities.
- The bank has begun implementing measures to reduce the impact of the bank's activities on the environment and raising the level of environmental awareness among employees.
- The share of green loans in the total loan portfolio increased from 13% in 2017 to 25% in 2018, on the back of 20.5% profit growth.

These activities have enabled the bank to call for financial institutions to facilitate internal carbon pricing and to help customers adapt to carbon pricing conditions.

## GARANTI BANK

Carbon pricing is a material indicator that is easier to understand than environmental and social risk more broadly. The new Turkish Monitoring, Reporting, and Verification Law that came into force in 2014 and Turkey's active membership in the PMR have helped raise awareness of carbon pricing. Yet determining the cost of carbon in the absence of a regulatory framework has been difficult for Garanti. The bank has thus been using an internal carbon price for carbon-intensive projects in order to reflect the cost of carbon in project finance since 2011.

While the bank had to convince customers of the value of managing climate risk in a highly competitive market, it has also managed to strengthen its relations with many of its customers through positioning itself as a partner in managing their non-financial risks. As severe environmental and climate impacts and transition risks occur over longer periods, carbon pricing is not quite applicable to corporate loans, which have short maturity timelines. Therefore, beyond project finance Garanti manages these risks through its newly adopted sector norms, which are used to screen carbon-intensive sectors. The norms were established based on a heatmap that takes into account the bank's exposure to climate-sensitive sectors.

## ECOSPHERE+

Ecosphere+,<sup>71</sup> the sales and marketing platform that brings the environmental assets of the Althelia Climate Fund to market, has been highlighting how carbon pricing can mobilize the protection of critical landscapes. According to a peer-reviewed study,<sup>72</sup> natural climate solutions could equate to 37% of the emissions reductions needed to achieve the goals of the Paris Agreement. It will not be possible to meet these goals without making significant progress to protect or restore natural sinks (forests, grasslands, wetlands, peatlands, agricultural land, and coastal ecosystems). The lowest-cost option is to prevent the conversion or destruction of our natural tropical forests in the first place. One-third of this natural mitigation can be delivered at or below \$10 per ton of CO<sub>2</sub>e, with many positive benefits<sup>73</sup> for communities and ecosystems. This is the same as taking more than 600 million cars off the road, making this a compelling commercial, environmental, and social value case, as argued in the booklet, *The Case for Forests*.<sup>74</sup>

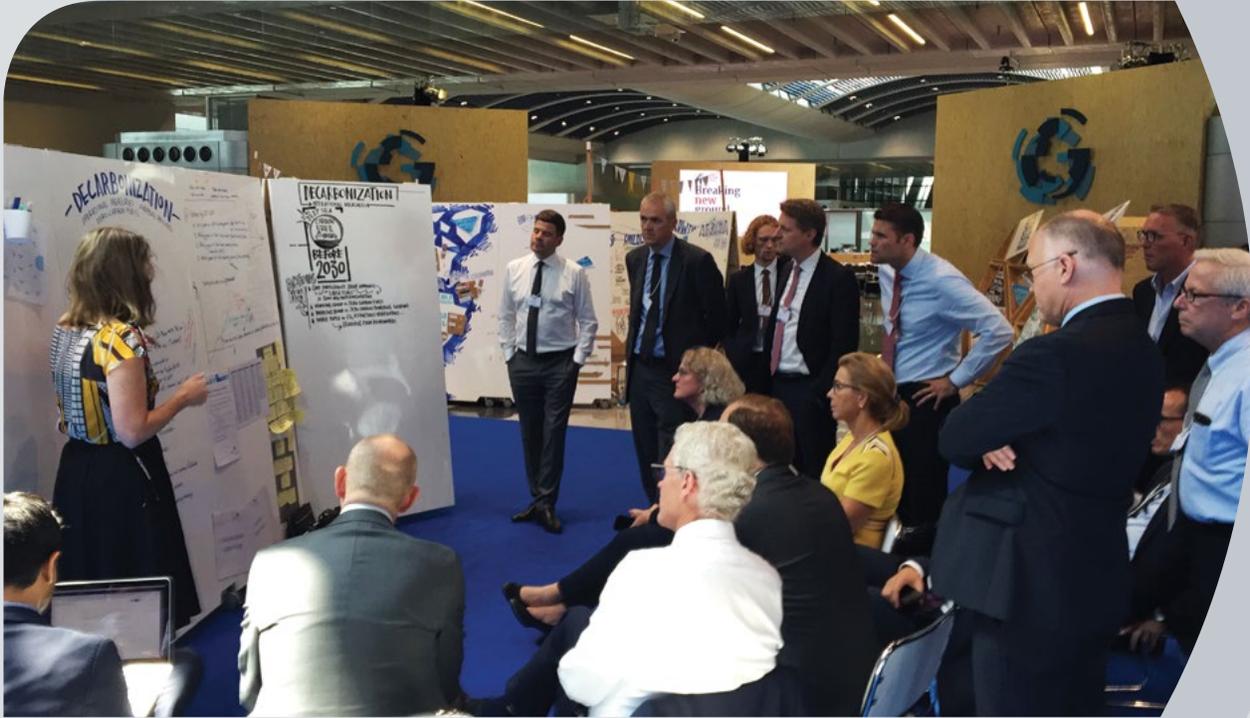
One of the future large anticipated sources of demand for carbon credits is the system covering international aviation emissions (Carbon Offsetting and Reduction Scheme for International Aviation, or CORSIA<sup>75</sup>) that starts in 2021 for those countries that have opted in to the first phase. Airlines must offset emissions above the baseline set in 2019–20, with additional emissions forecasted at 142–174 Mt per year by 2025. Ecosphere+ has been advocating for the inclusion of forest-based carbon credits in CORSIA. It also worked with Delta Air Lines, which acted early to achieve a goal of carbon-neutral growth compared to its total 2012 emissions, starting in 2013.

Institutional investors are also beginning to decarbonize their portfolios. Investment manager Mirova developed a method to calculate the carbon footprint of investors' portfolios, finding<sup>76</sup> most are not in line with the 2°C goal. That will need to change as more countries consider passing laws that require institutional investors to disclose and reduce their climate-related risks in line with the TCFD recommendations.

Whether demand comes from airlines, investors, or other emitting sectors, adding a price on carbon enables forests left standing to have a value through climate finance. This makes a difference on the ground as the financing mechanism encourages a transition away from unsustainable activities such as slash and burn agriculture or illegal mining. For example, at an Ecosphere+ project in Peru, locals can now join a farmers' cooperative to sustainably grow cocoa and then process the raw cocoa beans into value-added products at the cocoa processing facility—all made possible through a combination of impact investment paired with climate finance.

A price on carbon, coupled with adequate market demand for emissions reductions, will be a critical element in unlocking the potential of natural landscapes, forests, and oceans, to deliver the climate solutions necessary to securing a future of less than 1.5°C to 2°C of warming.





Maritime CEOs and stakeholders discuss carbon pricing at the Global Maritime Forum's Inaugural Annual Summit.

## GLOBAL MARITIME FORUM AND UNIVERSITY COLLEGE LONDON

In April 2018, the International Maritime Organization (IMO) committed to reducing greenhouse-gas emissions from international shipping by at least 50% by mid-century (compared to 2008 level). In IMO's initial strategy,<sup>77</sup> carbon pricing is among the mid- to long-term measures being considered for the final strategy, which will be adopted in 2023.

The 73rd meeting of the Marine Environment Protection Committee (MEPC73) and the 4th meeting of the Intersessional Working Group on Reduction of Greenhouse Gas Emissions from Ships were the first meetings held after IMO's climate breakthrough. Yet, they mainly focused on the action plan to 2023, with some discussion on short-term measures such as the possibility for slow steaming (that would be, mandating vessels not to exceed a certain speed). Nevertheless, some IMO member countries made two submissions proposing market-based measures as part of IMO's strategy to at least halve emissions. More submissions related to carbon pricing are expected at the upcoming meetings in May 2019.

At the same time, progressive maritime stakeholders, mobilized and guided by the Global Maritime Forum and University College London, have continued working on this agenda. Supported by the CPLC, these players organized two shipping expert workshops—in May 2018 in Cologne and in November 2018 in Geneva—where carbon pricing played a major role. As a result of CPLC's maritime engagement, IMF released a working paper titled *Carbon Taxation for International Maritime Fuels*, which assesses policy options and makes the case for a carbon tax. Ian Parry, a fiscal policy expert at IMF, presented this research paper to numerous shipping CEOs at the Global Maritime Forum's Inaugural Annual Summit<sup>78</sup> in Hong Kong in October 2018. At this high-level event, more than 30 maritime CEOs launched a call to action<sup>79</sup> urging the industry to contribute to the sector's decarbonization efforts and referring to carbon pricing as a core principle of the way forward.

