THE AMBITION LOOP

How business and government can advance policies that fast track zero-carbon economic growth

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EXECUTIVE SUMMARY

With hundreds of businesses pursuing bold climate change solutions, and leading countries updating national climate plans, the opportunity for greater ambition abounds. To outpace the most damaging and disruptive effects of climate change, countries and companies must establish targets and policies that enable each other to go further and faster. They must push each other to accelerate the pace and scale of innovation and investments in low-carbon solutions. That requires a positive feedback loop—an "ambition loop"—between bold business leadership and bold government policies.

Increasing commercial demand, setting bold climate and clean energy targets, and increasing investment in climate change solutions from businesses send strong signals to government in support of stronger climate policy. Strong policies, bold targets and clear timelines from governments enables even more businesses to go further. This is the "ambition loop"—a positive feedback loop between the private sector and governments that accelerates progress toward the objectives of the Paris Agreement and Sustainable Development Goals.

Governments building ambition loops with climate leaders in the private sector will be able to include more ambitious policies and targets as they update their national climate plans. These governments will find partners among the nearly 2,500 businesses and investors that have made public commitments to climate action.

These leaders are poised to go further and faster with policies that:

1. **ADD CLARITY**—with specific or streamlined rules and timelines, and accessible, consistent information and enforcement mechanisms; and

2. **BUILD CONFIDENCE**—with strong market signals, regulatory certainty, firm long-term strategies, predictability, and supportive infrastructure investments.

Ambition loops depend on policies that create **clarity** and **confidence**. They unlock further investment from investors and companies, accelerating progress toward countries' climate and development goals.

> "Only clear, credible and long-term policy frameworks will provide us with the confidence we need to deliver the required shift in investment for a low-carbon economy."
>
> **Institutional Investors Group on Climate Change**

Paul Polman—CEO of Unilever, a US$60 billion consumer goods company—has emphasized the same priorities, adding one additional element: courage.

> "Business needs three things from the political community: clarity, confidence, and perhaps most of all, courage. The more of these that the global business community can see, the greater and more transformational will be the business response."

Policies that add clarity and build confidence are critical to driving action across the private sector, providing the right incentives to move all companies toward a zero-carbon future.

Governments should seek out leaders from the private sector—among other stakeholders—to build ambition loops in key sectors. Limiting warming to 1.5°C will require bold policies for electric power, transportation, heavy industry, land, agriculture, and forests.

Evidence of ambition loops in these industries can be found around the world. This paper looks at emerging business leadership in electric power, transportation, and land and forests, with examples of policies that countries have implemented to drive action. Examples include bold renewable energy targets in India and clear rules for power purchase agreements (PPAs) in Europe, mandates and incentives for electric vehicles in Norway and California, clear financing for electric buses in China, and new partnerships for transparency in cocoa supply chains in Ghana and Côte d'Ivoire.

Governments can draw inspiration from others' examples to develop their own approaches, tailored to their specific climate and development goals. Policies can leverage growing interest and momentum in the private sector, balancing trade-offs and addressing uncertainty with clear rules and bold, long-term ambitions. Clarity and confidence have been essential to governments' efforts to accelerate action in the following areas:

These policies are examples of the potential for ambition loops in key sectors. With more and more companies making public climate commitments, countries have an opportunity to use support and evidence from the private sector to advance policies that spur even bolder investments in clean electricity, clean transportation, and restored land and forests.

Explicit and ambitious time-bound commitments to "zeros and 100s" provide an ultimate level of clarity and confidence. For example, some countries and companies are setting dates to phase out coal-fired power or ban sales of internal-combustion-engine vehicles. Likewise, many have now committed to achieve 100 percent renewable energy or 100 percent electric vehicle sales by a certain date.

Effective policies are needed to accelerate action to the pace and scale necessary to meet the objectives of the Paris Agreement and Sustainable Development Goals. Creating ambition loops must be a central part of efforts over the next two years to (1) advance bold domestic policies, (2) strengthen Nationally Determined Contributions, and (3) develop long-term, deep decarbonization strategies that create the clarity and confidence needed for significant investments from the private sector.

Electric power:

- Clear rules and access to power purchase agreements
- New or bolder renewable energy or energy efficiency targets in national policies
- Long-term regulatory certainty for financing renewable energy projects
- Clear timelines for phasing out coal-fired power and reaching 100 percent clean power

Transportation:

- Clear timelines and incentives for alternative fuels and transportation modes
- New or bolder targets for electric vehicles and clean fuels in national policies
- Supportive financing to overcome high initial costs of electric vehicles and infrastructure gaps
- Clear, time-bound plans to phase out gasoline- and diesel-fueled vehicles

Land and forests:

- New or bolder country goals to halt and reverse deforestation
- Common, credible certification schemes and clear rules for level playing fields
- Strong, trusted enforcement mechanisms and financing models
- Commitments to transparency and information sharing

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I. INTRODUCTION

TO OUTPACE THE MOST DAMAGING AND DISRUPTIVE EFFECTS OF CLIMATE CHANGE, COUNTRIES AND COMPANIES MUST ESTABLISH TARGETS AND POLICIES THAT ENABLE EACH OTHER TO GO FURTHER AND FASTER.

They must push each other to accelerate the pace and scale of innovation and investments in low-carbon solutions. That requires a positive feedback loop—an "ambition loop"—between bold business leadership and bold government policies. Strong reinforcement from leaders in the private sector can feed into stronger public policies, which in turn spur additional business action. Countries and companies unlock opportunities for one another to accelerate progress and market development (see Box 1 and Figure 1).

BOX 1. AMBITION LOOP DEFINED

An ambition loop is a positive feedback loop in which bold business leadership supports bold policy action that in turn accelerates further business action. This can unlock faster progress on national objectives and bigger market opportunities—examples of which are emerging around the world.

For governments, the push comes from leading businesses. Companies help demonstrate commercial demand and economic possibilities. Corporate climate actions and advocacy lend political and economic support to government efforts to deliver on existing policy goals sooner and advance new, bolder targets and policies.

For businesses, the push comes from long-term, clear, consistent government policies. Bold targets and strong policies provide the clarity and confidence to invest further in new market opportunities, helping companies achieve their targets faster and getting more companies to take action.

For both, the loop continues as business investments and government policies strengthen, accelerating action and investment and unlocking further opportunities to achieve their goals sooner.

This paper shows opportunities to spur ambition loops in countries and sectors around the world. It outlines the types of signals coming from business and government to increase ambition. Leadership from each pushes and enables the other to do more. Business leadership can support bold government policies, which in turn unlock further business action.

The focus of this paper is leadership. It shows where signals of commitment and evidence of demand from leading businesses have helped inform and support stronger, more ambitious policies. Those policies have then prompted more business action, accelerating progress toward national climate goals and driving clean economic growth. It is important to acknowledge that not all private sector influences support climate policy, but the focus in this paper is on those business and government leaders that are working to accelerate progress toward a zero-carbon future (see Box 2 and Appendix A).

Governments are looking for ways to achieve their climate and development goals. Businesses are looking for clarity to plan for and invest in a zero-carbon future. Governments and business leaders both want strong, stable, competitive economies in a changing climate. They both recognize that this requires reducing greenhouse gas emissions and adapting to climate change impacts. Each wants to avoid a future where citizens, customers, and employees are facing frequent heat waves, droughts, floods, and the other physical, social, and economic impacts of increasing global temperatures. Together they can harness the leadership and growth opportunities in the new industries, products, and services emerging for zero-carbon, climate-resilient development.

Governments sent strong signals to the global business community in the 2015 Paris Agreement. More than 190 countries outlined their individual climate priorities and plans in their Nationally Determined Contributions (NDCs). They also set a collective ambition to limit global warming to well below 2°C and pursue a limit of 1.5°C—goals that science suggests can help humanity avoid the most catastrophic impacts of climate change.

new market opportunities and prepare for risks in a changing climate.[2] A just transition to a zero-carbon future that limits warming to 1.5°C will have many economic and social benefits.[3] Studies suggest that smart policies to accelerate climate action unlock more than US$26 trillion in economic opportunities while generating more than 65 million jobs and avoiding more than 700,000 premature deaths from air pollution in 2030.[4]

In October 2018, the Intergovernmental Panel on Climate Change released a special report on "Global Warming of 1.5°C." It emphasizes the urgency of accelerated policy implementation and investments, while making clear that net-zero GHG emissions by 2050 is both possible and necessary to achieve the Paris Agreement's 1.5°C goal.

Businesses are already seeing climate action as an important driver of growth, competitiveness, innovation, and risk management. They are finding that setting and achieving emissions reduction

> "The electricity sector plays a key role in fulfilling the goal set by the Paris Agreement to keep global temperature rise well below 2°C and as close to 1.5°C as possible, and Iberdrola is committed to our role as an energy company in reaching that goal. We decided to phase out our coal-fired power plants and have called on regulators to increase their renewable energy targets."
>
> **Miguel Muñoz Rodríguez, Head of Climate Policy for Iberdrola—one of the world's largest electric utilities, producing and supplying power in Europe, the United States, Mexico, and Brazil**

Companies are reacting to a growing collective commitment to a zero-carbon future, increasing their own climate action, and aligning their strategic growth plans with the goals of the Paris Agreement. Nearly 500 companies have committed to set science-based emissions reduction targets to do their part to limit warming to below 2°C, and an additional 800 have indicated they plan to do so by 2019.[1] Companies are also acting because customers, investors, and employees expect them to capture

targets has a significant payback. In 2016, 56 of the Fortune 100 companies reported saving a combined US$2.5 billion from emission-reduction projects—with a typical payback period between 1 and 10 years.[5] This leadership and action from businesses helps prove the feasibility and opportunity in the transition to zero carbon and thereby offers economic and political support to governments to increase their ambition in line with the Paris Agreement.

COMPANIES TAKING THEIR OWN CLIMATE ACTION

"Taking action on climate change is not only the right thing to do for people and the planet, it's necessary for our long-term success as a business. Setting Science Based Targets will challenge us to find new and better ways, as well as drive innovation and renewal in our business. We encourage other companies to join us in accelerating the transition to a low-carbon economy which boosts investment, employment, and innovation."

Pia Heidenmark Cook, Chief Sustainability Officer, IKEA Group—the world's largest furniture retailer

"As a brand, Safaricom is in support of the Paris Agreement, and we strongly believe that the Science Based Target initiative demonstrates to policymakers the scale of emission reductions that are achievable and will positively influence climate policy ambition at every level."

Bob Collymore, Chief Executive Officer, Safaricom—a leading communications company in Kenya

"Acciona has set its Science Based Target to go further and faster in the race against climate change. Responsible companies and governments wanting to engage on climate change must set these new, bold targets to increase the share of renewables."

Juan Ramón Silva Ferrada, Chief Sustainability Officer, ACCIONA—A leading supplier of sustainable infrastructure solutions and renewable energy projects with presence in more than 40 countries

Leaders from both government and business are working to increase ambition and accelerate action to close the gap between existing policies and the goals of the Paris Agreement. Certain sectors will be critical to putting countries on a path to achieving the goals of the Paris Agreement. Aligning with a 1.5°C future will require additional greenhouse gas reductions beyond what was initially outlined in countries' NDCs in 2015. Studies suggest that investments in key sectors—including electric power, transportation, and land and forests—will be critical to helping put countries on pathways to zero-carbon futures.

Governments on those pathways will be supporting solutions that tap solar and wind energy resources, accelerate market adoption of efficient passenger cars, halt deforestation, and restore land and forests.[6]

Leading companies are setting ambitious targets and goals related to these solution areas. These companies are helping create and accelerate ambition loops by developing and implementing innovative, far-reaching solutions to cut emissions and build resilience in their operations and value chains and by increasing climate change awareness.

This paper illustrates where leadership is creating opportunities to build ambition loops in these key sectors around the world. It points to the growing number of businesses demonstrating leadership on climate and explores examples of policies that governments have used to spur greater action in the business community. These are meant to inspire and inform deeper dialogues between governments and leading businesses that result in the development and acceleration of more ambition loops in key sectors.

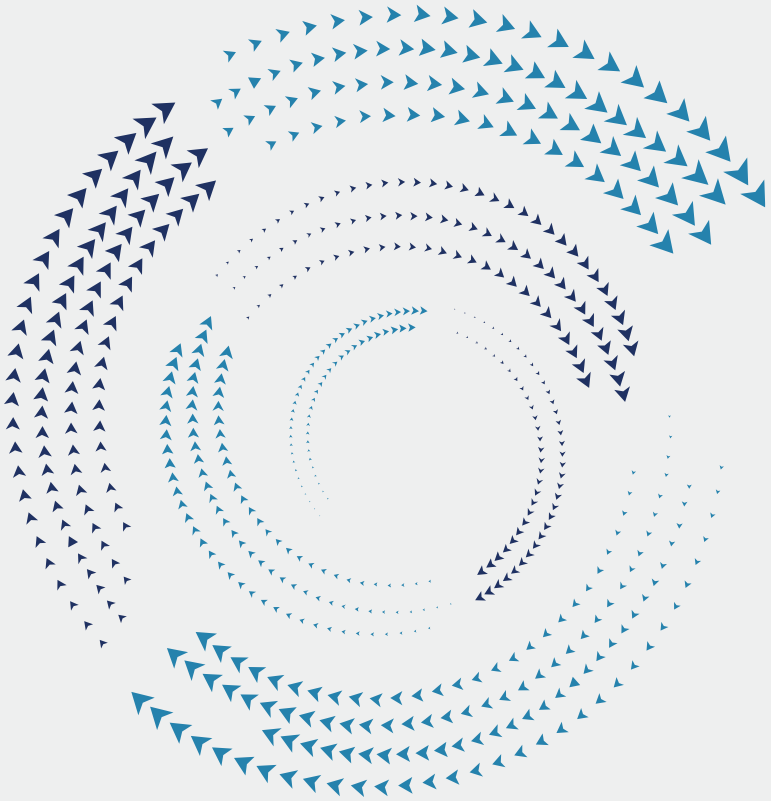
- **Sections II and III** explore what it takes to create an ambition loop and for governments to find private sector partners that will help advance a country's climate and development priorities. They emphasize that policies providing clarity and confidence help increase ambition and unlock further investment. Business and government can leverage common interests in supporting faster action on NDCs and the Sustainable Development Goals (SDGs).[7]
- **Sections IV, V, and VI** go deeper into examples from three key sectors: electric power, transportation, and land and forests. They highlight the potential to harness business leadership to create ambition loops. These offer important proof that can inspire other countries to emphasize clarity and confidence in their own policymaking.
- **Section VII** concludes with a set of priorities for inspiring and accelerating ambition loops, specifically with stronger NDCs by 2020 and long-term strategies for 2050 that boost clarity and confidence.

Figure 1.

"Ambition loops" support bolder climate action from business and governments

Government Climate Policy

- Clear, ambitious targets and policy
- Predictable regulatory environment
- Incentives and infrastructure
- Long-term market signals
- Support for research, development, and deployment
- Clear plans and timelines for full transition to a zero-carbon economy



Business Climate Action

- Ambitious, science-based targets
- Public updates on progress
- Investments and growth strategies aligned with a zero-carbon future
- Commercial demand for zero-carbon energy, zero-carbon transportation and zero-carbon land use
- Responsible policy engagement (individually and through trade associations)

II. DRIVING AMBITION LOOPS: CLARITY AND CONFIDENCE

BUSINESSES AND INVESTORS ARE ACTIVELY LOOKING FOR SIGNALS FROM GOVERNMENTS ON HOW THEY PLAN TO ADDRESS CLIMATE CHANGE—AND WHAT THIS WILL MEAN FOR TOMORROW'S MARKET OPPORTUNITIES.

Many market assessments emphasize the importance of increasing **clarity** and building **confidence** through those government signals. This is critical to unlocking bolder investment and harnessing the potential of ambition loops.

