

WORKING PAPER

Co-written by



MAINSTREAMING CLIMATE CHANGE IN THE FINANCIAL SECTOR AND ITS GOVERNANCE

Part I: A Necessary and Timely Evolution

Summary

In light of the transition to a low-carbon, climate-resilient growth model, fiscal and macroeconomic frameworks need to take into consideration and adjust for long-term climate objectives. This paper presents the reasons why both the financial sector and its governance bodies (IFGRIs) have interest in integrating climate change issues in their risk and stability assessment framework. "Mainstreaming" climate change is a rational answer to the threat imposed on their respective mandates by increasing greenhouse gas emissions and policies that are likely to be implemented to achieve long-term mitigation and adaptation objectives. Securing global financial and economic stability and scaling up low-carbon, climate-resilient investments are not conflicting, but rather mutually reinforcing objectives. This premise can provide a good starting point for discussions between policy-makers and practitioners in the financial sector and the climate change domain. A well-informed discussion is currently hindered by the seemingly differing mandates, and the lack of institutional and intellectual links between the two agendas.

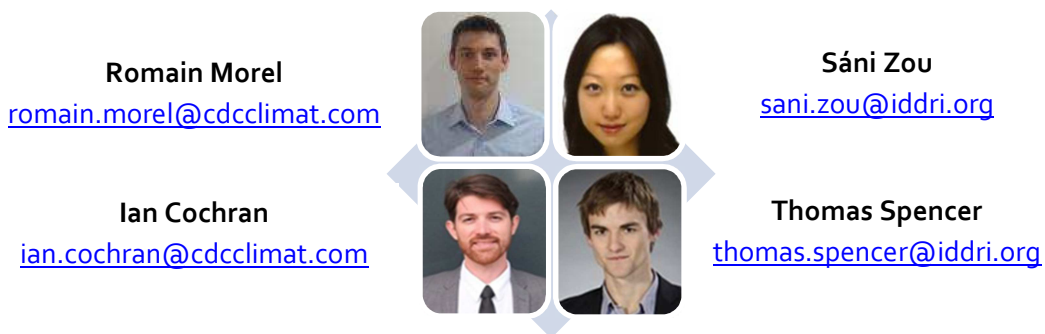
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- **Part I: A Necessary and Timely Evolution**
- **Part II: Identifying Opportunity Windows**

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CDC Climat Research is a public research office dedicated to help public and private decision-makers to improve the way in which they understand, anticipate, and encourage the use of economic and financial resources aimed at promoting the transition to a low-carbon economy.

The Institute for Sustainable Development and International Relations (IDDRI) is a Paris based non-profit policy research institute. Its objective is to develop and share key knowledge and tools for analyzing and shedding light on the strategic issues of sustainable development from a global perspective.