Filling enormous knowledge gaps is a key political challenge of implementing carbon pricing in shipping. IMO's initial strategy stipulates that any measures to reduce greenhouse-gas emissions should be considered in terms of its impacts on states. "Disproportionately negative impacts" should be assessed and addressed as appropriate. Consequently, The World Bank released the research paper *Understanding the Economic Impacts of Greenhouse Gas Mitigation Policies on Shipping*<sup>80</sup> in January 2019. The paper concludes from the existing literature that the economic impacts from an increase in shipping transport costs might be small to modest. A month later, a webinar jointly organized by The World Bank, the United Nations Conference on Trade and Development, and University College London discussed the paper's findings in more detail as well as suitable economic modeling approaches with policymakers in international maritime transport.

Given the rather long timeframe between the upcoming MEPC74 in May 2019 and IMO's MEPC75 in April 2020, it will be crucial to continue collaborating with maritime stakeholders. Additional shipping expert workshops, knowledge products such as joint impact assessments, and outreach activities in major climate and transport forums are being planned. A carbon pricing mechanism whose revenues enable serious research, development, and deployment of zero-emissions vessels<sup>81</sup> and compensatory measures for specific countries can significantly contribute to the sector's decarbonization, but a long journey remains ahead.

## EDP

EDP is a vertically integrated utility company, with operational activities in power generation, distribution, and supply of electricity (Brazil, Portugal, and Spain) and gas (Portugal and Spain). EDP has a significant presence in the world energy scene, supplying electricity to 9.9 million customers and gas to 1.6 million customers. Through its subsidiary EDP Renewables, EDP is also one of the largest wind power operators worldwide, with plants in Europe and North and South America.

A carbon price is used company-wide to assess the impact of current and future carbon regulation—namely ETSs and carbon taxes—on energy prices, energy volumes, and existing assets' value, as well as to evaluate capital investments in building or acquiring new electricity generation assets across the globe.

Price ranges are set by the Energy Planning Department and are updated yearly. Price forecasts currently range from €10 to €50 per ton of CO<sub>2</sub>, depending on the scenario, year, and geography. For the timeframe 2018 to 2030, the average price for the base scenario is about €25 to €30 per ton of CO<sub>2</sub>.

Meaningful carbon prices strongly benefit EDP's business strategy, fully align with the Paris Agreement, and contribute decisively to its commitment to be carbon neutral well before 2050. Carbon pricing should preferably be set up at the more global levels to safeguard economic competitiveness. Its revenues should be adequately recycled to support low-carbon growth and social cohesion.



## EDF

EDF is among the world's 10 largest global power suppliers and produces the smallest amount of CO<sub>2</sub> per kilowatt-hour (CO<sub>2</sub>/kWh), with direct emissions currently at 82 gCO<sub>2</sub>/kWh, which is far less than the world average for the sector (506 gCO<sub>2</sub>/kWh in 2015). EDF group's decarbonization strategy is focused on low-carbon generation with a balanced mix of nuclear and renewable energy.

EDF is a vocal advocate for the implementation of the Paris Agreement and considers carbon pricing as the most desirable and effective means to decarbonize the economy. The challenge is to achieve decarbonization while protecting purchasing power, especially of the most vulnerable people in society. Public policies could target smart recycling of the benefits of carbon pricing and give priority to those impacted by fuel poverty.

A predictable and paced rise in carbon pricing, with a floor to ensure a minimum price at all times, is key to securing the economic environment for all actors. Public policies can play a major role in creating an enticing environment for investments in the right technologies, while securing the purchasing power of

consumers and educating all actors on the need for a carbon-neutral economy.

EDF believes what is next and what should be first in carbon pricing is to use the pricing tool as a means for a just transition.

## EN+ GROUP

Aluminum and power producer En+ Group conducted a comprehensive in-house study of the approaches taken by leading international energy companies to introduce an internal carbon price. Companies included E.ON SE (Germany), EDP (Portugal), Iberdrola SA (Spain), ENEL SpA (Italy), Centrais Eletricas Brasileiras S/A (Brazil), American Electric Power (United States), Exelon Corporation (United States), Abengoa (Spain), and Eskom (South Africa). Based on its conclusions, En+ Group formulated its own best scenario for internal carbon pricing to create incentives for increasing energy efficiency. Secured funds will be used for researching and developing clean technologies, for greenhouse-gas emission reduction projects on existing hydropower plants, and for investments in renewables projects. Projects that reduce greenhouse-gas emissions or zero-emissions projects will be prioritized for implementation.



## SVEBIO

The Swedish carbon tax reduction for industries outside the EU ETS was entirely removed on January 1, 2018. This reduction has been in place almost since the carbon tax was introduced in Sweden in 1991 and was set at 79% until 2011, but has gradually been reduced over the years. As a result, the price of heating oil, propane, natural gas, and coal has increased considerably for the industries concerned. For industries belonging to the ETS, the carbon price is about \$25 to \$30 per ton, whereas the Swedish carbon tax is about \$140 per ton. Many of these companies are reducing their use of fossil fuels and, in many cases, removing them entirely.

The Swedish Bioenergy Association (Svebio<sup>82</sup>) promotes the increased use of bioenergy as a renewable energy source. It is making the companies affected by the removal of the subsidy aware of the changed conditions and suggesting fossil-free alternatives. These include different kinds of biofuels, like wood pellets and woodchips, bio-oils, and biogas. Many enterprises can connect to district heating, which in Sweden is almost entirely fossil-free. The tax increase also promotes energy efficiency measures in companies that still use fossil fuels.

Industries where fuel switching now takes place include breweries, dairies, other food industries, asphalt preparation companies, and textile industries. Greenhouses and laundries are also examples of industries where the high carbon tax has reduced the use of fossil fuels. In addition to the tax, the Swedish government can give investment grants to help these companies adapt to the higher fuel cost.

Svebio's role is also to inform the public about these developments. Because of the high carbon tax, many Swedish products have a much lower carbon footprint than imported products. One example is tomatoes or flowers produced in Swedish greenhouses. Today, Swedish greenhouses are almost entirely heated with biomass fuels or residual hot water from nearby industries, thanks to the carbon tax. This fuel-switch has taken place during the last 10 years. Imported greenhouse products have often been produced using gas. Svebio is not against trade and imports, but the public needs to be better informed about the climate impact and benefits of different products. Certification and labeling are two ways to do this, and Svebio tries to convince certification bodies to include climate aspects in their schemes.

At the national level, Svebio encourages member companies to join its effort to promote carbon pricing. Many of these companies work worldwide. At an international level, Svebio works through its membership

in Bioenergy Europe and the World Bioenergy Association to encourage its partners and associates in other countries to promote carbon pricing. It does this at meetings and conferences, but also through its magazine *Bioenergy International*, which has subscribers in 60 countries.

## HAGA INITIATIVE

Founded in 2010, the Haga Initiative consists of 14 Swedish companies committed to reaching net zero greenhouse-gas emissions by 2030. The Swedish carbon tax was implemented in 1991, so the companies have been operating under carbon pricing for many years, and for some of them the EU ETS is now the most important incentive for climate change efforts. Since their respective base years, the companies have increased their turnover by 10% on average, while their emissions have decreased by 47% (scope 1, 2, and business travel in scope 3).

The Haga Initiative explores the business benefits of acting on climate change. They are:

- Brand value and customer loyalty.
- Cost savings.
- Attractiveness as an employer.
- New products and business areas.
- Proactive risk management.
- Improved financing opportunities.

A survey of 300 Swedish companies confirmed these benefits, emphasizing the importance of brand values, customer loyalty, and attractiveness as an employer. During 2018, the Haga Initiative collaborated with actors outside of its network and collected insights from companies in the Nordic region and in Eastern Europe. Together with four other Nordic climate organizations, it interviewed CEOs and chairs of 38 large Nordic companies about their view of business climate efforts and what it means for competitiveness and growth. The Haga Initiative received strong support for its hypothesis that climate efforts are good for profitability and competitiveness, and that the companies welcome carbon pricing, because it creates a level playing field. The results were published in April 2018.

In a follow-up project, 22 Polish and Baltic business leaders were interviewed during the fall of 2018—and the findings are strikingly similar. Even though Poland and the three Baltic states are in a very different position to the Nordic countries, several CEOs and other business leaders expressed the necessity of climate efforts in companies. Acting under the EU ETS, most of them believe that carbon pricing is an important part of climate policy and think that it should be global instead of regional. The 22 interviewed companies together



employ about the same number of people as there are coal miners in Poland.

Having connected with companies in the Nordic countries, Poland, and the Baltics, the initiative is now looking at engaging with other countries. The Haga Initiative aims to bring companies together that demand more action on climate change and a quicker pace towards zero emissions. These companies tend to believe that carbon pricing is an important tool to make this happen. By letting companies express their view and sharing it with policymakers and the public, understanding grows that carbon pricing can be a business-friendly policy.