Government policies that include specific or streamlined rules and timelines, or accessible, consistent information and enforcement mechanisms provide **clarity**. Government policies that provide strong market signals, long-term regulatory certainty, and predictability build **confidence**. Countries give this clarity and confidence through their ongoing domestic policy processes, as well as through updated NDCs and long-term strategies by 2020.

Others have highlighted the importance of clarity and confidence in the delivery of national climate plans as a means to inform and attract private sector investment. For example, in a review of emerging market opportunities, the International Finance Corporation (IFC) notes that implementation of NDCs can "give countries and business confidence that they can continue to increase their targets and avoid the significant effects of climate change."[8]

In another analysis, the Organisation for Economic Co-operation and Development (OECD) modeled the potential for economic development and climate action across G20 countries. It concluded that "countries can achieve strong and inclusive economic growth at the same time as reorienting their economies toward development pathways with low greenhouse gas emissions and high resilience to the effects of climate change." The analysis highlighted "increased market confidence spurred by greater climate policy clarity" as a core element of the "climate and growth" agenda.[9]

Investment requires strong signals and the clarity and confidence they provide. The Institutional Investors Group on Climate Change (IIGCC) has outlined several priorities for the European Union (EU) to unlock private sector investment in climate solutions, including the following:[10]

- A long-term target for greenhouse gas emissions reductions for 2050 and targets for the short and medium term that guide the transition to a low-carbon economy are essential to provide investors with clarity and confidence about the future direction of climate policy.
- Ambitious emission reduction targets in line with scientific evidence are required to give investors confidence about the future direction of climate policy.
- Only clear, credible, and long-term policy frameworks will provide the confidence needed to deliver the required shift in investment for a low-carbon economy.

"Business people like to keep it simple. So let me try to do that. Business needs three things from the political community: clarity, confidence, and perhaps most of all, courage. The more of these that the global business community can see, the greater and more transformational will be the business response."[11]

Paul Polman, Chief Executive Officer, Unilever

III. WHERE TO FIND OPPORTUNITIES FOR AMBITION LOOPS

WITH HUNDREDS OF BUSINESSES PURSUING BOLD CLIMATE COMMITMENTS, AMBITION LOOP OPPORTUNITIES ABOUND.

"When policymakers and the private sector can find climate interests that align, they can catalyze action that benefits all. This is what SUEZ is accomplishing by identifying opportunities for GHG mitigation in alternative waste and water management solutions and by sharing them with European, national, and local governments in order to accelerate the transition to a circular economy that will contribute to reaching climate goals and to achieving the SDGs."

Sébastien Pellion, Climate Change Specialist, Sustainable Development Department, SUEZ—a €15 billion water treatment and waste management company based in France and operating on five continents

Governments should consider:

1. Finding private sector leadership among investors and companies headquartered or operating in their country.

2. Finding leading global companies with stated targets that help advance solutions in sectors relevant to countries' climate and development goals.

1. FINDING NATIONAL OPPORTUNITIES

Government leaders need not look far to find ambition loop partners in the private sector. Nearly 2,500 companies and investors have stepped up with public climate commitments and continue to set and strengthen targets. Appendix B shows private sector commitments by country, identifying in each case the sector with the highest number of commitments.[12]

Although a detailed analysis of each country and sector is beyond the scope of this paper, notable private sector commitments are emerging in various countries:

- **The power industry**, which has a major role to play in renewable energy, energy efficient buildings, and clean transportation solutions, is stepping up with more commitments than any other sector in countries such as India, Brazil, Colombia, and Japan.
- **The transportation industry**, including automakers as well as rail, air, and shipping companies, is particularly active with commitments in major markets such as the United States, Japan, United Kingdom, Germany, and China.
- **The food and beverage industry**, which has a role to play in multiple solution areas (agriculture, water, energy, transportation, and health), is the most active sector in the United States, Mexico, Norway, Nigeria, Denmark, and Bangladesh. Seven of the world's 10 largest food and beverage companies have committed to set science-based GHG reduction targets.[13]

"The need for ambitious policies that accelerate investments in building efficiency has never been more urgent. Half of today's buildings will still be in use in 2050, and buildings account for 28 percent of global greenhouse gas emissions. At ROCKWOOL, we are anxious to help create ambition loops with national and local governments that can help achieve global goals. We have identified several opportunities to advance building renovations that can dramatically reduce energy consumption and climate impacts, while positively affecting occupants' health and well-being, including efforts to:

- remove undesirable regulatory barriers such as fossil-fuel subsidies;
- improve information about energy savings and health benefits;
- establish local facilitators and knowledge centers;
- improve access to financing with mechanisms such as green bonds;
- ensure long-term political commitments regarding ambitions and policies; and
- utilize large-scale public ownership to achieve economies of scale and test new business models for renovating public buildings."

Connie Enghus Theisen, Director Stakeholder Engagement, ROCKWOOL Group—a €2.3 billion Danish company and world leader in stone wool solutions

Additional clarity and confidence from national governments will create and accelerate ambition loops. Countries' NDCs are one key place governments have articulated their overall climate and energy goals. Where these goals are clear and ambitious, they lay a foundation for ambition loops. Looking at a sample of 31 countries' NDCs,[14] it appears many countries can do more to send strong signals and set up ambition loops in key sectors.

Enhance engagement and implementation with the private sector.

- Only 7 of 31 countries sampled explicitly noted opportunities to involve the private sector in the implementation of their NDCs. Colombia, Indonesia, Japan, and Mexico stood out among those making efforts to engage multiple stakeholders and sectors in development and implementation plans for their NDCs.

Enhance mitigation with stronger targets, policies, and measures to reduce GHG emissions.

- Only 1 of the 31 countries sampled (Morocco) had targets that third parties assessed to be compatible with a 1.5°C future; and only 2 (Ethiopia and India) were 2°C-compatible.[15] Since few NDCs are even aligned with 2°C pathways, most countries will need to strengthen their NDCs and long-term strategies to clarify how they intend to achieve the objectives of the Paris Agreement (see Box 3 and 4).

Countries that have linked their NDC with broader development goals are showing the private sector where they see links between climate action and economic growth. For example, Colombia's NDC highlights links to 40 of the 169 SDG targets, including many aiming to address areas where the private sector will be a key partner, such as those relating to poverty and decent work and economic growth. Ethiopia's NDC priorities include increased incomes, job creation, and sustainable economic development. The country emphasizes interest in expanding renewable energy and accelerating adoption of energy efficient technologies for transport, industry, and buildings.

Matching these signals with specific policies to strengthen clarity and confidence can help businesses and governments achieve national goals.

"Sumitomo Chemical has worked to achieve and go well beyond the goals of the Japanese Business Federation's voluntary action plan for 2020 that set targets for reducing the amount of industrial waste sent to landfills. When the more than 1,300 companies of the Japanese Business Federation collectively raise the bar on ambition, clear signals of private sector ambition are sent to policymakers."

Jung Eun (Angela) Lee, Manager, CSR, Logistics & Procurement, Sumitomo Chemical–a US$19 billion company based in Japan with global affiliates across five major sectors: petrochemicals, energy and functional materials, information technology-related chemicals, health and crop sciences, and pharmaceuticals

> “Braskem S.A. has adopted a renewable chemical strategy that depends on investments in innovation to join with governments in the goal of curbing climate change. When policymakers and the private sector work together to raise ambition, climate action is enhanced by this cooperation.”
>
> **Jorge Soto, Sustainable Development Director, Braskem—a US$15 billion chemical and petrochemical company based in Brazil, with operations in the United States, Mexico, and Germany**

2. SECTORS OF INTEREST

Some countries may have only a few commitments from companies headquartered within their borders. However, global companies are sourcing, selling, or operating in those countries and have an interest in policies that shape those markets. Countries should seek out leading businesses with local interests and build ambition loops to advance national climate and development priorities.

Governments should also look beyond their borders to find global business leaders working to transform specific industries in a way that helps accelerate progress toward national goals. Some of these global companies are already looking explicitly to the NDCs for signs of government plans and priorities to inform their investment decisions, demonstrating the power of these policy commitments to drive business action and create ambition loops. Companies such as SUEZ and Iberdrola (see Box 3 and 4) are looking at countries’ NDCs and long-term strategies, among other policies and actions, for signals of potential market development for low-carbon solutions.

There are opportunities for countries and companies to build ambition loops around the world. They should familiarize themselves with the targets and goals being set by other government and business leaders. They can create competitive advantages as markets develop for clean electric power, clean transportation, and deforestation-free supply chains. The sections that follow provide illustrative examples of policies to create clarity and confidence in those key sectors.

BOX 2. CREDIBLE CORPORATE ADVOCATES FOR CLIMATE CHANGE POLICY

Corporate influences can be used to accelerate—or block—ambitious climate policies. Companies take action in their own operations and in their supply chains, but in many countries they also engage directly in public policy debates. Where those influences are responsible and credible, governments can find supportive economic voices to help advance policies that drive ambition loops.

Governments looking to speed progress on climate and development goals will need to find champions among those companies with shared interest in policies that keep temperatures well below 2°C. These companies will be making commitments and demonstrating actions that align with the public interest.

A growing number of companies that have recognized a strategic interest in taking bold climate action. These companies are helping move markets and economies toward a zero-carbon future. These companies' actions demonstrate support for and the feasibility of building a prosperous zero-carbon future, and governments are likely to find support and insights from them for more ambitious policy.

Governments must evaluate and identify companies playing constructive roles in policy debates using the five core elements of responsible corporate engagement in climate policy.[16] These were principles outlined ahead of the Paris Agreement negotiations to establish basic expectations for responsible climate lobbying. Credible companies stepping up to inform and advance ambition loops will be demonstrating these principles in their advocacy.

Five core elements of responsible corporate engagement in climate policy:

Legitimacy with...	▸ policymakers	▸ investors	▸ stakeholders
Opportunity to...	▸ inform	▸ influence	▸ benefit
Consistency with...	▸ science	▸ positions	▸ strategies
Accountability to...	▸ shareholders	▸ customers	▸ society
Transparency for...	▸ positions	▸ influences	▸ outcomes

For more, see Appendix A.

BOX 3. CLARITY AND CONFIDENCE: ONE COMPANY'S VIEW

By Sébastien Pellion, SUEZ

Sébastien Pellion is a Climate Change Officer at SUEZ—a €15 billion turnover worldwide water and waste management company based in France and patron of the UN Global Compact's Low-Carbon and Climate-Resilient Development Action Platform.

WHY WE ARE LOOKING FOR CIRCULAR ECONOMY OPPORTUNITIES IN THE NDCS

Greenhouse gas emissions from solid waste management accounted for 5 percent of global emissions in 2016 (1.6 Gt of CO_2 equivalent). Without improvements in the sector, solid waste–related emissions are anticipated to increase to 2.6 Gt of CO_2 equivalent by 2050, meaning that effective waste management techniques have a significant potential to mitigate greenhouse gas emissions. Investments in recycling programs and landfill gas capture could save up to US$665 million in 2030 and US$2.6 billion in 2050, and reach a CO_2 abatement potential of 0.6 Gt per year by 2050 (equal to the GHG emissions of Australia in 2012).[a]

Moreover, alternative waste management could contribute to avoiding greenhouse gas emissions for society as a whole by contributing to the circular economy. Indeed, recycling can have cascading effects at the value-chain level by reducing the use of fossil-based resources or fossil-intensive production and consumption schemes. A recent study found that recycling four of the most carbon-intensive materials of the European Union (iron, plastic, aluminum, and cement) would reduce GHG emissions of those industries by 56 percent—or 0.3 Gt of CO_2 per year—by 2050.[b] The mitigation potential could reach 3.6 Gt per year globally. SUEZ also contributes to countries' climate goals through its impulse toward circularity in the water sector, which can represent locally between 10 and 20 percent of total emissions from energy consumption. Generally, we believe that improving waste and water management is one way of contributing to the Paris Agreement efforts. As a key player in the circular economy, SUEZ sees a clear business opportunity to invest in countries that outline quantitative or qualitative waste and water targets (either in the field of waste collection and planning, energy-from-waste, recycling, wastewater reuse, desalination, or the raising of environmental awareness). These clearly articulated targets are very useful for the Group in driving the choice between different environmental solutions at the city level.

In developing and emerging countries, SUEZ identified the greenhouse gas emissions mitigation imperative as a good entry point to catalyze and accelerate the upgrading of current waste management systems. In addition to their GHG mitigation benefits, climate goals in these countries will have many co-benefits for Sustainable Development Goals, such as their contribution to planetary health and to more liveable cities. Recognizing that our business priorities align with clearly stated government priorities, the Group constantly promotes the significant GHG abatement opportunities of alternative waste management solutions to international organizations and local governments. For instance, the conversion of a dumpsite in the Middle East into a bioenergy landfill with energy recovery can make it possible to reduce up to 80 percent of GHG emissions for a relatively low CO_2 abatement cost (from €15 to €30 per ton of CO_2 reduced).

In the water sector, SUEZ has committed to transform some of its main wastewater treatment plants into biofactories that convert sewage sludge into compost for agriculture, and energy for self-consumption or distribution to the grid. Furthermore, treated wastewater is reused directly or indirectly for agriculture to enhance the resilience of territories and to mitigate water scarcity risks from global warming; also, secondary raw materials like phosphate, cellulose, or metals

a Andy Gouldson, Andrew Sudmant, Haneen Khreis, and Effie Papargyropoulou, "The Economic and Social Benefits of Low-Carbon Cities: A Systematic Review of the Evidence," Coalition for Urban Transitions, 2018.

b Material Economics, "The Circular Economy: A Powerful Force for Climate Mitigation," 2018.

can be extracted from sewage sludge if adequate regulations are in place and sufficient funding is available. For example, the biofactories of Aguas Andinas, a subsidiary of SUEZ in Chile, will reach carbon neutrality, positive energy, and zero waste by 2022. On September 27, 2018, Aguas Andinas was announced as the winner of the UN Momentum for Change climate action award.

Industry stands ready to work alongside governments to go further and faster toward a fully circular economy. In 2017, the French Association of Private Companies published 100 circular economy commitments of 33 large companies, including a number of climate-related waste and material efficiency commitments with trajectories or horizons specific to each sector of activity.[c] In December 2017 during the World Efficiency Congress in Paris, five major French industrial groups—Air France, Airbus, Safran, SUEZ, and Total—signed a Green Growth Commitment ("Engagement pour la croissance verte") with the French government. This commitment will create the conditions necessary to study the economic and operational feasibility of a sustainable aviation biofuel industry in France.

Although many governments have included references to their waste and water management policies in their current NDCs, there is room to make them clearer and more specific. SUEZ welcomes ambitious policies and programs, including the following:

- Clear links between the circular economy and climate targets. For example, accounting methodologies and appropriate metrics would help assess the full GHG emission mitigation potential of the circular economy, both in terms of "reduced" GHG emissions from waste and wastewater collection and treatment and "avoided" GHG emissions from the use of secondary materials in production processes and energy recovery.
- Strong targets that send a clear signal about government intentions. For example, the European Commission Circular Economy Package aims to recycle 60 percent of municipal waste by 2030, 70 percent of packaging waste by 2030, and reduce landfill to a maximum of 10 percent of municipal waste by 2030.
- Carbon pricing at the national and international levels in order to strengthen the profitability of low-carbon projects and investments, including projects in the fields of energy and material recovery from waste and wastewater.
- Complementary measures, such as "pull measures" that can promote the demand for secondary raw materials or wastewater reuse. For example, carbon certificate mechanisms based on the carbon mitigation potential of material and energy recovery from waste and wastewater. The plastic processing sector could largely benefit from this type of scheme due to its intrinsic high emissions, while about 1.6 tons of CO_2 can be avoided for each ton of plastic recycled. More generally, certificates or subsidies are necessary mechanisms to make recycled materials competitive for industries.
- Public-private voluntary approaches to catalyze innovation in the field of low-carbon and circular economies. For instance, the progressive incorporation of secondary materials into industrial production processes could significantly increase the demand for recycled materials and trigger significant public and private investments in recycling and recovery infrastructures. For example, Green Deals (Holland) or Commitments for Green Growth (France) enable market readiness for secondary materials through local experimentations at the facility level.