A CAUTIONARY TALE FOR ADDRESSING CLIMATE CHANGE: THE GLOBAL FINANCIAL CRISIS

1. Climate change on the one hand and the financial sector and its governance on the other hand are often seen as disconnected policy areas. For example, linkages between trade and climate policies are much more prominent. Moreover, the financial sector governance community has a busy agenda to strengthen global and national financial stability in its core domain. Within the current framing of risks to financial stability, climate change is typically seen a peripheral concern that has little detrimental impact on the stability of the global financial system. There are nevertheless interactions between climate change and the financial sector, which policymakers and practitioners have begun to consider.
2. The financial sector is often described as having a “natural adaptation” potential, whereby it naturally adapts to changes in the political and economic environment in a relatively smooth and forward looking manner. Therefore, if climate change and climate policies had a significant impact on the real economy and thus the financial sector, the latter would be able to integrate and efficiently adapt to this impact. This would, in theory, be true both in terms of identifying new investment opportunities and anticipating future losses.
3. History has demonstrated that the financial sector can internalize broad changes in the economy. However, this does not always happen without pain and turmoil as shown by past shocks and crisis. Moreover, similarly to natural systems, the financial sector may have the ability to gradually adapt to continuous changes, but may suffer from rapid, extreme and unpredictable changes. Such changes are expected in weather conditions, favored by delayed action to tackle climate change.¹ Taking precautionary action to prevent large, global shocks is a dominant strategy, which is illustrated by the decisions of the financial sector regulatory institutions to strengthen multilateral surveillance and impose macroprudential rules after the financial crisis. Therefore, climate change, as a source of risk, should be tackled in the same vein.
4. Nevertheless, climate policies also appear to be a source of new investment opportunities – trillions USD of productive investment per year are at stake in the pathway shift from BAU to 2 degrees – and aware investors may take benefit of it. Globally, infrastructure investment needs are US\$ 89 trillion between now and 2030, mounting to US\$ 93 trillion if climate change is to be adequately addressed (NCE 2014). The magnitude of these estimates shows that structural changes will be expected across key infrastructure intensive sectors – transport, energy, agriculture, buildings, industry – in developed and developing countries.
5. This paper addresses how climate change adaptation and mitigation and the interests of the global financial sector are not conflicting, but rather mutually reinforcing objectives. In this perspective, it identifies the channels through which climate change can impact directly the stability of the financial system and returns to investors’ assets, providing justification that calculations of risk-adjusted returns should take into account climate-related factors. Three

¹ The IPCC’s review of existing scientific work has consistently demonstrated that postponing action on climate will result in higher destructive impact (IPCC 2014).

different sources of change are particularly studied: the physical impact of climate change, the impact of climate policies on assets valuation and the perspective of new financial opportunities created by the paradigm shift to a low-carbon, climate resilient economy. In doing so, it reflects on how integrating these risks and opportunities can result in a more efficient financial system.

THE PHYSICAL IMPACTS OF CLIMATE CHANGE THREATEN GLOBAL FINANCIAL STABILITY

6. Climate change is a credible and significant threat for the financial sector and its stability. Both at the investor level and at the institutional governance of financial markets level, any threat to economic stability is normally addressed by mitigating it or adequately evaluating it as manageable. The global scientific community and political leaders have recognized climate change as a threat to future global economic and social well-being – setting the objective to limit change in the global average temperature to 2°C under the UN framework convention on climate change (UNFCCC).² In that perspective, identifying how climate change impacts short-term and long-term economic stability should form a part of the risk assessment operations of investors, regulators and other actors in the financial markets. This section presents the case why financial institutions and the associated International Financial Governance and Regulatory Institutions (IFGRIs)³ have an immediate and long-term interest in mitigating and adapting to climate change.
7. Climate change is a source of physical shocks and thus short-term instability. Over the past few years, climate change has expanded beyond the environmental and political arenas to be increasing part of mainstream financial and economic analysis and forecasts. The recognition of the potential disruptive physical impacts of climate change has been increasingly recognized over recent years. In the *Global Risks Report 2015*, the World Economic Forum (WEC 2015) identifies both the lack of adaptation to climate change and water shortage as the most likely and impactful risks next to interstate conflicts. The systemic impacts of climate change has also been highlighted in the report, showing that this phenomenon increases the scarcity of critical resources such as food, water and energy and decreases the security of their provision, thus increasing the risk of social unrest and interstate conflicts. This view has been reinforced by the analysis of mainstream financial institutions such as the credit rating agency Standard and Poor's (S&P 2014) as well as the US Department of Defense (DOD 2014).⁴

² In 2010, collectively under the UN international negotiations on climate change (UNFCCC), countries agreed on the objective to keep global average rising temperature below + 2°C compared with pre-industrial era.

³ These include the Bank for International Settlements (BIS), Basel Committee on Banking Supervision (BCBS), Group of Twenty (G-20), International Association of Insurance Supervisors (IAIS), International Monetary Fund (IMF), International Organization of Securities Commissions (IOSCO), and the Organization for Economic Co-operation and Development (OECD). In addition to international actors, central banks and other regulatory and supervisory bodies play pivotal roles.

