WORKING PAPER

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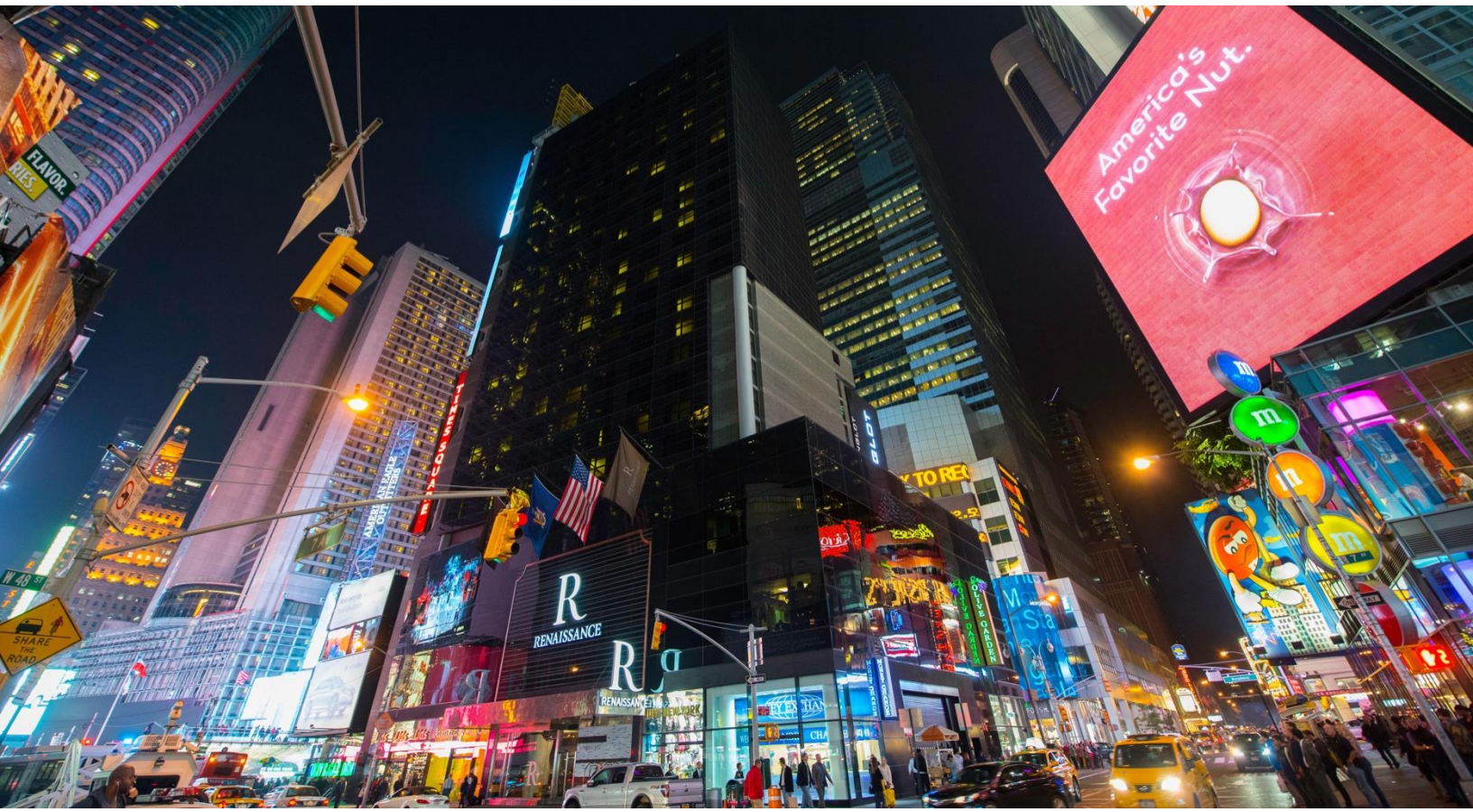
From National Climate Plans to Business Plans

How the Paris Agreement engages finance flows for the transition to a low-carbon economy



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About This Report

This working paper was written by Smruti Govan, Remi Moncel, and David Wei, with the assistance of our colleagues at BSR. It is based on independent research and data analysis conducted by BSR with the support of the ClimateWorks Foundation. For additional information, please contact David Wei (dwei@bsr.org).

Last December the 197 parties to the United Nations Framework Convention on Climate Change concluded the Paris Agreement. Pursuant to the agreement, 189 countries have brought forward national climate plans to reduce greenhouse gas emissions and build resilience. One of the stated purposes of the agreement is to shift finance flows toward low-emission and climate-resilient development. This working paper measures how strongly national governments' climate plans signal to the private sector this shift to a new mode of global economic development. By articulating practical insights on how governments can amplify these signals, this paper also aims to strengthen such finance flows over time.

We interpret finance flows broadly to include both investment and procurement, and we look to three groups of private sector actors who are essential to mobilizing these flows: the investment community, energy and extractives companies, and companies with large supply chains. This broad interpretation is commensurate with both the breadth of the finance flows national climate plans seek to influence and the scale of the climate challenge, which will require the mobilization of trillions of dollars.

The research for this working paper was conducted over four months and included a comprehensive review of the national climate plans and related literature, as well as semi-structured, anonymous interviews to harvest candid insights from corporate executives and sustainability practitioners, institutional investors, and leading private-sector consultants. Through these interviews we have gathered insights from 33 experts across a range of sectors.

This working paper is organized into three sections. The first introduces the Paris Agreement, its purposes, and the national climate plans that governments have developed under it. The second section provides an overview of findings that cuts across insights from our three groups of private-sector actors. The third section then canvasses findings that are specific to a single group. We conclude with some recommendations on how to strengthen the signals sent by the national climate plans to the private sector.

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Working papers contain preliminary research, analysis, findings, and recommendations. They are circulated to stimulate timely discussion and critical feedback and to influence ongoing debate on emerging issues. Most working papers are eventually published in another form, and their content may be revised.

SUGGESTED CITATION

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Contents

Executive Summary

The Paris Agreement on climate change marks a true turning point in the policy environment for businesses and investors. One of its stated purposes is to shift finance flows toward a low-carbon, climate-resilient global economy. The national climate plans brought forward by 189 countries under the agreement accelerate this shift.