SUEZ's climate commitments:

- Reduce by 30 percent the Group's GHG emissions in its entire scope of activity in 2030 (validated by the Science Based Target Committee) compared with 2014.
- Contribute to avoiding more than 60 million tons of GHG emissions for the Group's customers by 2021.
- Save the equivalent of the water consumption of a city of 2 million people by 2021 and promote different uses of water by tripling the Group's production capacity of alternative water by 2030 compared with 2014.
- Adopt an internal price for carbon and introduce it in 60 percent of the annual expenditure committed to new projects by 2021.
- Increase by 12 percent the Group's investments and expenses in research and development dedicated to low-carbon technologies and climate-responsible projects in 2020 compared to 2015 (for instance, in coupling of desalination with solar energy supply, biogas production and reinjection, or optimized recycling and plastic recovery systems).

c Afep (Association française des entreprises privées), "33 entreprises se mobilisent avec 100 engagements," 2017, https://www.afep.com/uploads/medias/documents/AFEP_100_Engagements_%C3%A9conomie_circulaire_33%20entreprises_1_2_2017.pdf.

BOX 4. CLARITY AND CONFIDENCE: ONE COMPANY'S VIEW

By Miguel Ángel Muñoz, Iberdrola

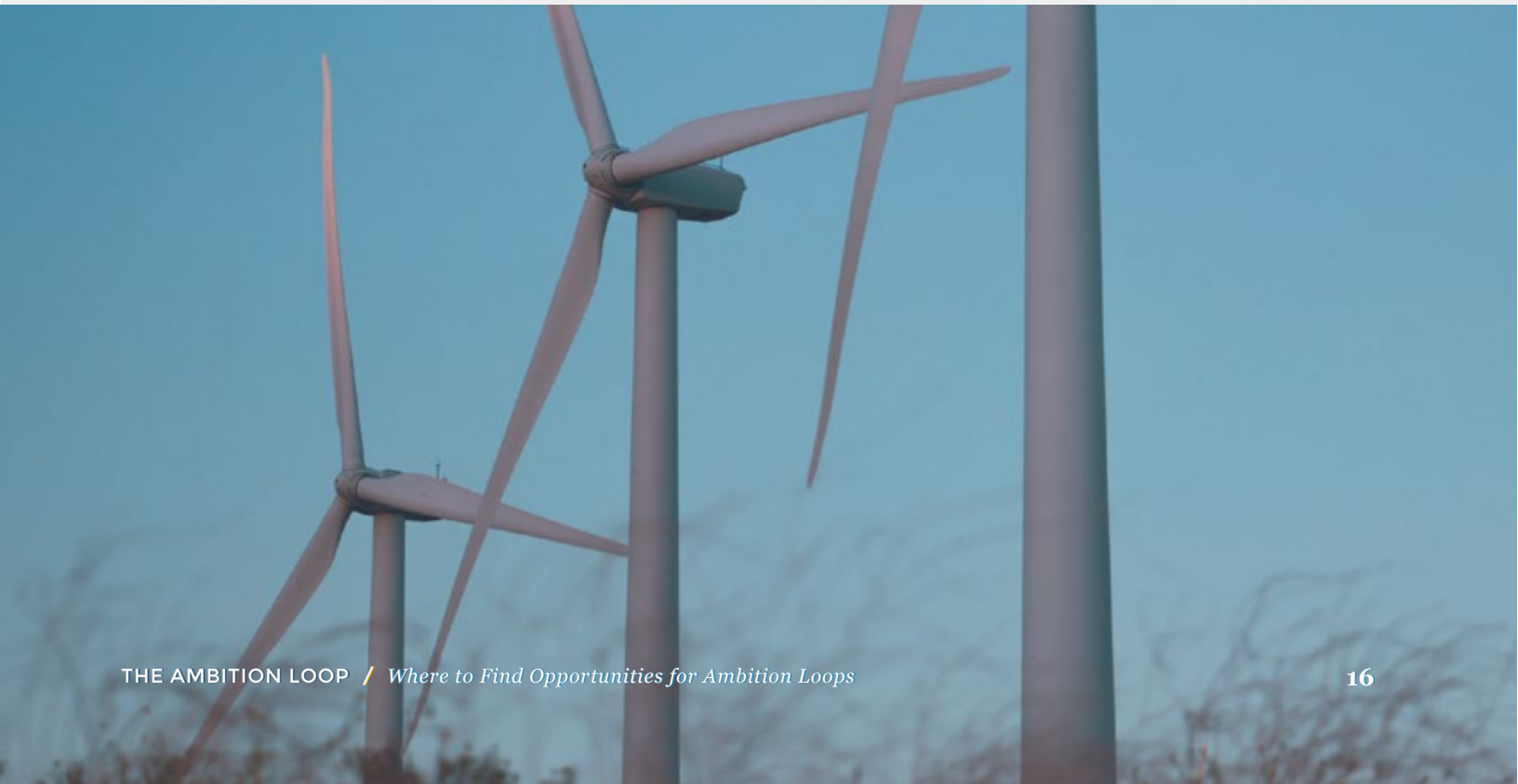
Miguel Ángel Muñoz is head of climate policies at Iberdrola—a power utility with presence focused in Spain, the United States, the United Kingdom, Mexico, and Brazil (and doing business in Germany, Italy, France, Portugal, Hungary, and Greece, among other countries). It has a workforce of 34,000 people, assets worth more than €110 billion (US$128.5 billion), and is a patron of the UN Global Compact's Low-Carbon and Climate-Resilient Development Action Platform.

WHY LONG-TERM STRATEGIES ARE ESSENTIAL TO INDUSTRY TRANSITIONS

Addressing climate change will mean transitions for multiple sectors that currently rely on fossil fuels. Electric power, transportation, and buildings, among others, will need long-term pathways to sources of energy that do not result in greenhouse gas emissions or other air pollution. This will include important investments in (1) energy savings and efficiency and (2) the progressive substitution of fossil fuels with emissions-free and renewable energy (including hydroelectric power, onshore and offshore wind energy, and solar photovoltaic).

The electric power sector in many countries has begun this transition. In Spain, two-thirds of generation no longer emits CO_2. The goal should be to advance toward a carbon-free system based on renewables by 2050, which poses challenges that need to be tackled.

Companies are willing to invest in and consume sustainable energy, and the funding resources are available. Iberdrola has invested close to €100 billion (US$116.8 billion) in renewable energy, grid upgrades, and energy storage. What we and other companies need is a framework of objectives aligned with the Paris Agreement and clear and stable policies to achieve them, which will generate opportunities for economic and social development.



We want to see governments create ambitious, long-term climate strategies for the Paris Agreement and Sustainable Development Goals. Companies like Iberdrola are looking for country strategies that can do the following:

- Maximize certainty for investors and society as a whole, including legally binding targets for 2030 and 2050.
- Create a transparent and inclusive process for developing, implementing, reporting on, and reviewing the strategy.
- Develop regular assessments of the strategy by an independent body, with upward revisions to reflect the latest climate science and technological advancements.
- Take a wide approach that covers all sectors of the economy, addressing economic, social, and environmental issues related to the transition to a decarbonized economy.
- Recognize the role of public-private partnerships in developing and implementing successful climate strategies.
- Recognize climate change as a risk for the economy as a whole and for the industrial and financial sectors and vulnerable groups in particular. It is important to bear in mind the impacts derived from climate change itself and the risks associated with a late and sudden transition to a low-carbon economy. In this regard, the strategy should encourage public and private stakeholders to carry out a thorough assessment of the possible risks, inform on the level of exposure to these risks, enhance the disclosure level, and develop related hedging strategies.
- Include carbon budgets (with targets and milestones), short- and long-term sectoral plans, a broad description of cross-cutting and sectoral instruments to meet climate goals, and adaptation guiding principles to inform the development of National Adaptation Plans.
- Set clear responsibilities for the bodies charged with delivering the strategy (as well as sources of funding and specific timelines).
- Establish sectoral plans and measures to address barriers to decarbonization in, and across, different industries.
- Support stringent implementation guidelines for the Paris Agreement at COP24 that send clear signals to investors and ensure environmental integrity.

Strong market signals and robust climate policy frameworks are important to Iberdrola's and other companies' transitions. Iberdrola started making investments nearly two decades ago, understanding that climate change was a real challenge that required urgent action in the electric power sector. Today, the company is the world leader in wind energy production and has nearly 30,000 MW of renewable energy capacity. This has also benefited our shareholders; thanks to this strategy, Iberdrola is currently bigger, more profitable, and more global.

Iberdrola intends to lead transitions by example, urging countries and companies to prioritize the following areas:

Public targets:
Iberdrola announced targets to reduce the intensity of its CO_2 emissions to 150 grams per kWh in 2030 (a level 50 percent less than its emissions in 2007), and to be carbon-neutral by the year 2050.

Significant investments:
Iberdrola will continue to develop a business strategy fully aligned with climate goals, with more than €32 billion (US$37.4 billion) in investments from 2018 to 2022, focusing on renewable energy (37 percent) and networks (50 percent).

Societal impact:
Iberdrola has closed 15 coal and oil plants (7,500 MW) and works closely with local authorities to guarantee jobs and minimize impact on the supply chain and the local economy.

IV. AMBITION LOOPS ILLUSTRATED: ELECTRIC POWER

AMBITION: ZERO-CARBON POWER

Companies are procuring more renewable electricity in pursuit of cost savings, market opportunities, and climate goals (Figure 2). They are looking to invest in countries with clear regulatory environments, as well as bold targets and policies that give them the confidence to increase their investments in renewable power. They are looking for policies that accelerate development of renewable electricity resources and make it easy for companies to structure power purchase agreements (PPAs). Companies are looking for predictability within the policy environment as well as flexibility in determining location, supplier, type of resource, and other terms.

> "With the Paris Agreement, governments signaled their ambition to tackle climate change. It will take dedicated action by states and the private sector to deliver on that ambition. Identifying and eliminating barriers to climate action, including obstacles to corporate purchasing of renewable electricity, will be a crucial step towards achieving our common climate goals."
>
> **Christoph Hörbelt, Senior Business Developer, Corporate PPAs, Ørsted—a US$9.25 billion electric power company based in Denmark, with significant markets in Sweden, the United Kingdom, Germany, and the Netherlands**

Figure 2.

Areas where national objectives and business leadership have the potential to be mutually reinforcing in the electric power sector

Accelerating Ambition in Clean Electric Power: Provide access to affordable, reliable, sustainable, and modern electricity.

OPPORTUNITIES FOR AMBITION LOOPS

Renewable Energy

POTENTIAL GROWTH:
US$6 trillion in new investment in wind and solar up to 2040

114
National climate plans

US $297 B
Market today**

Building Efficiency

POTENTIAL GROWTH:
Need US$300 billion annual investment to achieve global climate objectives

86
National climate plans

US $388 B
Market today**

Energy Storage

POTENTIAL GROWTH:
Emerging Market storage investments to reach US$23 billion in 2025

36
National climate plans

US $2.5 B
Market today**

BUSINESS CLIMATE AMBITIONS AND INITIATIVES

RE100

More than 150 companies committed to procuring 100 percent of their electricity from renewable sources.

- USD US$2.75 trillion in revenue
- Operating in 122 countries
- Combined annual electricity use (more than 180 TWh) is more than that of Poland.

EP100

More than 30 companies committed to using energy more productively, to lower GHG emissions and accelerate a clean economy.

United for Efficiency

Effort to double the global rate of improvement in energy efficiency of appliances and equipment by 2030.

Global energy efficiency accelerator

Companies and investors working with other stakeholders to double the global rate of improvement in energy efficiency by 2030.

Note: **Market size and NDC count from International Finance Corporation, "Creating Markets for Climate Business: An IFC Climate Investment Opportunities Report," 2017.

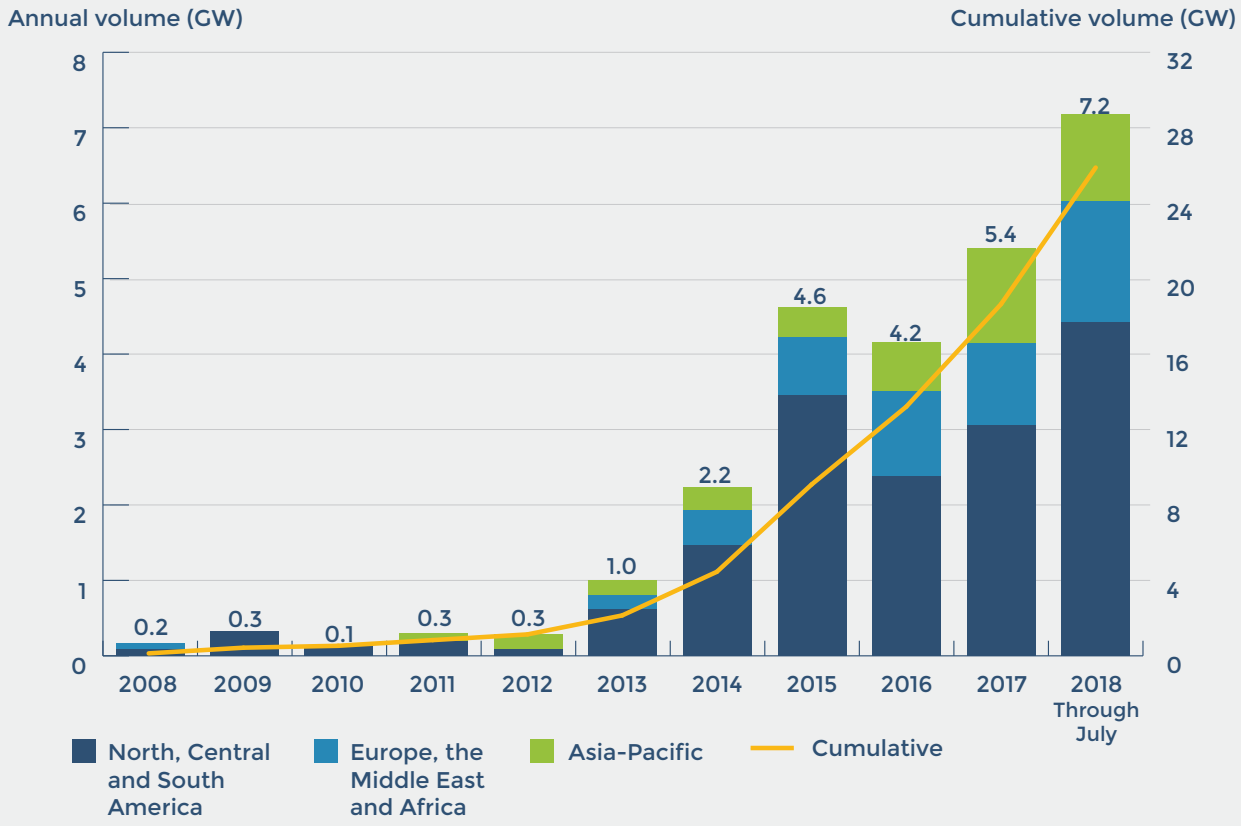
BOX 5. CORPORATE DEMAND FOR CLEAN ELECTRIC POWER

What government leaders need to know:

- **Nearly half of the Fortune 500 companies have set clean energy targets or greenhouse gas reduction goals.**[a]
- **The combined demand for clean electricity among companies now committed to 100 percent renewable energy through RE100 is enough to power the entire country of Poland.**[b] These companies are also outperforming their competitors financially, with net profit margins and earnings before taxes and interest in 2016 that are between 0.3 to 7.7 percentage points higher.[c]
- **Over the past five years (2013–17), companies have purchased nearly 15 times as much renewable power through offsite power purchase agreements (PPAs) compared to the five years prior (2008–12). Corporate offsite PPA volumes through July 2018 already exceeded 2017 totals.**

Figure B5.1.