⁴ The DoD states that: "*These effects [of climate change] are threat multipliers that will aggravate stressors abroad such as poverty, environmental degradation, political instability, and social tensions*"

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8. Geopolitical and resource-based tensions have been recognized as having a strong potential of systemic impact on the global economy and the financial system. First, as highlighted by S&P (2014), the impact on sovereign risk may be high as economic, fiscal and external performance are negatively impacted by resource shortages. Contagion across countries is likely given that due to the architecture of the financial system, any sovereign debt crisis has the potential to spread out relatively easily. Second, higher cost of basic resources such as food and water has a direct impact on the economy, which is a strong source of inflation that will have to be managed by IFGRIs and sovereign states.
9. In addition to tensions catalyzed by resource shortages linked with climate change, there are also the risks and associated costs of the direct physical impacts of weather-related events on the value of fixed capital. There is increasing evidence of significant human and economic vulnerability – and costs – even at today’s level of climate impacts (IPCC 2014). Indeed, some financial regulators are starting to raise concerns about investors’ exposure to the physical climate risks (Clark 2014b; Clark 2014a). Analysis show increasing losses – both insured or not – in assets due to natural catastrophes and extreme weather events in the order of magnitude of dozens of billions USD a year (EC 2013; Swiss Re 2014). For example, damages in the areas worst hit by the Typhoon Haiyan in the Philippines in 2013 accounted for 15 per cent of the Philippines’ GDP, according to the Economist Intelligence Unit.⁵ Damage can vary depending on the location and timing of the occurrence of extreme weather events. However, events such as Typhoon Haiyan and Hurricane Sandy in the US in the preceding year illustrate the enormous magnitude of economic shocks that natural disasters can have on physical assets.
10. While a single meteorological event cannot be attributed to climate change, it is recognized that as the atmospheric concentration of greenhouse gases rises, so do the frequency and intensity of storms and thus the potential for damage also increases. This poses significant risks for the financial sector, particularly the insurance industry whose core operations are linked to the economic valuation of the physical impacts of climate change. With the rising cost of resources and the depreciation or destruction of infrastructure, weather-related shocks from climate change may have substantial impacts on short term GDP growth forecasts. These impacts may even become systemic depending on the countries and institutions concerned – a severe example would be bankruptcy or intense financial stress on a major insurance company with potential contagion to other institutions “too big to fail”. Such events do not necessarily imply threats to global financial stability, but may lead to the rapid implementation of “crisis” policies from government and governance institutions.
11. Moreover, repeated crisis have the potential to limit the ability of IFGRIs to respond to future crises. This can be seen, for example, in the outcomes of the 2008 economic and financial crisis which has led to the use of unconventional monetary policies – at times far from the core mandate of these institutions. The use of these unconventional approaches has resulted from the inability of traditional policies – such as steering interest rates – to have a lasting effect. The risk for the IFGRIs is thus not only to face repeated crises but also to see their traditional toolkit lose its efficiency.

⁵ <http://blogs.ft.com/the-world/2013/11/the-economic-cost-of-typhoon-haiyan/>

12. A single extreme weather event can both have short-term and long-term negative impacts. A recent study of the NBER (Hsiang and Jina 2014) has shown that in addition to short-term economic impacts, cyclones damage growth trends of affected countries over long periods. This impact is estimated to reduce income by 15% over twenty years after most damaging cyclones. This is similar in magnitude to the estimated impacts of a typical banking crisis. Cyclones alone are thus estimated to have a cumulated discounted cost of 9.7 thousands trillions USD in income loss globally (Hsiang and Jina 2014). Furthermore, the study has emphasized the “non-recovery” trend of GDP after cyclones, partly explained by the tendency for extreme weather events to disrupt economic activities, destroy livelihoods and sink the poor into a poverty trap.
13. This reinforces the consensus among climate change economists that the physical impacts of climate change can substantially harm global GDP growth in the long term (Stern et al. 2006; IPCC 2014). In this perspective, both specific events and long-term trends mutually reinforce these wealth-destroying dynamics. Thus, climate change is evaluated to be responsible for the loss of a few percent a year of GDP; an amount higher than current estimates of how much taking action would cost in the long run. If ambitious mitigation and adaptation policies are not put into place, this destructive force – notwithstanding a cataclysmic collapse scenario as suggested by some – could in and of itself be high enough to transform long-term global growth into long-term global economic decline.
14. Without doubt, such a global economic downturn would be a source of additional constraints to the financial system, propagating further difficulties and crises. Thus, even if individual institutions may take benefit of such trends, a significant decline in global wealth will have negative effects worldwide and overall on the financial sector and its stability.