Shifting Finance Flows

The Paris Agreement explicitly recognizes that shifting finance flows is essential to building the thriving clean economy it envisions. Without new modes of investment and operations from the investment community, energy and extractives companies, and companies with large supply chains, these flows cannot be mobilized.

Corporate practitioners and private-sector consultants across these three groups assessed the signals sent by the major economies' national climate plans. In particular, they agree that:

1. The national climate plans collectively signal a shift toward a low-carbon economy.

2. Businesses recognize the need to respond to the national climate plans, but the degree to which they currently integrate climate and energy policy into decision-making varies widely.

3. The national climate plans are an important guidepost for business decision-making, but are often secondary to other factors.

4. The more predictable and transparent a country's implementation, the more credible and persuasive its national climate plan.

5. Sector-specific policies tend to be the most persuasive. Milestones, timelines, and carbon pricing also strengthen the credibility of national climate plans.

6. Governments are least persuasive when sending mixed policy signals and most persuasive when building national carbon prices and sectoral policies that strengthen the enabling environment for a low-carbon economy.

Toward Transformative National Climate Plans

In the post-Paris period, many businesses and investors are willing to transition to a new low-carbon and climate-resilient global economy, but they are looking for the stable and certain implementation of the national climate plans as well as other signals to the private sector that national governments are committed to this global transition. Based on our research, we make the following recommendations to governments as they clarify and strengthen their national climate plans under the Paris Agreement:

» Implement the national climate plans with stability and certainty, and articulate in detail implementation and review mechanisms for these plans at the international, national, and sub-national levels.

» Provide additional specificity to make the national climate plans more directly actionable by companies, including interim targets, sectoral specificity, and policies that establish explicit and implicit carbon pricing.

» Improve policies that currently impede the sustainable finance flows envisioned by the national climate plans, such as governance shortcomings and fossil fuel subsidies that slow the transition to a low-carbon economy and weaken national governments' credibility.

» Build sectoral policies into the national climate plans that support low-emission and climate-resilient finance flows—for example, on land-use and agriculture, transport, or research and development.

Businesses and investors are ready to act upon the national climate plans. By implementing and improving them, governments will make these plans more directly actionable and stimulate the finance flows essential to implementing the Paris Agreement in the real economy.

Introduction

In December 2015, the Paris Climate Conference (COP21) successfully concluded four years of negotiations toward a new global climate agreement. The Paris Agreement, adopted by consensus by the 197 Parties to the United Nations Framework Convention on Climate Change (UNFCCC), is the first agreement to require that developed and developing countries alike undertake national climate plans to reduce greenhouse gas emissions and build climate resilience. Engagement by the private sector will be critical to meeting the Paris Agreement's objectives.

The Paris outcome shifts the policy environment for companies and the investment community toward a low-carbon, climate-resilient economy in the long term, the medium term, and the short term.

In the **long term**, the Paris Agreement steers the world toward a low-carbon, climate-resilient global economy through three global goals: to hold global warming well below 2°C, with a stretch target of 1.5°C;[1] to reach net zero global greenhouse gas emissions in the second half of this century;[2] and to build a climate-resilient world.[3] The Agreement also mandates that countries prepare new national climate plans every five years, following an assessment of national governments' collective progress toward these global goals.[4] Each new national climate plan must be more aggressive than the previous one and reflect the country's highest possible ambition.[5] National climate plans will therefore become more ambitious as low-emission technologies mature, pushing the global emissions trajectory downward.

In the **medium term**, 189 countries accounting for 98.8 percent of global emissions have now submitted national climate plans to reduce emissions and build resilience under the Paris Agreement, setting targets for 2025 or 2030.[6] Collectively, these plans reduce projected warming by 2100 to around 2.7°C, compared with previous projected warming of up to 4.8°C.[7] The International Energy Agency estimates that implementation of the plans brought forward for Paris will require US$13.5 trillion of investment in

[1] UN Framework on the Convention on Climate Change Secretariat (UNFCCC), "Adoption of the Paris Agreement: Article 4.2 of the Paris Agreement." Accessed, May 2, 2016. https://unfccc.int/resource/docs/2015/cop21/eng/l09.pdf. (hereinafter "Paris Agreement Article 4.2").

[2] Paris Agreement Article 4.1.

[3] Paris Agreement Article 7.1.

[4] Paris Agreement Articles 4.9, 14.

[5] Paris Agreement Article 4.3.

[6] World Resources Institute, "Climate Data Explorer." Accessed May 2, 2016. http://cait.wri.org/indc/.

[7] International Energy Agency, "Energy and Climate Change: World Energy Outlook, COP 21 Briefing." Accessed May 2, 2016. http://www.worldenergyoutlook.org/media/news/WEO2015_COP21Briefing.pdf.

energy efficiency and low-carbon technologies by 2030.[8] Carbon pricing by governments, and shadow carbon pricing by companies in anticipation of regulation, will be crucial to mobilizing this investment.

In the **short term**, the "Action Agenda" in Paris showcased current climate action—sector by sector—by businesses, investors, and sub-national governments.[9] This made clear both the scale of private-sector action and the specific best-in-class commitments and collaborations being undertaken in each sector. A similar showcase will now occur annually at each UN climate conference through 2020, providing a natural forum for business leadership to share best practices.[10] Technical work on scaling up practical initiatives to reduce emissions and build resilience will also continue under UN auspices through 2020.

Recognizing that the national climate plans under the Paris Agreement must catalyze private-sector action and investment in order to achieve the Agreement's short-, medium-, and long-term goals, this working paper asks whether these national plans, with their climate policies and targets to 2025 and/or 2030, send the requisite signal to companies and the investment community to facilitate the global transition to a low-carbon, climate-resilient economy.

Shifting Finance Flows

Article 2.1 sets out the purposes of the Paris Agreement, which include holding global warming "to well below 2°C above preindustrial levels and pursuing efforts to limit [warming] to 1.5°C above preindustrial levels" and "increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development." These two purposes—to mitigate climate change and to adapt to it—are buttressed by a third purpose, "making **finance flows** consistent with a pathway toward low greenhouse gas emissions and climate-resilient development."[11]

By including this third purpose in the Paris Agreement, governments recognized that tackling climate change will require more than public finance. They recognized that only by shifting broader private- sector finance flows can we successfully construct the low-carbon, climate-resilient economy envisioned by the agreement. With respect to the national climate plans now brought forward, this clearly directs us to two questions:

1. How strong are the signals sent by the national climate plans to actors in the private sector, and in particular to companies and investors whose engagement is essential to shifting finance flows toward low-carbon, climate-resilient development?