Global corporate PPA by volumes, by region



Source: Bloomberg New Energy Finance, "2H 2018 Corporate Energy Market Outlook," August 2018.

Notes: Data is through July 2018. Onsite PPAs not included. APAC number is an estimate. Pre–market reform Mexico PPAs are not included. These figures are subject to change and may be updated as more information is made available.

a Ceres, Power Forward 3.0.

b RE100 (The Climate Group and CDP), August 2018. "Discussion paper on business leadership in the transition to renewable electricity," August 2018, http://media.virbcdn.com/files/ef/f8e97377fa5493be-RE-100LeadershipPaper.pdf.

c Analysis suggests a significant correlation—though not causation—between financial performance and bold renewable electricity commitments through RE100. Capgemini Invent and RE100 (The Climate Group and CDP), "Making Business Sense: How RE100 Companies Have an Edge on Their Peers," 2018, http://media.virbcdn.com/files/98/2d0162fd0066457a-RE100andCapgeminiReport.pdf.

PROVIDING LONG-TERM FINANCIAL CLARITY TO SPUR SOLAR POWER DEVELOPMENT

Insights from India[17]

COUNTRY PRIORITIES:

India set a bold target to develop 100 GW of solar capacity by 2022, aiming to increase access to electricity and improve air quality.[18] In support of India's national ambition, the state of Karnataka had been pursuing its own target of 2 GW of additional solar generation by 2021, including 1.6 GW from grid-connected projects like utility-scale solar to state electricity supply companies, third-party sales, and captive consumption.[19]

Karnataka allowed third-party sales between corporate buyers and power producers through their open access order, but the state had yet to unlock investment in the full potential of its solar energy resources and was lagging in deployed solar projects. The Karnataka Electricity Regulatory Commission (KERC), interested in finding new ways of increasing the amount of solar energy commissioned within the state, sought to increase the amount of solar power commissioned by third parties. In late 2013, KERC removed certain charges (wheeling charges, banking charges, and cross-subsidy surcharges) for the solar generation projects commissioned through open access. It convened stakeholders to help shape those plans.

BUSINESS PRIORITIES:

The Green Power Market Development Group (GPMDG)[20] is a coalition of corporate renewable electricity buyers working together to increase their procurement of renewable electricity. The group includes Indian companies (e.g., Infosys) and multinational companies (e.g., IBM and Coca-Cola) united in their pursuit of setting and meeting renewable electricity targets. GPMDG companies wanted to secure renewable electricity contracts with project developers. However, annual changes to charges added variability to solar prices and the charges made solar projects less competitive than traditional electricity options.

GPMDG companies participated in stakeholder meetings in Karnataka. To accelerate deployment of solar through corporate purchases, they asked regulators to provide certainty of the changes to the charges for at least the payback period (7–10 years). Long-term assurance would allow solar projects to get off the ground at competitive prices.

POLICY FOR CLARITY AND CONFIDENCE:

KERC enacted Order S/03/01, "Wheeling Charges, Banking Charges & Cross Subsidy Surcharge for Solar Power Generators," in August 2014. It created 10-year charge exemptions for solar projects commissioned before March 2018, eliminating the variability of annual changes to charges and surcharges, as well as creating competitive solar prices.

Solar purchases escalated quickly in the years that followed the order (Figure 3), suggesting that the policy played a role in unlocking new investment. Ensuring that project debt could be repaid over a 10-year period without the variable annual charges helped provide confidence and favorable prices for third-party solar projects. By the end of 2017, Karnataka had seen more open access solar capacity installed than any other state in India.[21]

WHAT COMES NEXT:

Going forward, KERC will have to address two questions:

1. How has the order impacted other users' electricity rates?

At the time of the stakeholder consultations, KERC asked utilities how the order might impact tariffs, but utilities didn't have a determination of if and how the order could impact rates. The utilities decided they would review potential impacts at a later time. Regulators will look to recalibrate charges to ensure not only that third-party sales benefit from competitive prices but also that customers' utility rates are not adversely impacted.

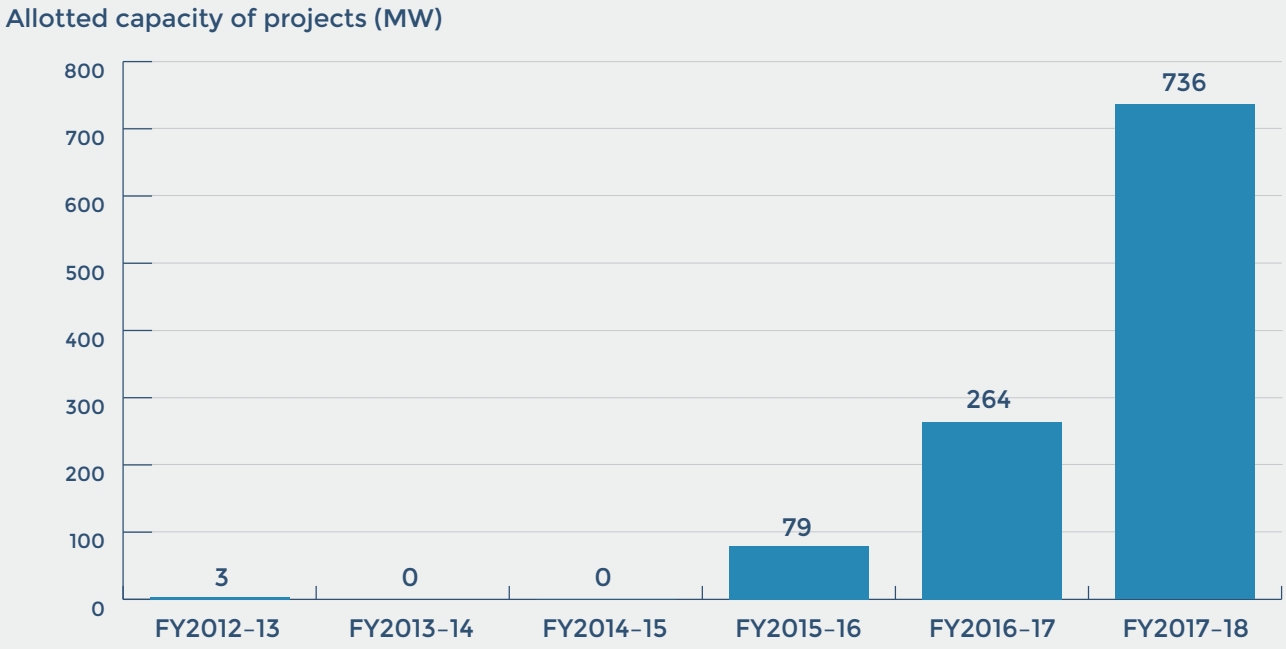
2. How will KERC (and other states) continue to encourage corporate investment in renewable energy projects?

The order in Karnataka expired in March 2018, and it achieved—or even overachieved—its goal of prompting more open access solar projects. Now regulators are considering what the charges should be for future renewable power projects, and they have even considered retroactively adding charges to companies' projects commissioned before the March 2018 end date. The latter option, which may undermine the confidence companies relied on to make the investments in the first place, has been challenged by companies in the courts. Companies are looking for clarity on how policies and charges will be applied. For example, Tata Motors—which nearly doubled its share of renewable energy in 2016—has called for additional clarity on plans for charges over time and consistency across states in India.[22]

How KERC and other Indian states answer these questions will determine whether they are able to build the clarity and confidence necessary for further and faster corporate investment in solar power projects. There will be a need to balance incentives and ensure that rates do not rise for other electricity users—especially those low-income users who can be impacted the most. Subsidies and policies will also need to evolve in the future as solar project costs improve. Some Indian states have moved to rein in regulatory incentives, but these decisions can be sudden and ad hoc.[23] Unexpected changes undermine the confidence that was essential to accelerating investment. Engaging transparently and proactively with business, and with clear timelines, will be important to continue to provide clarity and confidence.

Figure 3.

Capacity of solar projects allotted each fiscal year—third-party sales



Source: KREDL (projects marked as commissioned as of July 2018). Karnataka Renewable Energy Development Ltd. (KREDL), "Solar Abstract List," http://kredlinfo.in/solarlistrpt.aspx, accessed August 16, 2018. Based on discussion with Deepak Sriram Krishnan and Ashok Kumar Thanikonda; it is assumed that open access projects in Karnataka commissioned between 2014 and March 2018 were driven or influenced by the positive economic conditions created by the order.

CLEAR RULES AND STRONGER TARGETS FOR RENEWABLE ENERGY

Insights from Poland and the European Union

COUNTRY PRIORITIES:

The European Union (EU) has long been a leader on climate change. EU countries have specific motivations and goals for renewable electricity. Many seek to diversify their energy portfolio. Others emphasize the contribution to air quality improvements (for which the European Union has legally binding targets)[24] or economic development benefits, including leadership in future markets for clean energy technology.[25]

Most recently, the European Union has developed a post-2020 Renewable Energy Directive, which at the urging of many businesses included increased renewable energy targets.

Meanwhile, individual countries such as Poland have found ways to stimulate broader participation in renewable energy markets. They are seeking to incentivize more homes and businesses to install solar power, while balancing costs incurred by utilities integrating that power into the grid.

BUSINESS PRIORITIES:

Over the years, several companies and coalitions have formed among energy users in Europe interested in buying electricity from clean and renewable sources. In 2005, the Green Power Market Development Group (GPMDG) formed among major electricity users, including IKEA, Holcim, Michelin, and others. Since then, many additional alliances have formed to push for ambitious policies to unlock more corporate investment. More than 70 European companies have joined the RE100 initiative, which is led by The Climate Group in partnership with CDP, and committed to power their businesses with 100 percent renewable electricity (Figure 4). This group includes major European companies like Nestlé, Danone, IKEA, Unilever, and BMW. IKEA Group reports that it has invested €1.7 billion in wind and solar energy since 2009.[26]

These companies have supported action in individual European countries, including policies to accelerate renewable energy markets in Poland. They have advocated as individual companies and as members of coalitions that include business associations representing electric utilities, energy intensive industries, and broader energy consumers.

Joint declarations among dozens of companies and business associations push policymakers to increase ambition on renewable energy generation and make it easier to buy renewable electricity. Ahead of the EU Energy Council meeting in December 2017, the RE-Source Platform—a coalition of more than 50 companies and business associations (including RE100, SolarPower Europe [SPE], Wind Europe, and the World Business Council for Sustainable Development)—sent a joint declaration asking governments to support greater ambition and easier access to PPAs.[27] They asked EU member states to take the following actions:[28]

1. **Support an ambitious renewable energy target of at least 35 percent by 2030.**

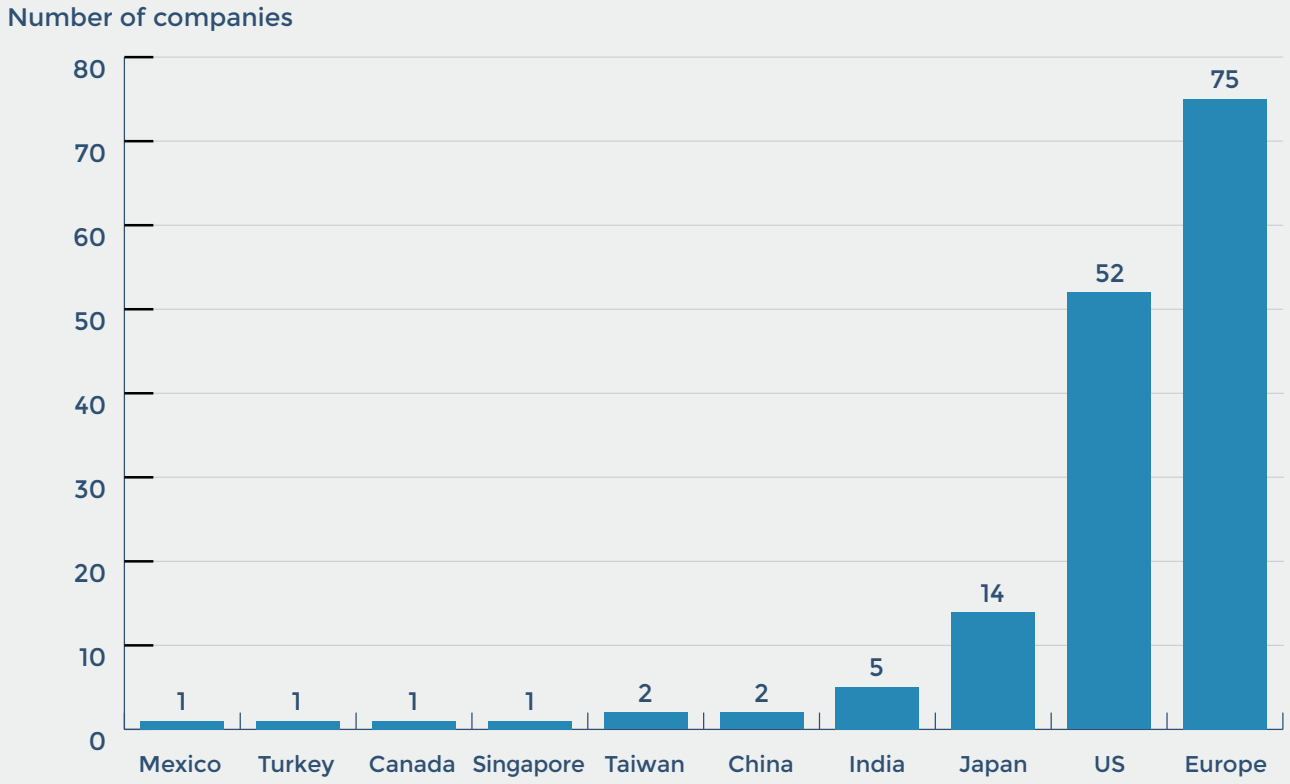
2. **Clarify rules and remove barriers for corporate PPAs.**

POLICY FOR CLARITY AND CONFIDENCE:

In 2016, Poland adopted a net metering rule that unlocked broader participation in solar power market development. Homes and businesses were able to sell electricity back to the power grid, getting financial credit that helped shorten payback periods for investments in solar energy systems. The utility buying the power was able to buy the electricity at a price that allowed it to balance the costs associated with integrating that power into the grid. It gave both energy producers and consumers a clear and simple means of participating in solar power markets. Likewise, it gave companies the confidence to offer new products and services. Karol Gobczyński, IKEA Group's Climate and Energy Manager, noted that "Poland's net metering policy for households unlocked greater residential demand for solar and prompted us to launch and expand our home solar business."[29]

Figure 4.