## ALLCOT

During the last year, ALLCOT has consolidated itself as one of the global leaders in reducing carbon emissions and combating climate change. Among other geographies, ALLCOT has grown its portfolio of projects in Colombia, where the carbon tax implemented by the finance ministry has proven to be a powerful tool to achieve large-scale emission reductions through carbon markets.

Using its experience gained developing emission reduction projects for existing carbon markets, ALLCOT will be implementing projects in new geographical areas like Chile, Mexico, or South Africa. Moreover, it has supported businesses looking to contribute to the achievement of the Sustainable Development Goals and to improve the outcomes of the carbon markets and their applications to the circular economy.

In 2019, ALLCOT will celebrate a decade of “changing the Change” in the climate change market. It will continue to be a leading company in unlocking the potential of carbon pricing to deliver on the Paris Agreement.

## ECOACT

EcoAct supports businesses and sub-national governments with carbon pricing initiatives aimed at driving the transformation of organizations towards a carbon-neutral world, anticipating a low-carbon future, and accelerating that transition.

### *Carbon Pricing to Guide Transformation*

Carbon pricing is a key tool to decarbonize companies and shift their decisions and investments towards low-carbon options. In Europe, EcoAct helps businesses in carbon-intensive sectors to better understand the EU ETS regulatory changes for Phase 4 (2021–30) and estimate the expected financial impact of stronger ambitions and a rising carbon price by 2030. Helping businesses to

understand the financial impacts from the transitional risk of carbon pricing policies is, and will continue to be, a core part of EcoAct’s work.

### *Voluntary Carbon Pricing to Anticipate Future Regulation*

A growing number of its clients voluntarily implement internal carbon pricing to guide the transition of their business strategy in terms of operations and investments. These actions are motivated by their anticipated climate change risks, which are under more scrutiny by investors. One of the key challenges is integrating carbon pricing into investment decision-making, which would help accelerate the transition to a low-carbon economy and therefore better manage transition risks.

### *Carbon Pricing to Accelerate the Transition Beyond its Scope of Activities*

A price on carbon can make emission reduction or carbon sequestration projects more financially attractive for investors and companies committed to decarbonization. EcoAct works with clients committed to action beyond their core scope of business to develop carbon offset projects and portfolios—voluntary actions that reduce emissions, build carbon sinks, and help accelerate the transition to a low-carbon world. These carbon offsets projects also increase companies’ contribution to the United Nations Sustainable Development Goals through relevant co-benefits, such as health improvements and gender equality.

To date, carbon pricing has been a tool to drive climate action. However, it is also a powerful economic tool to drive sustainable development, innovation, and growth. To continue to scale carbon pricing across more companies and regions, the ability to demonstrate the decarbonization impacts and the development and performance impacts of carbon pricing, especially on a local level, will be essential. Together, countries and companies implementing and using carbon pricing policies must demonstrate to their citizens, employees, and investors, the direct and local economic and social benefits.

Over the next few years, it will be essential to demonstrate how carbon pricing supports low-carbon and sustainable development with benefits for employment, health, social protection, and poverty reduction. If we do not, as the recent rise of the yellow vests in France demonstrates, whatever the country, social opposition will develop against this kind of climate policy. EcoAct plans to continue its decade-long perspective that low-carbon development is sustainable development, helping governments and companies to maximize the link between decarbonization and development and create social benefits while transitioning to carbon neutrality.

# STRATEGIC PARTNERSHIPS



Our strategic partners support decision-makers by engaging in data-backed research on innovative solutions and advocacy strategies that incorporate the latest developments in multiple disciplines.

# CARBON PRICING ON CAMPUS: HOW HIGHER EDUCATION CAN AFFECT PUBLIC POLICY

VALERIE SMITH, PRESIDENT, SWARTHMORE COLLEGE



A warmer climate threatens to bring food and water scarcity, mass displacement, disease expansion, resource wars, and other disastrous impacts to bear on our world. As was reiterated in last year's IPCC and National Climate Assessment reports, mitigating these threats will require a dramatic and rapid transformation of our electricity, heating, transportation, industrial, and food systems. All of us must consider how our own sectors and institutions are positioned to advance solutions that, collectively, match the unprecedented scale and fierce urgency of the challenge.

Institutions of higher learning are uniquely positioned to facilitate informed discussions of the climate crisis and ways it can be addressed. We also have a responsibility to adapt our own institutional behaviors and processes. For this reason, Swarthmore College has instituted an internal carbon pricing program.

A reading group of Swarthmore faculty, staff, and alumni began studying carbon pricing policy in the summer of 2015. This group soon determined that carbon pricing was a fair, feasible, and powerful solution with potential to change energy consumption habits, make zero-carbon alternatives cost-competitive, and keep fossil fuels in the ground. To bring carbon pricing to Swarthmore, the group proposed a program to model a price at a college scale; reduce campus emissions; engage our campus community; and build momentum for state, national, and global pricing solutions.

As a result of their efforts, in 2016 Swarthmore launched the second internal carbon price in higher education. The Carbon Charge Program levies a fee on departments and offices for the college's emissions to fund sustainability work across campus—thus emphasizing the shared social costs of carbon emissions. To incorporate the price incentive at institutional-level decisions, we also use a “shadow price” of \$100 per ton of CO<sub>2</sub>e in cost-benefit analysis for capital planning. Beyond reducing campus emissions, the program serves as a platform to educate members of our campus community about effective climate policy and engage them in these efforts. Each year, as a department builds its budget, it confronts its share of the cost of the college's overall emissions.

As an institution of higher education, we have the opportunity to use our public voice to build momentum for policies at a much larger scale. Given the scale of the issues, I am proud to have joined 50 other college and university presidents in announcing our public support for the Put A Price On It campaign and co-signing a letter calling on our elected leaders to act decisively in the face of the climate challenge by putting a price on carbon emissions at state and national levels. The letter signals a commitment on the part of higher education leaders to take a strong stance on solutions to climate change for the good of our students, institutions, and communities.

Swarthmore has found tremendous value in its Carbon Charge Program, and we encourage and support other institutions to explore internal carbon pricing in their own operations. Swarthmore was proud to contribute to the *Internal Carbon Pricing in Higher Education Toolkit* (discussed in greater detail on page 62) and provides workshops, webinars, and personal consultation for other schools looking to bring carbon pricing to their own campuses. The staff in our Office of Sustainability<sup>83</sup> are pleased to share information with you.

A price on carbon is a fair, feasible, and powerful strategy to accelerate the transition away from a fossil-fueled economy. We look forward to working with the CPLC community to determine how each of us can advance effective responses to the climate challenge. Together, we can demonstrate to our elected officials the political will necessary to enact effective policy to combat climate change. We have a moral duty to care for the conditions of life on Earth and a civic responsibility to require action from our elected leaders.

## About Article 6

One of the key areas of focus for the business community is Article 6 of the Paris Agreement and its market provisions. Article 6 enables voluntary cooperation among countries for achieving NDCs, allowing countries to trade mitigation outcomes internationally.

Article 6 has the potential to lower the cost of achieving NDCs while mobilizing the private sector as a key player. In the face of limited public and concessional finance, there is a need to leverage private capital intelligently if we are to increase global ambition. According to the *State and Trends*

*of Carbon Pricing* report (2016),<sup>84</sup> efficiency from markets could reduce global mitigation costs by around 54% in 2050, or \$3,940 billion.

Guidance for implementing Article 6 made impressive progress in 2018, moving from a list of disparate elements to a fully fledged, almost-final set of rules. However, Article 6 is one of the most technical parts of the rulebook, and a lack of operational detail resulted in this chapter of the rulebook not being finalized at COP24. Critical issues remain unresolved and need to be agreed on at COP25.

## INTERNATIONAL EMISSIONS TRADING ASSOCIATION (IETA)

In preparation for COP24, IETA supplemented its existing *Straw Proposal: Implementation Guidance for Article 6 of the Paris Agreement*<sup>85</sup> with a report carrying its views and priorities for Article 6<sup>86</sup> from a market practitioner's standpoint.

After Article 6 was deferred to COP25, IETA committed to expanding its Article 6 work with a new project to model and assess different rulesets and their implications for the cost-saving and ambition-raising potential of Article 6. The project is being run in collaboration with the University of Maryland and other partners and will, IETA hopes, be used to inform COP25 discussions on Article 6.

## THE WORLD BANK

Article 6.2 is expected to create flexibility for bilateral or plurilateral arrangements between parties by allowing mitigation outcomes (MOs) to be transferred under a variety of mechanisms, procedures, and protocols. Article 6.4, in contrast, will likely be governed by parties under UNFCCC process, with a greater level of multilateral regulatory supervision.

In 2018, The World Bank started a work program to determine consensus on the next generation of climate markets under Article 6. The work program focused on four components:

- Creating a supply of MOs from The World Bank's lending operations. MOs can be used against

countries' own NDCs or transferred internationally to private buyers or other countries.