2. How can governments improve their national climate plans to send stronger signals to the private sector?

In this working paper we consider three groups of private sector actors without whom the finance flows envisioned by the Paris Agreement cannot be mobilized.

[8] International Energy Agency (IEA), 2015.

[9] UN Framework Convention on Climate Change, "Lima-Paris Action Agenda." Accessed April 29, 2016. http://newsroom.unfccc.int/lpaa/.

[10] Paris Agreement, Decision 1/CP21, paras. 121.

[11] Paris Agreement, Article 2.1.

> It is significant that although Paris is non-binding on meeting the [targets in national climate plans] it does bind countries to keep contributing to them and increasing stringency. It is certain that what is on the table now will get more stringent relatively quickly, especially every five years.
>
> —Large multinational energy company

First, we consider the investment community, including asset owners, asset managers, and the environmental, social, and corporate governance (ESG) analytics firms that assist them. By managing climate risks and acting on low-carbon market opportunities, these actors will shift investment toward low-carbon and climate-resilient assets and business models, if they find that the national climate plans send persuasive signals in that direction.

Second, we consider companies in the energy and extractives sector, for whom climate and energy policy is material to their core business. Their capital allocation decisions directly impact climate change by setting greenhouse gas emissions trajectories for decades to come.

Third, we consider companies with large supply chains. Not only is climate change a material risk to supply chains across industries, but more than 50 percent of an average corporation's carbon emissions typically comes from its supply chain. While our cross-sectoral approach to these companies can provide only general indications of how national climate plans can incentivize low-carbon procurement, it nevertheless highlights the significant potential resources that large corporations can direct—with the right policy signals—toward low-carbon goods and services in the course of their business.

NATIONAL CLIMATE PLANS

The Paris Agreement supports the full implementation of national climate plans, known as Nationally Determined Contributions, or NDCs. Once the Paris Agreement enters into force, countries are bound to "pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions."[12] In other words, countries commit to implementing domestic laws and regulations to reach the targets set out in their national climate plans. The agreement requires that countries submit new national climate plans every five years that are progressively more aggressive and reflect each country's highest possible ambition.

[12] Paris Agreement Article 4.2.

The Paris Agreement also establishes a detailed transparency and reporting framework to monitor countries' progress, provisions to allow for the transfer of carbon credits between countries, climate finance to support mitigation and adaptation measures in developing countries, and a mechanism to help countries implement and comply with the agreement.[13]

For this working paper, we focus on the private sector's perceptions of the national climate plans of the top 10 emitters in absolute terms—including emissions from land use—namely China, the United States, the European Union, India, Russia, Indonesia, Brazil, Japan, Canada, and Mexico.[14]

[13] Paris Agreement Articles 6, 9, 13, and 15.

[14] Ge, Friedrich and Damassa, 2014.

Crosscutting Findings

Even though the investment community, energy and extractives companies, and companies with large supply chains influence different finance flows, there were substantial similarities in all interviewees' perceptions of the national climate plans and recommendations to strengthen these plans' signals to the private sector.

1. The national climate plans collectively signal a shift toward a low- carbon economy

Among interviewees there was a wide convergence that collectively the national climate plans evidence a trend toward a low-carbon economy. Interviewees described the plans as aggressive, as indicative of the winds of change, and as sending a strong signal that there would be a change of pace in the real economy.

Interviewees also stated that the national climate plans are indicative of a new policy environment supportive of low-carbon energy production, which suggests that climate change is becoming a mainstream concern for governments and businesses alike. Taken alongside other climate policy developments, the climate plans indicate that on the whole climate policies and climate risks merit increased consideration by the private sector.

2. Businesses recognize the need to respond to the national climate plans and climate and energy policy more generally, but the degree to which they currently integrate climate and energy policy into decision-making varies widely

The private sector is well positioned to respond to climate policy in general and to the national climate plans in particular. There was general agreement among interviewees that in order to properly respond to the plans, governments need to set specific and detailed targets, regardless of the particular policy tools chosen to achieve these targets.

The degree to which companies and the investment community currently integrate climate policy into decision-making varies widely. On one end of the spectrum are companies who regard climate and energy policy as material to their business, and for whom it drives corporate strategy and product development. For example, the national climate plans will directly influence the product design and energy mix of some transportation and energy companies. Some companies in this group are moving beyond current policy requirements, choosing to anticipate future policy trends and occupy a leadership position in their sector. On the other end of the spectrum are companies taking a wait-and-see approach who prefer to adapt to regulation once it is finalized and clearly mandates corporate compliance.

> What government begins, business will finish.
>
> —Large energy company

3. The national climate plans are an important guidepost for business decision-making, but they are often secondary to other factors

Across the three groups of actors, the national climate plans are often a secondary consideration that can be superseded by other considerations in business and investment decision-making. As a consequence, governments looking to catalyze private-sector investment should consider the factors below as part of a holistic climate policy.

- For the investment community, potential superseding considerations include the enabling environment for private-sector investment, composed of political stability, good governance, and regulatory frameworks to tackle corruption. These factors were considered particularly important in the emerging economies that have undertaken new climate targets.

- For energy and extractives companies, potential superseding considerations include geopolitical factors, fluctuating oil prices, the lower cost and availability of natural gas, and technological developments such as the speed of falling solar cell prices and the availability of shale gas.

- For companies with large supply chains, potential superseding considerations include quality and price of inputs, timeliness and reliability of suppliers, and legality of source. Procurement professionals currently consider climate change primarily in terms of the risk of climate impacts to infrastructure and raw materials and the need to be resilient to such impacts, not in terms of the carbon footprint of a company's supply chain or products.