RE100 companies, by headquarters

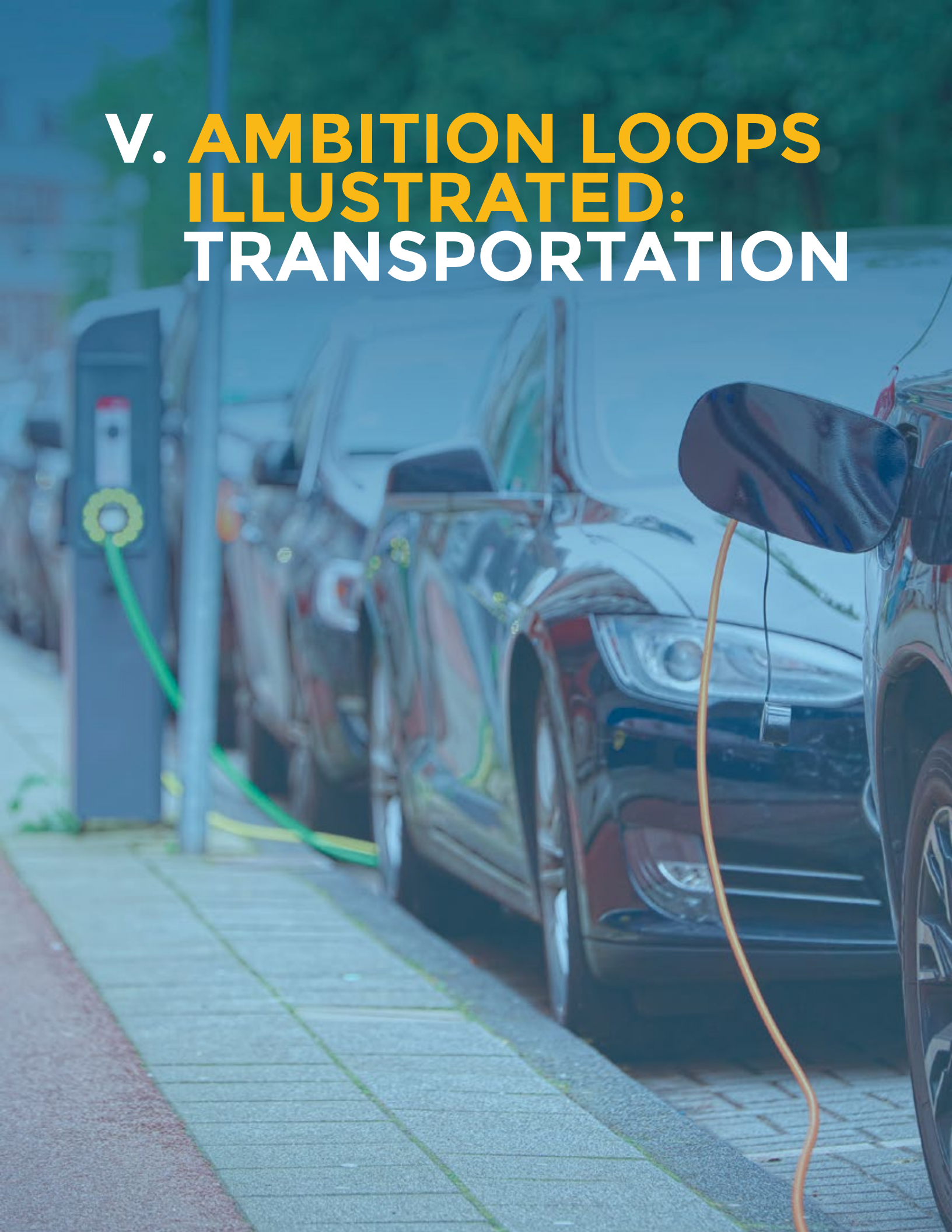


Note: Data from RE100, "Companies," http://there100.org/companies, accessed November 1, 2018.

More recently, in June 2018, negotiators for the EU Parliament, Council, and Commission reached a provisional agreement on the post-2020 Renewable Energy Directive. The specifics of the directive include a clause requiring European countries to remove existing administrative barriers to corporate PPAs.[30] The directive also builds on the European Union's existing legislation that targeted 20 percent renewable energy by 2020 by setting a 2030 renewable energy target of 32 percent (the original proposal was 27 percent).[31]

Clearer rules for PPAs and a bolder renewable energy target at the EU level are expected to help reinforce corporate buyers' ability to access and accelerate markets for renewable electricity in the years ahead. The 2030 target bolsters corporate confidence that the European Union will continue to support a transition to renewable energy sources.

> "More and more market leaders are turning to power purchase agreements (PPAs) as one of the best ways to ensure a supply of reliable, cost-competitive renewable energy. With rising national climate ambitions and a drastic need to lower emissions, it has never been more important to identify areas of collaboration for clean energy partnerships."
>
> **Antonella Santilli, Head of Sustainability, Enel Green Power–a €75 billion energy company based in Italy working in 34 countries across five continents**



V. AMBITION LOOPS ILLUSTRATED: TRANSPORTATION

AMBITION: ZERO-CARBON MOBILITY

Countries that are making good progress on clean transportation are working to build confidence that markets for technologies such as electric vehicles (EVs) will continue to grow (see Box 6). Many countries are providing greater clarity to businesses on their intent to accelerate market penetration of cleaner, more fuel-efficient vehicles. Overall, electric vehicles still represent only a small portion of total vehicle sales, but their sales have been growing fast since 2011 in places where policies are emerging, such as China, Europe, and the United States (Figure 5 and Figure 6).[32]

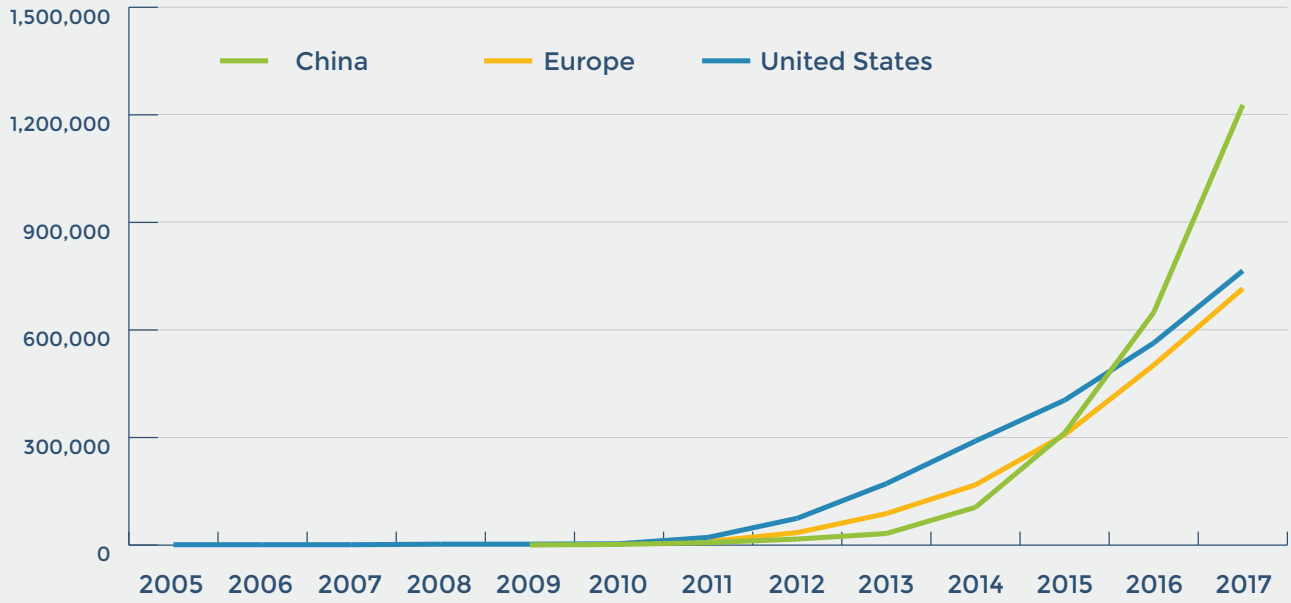
Different countries are taking different approaches—and the examples noted in this section are offered as inspiration for others, though not necessarily as replicable approaches. Policies in China and Norway, for example, may be unique to those countries' circumstances. Nevertheless, they stand out as successful examples and help illustrate general approaches, including the following:

- **Incentives.** In many cases, governments are using financial incentives, such as tax exemptions or cash rebates, to make electric vehicles more affordable.
- **Mandates.** Some governments are setting mandates or quotas for how many electric vehicles automakers need to sell in certain markets.

These and other types of policies will be important for ambition loops in clean transportation. For example, accelerating commercial EV fleets will require policies that spur investments in infrastructure, including battery production at scale, accessible charging stations, and cleaner power grids.

Figure 5.

Electric vehicle stock: China, Europe, and United States



Source: IEA Global EV Outlook 2018.

Figure 6.

Areas where national objectives and business leadership have the potential to be mutually reinforcing in the transportation sector

Accelerating Ambition in Transportation: Ensure access to safe, efficient, convenient, clean mobility options.

OPPORTUNITIES FOR AMBITION LOOPS:

Low-Carbon Transport

POTENTIAL GROWTH: Saving of US$8 trillion by 2050 possible with vehicle efficiency and fuel switching.**

82
National climate plans

$US 288 B
Market today**

Vehicle Fleets

POTENTIAL GROWTH: More than 1/2 of new cars sales (and 1/3 of global fleet) to be electric by 2040.***

40
National climate plans

$US 163 B
Market today**

Public Transport & Infrastructure

POTENTIAL GROWTH: Investment in infrastructure to grow from US$557 B/yr to US$900 B/yr by 2025.**

49
Combined National climate plans

150
Cities with bus rapid transit (BRT)

**Market size and NDC count from International Finance Corporation, "Creating Markets for Climate Business: An IFC Climate Investment Opportunities Report," 2017.

***Market projection from Bloomberg New Energy Finance, "Electric Vehicle Outlook 2018."

BUSINESS CLIMATE AMBITIONS AND INITIATIVES:

EV100
More than 20 companies committed to accelerating the transition to electric vehicles (EVs) and making electric transport the new normal by 2030.

Urban Electric Mobility Initiative
Companies, investors, and other stakeholders committed to increasing the sales of electric vehicles by 30 percent by 2030 to achieve a 30 percent reduction of GHG emisisons in urban areas by 2050.

Transport Decarbonization Alliance
Six companies working with six countries and five cities to make transportation a "net-zero emissions" sector as soon as possible (as part of One Planet commitments).

Low-Carbon Sustainable Rail Transport Challenge
More than 190 rail companies committed to reducing average global emissions from train operations by 50 percent by 2030 and 75 percent by 2050 based on 1990 levels.

Public Transport Declaration on Climate Leadership
Multistakeholder effort to double the share of public transport by 2025.

Global Green Freight Action Plan
Multistakeholder effort to dramatically reduce emissions of greenhouse gases, black carbon, and air pollutants in the freight sector by 2025 through a greener and more energy-efficient multimodal global supply chain.

"Now more than ever, it is the responsibility of business to work in partnerships with governments to create solutions that contribute to developing a more sustainable and inclusive world. A.P. Moller-Maersk's commitment to energy efficiency works in tandem with bold policy targets to take on the challenge of creating a sustainable world."

John Konerup Bang, Head, Sustainability Strategy & Shared Value, Maersk—the world's largest container shipping company based in Denmark and operating in 130 countries

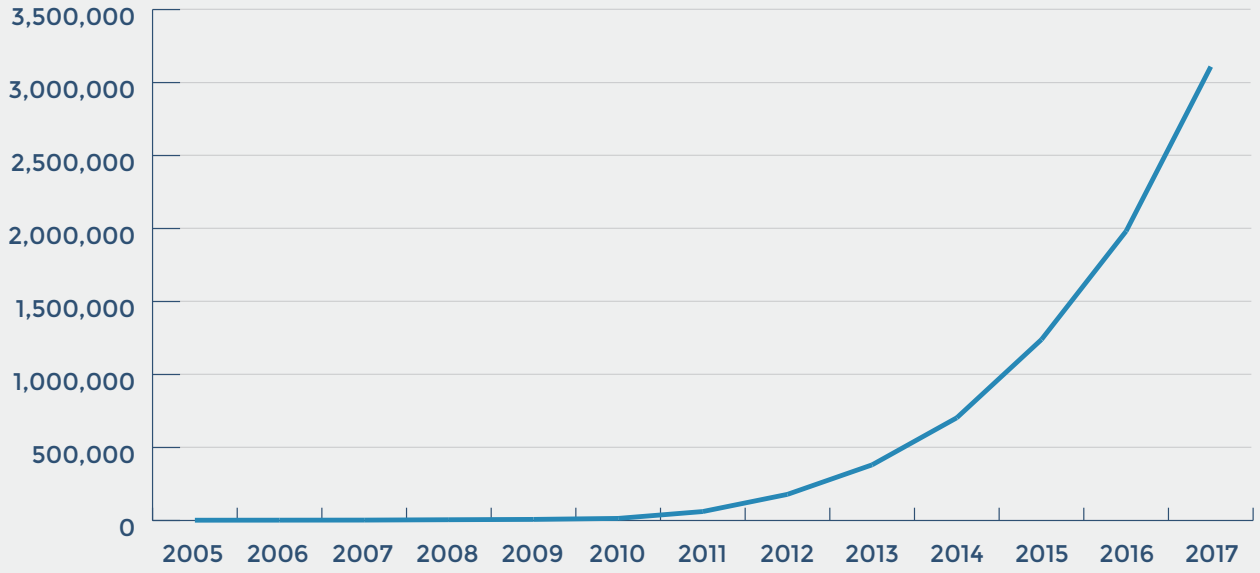
BOX 6. CORPORATE INTEREST IN CLEAN TRANSPORTATION

What government leaders need to know:

- **In the past three years, 20 automakers and nearly 20 countries have set targets for electric vehicles (EVs).[33]**
- **The number of electric vehicles on the road has more than doubled since 2015 and has increased sixfold since 2013, exceeding 3 million vehicles in 2017 and 4 million in September 2018.**

Figure B6.1.

Global EV stock (BEVs and PHEVs)



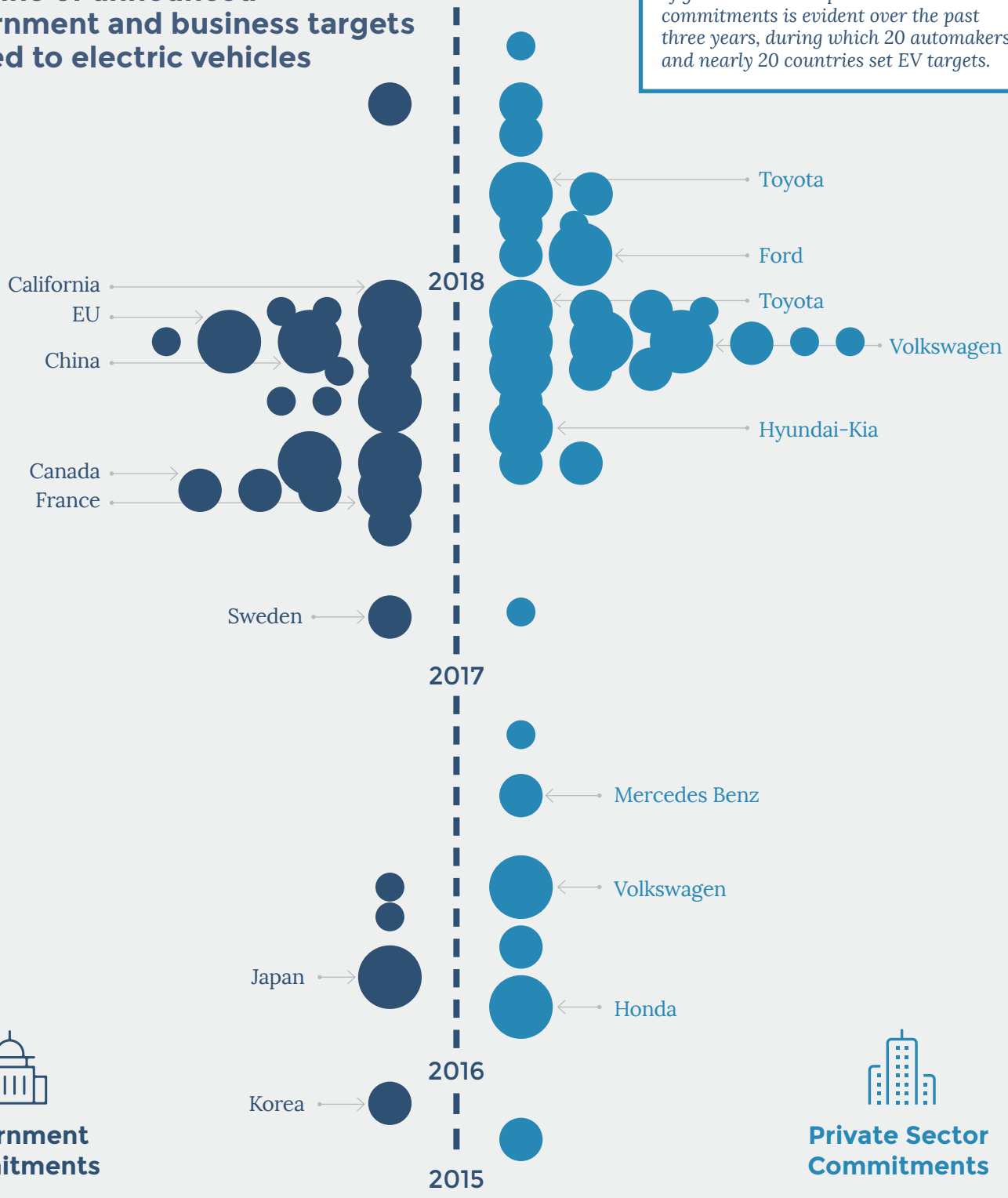
Source: IEA Global EV Outlook 2018.