- Supporting the creation of infrastructure to store, track, and potentially transfer MOs. This infrastructure would be used to "store" MOs in a "warehouse" after the benefits and risks of the MOs have been assessed using an independent, standardized assessment protocol. Such a warehousing system would enhance the transparency, comparability, and potential fungibility of MOs that are generated from the bottom up.
- Facilitating demand for MOs by the creation of suitable financial products. Financial instruments that reduce risks for early adopters would stimulate demand and participation from the private sector.
- Supporting the regulatory framework for Article 6 by engaging with relevant stakeholders, including multilateral development banks, to identify areas of common understanding and facilitate learning-by-doing.

Through the work program, The World Bank is demonstrating the opportunities and challenges inherent in different options for operationalizing Article 6. In 2019, it will continue supporting countries as they pilot MOs; develop conceptual frameworks for the proposed warehouse; work with its partners to design potential financial products; and engage stakeholders to receive feedback and input on proposed concepts and pilots. It is envisioned that the lessons it learns will help inform discussions at COP25.



### **Carbon Markets and Disruptive Digital Technologies**

In 2018, The World Bank released a report titled *Blockchain and Emerging Digital Technologies for Enhancing Post-2020 Climate Markets*,<sup>87</sup> which states that the evolving technological landscape is enabling an efficient and highly robust generation of climate markets. Blockchain, “big data,” “the internet of things,” “smart contracts,” “artificial intelligence,” and other disruptive technologies hold promise of addressing the needs of post-2020 climate markets. The data-sharing and transaction-management capabilities of blockchain technology, in particular, align well with the needs of climate markets. Blockchain technology has the potential of being able to:

- Record and track information associated with MOs.
- Provide transparency and robustly implement rules via smart contracts, which can be used to internalize governance between two or more parties.
- Digitalize monitoring, reporting, and verification.
- Measure, report, and verify mitigation outcomes at lower transaction costs, with the combined use of remote sensors, the internet of things, big data, and artificial intelligence.



Article 6 “family photo” before negotiations at COP24.

To test this theory, The World Bank is developing a proof of concept. The project is divided into three phases:

- Phase 1 aims to test feasibility and marketplace logic by using blockchain technologies to develop a pre-trade registry.
- Phase 2 aims to test the potential for digitalizing the monitoring, reporting, and verification process required to create climate assets by using embedded, internet-enabled sensors, smart meters (the internet of things), and imagery technologies. This phase also aims to develop a conceptual framework for a blockchain-enabled architecture that could ensure robust accounting of climate assets and avoid double counting.
- Phase 3 aims to test how well the new system works with local markets and individual producers. The creation of digital assets and interoperability between national and international markets will be explored in both Phases 2 and 3.<sup>88, 89</sup>

## NAVIGANT

Internal carbon pricing is gathering momentum across all sectors. Assigning an internal price to their carbon footprint gives companies and governments a monetary metric to inform decision-making. Most companies use internal carbon pricing to manage exposure to climate-related financial risks, while governments primarily use it to inform their decisions on public policies and projects. Pressure from investors to meet the recommendations from the TCFD is expected to drive more organizations to use internal carbon pricing to accelerate the reduction of their carbon footprint, build resilience against climate-related financial risks, and capitalize on low-carbon opportunities.

To support the development of internal carbon pricing, the Carbon Pricing Unlocked partnership between Navigant and the Generation Foundation published several best-practice guides<sup>90</sup> to internal carbon pricing in collaboration with CDP in late 2017.<sup>91</sup> The guides provide step-by-step instructions on how to establish an internal carbon pricing system and introduced a four-dimensional framework for best practice. This framework offers a new way of thinking about internal carbon pricing and has motivated CDP to expand disclosure on its carbon pricing questionnaire. Using the framework, Navigant has helped various companies and governments explore and implement best-practice internal carbon pricing systems through webinars, workshops, and projects.

In 2018, the Carbon Pricing Unlocked partnership continued researching how internal carbon pricing at financial institutions and along the procurement and supply chain has the potential to accelerate emission reductions:

- Financial institutions could accelerate the transition to a low-carbon economy—and benefit financially in the process—by decarbonizing their portfolios. The research, conducted in collaboration with CDP, focused on key considerations for investors and banks when implementing internal carbon pricing, aiming to help them understand how they could use internal carbon pricing in their investment and lending processes.
- Procurement and supply chain management that favors products and materials with a low carbon footprint can create incentives for large-scale low-carbon innovation. The partnership researched innovative ways to help suppliers understand the value of implementing internal carbon pricing and how it could be used to futureproof their operations. The research holds promise for bringing large-scale change. Already, based on recommendations from an expert group

led by Navigant, sub-national governments in the Netherlands have started working on a pilot project to implement internal carbon pricing for sustainable procurement in 2019.

The outcomes of the above research will be published in the first half of 2019.

## YALE UNIVERSITY AND SECOND NATURE

Colleges and universities are agents of change in their communities and play a leadership role in addressing the climate crisis. Increasingly, campuses are exploring carbon pricing. They are doing so through faculty research, student and community education, and advocacy, and by demonstrating how pricing carbon within the organization can support climate action.

The Carbon Pricing in Higher Education Working Group was founded in 2018 by CPLC, Second Nature, Yale University, and Swarthmore College. The group comprises colleges and universities that actively price carbon on their campuses, and includes schools from the United States, Canada, and England. Second Nature—a nonprofit organization advancing climate action through higher education—and Yale University facilitate the group. Its mission is to support schools that wish to implement an internal carbon price on campus.

A campus's internal carbon price can take many forms. It can be as straightforward as charging a flat fee per round trip plane ticket, or as complex as metering the energy use of each campus building and charging departments accordingly.

As its first project, the group developed a toolkit to guide institutions along this process. It compiles resources, tools, and lessons learned to help them design and implement an internal carbon price on campus. A beta version of the toolkit was released in September 2018 at the Global Climate Action Summit in San Francisco.

Looking forward, the working group hopes to expand and refine the toolkit. Within a few years, the group envisages a new generation of students graduating having experienced what it is like to work in an organization with a price on carbon. Several members of the group are also exploring the role of higher education in advocating for carbon pricing policy.<sup>92</sup>



## Internal Carbon Pricing In Higher Education Toolkit: Helping campuses implement an internal carbon price

The *Internal Carbon Pricing in Higher Education Toolkit*,<sup>93</sup> edited by Casey Pickett of Yale University and Ruby Woodside of Second Nature, aims to help schools choose, implement, and manage the best model of internal carbon pricing for their institution's needs. The toolkit is divided into six sections that align with the decision-making, implementation, and management processes for putting in place an internal carbon price. Each section provides guidance and references to online resources for download.

These online resources include:

- The rationale and goals behind campus carbon pricing policies.
- Guidance and decision trees on the various models of internal carbon prices.
- Practical considerations for implementing a carbon pricing scheme.
- Case studies from colleges and universities with different types of internal carbon prices.
- Sample communication documents.
- Program management templates.

For more information, please visit <https://secondnature.org/climate-action-guidance/carbon-pricing/>.

## THE GEORGE WASHINGTON UNIVERSITY

The next generation of carbon managers need specialized training to enable them to assess and certify reported reductions by countries and companies to ensure that these gases don't end up in the atmosphere. One university offering such training is The George Washington University in Washington, D.C., which saw its first class of certified greenhouse-gas managers graduate from its rigorous graduate-level greenhouse-gas management program<sup>94</sup> in May 2018. Going forward, the program plans to expand its online course offering and provide new opportunities for real-world practical experience. The program is run in partnership with the Greenhouse Gas Management Institute.

The director of the program, Professor Rachael Jonassen, sits on the CPLC Research Conference's scientific committee and in February 2019 moderated two sessions at CPLC's first International Research Conference on Carbon Pricing in New Delhi, India.

## THE ENVIRONMENTAL DEFENSE FUND

Carbon pricing can channel capital, innovation, and entrepreneurial effort to the fastest and cheapest methods for cutting emissions, making deeper reductions possible. More than a billion people live in jurisdictions with carbon pricing and that number is likely to grow dramatically in coming years. While the momentum is real, so is the need for good policy design. The Environmental Defense Fund (EDF) has continued in 2018 and 2019 to work to ensure that carbon pricing is a key tool for addressing climate change while recognizing that if implemented without sufficient integrity it will be sidelined in favor of less efficient paths. In ICAO, as an expert adviser to the process, EDF remained focused on ensuring that CORSIA delivers a real climate result—with broad participation and robust and transparent rules. In 2019, ICAO made significant progress by adopting the emissions unit criteria for offset program eligibility. EDF worked within the process and through political channels to ensure that the criteria included principles vital to environmental integrity. This past year, EDF also expanded the use of CarbonSim, a software application that teaches the principles of emissions trading. And in California, EDF advocated for a firm cap and other provisions to strengthen the cap-and-trade program in the 2018 amendments. These developments are detailed below.