Despite the prevalence of potential superseding considerations, it is clear that companies view the emissions reductions and other targets in the national climate plans as guideposts to follow. Many companies align their emissions reduction targets or renewable energy targets with those of the national climate plans in the countries where they operate. Shareholders are also increasingly requesting that companies set emission reduction targets and detail how they will respond to the national climate plans brought forward in Paris.[15]

4. The more predictable and transparent a country's implementation, the more credible and persuasive its national climate plan

Whether a national climate plan is likely to shift finance flows from the private sector depends upon the certainty and stability of the plan's implementation. The three groups of actors believed a plan with clear milestones and strong verification procedures would provide good assurances of implementation, with

[15] Proxy Preview, 2016.

some interviewees calling for national plans to be “binding.” While the targets in the NDCs under the Paris Agreement are not themselves legally binding, the Agreement provides meaningful assurance that they will be implemented at different levels of climate policy.

At the **international** level, the Paris Agreement, a legally binding treaty, requires countries to pursue domestic measures to achieve the targets set out in the plans. In addition, some interviewees indicated that the establishment of a detailed reporting and verification framework for countries in Paris increases their confidence that the plans will be implemented.

> “[We need] some kind of nuclear-inspector-like reporting and review system to get data from these countries to show that there is something happening. The reporting mechanism would ideally allow private investors to see that it is real.”
>
> —Large asset management firm

At the **national** level, there was consensus among the interviewees that the success of national climate plans is dependent on domestic legislation and regulation. Many of the plans explicitly specify which laws and regulations countries will implement to meet their overarching policy goals. Interviewees tended to find more persuasive those plans that reflected clear political will, such as plans supported by detailed national policies and milestones.

Companies were mindful that domestic political realities might undermine a government’s stated goals. This made it difficult for them to assess whether governments would collectively follow through on their pledges. For example, some interviewees expressed skepticism at the ability of the United States to achieve its national targets given the 2016 presidential election and the temporary stay of the Clean Power Plan pending judicial review.

> Trust and distrust lies in the senior leadership of countries which could in turn affect the ability to effectively execute on binding targets.
>
> —Large asset management firm

At the **sub-national** and **regional** levels, ambitious regulation can support, and even exceed, national targets and set an example for other jurisdictions. For example, several interviewees pointed to California as having a history of establishing emissions reductions and renewable energy targets that were then adopted by other jurisdictions.

> California [has] set the most ambitious and aggressive targets. The U.S., China, and Europe ... can't discount the signals and leadership from California, which is also one of their biggest markets.
>
> —Diversified energy company

5. Sector-specific policies tend to be the most persuasive. Milestones, timelines, and carbon pricing also enhance the overall credibility of national climate plans

Interviews showed that a transformative national climate plan must not only be implemented with certainty, it must include sufficient specificity and detail to enable businesses to rely on it for financial decisions. Interviewees were more likely to rely on plans with the following characteristics:

» **Consistency of baseline years** eased comparability across countries and made collective action appear more coordinated and ambitious.

» **Timetables and interim milestones** provided companies with additional data points to incorporate into decision-making, and increased policy certainty.

» **Sectoral specificity**, such as a sectoral allocation of national emissions reduction targets, enabled the translation of national climate plans into business opportunities and allowed companies to adjust corporate strategy and operations to contribute to these targets.

» **Explicit carbon pricing**, whether by tax or trade, was preferred to implicit carbon pricing through other policies or regulations. Companies reported difficulty in setting an appropriate internal carbon price without a clear regulatory environment that enabled them to determine what internal price to set.

> “A price on carbon would really get mainstream investors’ attention.”
>
> —Major ESG analytics firm

6. Governments are least persuasive when sending mixed policy signals and most persuasive when building national carbon prices and sectoral policies that strengthen the enabling environment for a low-carbon economy

Interviewees agreed that mixed policy signals weakened the credibility of the national climate plans. For example, some described fossil fuel subsidies as an aberration that cast doubt on governments' resolve to transition to a low-carbon economy.

Many noted the value of subsidies to create an environment conducive to the deployment and expansion of renewable energy. Interviewees looked favorably upon policies that supported investment in research and development for low-carbon innovation, such as for electric cars. Many called for a global carbon price, beyond what the national climate plans currently include, in part to level the global playing field and allow companies in heavily regulated jurisdictions to compete globally. Others were interested in carbon pricing because of its potential to generate opportunities in terms of fuel displacement or reprioritization.

Companies acknowledged inconsistencies and challenges associated with various sectoral policies. For example, a major company in the agriculture sector viewed the voluntary emissions program in U.S. agriculture positively while regarding U.S. policy on the whole as encouraging carbon-intensive agriculture.

To address these policy inconsistencies, companies noted that governments could send clearer policy signals by halting counterproductive programs and providing support to legacy companies to make the transition toward a low-carbon economy.

Group-Specific Findings

In addition to the crosscutting findings detailed above, our research yielded insights specific to each group of actors interviewed.

INVESTMENT COMMUNITY

The transition to a low-carbon economy and the successful implementation of the national climate plans will require significant investment from both the private and public sectors. Investors view climate change and climate policy both as a source of risks and opportunities. Climate risk includes regulatory risk, such as increased restrictions on the use of carbon-intensive natural resources that could cause assets to become "stranded," and risk from climate impacts, such as damage caused by extreme weather events to the infrastructure of portfolio companies.

1. Within the investment community, socially responsible investors tend to be more active in integrating climate change within investment strategies and risk assessments, and mainstream investors are beginning to consider climate change within investment decision-making

Investors have considerable influence over a company's decision to pursue climate change mitigation efforts in line with national climate plans. Socially responsible investors, who consider both financial return and social and environmental impacts within investment decision-making, are more likely to incorporate climate change risks into their asset allocation strategies. These investors view risk comprehensively and consider "extra-financial" factors such as climate impacts. By contrast, mainstream investors typically do not consider ESG factors in risk modeling, nor do they consider ESG factors essential to the fulfillment of their fiduciary duty.

While socially responsible investors are more climate-conscious than mainstream investors, both types of investors were unsure of how to integrate recent policy developments into investment decision-making. Interviews suggested that mainstream investors have little understanding of the national climate plans. Many ESG analytics firms noted that mainstream investors have not yet considered the national climate plans, and that only a few institutional investors have institutionalized a structured approach to climate change.

However, "climate mainstreaming" is making strides even in the more traditional investment community. Some mainstream investors are actively considering climate change within investment decision-making. Many interviewees acknowledged that mainstream investors are slower to adapt and will therefore have to make a "more abrupt transition" to a low-carbon world.