Note: BEV = battery electric vehicle; PHEV = plug-in electric vehicle.

Figure B6.2.

Timeline of announced government and business targets related to electric vehicles

The growing number and momentum of government and private sector EV commitments is evident over the past three years, during which 20 automakers and nearly 20 countries set EV targets.



GOVERNMENTS WITH A GDP (2017) OF:

- Less than US$400 billion
- Between US$400 billion and US$2 trillion
- Greater than US$2 trillion

ORIGINAL EQUIPMENT MANUFACTURERS (OEMS) WITH ANNUAL SALES VOLUME (2017) OF:

- Less than 400,000 vehicles
- Between 400,000 and 4 million vehicles
- Greater than 4 million vehicles

Source: IEA Global EV Outlook 2018 and WRI desktop research. Data reflected includes country and company announcements from 2015 through May 2018.

INCENTIVES AND QUOTAS FOR CLEAN FLEETS AND FUELS

Insights from China, Europe, and the United States

COUNTRY PRIORITIES:

Governments at the national and subnational level are setting ambitious targets in major markets, including the United States, Europe, and China, which help accelerate markets for electric vehicles to realize benefits in fuel efficiency, energy security, air quality benefits, GHG reductions, and market leadership.[34]

- China has set a goal to sell 4.6 million passenger and light-duty electric vehicles by 2020, along with 0.2 million electric buses and 0.2 million electric trucks.
- Several countries in Europe (including Ireland, Netherlands, Norway, and Slovenia) have set targets to sell 100 percent electric passenger and light-duty vehicles by 2030. A number of countries (such as Austria, Denmark, the United Kingdom, France, and the Netherlands) have indicated they will phase out sales of traditional internal-combustion engines by 2040 or sooner. Other European countries have set electric vehicle sales targets that together amount to as many as 1.2 million electric vehicles by 2020 and 7 million electric vehicles by 2030.
- Eight U.S. states (including California, Connecticut, Maryland, Massachusetts, New York, Oregon, Rhode Island, and Vermont) have targets that amount to 3.3 million electric vehicles by 2025.

BUSINESS PRIORITIES:

Electric vehicle manufacturers:

Twenty major automakers (including Toyota, General Motors, Ford, Volvo, and others) have announced public targets to boost production and sales of electric vehicles. More than half of them have set quantitative sales targets that together amount to an ambition to sell nearly 11 million electric vehicles by 2020. (It is important to note that even this ambition falls short, as analyses suggest that fuel efficiency would need to increase rapidly and electric vehicles would need to constitute 100 percent of new car sales by 2035—with a decarbonized power sector—in order to limit warming to 1.5°C.)[35]

Corporate electric vehicle purchasing:

Major fleet owners such as Walmart and Unilever are setting and achieving fleet efficiency and procurement goals. They are doing so either individually or as part of coalitions, such as The Climate Group's EV100 initiative and The Climate Group and C40's Zero Emission Vehicle (ZEV) Challenge.

Walmart doubled its fleet efficiency in 2015 compared to 2005, with expected savings of nearly US$1 billion and 650,000 $MTCO_2e$. The company's stated motivation: "a cleaner environment and lower prices for customers."

Unilever, with a fleet of approximately 13,300 company cars, committed to a phased approach to integrating electric vehicles. It aims for a 25 percent electric vehicle/hybrid fleet by 2020; 50 percent by 2025; and 100 percent by 2030. The company also established other corporate policies, including to (1) partner with car hire and taxi companies that offer electric vehicles, (2) negotiate discounts with car leasing companies for employees looking to lease electric vehicles for personal use, and (3) install charging infrastructure at Unilever buildings.[36]

These commitments send a collective demand signal to manufacturers and show policymakers that major corporations are ready for an electric vehicle future. Stepped up commitments from governments around electric vehicle incentives and infrastructure investments will further accelerate these efforts.

Broader clean fuel supports: below50, a coalition assembled by the World Business Council for Sustainable Development (WBCSD), brings together fuel producers and consumers that have committed to decarbonizing liquid fuel supply chains. They have pledged to support fuels that emit at least 50 percent fewer GHG emissions than conventional fuels.[37] More than 20 companies (as of August 2018) have made commitments through below50. Companies also make additional commitments, including advocacy and investment in clean fuels.

Notably, the initiative welcomes participants across the value chain and includes stakeholders representing fuel producers, buyers, governments, and investors—all sharing a common business case for action.

Low-carbon transport fuels are essential to achieving environmental, social and economic goals. Only 3 percent of [total] transportation fuels are currently low-carbon, and this figure must grow to 10 percent by 2030 in order to satisfy economic growth and help keep global temperatures from rising more than 2°C. This is a significant market opportunity that is predicted to double to US$185 billion globally by 2020.[38]

POLICY FOR CLARITY AND CONFIDENCE:

Leading examples of policies spurring clean transportation include the following:

Norway exempts battery electric vehicles (BEVs) from the 25 percent value-added tax (VAT) on car purchases, and BEVs now account for more than 20 percent of total market share. Norway also introduced additional rebates and tax exemptions for plug-in hybrid electric vehicles (PHEVs) in 2016, and sales more than doubled, from 7,950 to 20,670. The incentives and rebates boost corporate confidence in the electric vehicle market.[39]

California and other U.S. states have introduced cash or tax rebate programs that help consumers overcome initial costs for electric vehicles.

Some companies, in addition to making public commitments to increase electric vehicle options and sales, are also actively weighing in on the need for electric vehicle rebate programs. In California, for example, Ford and Tesla are pushing to incorporate cash rebates at the point of sale so that consumers see immediate savings off the purchase price.[40] These policies help give the companies the confidence they need to increase their investments in electric vehicle production.

California also has a policy that sets a quota for the number of zero-emissions vehicles (ZEVs) that automakers must sell. The goal is to sell 1.5 million ZEVs by 2025 and 5 million by 2030. Companies either sell the mandated number of ZEVs or buy credits from other companies that have sold more than their required number of ZEVs.

China has instituted a similar policy with "New Energy Vehicle Credits" and has mandated that 10 percent of passenger vehicle sales be of electric vehicles by 2019 (and 12 percent by 2020). These programs create an incentive for automakers to overdeliver on their quotas, as they are able to sell credits to other companies that underdeliver.

China accounts for half of today's global electric vehicle sales. In 2017, the country announced intentions to sell 5 million electric vehicles by 2020. Within days, Ford and General Motors had announced their own goals to increase electric vehicle sales. When the world's biggest markets mandate electric vehicle sales, automakers pay attention.

Meanwhile, countries that have eliminated or opted not to renew financial incentives have seen sales decline. Denmark and the Netherlands, for example, saw year-on-year PHEV sales drop by 50 percent in 2016 when the countries scaled back PHEV tax exemptions. The International Energy Agency concluded that "financial incentives, and particularly those that reduce the upfront purchase price, are the main policy mechanisms driving today's market uptake of electric cars."[41]

China is a huge part of the story in EVs, and it is a big factor in the decision making of the automakers. As an auto industry analyst at Gartner observed,[42] "China's move toward higher emissions standards and the EV mandates gives the big global automakers certainty that they are going to have a significant market for these cars and they can know these investments will be worth it."

FINANCING AND INFRASTRUCTURE FOR ELECTRIC BUSES

Insights from China

COUNTRY PRIORITIES:

China has set ambitious goals for bus electrification. Many buses run on diesel and operate for long hours each day, contributing significantly to a city's GHG emissions and local air pollution. In Shenzhen in the early 2000s, for example, diesel buses represented only 0.5 percent of the city's total vehicle fleet, but they accounted for 20 percent of transport-related carbon dioxide emissions.[43]

In 2009, the Chinese central government chose Shenzhen and 12 other cities for a pilot project to reduce emissions from vehicles. Bus electrification offers a high-impact opportunity for emissions reduction. Having recognized the need to electrify its bus fleet, China set an ambitious goal of having 600,000 fully electric public service vehicles countrywide by 2020.[44]

BUSINESS PRIORITIES:

Businesses, including manufacturers and city bus operators, are seeking to develop and commercialize new electric bus models and utilize new financing options. They are responding to ambitious national goals and positioning to be leaders in a market that is expected to increase significantly over the coming years. For example, BYD, the largest battery manufacturing company in Shenzhen, put out the first batch of electric buses in 2011, prompting other manufacturers to follow.[45] BYD sees the business opportunity emerging in other countries as well and has recently joined with Generate Capital, an investor in San Francisco, to lease electric buses to cities, schools, and corporations in the United States. Generate Capital is providing US$200 million to buy and lease buses; BYD will supply the buses and market them to consumers, with the goal of increasing their international presence.[46]

POLICY FOR CLARITY AND CONFIDENCE:

Two of the most critical barriers to bus electrification in China are upfront cost and charging infrastructure.[47] Over its lifetime, the cost of an e-bus in China is on par with conventional options. However, e-buses remain two to four times more expensive upfront and, due to range limitations, require regular charging and/or a larger overall fleet.[48] Shenzhen implemented the policies and incentives below to help overcome the hurdle to electric bus investments:[49]

1. National and local subsidies:

Shenzhen and other Chinese cities received national and local subsidies to reduce the upfront cost of e-buses. For example, an e-bus in Shenzhen could receive a US$150,000 government subsidy—covering more than half the price.

2. Leases to reduce upfront investments:

To reduce the upfront cost even more, some operators in Shenzhen chose to lease the e-buses rather than purchase them outright, even at the reduced, subsidized price.

3. Optimized charging and operation:

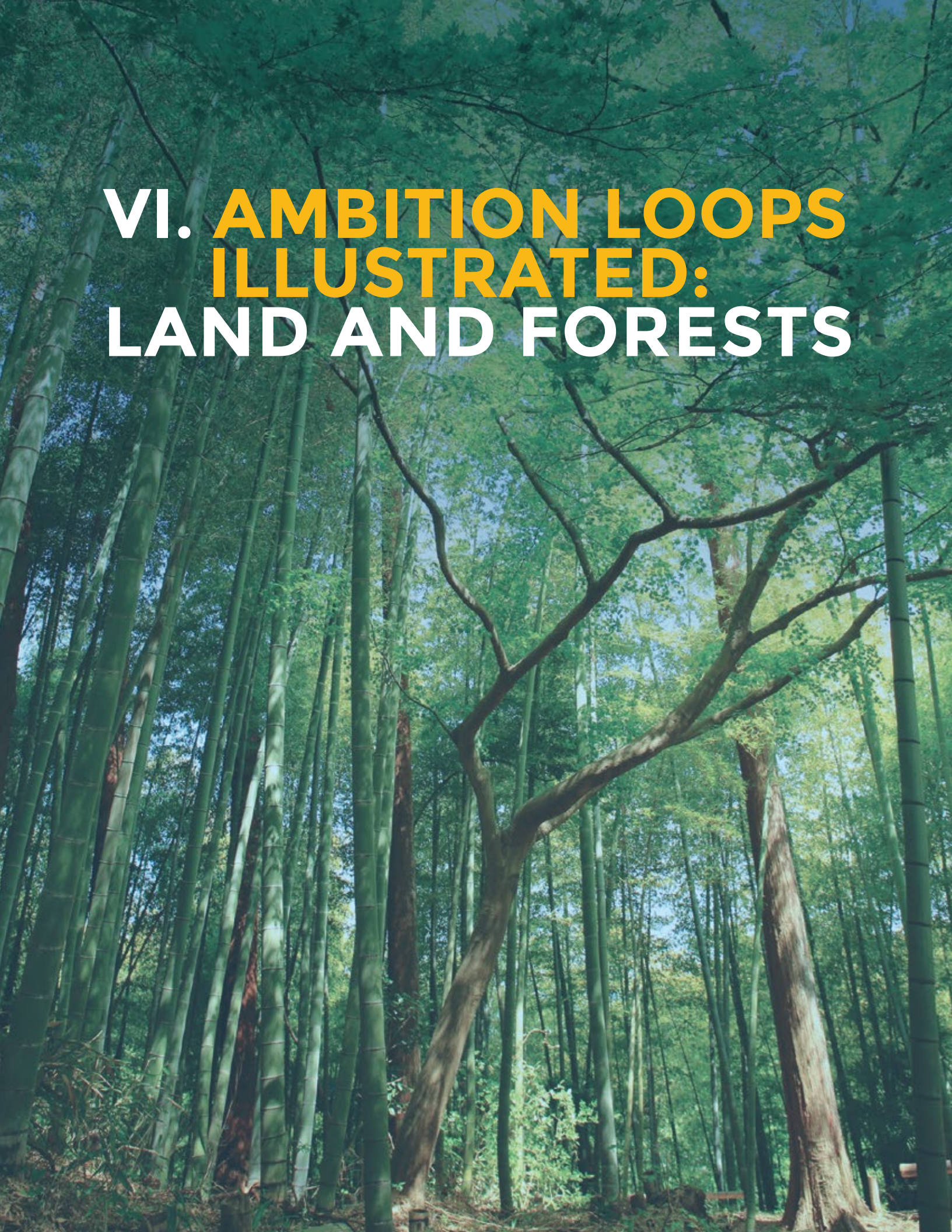
Shenzhen overcame the need to have more e-buses than conventional ones (due to shorter driving ranges and recharging needs) by having bus operators work with charging infrastructure providers to establish more charging facilities along routes. These facilities were also open to use by private cars to increase their revenue.

4. Lifetime warranty of batteries:

Bus operators required a lifetime warranty on batteries for their e-buses from the battery manufacturers to lessen the burden on operators from increased breakdowns due to the early stage technology that e-buses are still in. Battery manufacturers own the technology and are constantly updating and improving so they can guarantee their products and increase bus operators' confidence in e-bus profitability and reliability.

China has created clear and stable financing options and consistency in charging technology, along with strong governmental goals, warranty programs, and significant infrastructure investments. This allows companies like BYD and cities like Shenzhen to scale electric buses quickly. Shenzhen had the distinction of being the first city to convert its entire fleet of 16,359 buses (more than the combined bus fleets of New York, Los Angeles, New Jersey, Chicago, and Toronto) to electric buses by the end of 2017.[50]

As of 2017, about 17 percent of China's buses were electric, making up more than 99 percent of the 385,000 electric buses worldwide.[51] Other cities are looking to electrify their bus fleets as well: Paris, London, Mexico City, Quito, Cape Town, and Los Angeles are among 13 cities[52] that have committed to buying only zero-emissions transport by 2025 and signed the C40 Fossil-Fuel Free Streets Declaration in October 2017.[53]



VI. AMBITION LOOPS ILLUSTRATED: LAND AND FORESTS

AMBITION: ZERO DEFORESTATION

Ambition loops relating to land and forests are less mature than those in other sectors, but the opportunity is immense (see Box 7). The Nature Conservancy found that natural solutions to climate change, including landscape restoration and avoiding forest conversion, could achieve 37 percent of the GHG reductions necessary to keep warming below 2°C.[54]

Countries have an increasing number of partners among companies that are supporting net-zero deforestation and landscape restoration, with partnerships among businesses and governments in countries ranging from Ghana and Côte d'Ivoire to the United Kingdom. These efforts suggest potential ambition loops that can accelerate investments in support of sustainable livelihoods, transparency, and resilient supply chains. Companies are also teaming with partners across other sectors, including civil society and academia, to broaden the voices calling for greater ambition in forest and land management (see Box 8).