### **Market Simulations to Accelerate Capacity Building**

How can countries accelerate the adoption of an effective ETS with stakeholders that lack a strong understanding of carbon and/or financial market mechanisms? This question drove the Environmental Defense Fund to launch CarbonSim—a carbon market simulation tool. Experience gained since the launch of the tool in China in 2015 provides lessons to guide future carbon market simulations.

In 2018, more than 900 ETS stakeholders in Mexico, China, Korea, Thailand, and the United States participated in more than 25 carbon market simulations using CarbonSim. Drawn from government, industry, and civil society, participants included engineers, economists, planners, and sustainability managers. Key lessons learned include:

- **The professional backgrounds of the participants develop as participants gain a greater appreciation of the nuances of emissions trading.** Initially, firms tend to assign people with narrow focus—for instance, those who buy printer ink may also be assigned to purchase allowances. Over time, firms come to understand that managing a carbon portfolio can (and should) be done by those that also are responsible for optimizing the

company as a whole, that is, those charged with risk management, capital budgeting, engineering, fuels management, product development, and so on.

- **Carbon portfolio management strategies evolve.** In the early exercises, participants tended to strive for compliance considering only on-site abatement costs. Over time, they come to understand that there are many paths to compliance—but only a subset of them are fiscally prudent. Superior performance is realized when budding carbon portfolio managers think about abatement and allowance/credit decisions as both compliance and investment decisions.
- **Knowledge gained through simulations facilitates more lucid and impactful discussions with regulators.** Regulators have remarked that the quality of stakeholder queries improves as the carbon market simulation progresses. Those engaged in the simulation come to understand that outcomes are a function of both their own skillset and program design. Participants draw on this knowledge as they engage with regulators in the real world regarding an actual potential ETS.
- **Simulation experiences prompt ETS-related planning within organizations.** As participants develop, implement, and adjust their virtual carbon portfolio management strategies, they also begin to have more fruitful internal discussions about how their companies should prepare for an actual ETS. Ultimately, this can help companies better appreciate and take advantage of opportunities to improve their energy, process, and abatement efficiencies.
- **Capacity-building and policy experimentation goals are, at best, imperfectly aligned.** Carbon market simulations allow participants to improve their ETS-related skills. Participants can also experiment with different policy designs. However, researchers should be cautious about basing their policy design recommendations solely on the results of a set of carbon market simulations. There are several reasons for this. One is that the actions of a novice carbon portfolio manager can be quite different from those of a manager of a real-life facility. The lack of real-world risks (like imprisonment for non-compliance) could encourage virtual facility managers to take greater risks than their real-world counterparts. Other factors—for instance, the relative short term of one to six virtual years—and an inability to accurately capture the effects of other economic, manufacturing, and energy-related variables should also give policy researchers pause for thought.



Participants at the CarbonSim workshop in China.

CarbonSim is an artificial intelligence-enhanced, multilingual, multi-user software application that teaches the principles of emissions trading and brings markets to life. ETS program administrators learn that policymakers drive results with their design choices. Industries learn how to develop and implement a carbon management strategy. To date, more than 3,000 stakeholders from companies with emissions that exceed 3.5 billion tons of CO<sub>2</sub> have used it.

### **Advocacy in California**

The Environmental Defense Fund hit the ground running in California in 2018 and 2019. In December 2018, California adopted amendments to its cap-and-trade program, as directed by the legislature. The fund played a critical role in advocating for a firm cap, which included strengthening the instruments that would allow the program to maintain environmental integrity and ensuring that the inclusion of a price ceiling would provide certainty for the market, as well as preserve the program's environmental goals. Quentin Foster, the fund's California Director for Climate, was appointed by Governor Brown to the Independent Emissions Market Advisory Committee, where he can weigh in on these issues with other notable academics. The Environmental Defense Fund's comments submitted to the California Air Resources Board on the proposed amendments to the cap-and-trade program can be accessed online.<sup>95</sup>

In addition to its advocacy on cap and trade, the Environmental Defense Fund encouraged the California Air Resources Board to consider the benefits of limiting the deforestation of tropical forests. The California Air Resources Board subsequently issued its Tropical



Forest Standard to curb the effects of deforestation and its contributions to global climate change. The Environmental Defense Fund strongly supported the adoption of the standard, which is currently being considered. This remains a priority for the fund in 2019. The fund's comments are available online.<sup>96</sup>

In 2019, the Environmental Defense Fund will continue to work with the California Air Resources Board to strengthen and support California's carbon market, as well as share the best practices and experiences of California's market with states and sub-national jurisdictions looking to establish their own carbon pricing policies.

## CEBDS

In 2018, after meetings with representatives from 30 large companies across 13 economic sectors, the Brazilian Business Council for Sustainable Development (CEBDS)—accompanied by various member companies' CEOs—submitted a proposal<sup>97</sup> to the country's Minister of Finance<sup>98</sup> highlighting issues of concern that will need to be considered in designing carbon pricing mechanisms. These include gradual implementation, actions to protect competitiveness, and good governance.

The report put forward that:

- Both regulators and regulated entities should be able to refine the carbon pricing scheme based on lessons learned as time goes by.
- There should be a price ceiling of \$10 per ton of CO<sub>2</sub> for the first phase of the scheme, combined with free allocations for sectors with the greatest exposure to international trade, high mitigation costs, and high carbon intensity.
- Allowing offsets from the forestry sector and providing tax exemption on capital gains in emissions trade transactions could be used to help contain costs.
- To promote good governance, the future regulatory framework should be established by law. It should also define principles, general guidelines, phases, appointments, scope, the legal nature of emission rights, and mechanisms for participation of regulated agents.

In light of the new government in place, CEBDS and member companies' CEOs met the new Brazilian Vice President and defended the idea of establishing a carbon market in the country. The documents presented will now be analyzed and subsequent meetings will be scheduled. In the meeting, CEBDS stood as an important stakeholder for the government to reach out to when dealing with sustainable development with the private sector.

## GOLD STANDARD

Regulation is an effective way to control carbon emissions, but where the political will to quickly extend carbon pricing to all corners of the economy is lacking, voluntary action is critical.

Voluntary carbon offsetting fell out of favor following the 2008 market crash, a series of highly publicized trading scandals, and rising criticism from civil society. Well-intentioned journalists and non-governmental organizations characterized offsetting as a way to buy out of meaningful internal emission reductions. However, the opposite was actually true: according to a 2017 report by Ecosystem Marketplace,<sup>99</sup> companies that included offsetting in their carbon management strategy typically spent about 10 times more on emissions reductions activities than companies that didn't offset.

To catalyze private sector finance for high-impact climate and development projects worldwide, Gold Standard set out to establish the role offsetting should play in a credible climate strategy. Partnering with CDP and WWF, it published a report titled *Corporate Climate Stewardship*<sup>100</sup> containing guidelines for best practice in corporate climate action. Published in April 2018, this report places carbon pricing at the center of a business's climate strategy. The guidelines outline the following four pillars:

- Measure and disclose climate impact and risks.
- Reduce climate impact and risks in line with science.
- Finance the global transition to a zero-carbon resilient economy.
- Advocate for strong policy frameworks.

The guidelines are the first step to determine if, how, and to what extent voluntary carbon pricing—or financing emissions beyond boundaries—should figure into a broader climate strategy. Future work for the Gold Standard's team, CPLC, and civil society partners includes clearly defining what "net zero emissions," as enshrined in the Paris Agreement, means for business. For instance, should a company be responsible for its value chain's emissions? When should a company offset, and when should they not? And what if a company is officially carbon neutral, but investing in new carbon-intensive products or services that are incompatible with a net-zero future? These updates will soon be available.

## INTERNATIONAL CARBON ACTION PARTNERSHIP (ICAP)

Since 2007, ICAP has been supporting governments in their efforts to implement successful ETSs. At the heart of its

work is the exchange of lessons learned and best practice among members through the ICAP technical dialogue.

A core theme of ICAP's current work is how to maintain the competitiveness of the participating sectors under carbon pricing. This question is key to safeguarding the effectiveness and longevity of these programs, as an adequate carbon price should not disadvantage regulated entities and lead to carbon leakage, that is, displace emissions to jurisdictions with less stringent climate regulations.

Most ETS jurisdictions have used free allocation of allowances to ease the transition of entities into the system and to protect emissions-intensive and trade-exposed sectors from carbon leakage. Free allocation lowers the effective carbon cost for industry and frees up financial resources that can be used to invest in low-carbon technologies. On the other hand, giving free allowances can limit the incentive to reduce emissions. It is therefore commonly accepted that free allocation should become more targeted over time while continuing to protect those most at risk.

Leading into 2019, ICAP's work on competitiveness will focus on two aspects: first, in a work stream on future-proofing carbon leakage protection, ICAP will examine suitable metrics for identifying the sectors most at risk and thus deserving of free allocation. In addition, ICAP will debate alternative approaches to leakage protection in the longer term. Over time, as caps become stricter, free allocation volumes will decline, which will render treating leakage concerns with free allocation less effective. These issues become increasingly salient as jurisdictions progress on their decarbonization pathway.