2. Most investors currently consider climate change more from a risk perspective than as an opportunity, and consequently they pay particular attention to policies and campaigns that address climate risk. Regulations requiring disclosure of climate risks and efforts to manage them are a major driver of climate action by the investment community

Most investors primarily approach climate change from a risk mitigation perspective and consider it one among a multitude of risks that must be addressed for good portfolio management. Investors are

increasingly monitoring the carbon footprints of their portfolios. Some are also choosing to divest from fossil fuel companies in order to minimize their risk exposure.

Interviewees also noted that recent regulations mandating climate-risk disclosure are increasing companies' and investors' awareness of the effects of climate change and climate policy on their bottom line. Investors took particular notice of France's recent law requiring institutional investors to disclose how they consider ESG issues within their investment decision-making processes.[16] The mandate requires disclosure of investor exposure to climate risks, whether from climate impacts or climate and energy regulation. Other countries are following France's approach.

In addition to regulation, voluntary initiatives have catalyzed action from the investment community. For example, the Montreal Pledge currently has over 100 signatories who voluntarily report on the carbon footprint of their portfolios.[17] While disclosure of climate risk has yet to become the norm within the traditional investment community, regulation and voluntary initiatives are slowly pushing climate toward the forefront of the investment agenda.

3. While investors are ready to comply with new regulations on carbon disclosure and to reduce the carbon footprints of their portfolios, they often lack adequate company-level data on climate change and tools to integrate risk within specific sectors

There was wide convergence among interviewees that improved analytics, tools, and data were necessary to accurately incorporate climate risk into portfolios. Many investors asked for standardized, comparable, and credible data. Greater alignment of data across the many consulting firms that service the financial services industry would allow investors to more effectively measure climate risk.

To address this gap, some ESG analytics firms are developing products and services to assist with the incorporation of climate risk. Some firms provide services to measure the carbon footprint of portfolios and have constructed low-carbon and clean-technology indices. Others provide tools to assess impact of climate-related events on portfolio companies and conduct country and/or sectoral analysis of climate risk.

Many interviewees also stated that there were inadequate tools to help investors determine a company's ability to thrive in a 2-degree world, including their ability to benefit from global decarbonization and to comply with or adapt to regulation including the national climate plans.

ENERGY COMPANIES

Moving toward a low-carbon economy requires energy companies to allocate capital toward low-carbon projects rather than build or maintain high-carbon operations. Climate change poses infrastructure risks for all energy companies exposed to severe weather events and supply chain disruptions. Climate change policy presents material risks to high-carbon energy companies and opportunities to companies ready to harness renewable energy and clean-technology innovation. Thus the national climate plans and

[16] Ministry of Ecology, Sustainable Development, and Energy, République Française, "The Energy Transition for Green Growth Act, Article 173." French Ministry of Sustainable Development, enacted August 17, 2015.

[17] PRI Montreal Pledge, 2016.

their periodic improvement, by reducing climate vulnerability and gradually imposing a price on carbon, will substantially impact energy forecasts and opportunities.

1. The climate plans contribute to a political environment that favors low-carbon energy production and pressures energy companies to integrate climate policy into their operations. However, energy company behavior spans a wide spectrum from proactive to inactive

Interviewees recognized that the political environment is gradually shifting toward a greater concern about climate change, citing examples such as the U.S. administration's rejection of the Keystone XL pipeline, controversy over offshore drilling in Arctic waters, the investigations of ExxonMobil by the New York and California attorneys general, and the increase in climate-related shareholder resolutions.

For some energy companies, the national climate plans serve as a benchmark for action. Some have set internal targets aligned with climate policy, such as renewable energy goals aligned with government goals in their target markets. Some are calling for a global price on carbon, beyond what is stated in the national climate plans, in spite of the many years it will take to establish links between existing carbon markets. Still others are working closely with governments to develop national climate plans and corresponding business strategies. For energy companies located in jurisdictions with strong climate policy, such as California, the national climate plans validate these companies' earlier decisions to develop low-carbon energy sources and plan for increasingly aggressive climate policy.

In contrast, other energy companies are taking a wait-and-see approach; they are not pursuing action until national regulations compel them to do so. Some believe that implementation of the national climate plans remains uncertain, and they want to ensure that a supportive regulatory framework is in place before they take the risks inherent in setting climate targets and making major adjustments to business models. Others await further policy signals because they believe that government, not industry, is responsible for leading on climate.

> "What the national climate plans have done is shift the set of expectations about what will or might happen."
>
> —Large energy company

2. Climate policy presents an opportunity for newcomers to the renewable energy market, though oil and gas companies that have been willing to diversify also stand to benefit

There was general acknowledgement that companies offering natural gas stood to benefit from the transition to a low-carbon economy. Both traditional and diversified energy companies recognized the tremendous opportunity for new business that could come from assisting an entire country to implement

its national climate plan and shift to low-carbon development. This shift, many acknowledged, conflicts with business as usual propositions in the oil and gas sector.

Some traditional energy companies are creating a resilient business model where investments are constantly shifting to wherever returns are highest. Some have diversified their portfolio to include more renewable energy and gas. They noted that while the national climate plans have had some influence in shifting assets within their portfolio, it is too soon to determine the extent and time frame of this change.

3. Clear and consistent climate policy is essential but not sufficient for a smooth transition away from fossil fuels

Energy company interviewees repeatedly emphasized the need for stable climate policy in order to transition to a low-carbon economy. Many are calling for regulatory frameworks to support this transition. Diversified energy companies were concerned with the temporary nature of tax credits, subsidies, and other policy incentives for renewable energy. These companies rely on stable policy frameworks and called for clear, long-term policy incentives to profitably diversify their energy mix and help them develop a stable supply of renewable energy equipment.

> We are trying to transition as a company in the energy sector and the investors are not making it easy. Policy could help with this and can help answer the crucial question, how do you invest through the transition? We can't turn off the power plants tomorrow in favor of renewables. Signaling the right trends of where we're going and educating investors of the risks of not transitioning helps steer them in the right decision.
>
> —Diversified energy company

Interviewees acknowledged that climate policy is just one of many factors necessary for the successful transition to a low-carbon economy, and noted that there are external barriers that make the transition difficult. These included geopolitical conditions, political conflict, fossil fuel subsidies, and the lack of reliable suppliers of renewable energy. While national climate plans can help drive progress toward a low-carbon economy, they are most effective when other factors, such as the enabling environment and stability of supply chain, are addressed.