BOX 7. CORPORATE INTEREST IN LAND AND FORESTS

What government leaders need to know:

- **Tropical deforestation alone accounts for 8 percent of global net emissions, but reversing this trend could reduce net emissions by 30 percent.[55]**
- **Seven of the world's 10 largest food and beverage companies have committed to setting Science Based Targets to reduce GHG emissions.[56]**
- **In 2017, Supply Change reported that there were 447 companies making public commitments to address commodity-driven deforestation, a 22 percent increase from the year before.[57]**

BOX 8. BUSINESS VOICES IN A BROADER COALITION PUSH FOR CLARITY AND CONFIDENCE IN BRAZIL

The Brazilian Coalition on Climate, Forests, and Agriculture (Coalizão Brasil) is an innovative multisector collaboration leading the movement to push low-carbon economic development in Brazil. Formed by 170 leading organizations, the membership of Coalizão Brasil includes leading businesses, along with other stakeholders. It brings together Brazilian agribusiness, civil society in the environment and climate area, important representatives from academia, sectoral associations, and leading companies in the wood, cosmetics, steel, pulp, and paper areas, among others.

In September 2018, the coalition presented 28 proposals to promote Brazilian mitigation and adaptation initiatives on climate change, agriculture, and forestry. All 28 measures can be implemented within four years and range from suggested market mechanisms to conservation, restoration, and reforestation programs. Businesses in the coalition recognized that agriculture and forests are not only important to reaching Brazil's national climate goals but also are connected to an extensive value chain that creates jobs in both rural and urban areas. The proposals were written to send clear signals to Brazil's policymakers and presented to all candidates in the country's presidential election.

CREATING ACCOUNTABILITY AND MARKET DEMAND FOR SUSTAINABLE PALM OIL

Insights from the United Kingdom

Palm oil is a cash crop grown in heavily forested countries seeking to further develop their economies. However, the clearing of land for its production has led to environmental and social impacts, including deforestation, land erosion, increased GHG emissions, land conflicts, labor and health problems, and forest fires. For example, in September and October 2015, large fires in Sumatra and Indonesian Borneo increased the levels of smoke and haze for the entire region, resulting in approximately 100,300 deaths across Indonesia, Malaysia, and Singapore.[58]

COUNTRY PRIORITIES:

Europe is a major consumer of palm oil. Recognizing the hazards created by unsustainable palm oil production, the United Kingdom made a commitment in 2012 to seek "100 percent sourcing of credibly certified sustainable palm oil by the end of 2015."[59]

BUSINESS PRIORITIES:

Investors, consumers, and civil society groups have pressured companies to eliminate unsustainable practices from their palm oil supply chains. As a result, hundreds of major companies have made public commitments to source palm oil only from certified sustainable sources. Companies making commitments include palm oil processors and distributors, food and drink manufacturers, retailers, animal feed manufacturers, catering companies, and companies in the hospitality, renewable energy, cleaning products, and chemical sectors.[60]

POLICY FOR CLARITY AND CONFIDENCE:

In 2004, multiple stakeholders came together in the Roundtable for Sustainable Palm Oil (RSPO) to create common definitions and agree on a certification scheme to validate sources practicing sustainable palm oil production. In November 2007, the RSPO General Assembly approved the RSPO principles and criteria.[61] Previously, there was little governance, visibility, or verification for the sustainable practices of palm oil.

By November 2015, RSPO-certified palm oil accounted for more than 90 percent of all palm oil imported into the United Kingdom.[62] In December 2015, the United Kingdom and five other major consuming European countries came together with a joint statement of support for 100 percent sustainable

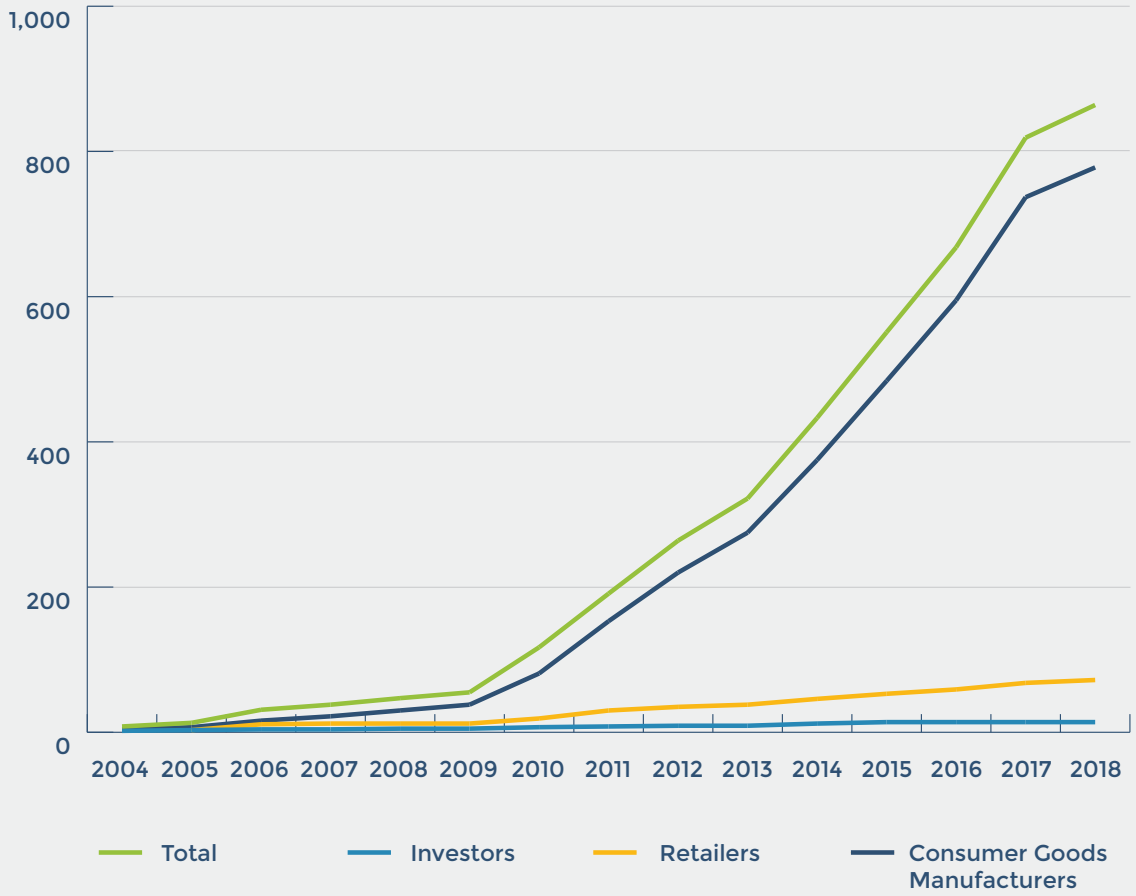
palm oil supply chains. They emphasized that "private sector driven" commitments inspired their statement of support:[63]

We, the Signatories, are encouraged by the European private sector organisations engaged in the palm oil supply chain joining forces in a commitment and drive toward 100 percent sustainable sourcing and trade.[64]

With increased transparency and assurances, more companies and countries are stepping up with bold commitments. The number of products with RSPO certification has been growing quickly, and today nearly 20 percent of global palm oil is from RSPO-certified sources. Overall, RSPO membership has grown tremendously (Figure 7), as has certified palm oil production, which increased by more than 20 times between 2008 and 2016. While this is encouraging, the RSPO does encounter limits in reaching smallholder farmers. Smallholder farms are a quarter of Indonesia's palm oil plantations, but as of 2017 less than 1 percent of independent smallholder farms were RSPO certified.[65] The next, important step is to translate the increased ambition and demand for certified palm oil into results on the ground. Additional action is needed to ensure that this increase in attention and private sector commitment is harnessed to halt and reverse deforestation in supply chains.

Figure 7.

Total number of consumer goods manufacturers, retailers, and banks and investors, by year of membership in the RSPO



Note: The RSPO brings together stakeholders to "transform markets to make sustainable palm oil the norm." It involves influential representatives of stakeholders in the palm oil industry: oil palm producers, processors or traders, consumer goods manufacturers, retailers, banks and investors, and environmental and social NGOs.

COMMITMENTS TO RESPONSIBILITY AND COOPERATION

Insights from Ghana and Côte d'Ivoire

COUNTRY PRIORITIES:

Ghana and Côte d'Ivoire aim to increase cocoa production while protecting forests. Côte d'Ivoire is deforesting (not limited to cocoa) at a rate that risks consuming all its forest cover by 2034. According to Global Forest Watch, Ghana has seen significant tree cover loss as well. Between 2001 and 2017, the country lost 935 kha of tree cover, equivalent to a 13 percent decrease since 2000 and 86.6 Mt of CO_2 emissions.[66] In 2015, Côte d'Ivoire initiated a crackdown on illegal cocoa plantations and set goals to increase the percentage of land covered by forests in the country to 20 percent, from the current 12 percent, while also aiming to capture 50 percent of the global cocoa supply share.[67] The Ghanaian government is similarly working toward improving livelihoods and restoring degraded land.

BUSINESS PRIORITIES:

Market-leading companies—including Cargill, General Mills, The Hershey Corporation, and Mars—have made ambitious commitments to eliminate deforestation in their supply chains. They are driven both by reputational benefits and business interests in securing a resilient future supply of commodities such as cocoa.[68]

POLICY FOR CLARITY AND CONFIDENCE:

In November 2017, in partnership with the governments of Ghana and Côte d'Ivoire, the World Cocoa Foundation; IDH, the Sustainable Trade Initiative; the Prince's International Sustainability Unit; and 35 companies launched the Cocoa and Forests Initiative (CFI).[69] The CFI is an integrated effort to prevent any further deforestation from cocoa farms while increasing production in a sustainable manner on the existing farms.

The CFI's stated objective is to be able to trace cocoa from the first farm to the first point of purchase by 2019.[70] Governments will complete the mapping and data collection by the end of 2018. This will inform a clear CFI framework of action and determine specific strategies to address deforestation. Further, the CFI has established a principle of no further conversion of forest land for cocoa production.[71] Governments and companies can be confident in the critical mass of participants committed to this principle. Ghana and Côte d'Ivoire and the 35 signatory companies represent approximately 80 percent of global cocoa usage.[72]

The CFI also involves additional commitments that enhance clarity and instill confidence, such as social risk mitigation, financing, strengthening of forest policies, and effective enforcement.

BOX 9. CARBON PRICING: A TOOL TO DRIVE AMBITION LOOPS IN MULTIPLE SECTORS

Ambition loops need not be restricted to single industries. Broader policy frameworks also drive ambition loops that involve multiple sectors.

Carbon pricing is a good example of cross-sector ambition loop potential. The OECD notes that "the introduction or strengthening of carbon prices . . . signals strong policy commitment, creating certainty for investors that it pays to invest in carbon-neutral technologies." Hundreds of businesses are using an internal carbon price to inform strategic planning. A strong carbon-pricing policy can help clarify and accelerate the timelines in which business and governments achieve and surpass ambitious climate goals. It internalizes the economic costs and effects of carbon emissions into financial decision-making. It gives companies the confidence and financial support needed to invest in long-term GHG reduction projects. More and more companies and governments are using carbon pricing to inform decision-making and spur a shift toward low-carbon investments. Both companies and governments are learning important lessons along the way about what design elements and price levels give enough clarity and confidence to drive change in key sectors.

Policy experience

Carbon-pricing policies are emerging in markets across the globe, from U.S. states to Canada, Mexico, and India. Initial experiences with carbon pricing in Europe and Canada suggest that these frameworks provide essential clarity and confidence.

In the initial phases of the EU Emissions Trading Scheme (ETS) there was plenty of flexibility and learning. Revisions made in the third period (2013–20) addressed weaknesses identified in earlier phases, including the fact that the price was too low to drive significant change in the private sector. Specifically, amendments reduced the cap on emissions by 1.74 percent per year in order to reduce emissions by 21 percent in 2020 compared to 2005. Auctions became the main allocation method, with an emphasis on predictability, cost-efficiency, and fair access. A further reform—supported by a coalition of more than 60 corporate leaders[b]—introduced a market stability reserve that will reduce the large surplus of emission permits in the trading system. A robust cap tightening (which the European Union has signaled it is anticipating in Phase 4) could increase permit prices, as could the introduction of an auction reserve price, or a carbon floor price.

In Canada, the experience in British Columbia has shown the value of clear, predictable timelines. North America's first broad-based carbon tax (covering approximately 70 percent of British Columbia's GHG emissions) went into effect in 2008. The province initiated a tax on each metric ton of CO_2 emissions at C$10 (US$7.7). The tax was to increase by C$5 (US$3.9) each year until 2012, when it reached a price of C$30 (US$23.1) per ton. The tax emphasized four main principles: revenue neutrality, phased implementation, protection for families, and broad coverage. Legislation kept the pending carbon tax revenue-neutral by reducing corporate and income taxes at an equivalent rate.

The policy became one of the early demonstrations that economies can grow while pricing and reducing GHG emissions. Between 2007 and 2015, provincial real GDP grew more than 17 percent, while net emissions declined by 4.7 percent. British Columbia's carbon tax policy has spurred fuel efficiency gains, and the economy has outperformed the rest of Canada since 2008.[c]

By 2016, more than 160 companies in British Columbia were pushing the government to strengthen the carbon tax.[d] In April 2018, the carbon tax increased to C$35 (US$27) per ton, and it will increase by C$5 per ton per year, until it reaches C$50 per ton in 2021.

Business interest

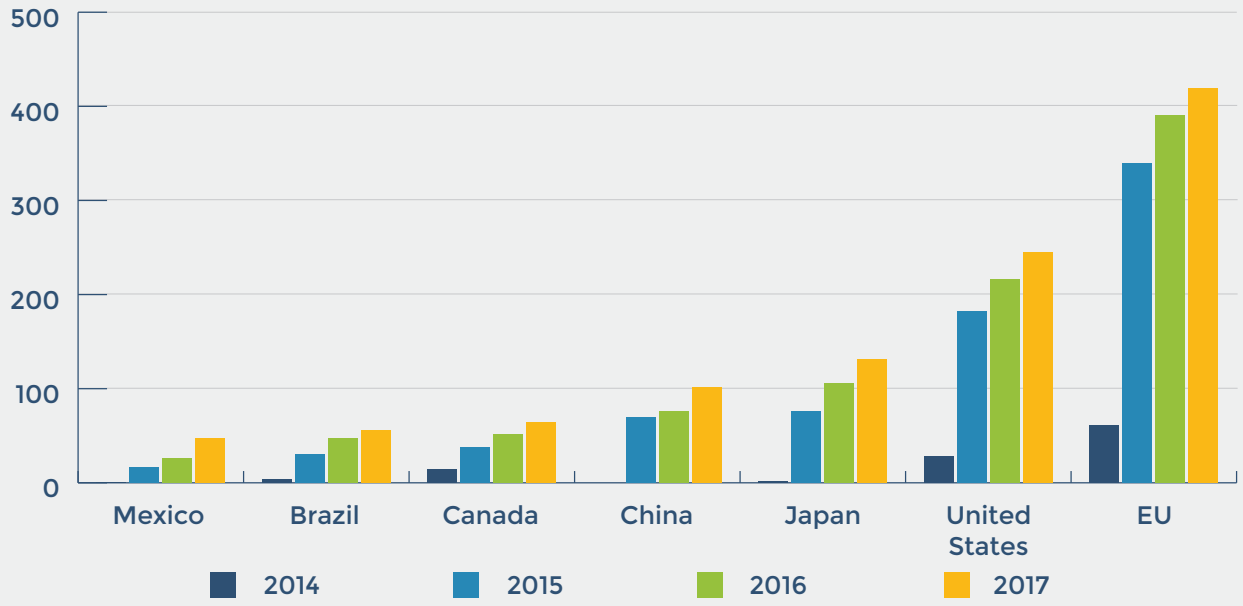
Companies are increasingly active and interested in carbon pricing. There has been a dramatic increase in the number of companies using internal carbon prices as part of strategies to evaluate investment risks and opportunities (Figure B9.1). In 2014, 150 companies reported that they used an internal carbon price. By 2017, more than 1,300 companies were pricing carbon or planning to do so within the next two years.[e] The European Union, where carbon-pricing policies have been in place the longest, is home to the most companies that report pricing carbon internally.