In parallel, ICAP is creating a common knowledge base among its members around questions of free allocation. This involves both identifying trade flows of commodities covered by carbon pricing and comparing notes on jurisdictions' approaches to free allocation, particularly benchmarking. ICAP, along with other actors in the field, is working to ensure competitiveness for firms subject to an ETS over the lifespan of the program. Looking to 2019 and beyond, ICAP will continue stimulating discussions in an ever-expanding circle of peers pioneering and fine-tuning carbon markets as a key tool on the path to decarbonization.

## PEMBINA INSTITUTE

The climate-positive policy decisions made over the years by Canada and its provinces like Alberta and B.C. are the product of insightful decision-making, supported by robust discussion, science-based evidence, and the advocacy of organizations like the Pembina Institute. But the work of a climate change advocate is never done,

and the institute is now turning its attention to building wide support for carbon pricing, with a view to protect long-term climate action. In Alberta, it is continuing the push for climate action and awareness by disseminating information on carbon pricing to ensure that the province's price on pollution stays in place. Meanwhile, in B.C. it is offering the government recommendations on how to fairly and effectively broaden the carbon tax.<sup>101</sup> In 2018, Pembina also released an Energy Policy Simulator, a modeling tool that helps demonstrate the importance of carbon pricing as part of a suite of climate policies.

Going forward, Pembina will continue advocating for a price on methane emissions at federal level and advising on the development of regulations around the output-based pricing system to ensure that industries reduce emissions while limiting risks. Finally, it will focus on shaping the narrative on carbon pricing in the media.

## WORLD RESOURCES INSTITUTE (WRI)

WRI works with governments and the private sector to advance the adoption of carbon pricing. In close coordination with the PMR, the Ministry of Environment, Forests, and Climate Change, and the Confederation of Indian Industry, WRI India has been preparing a comprehensive roadmap towards establishing carbon markets covering small and medium-sized businesses, which are not yet covered under any mechanism.

In addition, WRI India, in partnership with CPLC, has embarked on an economy-wide carbon market simulation to further explore the potential of carbon pricing in the country. A preliminary landscape and scoping exercise, carried out in consultation with leading businesses in the country, has helped WRI India establish recommendations on possible market design considerations. The simulation, planned to be launched in the first half of 2019, will test out various options and establish key opportunities, challenges, and impacts regarding price ranges and possible reductions.

Carbon pricing programs often result in improved availability of climate-related data and bottom-up information. Our planned webinars in early 2019, as part of the capacity-building efforts under the Partnership to Strengthen Transparency for Co-Innovation, will explore experiences from carbon pricing programs across the globe to put forth learnings in the context of improved availability of climate-related data.

Training based on WRI's publication outlining a clear framework on how corporates can incorporate internal carbon pricing measures will be rolled out in early 2019. WRI is also building a knowledge base of corporate experiences of applying internal carbon pricing,



specifically in terms of effectiveness, impact, and transition towards enhanced business goals, including science-based targets. As a start, a compendium of case studies from leading businesses in India, developed by WRI, shares the approach and methodology adopted by companies across the automotive, oil and gas, textiles, information technology, and cement sectors.

## CARBON TRUST MEXICO

The Carbon Trust has continued collaborating with several Latin American countries to develop carbon pricing mechanisms, as well as supporting various organizations in the region to strengthen their capabilities. Recent work has included helping Costa Rica develop a voluntary carbon market, known as the Costa Rica Compensation Mechanism. This voluntary carbon market aims to promote the compensation of carbon emissions by acquiring Costa Rican compensation units, derived from the implementation of climate change mitigation projects.

In addition, the Carbon Trust recently led a series of capacity-building workshops for the private sector in Mexico on the upcoming implementation of the national ETS. Carbon Trust experts trained key stakeholders from regulated sectors to facilitate public-private discussions and greater collaboration.

## CLIMATE MARKETS AND INVESTMENT ASSOCIATION (CMIA)

It has been a challenging year for EU ETS development in the United Kingdom (UK). The European Commission decided to temporarily suspend processes related to the UK in the Union Registry,<sup>102</sup> and the UK government does not plan to issue any 2019 allowances until this issue is resolved. The Climate Markets and Investment Association participated in the UK's Department for Business, Energy, and Industrial Strategy EU ETS Stakeholder Group, where it contributed to Brexit discussions on the EU ETS.

The department consulted the association throughout the year on a range of post-Brexit options for the country's future approach to carbon pricing. The association also has its own Brexit EU ETS working group, which invites a wide range of industry for consultation.

At COP24, Climate Markets and Investment Association presented, along with IETA, the Carbon Pricing Champion Award to the Republic of Colombia and to



Shakti Sustainable Energy Foundation launching its report, *Discussion Paper on Carbon Tax Structure for India*.

the CPLC Secretariat. The association also conducted an official side event with the Nigerian government on "Leveraging Domestic and International Finance for NDC Implementation."

## SHAKTI SUSTAINABLE ENERGY FOUNDATION

Advancing smart energy policies will be key to providing millions of Indians with reliable, affordable, and secure access to energy in a sustainable manner. Meaningful policy action on India's energy challenges will strengthen national energy security, support development, and keep the environment clean. Shakti Sustainable Energy Foundation works to facilitate India's transition to a sustainable energy future by aiding the design and implementation of policies that promote clean power, energy efficiency, sustainable urban transport, climate action, and clean energy finance. Working collaboratively with policymakers, civil society, industry, think tanks and academia, Shakti seeks to catalyze transformative solutions to meet India's energy needs in clean and sustainable ways.

Carbon pricing instruments have been growing in significance over the past few years, with an increasing number of national and sub-national players committing to reduce greenhouse-gas emissions through effective market mechanisms. Shakti works closely with policymakers in India on regular high-level stakeholder discussions on Article 6 of the Paris Agreement, which includes a specific focus on carbon pricing through taxation or a cap-and-trade approach. Under its climate business program, Shakti also engages with corporates to help establish internal carbon pricing measures.

In India, the recent adoption of the Goods and Services Tax opened up a window for re-strategizing the pricing of energy resources, including fossil fuels. In this context, Shakti commissioned Ernst & Young to examine if, and how, a carbon tax mechanism can be introduced in India; its associated merits and challenges; and the role that the proposed tax mechanism can play in helping India achieve its stated climate goals.

## KLIMAATPLEIN.COM

Klimaatplein.com,<sup>103</sup> a social enterprise based in the Netherlands, carried out a unique carbon pricing pilot on small and medium Dutch enterprises in 2017. The participants gained insight into their carbon footprint and how much they would have to pay if carbon emissions were priced at €100 per ton. What energy-saving measures could these companies take to keep their carbon emissions at their lowest possible level?

For starters, the pilot led to increased carbon emission awareness by the participating organizations: What's the source of their CO<sub>2</sub> emissions? How can they be reduced and what does a price on carbon mean when it is time to choose energy-efficient investments? Companies found answers to these questions by participating in this pilot.

One year later Klimaatplein.com asked the participating companies what kind of energy-saving and emission reduction measures they took in response to participating in the pilot. Participants took very different approaches, including:

- Replacing remaining conventional lighting in warehouses with LED lighting.
- Buying green electricity from wind energy.
- Buying an electric company car for deliveries in the region.
- Replacing company cars with fuel-efficient vehicles.
- Standardizing stocks (parts) in buses. Partly because of this, the company can drive with smaller buses that consume less fuel because they have less air resistance and are less heavily loaded.
- Buying more than 360 solar panels, allowing the business to become energy self-sufficient.
- Buying a software program to regulate transport more efficiently. With this program the company can plan routes more efficiently, thereby saving fuel.

Because of these results, Klimaatplein.com started a follow-up of this research with 12 small- and medium-sized companies in three business sectors: metal, technology, and horeca (the hotel/restaurant/café food service industry). The companies worked with a carbon price of €60 per ton. The research is still ongoing.

## SOUTH POLE

In the last 12 years, South Pole has developed over 700 emissions reduction projects in renewables, forestry, agriculture, and industry. In addition to reducing hundreds of millions of tons of carbon and protecting or restoring landscapes, these projects have transformed lives: improving the health of millions of people by increasing access to clean and affordable energy and water, and creating jobs.

In 2019, South Pole will continue to focus strongly on driving and quantifying the social benefits of projects and demonstrating how they contribute to the Sustainable Development Goals. In addition, it will increase its efforts on nature-based solutions. Despite frameworks still being developed, South Pole is looking forward to pioneering Article 6 approaches (see below for details) to explore how international cooperation can mobilize additional finance to support countries' ambitions, and drive climate action on the ground.