> There is no single silver bullet. What is needed is a collection of policies, some of which affect near-term infrastructure and investment.
>
> —Energy company

4. Energy companies are adopting a range of approaches to integrate climate policy into decision-making

While the national climate plans generally signal a shift toward a low-carbon economy, they often do not offer the granular pricing or concreteness necessary to determine capital allocations. Some indicated that carbon pricing would guide capital allocation, especially at the project level. A diversified renewable energy company explained, for example, that a clear price on carbon would "trickle down into capital allocation, whether that involves plant operations or which [locations] can do business from a renewables perspective."

The national climate plans are influencing the long-term investment strategy of energy companies in different ways. Some companies examine long-term projections of global energy supply and demand, and adjust to shifts in global forecasts. Others have reviewed the national climate plans of countries in which they have a significant business presence to begin mapping out their risks and opportunities. And still others focus on how policy affects long-term projections of the cost and availability of technology, fuels, and resources in order to inform their investment strategies. Energy companies also noted that their suppliers closely monitor and adjust to climate and energy policy risk, which in turn has implications for their own business.

LARGE SUPPLY CHAINS

Climate impacts pose risks to sourcing and procurement where commodities, infrastructure, and other resources in a company's supply chain are vulnerable to more severe weather events. Climate policy also affects companies' supply chains: on average, more than half of a company's emissions come from its supply chain.[18] Large companies with expansive, global supply chains have the potential to significantly increase global climate resilience and reduce greenhouse gas emissions by redirecting finance flows toward low-carbon, climate-resilient procurement and by working with suppliers to meet the company's

[18] CDP, 2011.

new sourcing policies. National climate plans, if crafted properly, can encourage this shift to low-carbon and climate-resilient sourcing.

1. Companies are starting to measure and manage their supply chain (scope 3) emissions. While supply chain–related greenhouse gas emissions are important to some companies, they are not yet a primary consideration in sourcing decisions

Generally, interviews indicated that companies with large supply chains measure greenhouse gas emissions that fall within scope 1 (direct operations) and scope 2 (acquired heat and power) but have not yet considered scope 3 emissions (indirect emissions), often due to resource constraints. Consumer demand does not appear to drive action to reduce emissions in the supply chain, except for certain high-profile commodities such as palm oil.

Spurred in part by increased political and public concern around climate change, some companies are starting to measure scope 3 emissions. Interviewees recognized that the national climate plans are likely to lead to greater regulation in relevant sectors, such as transportation, and result in more government-mandated monitoring of scope 3 emissions, even if the plans do not currently call for such monitoring explicitly.

> “Climate change is not a major driver in sourcing decisions yet. While access to clean energy can be a factor in terms of sourcing, in that we [scrutinize] countries that may have policies that are unfriendly to clean energy, access to clean energy will never be the sole factor upon which we base a sourcing decision.”
>
> —Large multinational company

2. Procurement professionals currently find it easier to incorporate climate risk into a discussion of broader business risk, and to communicate with suppliers about specific climate events and impacts, rather than treat climate risk separately

Supply chain professionals all agreed that climate-related impacts cause business disruptions and that companies need to minimize risk exposure. Food and beverage companies are concerned with extreme weather events negatively affecting water supplies, logistical access, and crop yields. Transportation and

technology companies are concerned about climate impacts on infrastructure, including roads and data centers. Techniques used to reduce climate risks include the careful selection of operational sites and identification of backup suppliers in different locations.

Procurement professionals noted that it was easier to incorporate climate risks into general business risk assessments rather than treat climate risk separately. Engagement with local suppliers focused on specific physical risks, such as “flooding risk” or “tornado,” and how to build resilience to these impacts, rather than on climate change risk generally.

3. Climate policy offers sector-specific opportunities to reduce emissions and build resilience along supply chains

Companies with large supply chains acknowledged that climate policy can enhance opportunities to improve brand reputation, competitive advantage, supplier engagement, and new product and service offerings. In the pursuit of these opportunities, companies have influenced suppliers to adopt low-carbon practices, including fuel diversification, and have collaborated with peers to engage with suppliers collectively to take climate action.

Many of these opportunities are sector-specific. For example, transportation companies noted that increased use of renewable energy and electric vehicles can spur suppliers to invest in and provide low-carbon technology. While agriculture has not been a focus of climate policy so far, the national climate plans can promote soil sequestration through land use and forestry practices.

> “As for a renewable energy strategy, we are not waiting on policy and are instead doing this ourselves. The transportation sector is competitive.”
>
> —Large multinational transportation company

Conclusion: Toward Transformative National Climate Plans

A key measure of success for the Paris Agreement on climate change is its ability, and that of the national climate plans under it, to shift finance flows in the real economy toward low-carbon and climate-resilient development. Our measure of success on this criterion comes not only from the investment community, whose reaction will be a key focus in 2016; it comes also from the energy and extractives sector, whose capital investment will influence emissions for decades to come, and from companies with large supply chains, for whom supply-chain emissions can be many times those of direct operations.

Our research has found widespread recognition that the national climate plans of the major economies signal a shift toward a low-carbon economy. Businesses and investors are now looking for the stable and certain implementation of these plans. They are also looking for governments to both improve the plans to include more actionable, specific details and to enact policies outside of the traditional climate plans that would improve the broader enabling environment for business action.

To governments seeking to strengthen the signals sent by their national climate plans to the private sector and to shift finance flows in a low-emission and climate-resilient direction, we make the following recommendations:

» Implement the national climate plans with stability and certainty, and articulate in detail implementation and review mechanisms for these plans at the international, national, and sub-national levels.

» Provide additional specificity to make the national climate plans more directly actionable by companies, including interim targets, sectoral specificity, and policies that establish explicit and implicit carbon pricing.

» Improve policies that currently impede the sustainable finance flows envisioned by the national climate plans, such as governance shortcomings and fossil fuel subsidies that slow the transition to a low-carbon economy and weaken national governments' credibility.

» Build sectoral policies into the national climate plans that support low-emission and climate-resilient finance flows—for example, on land-use and agriculture, transport, or research and development.