A NEED FOR BETTER INTEGRATION OF RISKS FROM EXPOSURE TO CLIMATE POLICIES

15. Climate change is a systemic issue which poses economy-wide challenges and opportunities. To achieve the long-term 2° C objective, the existing set of policies considering climate-related risks and opportunities must be significantly expanded to include policy areas across the economy in the future to transition the global economy away from demand and supply of fossil fuels and emissions-intensive technologies. This will provoke significant structural changes that have implications for individual financial institutions and investors. Studies have indicated that trillions of USD per year must be reoriented from existing carbon-intensive assets and uses towards investments coherent with a 2°C-compatible world.⁶ This combined reorientation of financial flows away from traditional carbon-intensive assets – as well as a substantial increase in low-carbon, climate-resilient investments – implies both risks and opportunities for the financial community.

⁶ See for example, IEA (2014), NCE (2014) and WEF (2015).

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16. A shift from high carbon to low carbon investments of the scale and rapidity needed to achieve long-term climate objectives will undoubtedly have significant economic impacts. Climate policies are designed to internalize GHG emission externalities to avoid the consequences of climate change outlined in Section 2. The “stranded assets” concept and the idea of “unburnable carbon” is typically used to illustrate the risks that the fossil fuel extraction sector is exposed to if already known reserves are not exploitable under current and credible future climate policies, not to mention the risks of current and future investment being identified (CTI 2013). High-carbon productive assets are expected to depreciate and new markets and technologies for new low-carbon productive assets will emerge under market terms. This shift in investments and the risks that it may imply for the financial sector are at the heart of the “stranded assets” discussions (Bast et al. 2014; Robins 2014; Dirk Schoenmaker, Rens van Tilburg, and Herman Wijffels 2015).
17. A recent analysis estimates an expected loss of value to 28 trillion USD₂₀₁₂ over the next two decades for the fossil-fuel sector only (Kepler Cheuvreux 2014). However, “stranded assets” can occur in all sectors with long-term investment impaired by structural economy-wide changes linked to the low-carbon transition. Thus, buildings, utilities and transport infrastructures are also concerned if carbon-intensive or energy inefficient characteristics are locked-in. The recent reorganization of German utility company E.ON into two companies with one concentrating the expected stranded assets is an illustration of the multiple sectors impacted by climate policies (Steitz 2014).
18. Besides having an impact on investments through policies and regulations, how governments choose to manage their own exposure to “stranded assets” may also significantly influence market stability. The New Climate Economy report estimates that governments’ assets represent almost 70% of expected stranded assets under a 2° C scenario by 2035 (NCE 2014). Furthermore, fossil fuel subsidies are a fiscal burden in both exporting and importing countries. Despite their social motivations, fuel subsidies send a negative price signal compared to climate policies and finance sub-efficiently high levels of domestic fuel consumption and production. If these externalities are not planned for, public budgets will be negatively impacted with associated macroeconomic impacts. Indeed, such instability in public budget due to sector-specific loss of revenues can spread out easily to other sectors and countries.
19. The ability of the financial sector to limit their exposure – and for IFGRIs to limit associated systemic risks – will depend on two things. Firstly, whether financial institutions begin to integrate long-term climate policy risks into their asset management strategy. Secondly, whether governments will implement the ambitious climate and energy policy needed to achieve long-term objectives. Changes would have to occur in a large enough scale to substantially impact the real economy and financial institutions.
20. Climate policies should send a stable signal to investors. An assumption of the stranded asset discussion is that climate policies are credible. Indeed, the financial sector’s ability to anticipate future changes depends directly on the credibility of the implementation of climate policies. In practice, however, this is not always the case. Expected climate policies will imply rational losses and a winner/loser dynamics. It is likely that economically efficient climate policies will have redistribution impacts and political economic barriers posed by lobby