Companies are also increasingly active in informing and advocating for carbon-pricing policies. More than 70 companies committed to the UN Global Compact's Business Leadership Criteria on Carbon Pricing, which includes a pledge to "publicly advocate the importance of carbon pricing through policy." The Carbon Pricing Leadership Coalition—a platform advancing carbon pricing in countries around the

Figure B9.1.

More and more companies around the world are using internal carbon prices as part of strategies to evaluate climate risks and opportunities

Note: In select countries, as reported in annual disclosures to CDP



world—now counts 160 companies as partners in that effort. A contingent of nearly 20 Canadian companies signed up to be part of the coalition in 2016, representing the largest group of corporate leaders to join the effort.[f]

The Carbon Pricing Corridors initiative provides insights from business leaders on what level of carbon pricing is needed to drive change in their industries. Their insights support other studies which find that today's carbon-pricing policies, globally, are not nearly sufficient in coverage or price levels to spur the investment necessary to transition the economy.[a] The initiative—a collaboration among the Carbon Disclosure Project (CDP), the We Mean Business coalition, and the Carbon Pricing Leadership Coalition—put together a panel of 22 business leaders and experts to review what carbon price levels would be sufficient to shift investments in key industries. In the power sector, for example, they have outlined a range of carbon prices for 2020, 2025, and 2030 that would help send financial signals to utilities to decarbonize electric grids.

Industry leaders across multiple sectors featured in the Carbon Pricing Corridors initiative make clear that a carbon price is one tool for providing a clear signal to the market. It helps inform corporate planning and can accelerate the shift to low-carbon products and practices. It is also clear that to instill confidence in the pace and scale of change that governments are working toward, the price needs to be high enough to impact decision-making. The power sector determined that a price range of US$24–35/ton in the short term, increasing to US$38–100 by 2035, would be needed to drive necessary investments. The chemical sector, meanwhile, suggested it would need a price range of US$30–50/ton in the short term, increasing to US$50–100/ton by 2035. These insights from leaders in both sectors underscore the importance of ambitious policy, in this case in the form of a high enough carbon price, to give the confidence and clarity needed to drive change.

a OECD, "Effective Carbon Rates 2018," https://doi.org/10.1787/9789264305304-en.

b Prince of Wales's Corporate Leaders Group, "Business Voice Grows as More Than 60 Companies Call on MEPs to Reform the EU-ETS," 2015, https://www.corporateleadersgroup.com/reports-evidence-and-insights/news-items/business-voice-grows-as-more-than-60-companies-call-on-meps-to-reform-the-eu-ets.

c Stewart Elgie, "British Columbia's Carbon Tax Shift: An Environmental and Economic Success," World Bank, September 10, 2014, http://blogs.worldbank.org/climatechange/british-columbia-s-carbon-tax-shift-environmental-and-economic-success.

d Pembina Institute, "B.C. Businesses Support a Stronger Carbon Tax," 2016, http://www.pembina.org/bc-carbon-tax.

e CDP (Climate Disclosure Project), "Putting a Price on Carbon: Integrating Climate Risk into Business Planning," 2017, https://www.cdp.net/en/climate/carbon-pricing.

f Carbon Pricing Leadership Coalition, "Nearly Twenty Canadian Companies Sign on to Carbon Pricing Leadership Coalition," 2016, https://www.carbonpricingleadership.org/news/2016/7/14/twenty-canadian-companies-sign-on-to-carbon-pricing-leadership-coalition.

VII. CONCLUSION

Achieving the objectives of the Paris Agreement and Sustainable Development Goals will require businesses and governments to step up their ambition. They will need strategies and policies to close the gap between existing plans and the pace and scale of investment needed to limit global warming to 1.5°C.

As seen in the previous sections, increasing ambition is not a task for governments to pursue alone. More and more businesses are considering climate risk, seeing opportunity in the zero carbon economy, and taking action on climate. Hundreds of companies have already set ambitious targets of their own, which collectively send significant demand signals. Governments can use this as a strong vote of confidence and advance policies that in turn unlock further private sector innovation and investment in climate solutions.

Countries and companies can create these ambition loops now to unleash commercial demand for zero-emissions electric power, zero-emissions fleets, and zero-deforestation (among other sectors; see Box 9). By 2020, governments must capitalize on progress and momentum already evident in these sectors. They can provide clarity in terms of direction and pace and confidence in long-term market development. Ministers and other government officials responsible for national climate action will find support among leading companies that share interests in building and accelerating ambition loops. Together leaders can advance toward a zero-emissions future through the following means:

1. **Ambitious national policies and plans**

2. **Strengthened nationally determined contributions (NDCs) by 2020**

3. **Clear, long-term 2050 deep decarbonization strategies**

With bolder policies and private sector leadership reinforcing each other, ambition loops will emerge, and countries will move faster toward their climate and development goals.

APPENDIX A.

CREDIBLE CORPORATE ADVOCATES FOR CLIMATE CHANGE POLICY

Examples offered in this paper illustrate the potential of ambition loops driven in part by growing commitment and action in the private sector. In many of these cases, businesses have not only made commitments to reduce carbon emissions in their own operations, but they also have participated directly in policy discussions. As governments engage with businesses, they should keep the principles for responsible corporate policy engagement in mind and look for companies that are advocating responsibly.

Five core elements of responsible corporate engagement in climate policy:

Legitimacy with...	▸ policymakers	▸ investors	▸ stakeholders
Opportunity to...	▸ inform	▸ influence	▸ benefit
Consistency with...	▸ science	▸ positions	▸ strategies
Accountability to...	▸ shareholders	▸ customers	▸ society
Transparency for...	▸ positions	▸ influences	▸ outcomes

When advancing climate change solutions, governments will need to balance impacts on producers and consumers. Governments can find credible corporate voices among those that clearly articulate the **opportunity** in policies for zero carbon electric power–both for them and for other stakeholders. For example, in Poland, advocates for the net metering policy were able to highlight and balance the interests of both energy consumers (interested in selling solar power back to the grid) and utilities (interested in ensuring their costs were covered if required to manage distributed solar power inputs to the grid).

Other core elements of responsible policy engagement will be important for governments seeking input from the private sector and other stakeholders on electric power, transportation, and land and forest policies. For example, governments can find credible corporate voices when there is **consistency** between what individual companies are saying and what their industry associations are saying. It is important that both are supporting policies consistent with pathways to limit global temperature to 1.5°C.

In some countries, such as India, commercial and industrial electricity use helps subsidize and make electricity more affordable for other users. Governments can find credible corporate voices among those advocating for policies that spur clean electricity with proper attention and accountability for potential adverse impacts on smaller companies or low-income households. Likewise, credible corporate voices on transportation will be advocating for rules and tax incentives that ensure responsible stewardship of public finances.

Similarly, governments can find credible corporate voices when companies are supporting **transparency**. These companies will be clear about where their commitments are—or are not—effective or in compliance with certification. They will seek and share nonsensitive information publicly and be open and honest about the challenges they confront when evaluating progress toward their supply-chain goals.

Finally, governments can find credible corporate voices among those recognizing broader public interests and establishing **legitimacy** among other stakeholders. In the case of land management in Ghana and Côte d'Ivoire, nearly 2 million households are dependent on cocoa farming, and most of these farmers live below the poverty line (smallholder farmers in Côte d'Ivoire earn an average equivalent of US$1.17 per day).[a] Companies advocating for policies eliminating deforestation in these and other countries will support options for advancing national goals for decent work and economic growth. For example, policies can help smallholder farmers improve yields with better tree and soil management, as well as create access to improved inputs and financing.[b]

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APPENDIX B.

CORPORATE CLIMATE COMMITMENTS BY COUNTRY

Country	Number of Public Climate Commitments from Companies	Number of Public Climate Commitments from Investors	Total Public Climate Commitments from Private Sector	Most Active Sector (excluding investors)
Algeria	1	0	1	Electric Power
Andorra	1	0	1	Electric Power
Argentina	3	1	4	Construction and Engineering
Armenia	1	0	1	Electric Power
Australia	33	48	81	Oil and Gas
Austria	14	5	19	Containers and Packaging
Azerbaijan	1	0	1	Electric Power
Bangladesh	4	0	4	Food and Beverage
Belarus	1	0	1	Electric Power
Belgium	18	2	20	Food Retail
Benin	1	0	1	Electric Power
Bermuda	1	0	1	Mining
Bosnia and Herzegovina	2	0	2	Electric Power
Botswana	1	0	1	Oil and Gas
Brazil	50	5	55	Electric Power
Bulgaria	4	0	4	Construction Materials
Burkina Faso	1	0	1	Electric Power
Cameroon	1	0	1	Electric Power
Canada	67	22	89	Oil and Gas
Chile	6	0	6	Electric Power

Country	Number of Public Climate Commitments from Companies	Number of Public Climate Commitments from Investors	Total Public Climate Commitments from Private Sector	Most Active Sector (excluding investors)
China	93	9	102	Technology Hardware and Equipment
Colombia	23	1	24	Electric Power
Costa Rica	0	1	1	Electric Power
Côte d'Ivoire	3	0	3	Electric Power
Croatia	3	0	3	Electric Power
Cyprus	1	0	1	Oil and Gas
Czech Republic	7	0	7	Electric Power
Democratic Republic of the Congo	2	0	2	Electric Power
Denmark	32	5	37	Food and Beverage
Egypt	3	0	3	Professional Services
El Salvador	1	0	1	Containers and Packaging
Estonia	1	0	1	Electric Power
Finland	24	7	31	Electrical Equipment and Machinery
France	94	31	125	Software and Services
Gabon	1	0	1	Electric Power
Georgia	1	0	1	Electric Power
Germany	65	15	80	Chemicals
Ghana	2	2	4	Oil and Gas
Greece	7	1	8	Electric Equipment and Machinery
Guatemala	1	0	1	Food and Beverage
Honduras	2	0	2	Electric Power
Hong Kong, China	11	4	15	Electric Power

Country	Number of Public Climate Commitments from Companies	Number of Public Climate Commitments from Investors	Total Public Climate Commitments from Private Sector	Most Active Sector (excluding investors)
Hungary	10	0	10	Electric Power
Iceland	2	1	3	Electric Power
India	57	10	67	Electric Power
Indonesia	5	0	5	Construction Materials
Iran (Islamic Republic of)	4	0	4	Electric Power
Ireland	14	1	15	Healthcare
Israel	7	0	7	Technology Hardware and Equipment
Italy	46	9	55	Electric Power
Japan	171	20	191	Electric Power
Jordan	3	0	3	Transportation (Air Freight)
Kazakhstan	1	0	1	Electric Power
Kenya	2	0	2	Food and Beverage
Kuwait	1	0	1	Transportation (Water)
Latvia	2	0	2	Electric Power
Lebanon	1	0	1	Construction Materials
Libya	1	0	1	Electric Power
Liechtenstein	1	0	1	Construction and Engineering
Lithuania	1	0	1	Electric Power
Luxembourg	4	1	5	Transportation (Autos)
Malaysia	6	1	7	Electric Power
Mauritania	1	0	1	Electric Power
Mauritius	1	1	2	Telecommunications
Mexico	24	3	27	Food and Beverage

Country	Number of Public Climate Commitments from Companies	Number of Public Climate Commitments from Investors	Total Public Climate Commitments from Private Sector	Most Active Sector (excluding investors)
Mongolia	2	0	2	Electric Power
Montenegro	3	0	3	Electric Power
Morocco	1	0	1	Electric Power
Mozambique	1	0	1	Electric Power
Netherlands	28	29	57	Construction and Engineering
New Zealand	6	2	8	Retail
Nigeria	2	1	3	Food and Beverage
Norway	35	5	40	Food and Beverage
Pakistan	13	0	13	Transportation (Autos)
Panama	3	2	5	Professional Services
Peru	6	0	6	Specialized Consumer Services
Philippines	3	1	4	Electric Power
Poland	20	0	20	Professional Services
Portugal	13	1	14	Electric Power
Qatar	1	0	1	Electric Power
Republic of Korea	61	13	74	Consumer Durables, Household and Personal Products
Republic of Moldova	1	0	1	Electric Power
Romania	8	0	8	Electric Power
Russian Federation	6	0	6	Oil and Gas
Rwanda	1	0	1	Specialized Consumer Services
Saudi Arabia	1	0	1	Electric Power
Serbia	1	0	1	Electric Power

Country	Number of Public Climate Commitments from Companies	Number of Public Climate Commitments from Investors	Total Public Climate Commitments from Private Sector	Most Active Sector (excluding investors)
Singapore	16	4	20	Telecommunications
Slovakia	6	0	6	Chemicals
Slovenia	1	0	1	Electric Power
South Africa	52	10	62	Mining
Spain	53	8	61	Construction and Engineering
Sri Lanka	3	0	3	Food and Beverage
Sudan	2	0	2	Professional Services
Swaziland	1	0	1	Electric Power
Sweden	61	32	93	Consumer Durables, Household and Personal Products
Switzerland	44	20	64	Chemicals
Syrian Arab Republic	2	0	2	Transportation (Air Freight)
Taiwan Province of China	33	4	37	Technology Hardware and Equipment
Thailand	10	1	11	Consumer Durables, Household and Personal Products
The former Yugoslav Republic of Macedonia	1	0	1	Electric Power
Trinidad and Tobago	2	0	2	Construction and Engineering
Tunisia	2	0	2	Electric Power
Turkey	29	5	34	Consumer Durables, Household and Personal Products
Ukraine	3	0	3	Technology Hardware and Equipment
United Arab Emirates	4	0	4	Electric Power

Country	Number of Public Climate Commitments from Companies	Number of Public Climate Commitments from Investors	Total Public Climate Commitments from Private Sector	Most Active Sector (excluding investors)
United Kingdom of Great Britain and Northern Ireland	218	63	281	Construction and Engineering
United Republic of Tanzania	2	0	2	Telecommunications
United States of America	419	72	491	Food and Beverage
Uruguay	1	0	1	Consumer Durables, Household and Personal Products
Venezuela (Bolivarian Republic of)	1	0	1	Transportation (Trucking)
Viet Nam	2	0	2	Textiles/Apparel/Footwear
Zambia	1	0	1	Electric Power
TOTAL:	2,138	479	2,617	Electric Power

Note: Figures are from UNFCCC NAZCA database (http://climateaction.unfccc.int/). The "Most Active Sector" column indicates the economic sector with the most public climate commitments, excluding commitments from investors and the 167 commitments from railroads as part of the Low Carbon Rail Transport Challenge.

APPENDIX C.

ENDNOTES

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14 Countries selected for the sample were meant to ensure inclusion of large economies, large emitters, vulnerable countries, and geographic diversity. They include Australia, Bangladesh, Brazil, Canada, Chile, China, Colombia, Democratic Republic of Congo, Denmark, Ethiopia, Fiji, France, Germany, Ghana, India, Indonesia, Italy, Japan, Mexico, Morocco, Netherlands, Norway, Pakistan, Poland, South Africa, South Korea, Sweden, Tanzania, United Kingdom, United States, and Vietnam. The following resources helped supplement and validate the landscape analysis: World Bank INDC database (indc.worldbank.org), Climate Action Tracker assessments (climateactiontracker.org), and Global Climate Action Playbook (https://www.unglobalcompact.org/docs/issues_doc/Environment/climate/Global-Climate-Action-Playbook-2018.pdf).

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