For their part, many businesses are already acting to shift finance flows in a low-carbon and climate-resilient direction. They too face challenges, including insufficient tools and data to better incorporate climate risk into decision-making, the need to translate the national climate plans into workable business decisions, and the need to look beyond climate risks to the opportunities presented by climate and energy policy.

In placing finance flows at the heart of the Paris Agreement, governments recognized that tackling climate change requires the mobilization of the environmental as well as the financial community. It is the role of the national climate plans to bridge these communities by providing businesses and investors certainty, specificity, and support in the transition to a new low-carbon, climate-resilient economy.

Appendix: Interview Guide

The following is an excerpt from the interview guide that was used to gather data for this working paper:

Questions

1. **Can you please clarify for us your role within your company?**
    a. Can you give us a broad overview of the kinds of assets and sectors are in portfolio?
    b. In what regions and sectors are you invested?

2. **How does your company keep up to date with climate policy developments?**
    a. Who, within your company, is responsible for assessing and managing risks and opportunities relating to climate change?
    b. Which sources of information do you use to keep abreast of climate policy developments? Do you conduct ESG analysis in house or use a third party data provider in order to screen investments, etc.?

3. **How does climate change figure into your capital allocation models and long-term business strategy?**
    a. To what extent are your clients concerned about the carbon footprint of their investments?
    b. To what degree does climate and energy regulation affect your portfolio/asset allocation?
    c. How do you account for the risk of stranded assets?
    d. How do you account for the risk of climate impacts to your portfolio?

4. **What are your general reactions to the climate policies—taken as a whole—that countries have committed to in anticipation of the Paris conference?**
    a. Do these climate commitments decrease climate policy uncertainty for you? If yes, how so? If not, why not?
    b. To what extent do these commitments, in aggregate, incentivize low-carbon investment?
    c. What opportunities for investment do the country commitments present, if any?
    d. What assets and sectors do you believe will be most affected by these policies?
    e. Based on these country commitments, how likely are you to invest a greater share within renewable energy?

5. **Looking at these country commitments individually, which did you find most notable and why?**
    a. Which governments do you believe are more or less likely to meet these targets?
    b. Do you believe these measures will be implemented within domestic law?
        i. If not, what signals from governments would change your mind? What about general decarbonization language? What are your views of economy-wide goals? What about carbon caps and taxes? What about specific energy regulations (renewable energy, energy efficiency, etc.)?

6. **Which of these country commitments do you believe will most affect your company and investment decision-making?**
    a. Which kinds of regulations do you believe will be most effective in incentivizing low-carbon investment?

7. **Is there anything else you would like to share with us about the meaning for your company of this recent round of climate commitments?**

COP21 COMMITMENTS OF 10 LARGEST GREENHOUSE-GAS-EMITTING ECONOMIES

	GHG Emissions			Share of Global GDP		Population (in millions)		KEY CLIMATE COMMITMENTS[1]
	World share (2012)[2]	Per capita (tCO_2)[3]	Over GDP (tCO_2 per Million $)[4]	(2014)[5]	(2030)[6]	(2014)[7]	(2030)[8]	
China	22.45%	7.91	735.39	13.30%	18.06%	1,365	1,414	**Overall goals:** Peak CO_2 emissions around 2030, making best efforts to peak early. Nationwide carbon emission trading system, building on existing regional pilots. Reduce CO_2 emissions per unit of GDP below 2005 levels by 40-45% and 60-65% by 2020 and 2030 respectively. **Energy:** Increase share of non-fossil fuels in primary energy consumption to around 15% by 2020 and 20% by 2030. **Forests:** Increase forest stock volume by 4.5 billion m^3 above 2005 level by 2030.
United States	12.23%	18.55	366.74	22.37%	20.22%	319	356	**Overall goals:** Reduce GHG emissions in the range of 17% below 2005 levels by 2020 and 26-28% by 2025, making best efforts to reduce by 28%. Aspire to deep, economy-wide emission reductions of 80% or more by 2050. **Energy, Transport, and Buildings:** Implement existing and new regulations under the Clean Air Act, the Energy Policy Act, and the Energy Independence and Security Act. These regulations include fuel-economy standards for vehicles, carbon-pollution standards for new and existing power plants, building energy-conservation standards, reduction of the use of HFCs, and reduction in methane emissions from landfills and the oil and gas sector.
European Union (28)	8.66%	8.22	238.44	23.73%	18.41%	508	514	**Overall goals:** Reduce GHG emissions by 20% below 1990 levels by 2020 and at least 40% by 2030. Aspire to reduce emissions by 80-95% by 2050. **Energy, Manufacturing, Buildings, Forestry, and Agriculture:** Specific EU-level policies across these sectors underpin the EU's overall GHG-reduction goals.
India	6.07%	2.33	470.03	2.65%	5.37%	1,296	1,528	**Overall goals:** Reduce emissions per unit of GDP by 20-25% from 2005 levels by 2020 and 33-35% by 2030. Adopt a climate-friendly and cleaner path than the one followed hitherto by others at corresponding level of economic development. **Energy:** 40% electric power installed capacity from non-fossil fuel sources. Put forward and further propagate a healthy and sustainable way of living based on traditions and values of conservation and moderation. **Industry:** Enhance energy efficiency. **Forests:** Create additional carbon sink of 2.5-3 billion tonnes of CO_2 equivalent through additional forest and tree cover by 2030. **Agriculture, Water:** Programs to enhance resilience to climate change, including natural disasters. **Cities, Transport:** Development of climate-resilient urban centers with safe, smart, and sustainable green transportation network.
Russia	4.74%	15.75	675.51	2.39%	1.98%	144	134	**Overall goals:** Reduce GHG emissions by 15-25% below 1990 levels by 2020 and 25-30% by 2030.
Indonesia	4.16%	8.02	906.23	1.14%	1.68%	254	295	**Overall goals:** Reduce GHG emissions below business as usual by 26% by 2020 and 29% by 2030. Might reduce emissions up to 41% below business as usual by 2030 with international support. **Energy:** 23% of energy use from new and renewable energy by 2025. **Forests:** Reduce deforestation and forest degradation. Moratorium on clearing of primary forests and conversion of peat lands until 2016.
Brazil	3.83%	9.18	640.74	3.01%	3.22%	206	229	**Overall goals:** Reduce GHG emissions by 37% below 2005 levels by 2025 and 43% by 2030. **Energy:** 28-33% renewable energy (other than hydropower) in total energy mix by 2030. Increase share of sustainable biofuels in energy mix to 18% by 2030. **Forests:** Restore 12 million hectares of forests. Eliminate illegal deforestation by 2030. Restore an additional 15 million hectares of degraded pasturelands. **Industry:** Promote new standards of clean technology and energy efficiency. **Transport:** Improve infrastructure, efficiency, and public transportation in urban areas.
Japan	2.54%	9.46	270.51	5.91%	5.23%	127	120	**Overall goals:** Reduce GHG emissions by 25% below 1990 levels by 2020 and 25.4% below 2005 levels by 2030. **Energy:** Expand renewable energy "to the maximum extent possible." **Industry:** Promote energy efficiency technology and recycling. **Infrastructure, Cities:** Energy efficiency standards and technology for buildings. **Transport:** Promote fuel efficiency, next-generation vehicles, and public transportation. **Forests and Agriculture:** Forest management and forestry industry measures.
Canada	1.80%	24.64	539.10	2.29%	2.09%	36	40	**Overall goals:** Reduce GHG emissions 30% below 2005 levels by 2030. **Energy:** Ban the construction of traditional coal-fired power plants. Phase out existing coal-fired electricity units without carbon capture and storage. Reduce methane from oil and gas production. Promote investments in renewable energy technology. **Transport:** Develop common North American GHG standards for vehicles. Low-carbon-fuel standard. **Industry:** Regulate HFCs.
Mexico	1.57%	6.20	379.81	1.65%	1.85%	125	148	**Overall goals:** Reduce GHG emissions by 22% and black carbon by 51% below business as usual by 2030. Depending on contents of international agreement, reductions could be as deep as 36% for GHGs and 70% for black carbon. Peak GHG emissions in 2026. Reduce emissions intensity per unit of GDP by 40% below 2013 levels by 2030. Aspire to reduce GHG emissions by 50% below 2000 levels by 2050.
Sum	68.05%	N/A	N/A	78.44%	78.11%	4,380	4,778	