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groups from the fossil fuel industry and consumers spending the highest share of income on utility bills. Climate policy action hindered by these factors may allow for shocks and then post-shock crisis-driven – and thus potentially irrational and sub-optimal – policymaking. Putting in place a stable regulatory policy framework praised by the private sector thus implies predictable and ex-ante climate policy action rather than ex-post action.

21. A proactive dialogue between climate policy regulators and the financial sector should aim at increasing the visibility of the implications of climate policy for the financial sector. On the one hand, the signaling effect of credible national climate policy objectives and international climate agreements can be of crucial importance for reorienting the expectations and decisions of the financial sector. On the other hand, the financial governance community also has a role to play in ensuring the visibility and credibility of these signals and incentives, or in other words, to contribute to the communication and mainstreaming of the “cost of carbon” introduced by these policies into the analytical and asset allocation decision frameworks of the financial sector. The role of aligning policies between countries and within a country is generally devoted to the same organizations as those responsible for economic growth and financial stability – e.g. G20, IMF, central banks and regulators. Therefore, these organizations have a core interest in mainstreaming climate within all their missions, which has indeed been documented by the high-level statement on climate change at the most recent OECD ministerial meeting in 2014. The recent demand from G20 finance ministers to review how the private and public financial sector can take into account climate-related is a promising step forward (G20 2015).

A CHANGING ECONOMIC MODEL CONSISTENT WITH A 2 DEGREES PATHWAY

22. While climate change is often seen as another constraint to economic growth, the shift induced by a climate-compatible world is also a source of improvements and opportunities for the financial sector. What are required for the transition to a low carbon economy are two things: 1) an investment shift and 2) the scaling up of additional financing for low carbon infrastructure. To provide a magnitude estimate, at least \$89 trillion of investments needs under BAU will need to be made low-carbon and climate-resilient between now and 2030 (NCE 2014). Much of this will be for new infrastructure investments in developing countries as well as small scale energy demand-side investments (McKinsey 2013; IEA 2014). An additional \$4 trillion is required under the low carbon scenario. The bigger challenge is therefore to shift existing investment needs by aligned policies and regulation, including those governing the financial sector. However, investors have noted a lack of low-carbon investment opportunities in some region of the world in the past years (FTF 2015).
23. Furthermore, in today’s era of low interest rates, a race to higher yields may appear. Leveraging the potential of low-carbon investments may be a solution to combined issues of seeking higher yields and the lack of investment-grade opportunities. Shifting investment to transition-compatible assets implies new methods of allocation, and tools to match available capital and new investment opportunities. Traditionally profitable carbon-intensive or energy-inefficient investments will lose value in a 2°C world. In that perspective, the allocation

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strategies of financial actors will have to evolve to fulfill fiduciary duties. Thus, the real economy and its “financing engine” will have to transit simultaneously to a low-carbon model, which can lead to an expansion of investment opportunities and a net increase in balance sheets for the financial sector.