### ***Southern and Eastern Mediterranean***

South Pole is working with the EBRD to mobilize climate finance and support carbon market developments in the southern and eastern Mediterranean region, including countries such as Egypt, Jordan, Morocco, and Tunisia. The project aims to design and implement an upscaled crediting mechanism for renewable energy projects to monetize greenhouse-gas emissions pre-2020, while helping to set the stage for piloting a new market mechanism to support international and domestic mitigation efforts post-2020.

Since the project started in 2016, South Pole has been in charge of the overall project coordination, including working closely with national authorities to develop the grounds for a carbon crediting mechanism and quantifying emission reductions from renewable energy pilot projects in order to monetize them. South Pole has also contributed to the dissemination of the project's progress by participating in events at COP22<sup>104</sup> in Marrakesh and at the Innovate4Climate 2018<sup>105</sup> in Frankfurt.

### ***Nordic Region***

The Nordic Working Group for Global Climate Negotiations has engaged South Pole, along with Climate-KIC and Gaia Consulting, to build a Nordic collaborative platform that can mobilize and scale climate financial flows by sharing knowledge of operational experiences and best-practice designs. South Pole supported this initiative by creating and operating a steering group that focused on key climate finance issues; synthesizing findings through producing briefs on *Mobilizing Private Finance for Climate Action*



*in the Global South: Nordic Experiences and the Way Forward*<sup>106</sup> and *Greening the Financial System: Nordic Experiences and the Way Forward*,<sup>107</sup> and organizing workshops and webinars to present the final findings.

South Pole is also supporting the platform's working group on Article 6 of the Paris Agreement to understand how to mobilize private finance between Nordic countries and individual emerging countries. The group explores how to enable cooperative arrangements under Article 6.2, to then enable the transfer of internationally transferable MOs under Article 6.4. As long as Article 6.2 and 6.4 are subject to further UNFCCC negotiations, Nordic countries can already move ahead with bilateral test instruments that can be integrated under Article 6 later on. Nordic countries aim to use the operational lessons learned from pilot testing Article 6 projects to support negotiations, particularly on ensuring environmental integrity and sustainable development (see next project).

### **Colombia and Mexico**

Given the uncertainties of how Article 6 will operate in real-world contexts, South Pole is facilitating a virtual pilot of Article 6 in Colombia on behalf of the Swedish Energy Agency. This mitigation pilot activity aims to demonstrate how to mobilize climate finance between Annex 1 and non-Annex 1 countries. Specifically, South Pole will act as an intermediary between the Colombian government and the Swedish Energy Agency to find carbon projects that will inform the development of Article 6 programs in the energy sector.

South Pole is supporting the Nitric Acid Climate Action Group's activities in Colombia and Mexico by identifying long-term abatement opportunities of nitrous oxide emissions after 2020, based on the nature of each country's nitric acid production sector, and the current and future policies that are aimed to reduce nitrous oxide emissions from these sectors.

In 2018, South Pole developed a white paper for GIZ and the Colombian government that catalogues policies, mechanisms, instruments, and incentives to reduce nitrous oxide emissions in the nitric acid sector, including those that would need to continue after 2020.

In 2019, South Pole will work on a similar white paper for Mexico and undertake further work in Colombia, including an analysis of options to certify existing Clean Development Mechanism projects under the Voluntary Carbon Standard, and options to adjust the project design to another technology.



# CARBON PRICING RESEARCH



A selection of research  
produced by our knowledge  
partners in 2018/19.

## NEW CLIMATE ECONOMY

We are on the cusp of a new growth era, one where bold climate action across economic systems can lead to higher productivity, more resilient economies, and greater social inclusion. Yet we are not making progress fast enough. The next 10 to 15 years are a unique use-it-or-lose-it moment. The world is expected to invest \$90 trillion<sup>108</sup> in infrastructure by 2030, more than the current global stock. How that infrastructure is built will be a major determinant of future prosperity and whether the world turns the tide on climate change. The next two to three years are a critical window when many of the policy and investment decisions that shape the next 10 to 15 years will be taken.

In 2018, the New Climate Economy<sup>109</sup> launched its flagship report, *Unlocking the Inclusive Growth Story of the 21st Century: Accelerating Climate Action in Urgent Times*.<sup>110</sup> It demonstrates the benefits of low-carbon growth and outlines how we can accelerate efforts to achieve it. The report finds that bold climate action could yield a direct economic gain of \$26 trillion by 2030 compared with business as usual. Ambitious climate action could also:

- Generate more than 65 million new low-carbon jobs in 2030 (equivalent to the workforces today of Egypt and the United Kingdom combined).
- Avoid more than 700,000 premature deaths from air pollution in 2030.
- Increase women's participation in the labor force.

The 2018 report urges leaders in government, business, and finance to prioritize action on four fronts:

- Ramp up efforts on carbon pricing and move toward mandatory disclosure of climate-related financial risks.
- Accelerate investment in sustainable infrastructure.
- Harness the power of the private sector and unleash innovation.
- Build a people-centered approach that shares gains equitably and ensures that the transition is just.

The 2018 report also calls on major economies to put a price on carbon of at least \$40 to \$80 per ton of CO<sub>2</sub> by 2020,<sup>111</sup> along with a predictable rising pathway by 2030. It calls for major economies to phase out fossil fuel subsidies by 2025. Subsidies and other support to fossil fuel production and consumption have declined, but still amounted to \$373 billion a year<sup>112</sup> in 2015. The report finds that subsidy reform, combined with carbon pricing, could generate an estimated \$2.8 trillion in annual government revenues or savings in 2030, equivalent to the total GDP of India today. Evidence

shows that putting a price on carbon does not slow economic growth. It provides a clear and steady signal for business, industry, and consumers to shift course.

Carbon pricing can also support a people-centered approach. Carbon pricing revenues can be used to invest in public priorities, including those that ensure a just transition<sup>113</sup> to a low-carbon economy. For example, in B.C., Canada, revenue from a carbon tax is returned to the people through corporate and individual tax rate cuts and a low-income climate action tax credit. And even where carbon pricing is not yet in place, businesses and development finance institutions can implement shadow carbon prices to steer investments away from increasingly risky fossil fuel options.

Leaders are seizing the exciting economic and market opportunities of this new growth approach. The laggards are not only missing out on these opportunities; they're putting us all at greater risk. The New Climate Economy's 2018 report makes plain, we have everything to lose and so much to gain.

## MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Sergey Paltsev, a leading climate change academic with the Massachusetts Institute of Technology (MIT), presented the key findings of two reports<sup>114</sup>—one on Latin American nations and the second on Association of Southeast Asian Nations—at COP24 side events. The reports analyze gaps between current emission levels and NDC targets for each region, highlight key challenges to compliance with those targets, and recommend cost-effective policy and technology solutions to overcome those challenges. The research was supported by General Electric.

Michael Mehling<sup>115</sup> (Deputy Director, MIT's Center for Energy and Environmental Policy Research) also shared new research<sup>116</sup> at COP24 on carbon markets, providing guidance for the governance of cooperative approaches for transferring MOs to ensure transparency, accurate accounting, and environmental integrity while minimizing transaction costs and maximizing participation and climate ambition.



## THE WORLD BANK

With carbon pricing gaining traction throughout the world, carbon revenues represent an increasingly crucial asset for both the economy and the environment (globally, \$33 billion in revenues in 2017). The World Bank's forthcoming *Carbon Pricing Revenues* report will provide practical guidance and insight on the use of revenues generated by carbon pricing policies. The report is aimed at decision-makers involved in the design, implementation, and evaluation of carbon pricing instruments. It highlights the importance of using revenue for the distributional impacts of carbon pricing instruments. It details the four main options used by governments to spend carbon revenues: earmarking for infrastructure and/or climate-related projects, allocation to the general budget, targeted tax cuts, and direct benefit schemes. To assess the benefits and challenges associated with each option, the report proposes six criteria: macroeconomic performance; environmental performance; political resilience; communication and transparency; social inclusiveness; and governance and management.

Finally, the report proposes a checklist of guiding principles forming the six stages of a well-defined framework for the use of carbon revenues, the INCOME principles:

- Incorporate revenues upfront when designing a carbon pricing instrument.
- Tailor revenue use to national circumstances and priorities.
- Consult widely and set up an inclusive governance structure.
- Organize the right revenue spending framework to increase acceptability.
- Measure and report on revenue use.
- Enhance revenue use through regular reviews.

## I4CE

Every year, I4CE releases a short yet comprehensive overview of key trends regarding the implementation of explicit carbon pricing policies throughout the world. A timeline, a world map, a detailed table, and graphs provide up-to-date and extensive information on the jurisdictions that have implemented or plan to implement explicit carbon pricing policies, the type of instrument chosen, the sector and fuels covered, the pricing levels, and the use of revenues.