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	KEY FINANCIAL RISKS FROM CLIMATE REGULATION AND FROM CLIMATE CHANGE IMPACTS[9]
Energy	- Gains in technology and efficiency in renewable and nuclear industries - Possible resource shortages, especially water, which can impact fossil fuels, nuclear, and renewables (hydro) industries - Reduction in oil market share, due to new technologies and increase in share of renewable energy - Natural gas considered a “transition fuel” in the transition to a low-carbon economy - Coal at odds with climate goals, unless rapid adoption of high-efficiency coal-fired generation and carbon capture - Price parity of renewable energy expected in more and more markets - Fossil fuels at higher risk of physical damage from climate impacts, given that supply is often centralized and near coastal areas - Policies expected to support low-carbon energy, while posing a risk to fossil fuels
Forests and Timber	- A hedge against climate risks for asset managers, given asset class’s low-carbon profile - Expected rise in timber assets and prices, due to increased fines and regulations against deforestation - Growing demand for sustainable forestry products - Changes in growing patterns - Increased risk of disease, drought, and wildfires
Water	- Alteration of water availability, which can further threaten water security - Future irrigation demand projected to exceed local water availability in many places - Rising temperatures and ocean acidification affect marine habitats and organisms, including fisheries - Freshwater availability under further stress in many tourist destinations - Indirect impacts of hydrological changes on navigation, transportation, tourism, and urban planning - Water scarcity may exacerbate violent conflicts and nation-state instability
Agriculture	- Substantial financial support likely available to assist emerging markets’ adaptation methods in farming - Technological development, leading to more productive and resilient crop varieties, thus reducing risk of disrupted production - Protectionist policies in response to food shortages may create unrest and additional geopolitical risk - Shifts in regional weather patterns, water stress, and movement of crop pests may lead to higher prices and increased volatility - Changing weather patterns may negatively affect raw commodities - Possible difficulty of some farmers to adapt to changes in climate, thus straining value chains - Farmers and supply chains will need to adapt to new regulations and methods to reduce emissions from land use change and livestock
Transport, Infrastructure, and Cities	- Efforts by regions and cities to adapt to climate change may lead to enhancement and replacement of existing infrastructure - Shift to low-carbon infrastructure will lead to new investments and increased demand for energy-efficient transport - Likely reduction in value of some infrastructure assets that are less advanced or able to adapt, with some particularly carbon-intensive assets possibly becoming “stranded” - Other infrastructure assets with low-carbon intensity will benefit strongly - Risk of damage to transport infrastructure such as roads, railways, and ports - Risk of under-insurance against catastrophic events, which are increasing in frequency and severity - Risk of insurance-market disruption, as re-insurance providers may need to increase premiums to avoid capacity shortages - Real estate market subject to changes in operating costs (water and energy costs, tax, maintenance, insurance) - Increased disaster risk to commercial real estate sector located in low-lying and coastal population centers
Industry	- Worker productivity expected to decline during hottest and wettest seasons in parts of Africa and Asia - Risk of significant reduction in economic output in sectors involving heavy labor (e.g. construction), or may require significant investments (e.g. in cooling equipment) to maintain economic output - Changing climatic conditions may affect individuals’ health, their need for health insurance, and their ability to work - Transformation to low-carbon economy requires new patterns of investment, including increased investment in renewable energy and reduced investments in conventional fossil-fuel extraction and power generation - Risk that energy-intensive sectors and fossil fuel-based industries become obsolete or no longer profitable
Services	- Threat to coastal tourism infrastructure and natural attractions, changes in biodiversity (affecting eco-tourism) - Growth in GHG emissions caused by international travel may lead to increased taxation or regulation - New geographical regions may become more attractive to tourism - Demand for new climate change–tailored insurance products, and risk of adjustments and disruptions in the re-insurance market - Financial services industry likely to increasingly factor in carbon risks - Measures to mitigate and adapt to climate change likely to stimulate sectors such as energy conservation, renewable energy, nuclear power, infrastructure, and forest stewardship, thus creating new jobs

Sources

[1] Countries’ Intended Nationally Determined Contributions (INDCs) and other major communications. The information presented is not comprehensive and includes only the top 10 emitting countries out of the more than 150 countries that have submitted INDCs to the United Nations.
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