# MARKET APPROACHES GAIN TRACTION IN NORTHEAST ASIA

JACKSON EWING, SENIOR FELLOW, DUKE UNIVERSITY NICHOLAS SCHOOL OF ENVIRONMENTAL POLICY SOLUTIONS



In her remarks at the 2018 CPLC High-Level Assembly,<sup>117</sup> and in this report, IMF Managing Director Christine Lagarde repeated her call to “price it right, tax it smart, and do it now.” The “it” here is carbon emissions and the already-converted crowd Lagarde addressed leads a movement to expand and deepen carbon pricing—whether through taxes or markets—around the world.

There are signs that Lagarde’s call is gaining traction. The World Bank estimates<sup>118</sup> that 74 jurisdictions are covered by existing or scheduled carbon pricing initiatives; and this coverage is expanding steadily year by year. Northeast Asia is helping to lead this charge, with three of the world’s largest economies—China, Japan, and the Republic of Korea—all pricing carbon as core elements of strategies to reduce emissions.<sup>119</sup>

Unlike past efforts that were more centralized internationally, this generation of carbon pricing is organic and individualized, with policy designs unique to the governments putting them in place. The most likely path for continued carbon pricing expansion is through linking multiple pricing regimes together.

Market approaches are particularly attractive<sup>120</sup> for the major economies of Northeast Asia given their commitments to reduce greenhouse-gas emissions in economies highly dependent on fossil fuels. The juxtaposition of China’s relatively low emissions reduction costs and the high costs faced by Japan and the Republic of Korea also creates opportunities for market links that are in the interest of each party. Recent and ongoing research<sup>121</sup> by the Asia Society Policy Institute and its partners suggests that policymakers and stakeholders in Northeast Asia can cheaply and efficiently reduce emissions if they learn from others and find ways to work in concert.

With China, Japan, and the Republic of Korea accounting for roughly one-third of the world’s emissions footprint, it is critical to find solutions that enhance domestic markets and open up opportunities for future market links. This means modeling different policy interactions domestically as a basis for strategic policy

decisions, and striking<sup>122</sup> a balance between alienating covered businesses through overly onerous carbon restrictions and placing limitations on carbon that are too lax to be environmentally valuable. Linking markets regionally requires harmonizing<sup>123</sup> select policies, exploring<sup>124</sup> different legal and diplomatic options, and developing the political trust needed to accept emissions reduction credits from another country.

Given the trend of expanding carbon pricing coverage in developed and developing polities across the world, its effectiveness will drive or impede the speed and costs of transitioning to a lower-carbon future. Getting these policies right necessitates combining<sup>125</sup> research and practitioner experiences across geographies and throughout different stakeholder groups. Such collaborations can yield outcomes that are greater than the sum of their parts.





# YOUTH LEADERSHIP THE KEY TO SUCCESSFUL CARBON PRICING

ALLISON ROMER, UNDERGRADUATE STUDENT, BINGHAMTON UNIVERSITY

Young people will disproportionately face a crisis that no generation has experienced before: climate change. The predicted magnitude of this crisis requires a global push for sweeping environmental policies, including a price on carbon, that will guarantee a dramatic reduction in global greenhouse-gas emissions over the next decade. Failure to act on climate change will leave young people fighting to adapt to a completely altered planet rather than pursuing the same opportunities previous generations had. We have grown up with “climate anxiety,” but ultimately, young people have the power, energy, and drive to ensure that we are the last generation to face this scenario.

I strongly believe that the climate policy youth should be advocating for is carbon pricing.

A well-designed price on carbon eliminates the present market failure by holding those most responsible for climate change accountable for their actions. Benefits include a measurable reduction in emissions, a source of revenue that can be used in many ways, and the promotion of continuous innovation in renewable energy. By leveling the economic playing field, clean energy is likely to advance as the most efficient option as these energy sources are not priced under a carbon fee. A well-designed carbon price can create measurable reductions in carbon emissions without placing unfair burdens on disadvantaged communities, thus offering an equitable and economically viable path towards mitigating climate change and relieving young people of a global climate crisis.

Raised in upstate New York, I was exposed early to the gifts a healthy ecosystem provides as I was surrounded by a plethora of lakes, gorges, and agricultural products. I am certain that I am not alone when I express fears of losing natural diversity as a result of climate change. At the same time, the impacts of climate change on the natural environment span far beyond losing “pretty” things. Innumerable people around the world depend directly on their natural environment to meet their day-to-day needs. Further, every individual, regardless of their geographic background, relies on a properly

functioning ecosystem to provide clean water, nutritious food, and breathable air.

I choose to act on climate because my interests lie where social issues and climate change intersect. It is increasingly clear that climate change will exacerbate struggles faced by communities in both developing and developed nations, including food and water security, suitable land access, and economic progress. Pricing greenhouse gases can be scaled up globally, thus prompting further worldwide action on equitable solutions to climate change. A carbon price will not only slow the direct impacts of climate change but will also prevent young people from addressing these secondary burdens associated with rising global temperatures.

The time to act on climate is now. Young people have the most to lose as a result of climate change and, as the best movements do, the voices of those who have the most to lose must be centered in decisions. Given this, we have an opportunity to get directly involved in the outcome of our future in a key way. In the United States, young people are now the largest eligible voting block; we have the power to elevate politicians who prioritize climate legislation through our voting voice and civic engagement. I’ve personally advocated for carbon pricing legislation by attending nearly a dozen lobby meetings at the state and federal level, collecting letters from young people to send to elected officials, and engaging in countless conversations with peers on why they should care about climate action. A clean and livable future is something young people are entitled to and can’t happen without a direct, economically sound, socially equitable, and politically viable path to combat climate change—which a well-designed price on carbon can help to achieve.

# STILL MUCH WORK TO BE DONE

ANGELA CHURIE KALLHAUGE, HEAD, CPLC SECRETARIAT

2018 was an eventful year for carbon pricing, with robust progress seen on several fronts. At the same time, new challenges emerged as carbon pricing initiatives segued into concrete implementation. Needless to say, it was a busy year for CPLC.

While the momentum around carbon pricing continued to grow, what was especially encouraging for us was that this momentum was accompanied by a strengthened carbon price. With the increase in prices comes an increase in revenues generated by these initiatives, as highlighted in several dialogues convened by CPLC and its partners. Greater focus on these revenues has been an important factor in many jurisdictions, and the discussions underlined the need to consider this in the context of communicating the social aspects related to pricing.

Due to the growing political attention that carbon pricing has been receiving, we also witnessed increased social awareness. In some jurisdictions, this took the form of opposition to carbon pricing programs. While one can argue the cause for opposing carbon pricing—whether due to the price being set or due to the implications from the broader policy context within which it is applied—one thing became clear: more effort is needed to build a strong social case for pricing carbon. For us, a key question is whether we are advocating for pricing in a way that resonates with the broader social and developmental priorities of stakeholders in different jurisdictions and sectors.

To help our partners communicate carbon pricing to key stakeholders, CPLC, in collaboration with the PMR, released the *Guide to Communicating Carbon Pricing*. While the fundamental principles of different carbon pricing policies and measures are fairly similar, the application, motivations, and form of the initiatives vary from sector to sector and from jurisdiction to jurisdiction. We plan to



work with our partners to continue building awareness on how to strengthen communication on carbon pricing, so that we can contribute to objective debates that are relevant to specific circumstances and priorities.

Businesses continue to engage deeply with the coalition. As the number of business partners increases, so does the need to address some of their prevailing concerns, especially among energy-intensive and trade-exposed industries. To respond, the work of the High-Level Commission on Carbon Pricing and Competitiveness, launched at the last High-Level Assembly, has begun. This commission is examining the evidence of impacts of pricing on key sectors and engaging with industry leaders on how best to address their concerns while enabling a shift to a low-carbon economy.

In 2018, we continued engaging with partners in different fora across the world. CPLC was present at several partner-led events, including the Globe Forum, where Canadian partners launched their report on the role carbon pricing can play in the transition to a low-carbon economy, and the Global Compact Network Singapore's National Summit in Singapore, where the first national CPLC chapter was launched to support corporate engagement on pricing carbon. Private sector partners are discussing forming a similar chapter in India—a development we hope to pursue in 2019.

In addition, CPLC partnered with California, the EU, IETA, and others at the Global Climate Action Summit in San Francisco to run a “Carbon Pricing Day,” which provided a comprehensive overview of progress being made globally on this issue.

Four years since the CPLC was established, we are at a watershed moment for carbon pricing. While we can take pride in the fact that CPLC is considered a trusted and respected platform for stakeholders from the public and private sectors to openly discuss the benefits and challenges of this tool, we need to remain focused. We must continue strengthening the case for a price on carbon, building social acceptability, and exploring opportunities to engage with stakeholder constituencies across different regions and sectors, while keeping their specific context in mind.

Our work is far from done. We need to keep engaging with our partners and amplifying leadership efforts to achieve our collective vision of doubling the global coverage of carbon pricing by 2020, and doubling it again by 2030. In this way, we aim to contribute to ambitious, effective climate action while supporting sustainable development.



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