24. Low-carbon infrastructure tends to be more reliant on long-term finance with higher upfront capital costs than high-emission projects. This is often offset by lower operating costs over the project’s lifetime. In the financial markets, some of climate-dedicated finance barriers are linked with broader issues associated with long-term finance, particularly financing for SMEs or infrastructure (OICV-IOSCO 2014). In this context, one barrier to scaling up climate investments is that there appears to be a mismatch in terms of size, maturity, liquidity and expected risk-weighted returns between the financial sector actors and project developers. This is because the financial sector’s practices may be not fully aligned with project developers’ needs (Kaminker et al. 2013). Developing and scaling up the use of matching financial instruments, such as asset-backed securities (ABS), will be required in order to transform small-scale climate infrastructure projects into liquid and bankable investment opportunities.
25. The market of green bonds is still small although it has been rapidly growing and has received a lot of attention from investment banks as well as regulators in 2014. In order to scale up the market, standardization will be required in the form of third party verification, credit rating by agencies such as S&P and Moody’s, as well as regulatory intervention by IOSCO. Institutions such as the OECD, the G20 and the IOSCO are actively examining market-based long-term financing solutions for SMEs and infrastructure (OICV-IOSCO 2014). Developing such instruments with an eye to climate objectives would result in expanding the availability and volume of investable assets and their diversity for institutional investors.
26. Capital and liquidity adequacy rules were introduced following the financial crisis, aimed at increasing financial market stability. One unintended side effect has been the reduction in commercial banks’ and other lenders’ capacity to issue long-term, illiquid loans and therefore, by association, to finance low-carbon, climate-resilient infrastructure (Spencer and Stevenson 2013; Kaminker et al. 2013; UCISL and UNEP-FI 2014). These rules have contributed to a race to better quality assets and higher capitalization of banks, but they did not take into account the impact of more expensive loans to low-carbon, climate resilient infrastructure investments. As prudential regulation, they also failed in improving the assessment of devaluation risks linked with climate policies and physical impacts. Fiduciary standards, accounting rules and credit guidelines may not have incentivized enough the integration of those risks. This issue is often demonstrated by the lack of the integration of carbon risks and stranded assets (CTI 2013; Shankleman 2014) into existing practices within the financial sector, such as quarterly benchmarks or accounting systems (2°ii 2014; FTF 2015).
27. The importance of counteracting regulatory interventions are shown by recent initiatives to provide green monetary stimulus, such as Fannie Mae in the US have provided loans at lower interest rates to LEEDS certified building infrastructure (CBI 2015) as well as the Chinese central bank’s green credit line (Amin, Ng, and Holmes 2014), as well as the call for insurance companies in the UK to integrate climate risks by the Bank of England (Shankleman 2014).

CONCLUSION

28. Mutually reinforcing interests of policy-makers and practitioners in the financial sector and the climate change domain can lead to innovative actions. Integrating climate change considerations into financial market regulations and policies could increase the provision of capital to climate investments and reduce flows to sectors with potentially significant exposure to carbon risks and stranded assets, such as fossil fuel energy supply. Mainstreaming climate change considerations into the decision-making frameworks of the financial sector – notably in banking and insurance – is an emerging field of policy-oriented research, as well as practice at the national level.⁷
29. This paper has shown how the impacts of climate change can directly affect the stability of the financial sector both in the short and long term. As explored above, the risks and opportunities with systemic implications induced by climate policies as well as by climate change itself are credible and significant threats. Thus there is an imperative for these factors to be taken into consideration in financial governance at the national and the international level.
30. Fostering a well-informed dialogue between the financial and climate communities appears essential to finding solutions that address the long-term climate challenge and safeguards the stability of the global financial system. To be understood and acted upon by the financial community, climate-related issues need to be “translated” into the language of the institutions in question (risk, adequacy, ratios, etc.). These actions then need to be “retranslated” into terms understood by climate change policy-makers, to be acknowledged under the UNFCCC and to be aligned with climate policies.
31. A number of IFGRIs have already launched initiatives to foster mainstreaming, but more needs to be done to scale up action to the size of the challenge. Fundamentally, there are several links between the mandates of the international climate change community – those involved in the UNFCCC negotiations– and the financial market governance community. This is not to say that the two communities have the same objectives. Rather, securing global financial and economic stability and scaling up climate investments are not conflicting, but mutually reinforcing objectives. This premise can provide a good starting point for discussions between the two communities, which is currently hindered by the seemingly different mandates, lack of institutional connections, as well as the lack of a common vocabulary. Nevertheless, ignorance is demonstrated by both sides as discussions on finance under the UNFCCC have only relatively recently broached the critical role of incentivizing the the private financial sector to shift trillions USD of investments in a 2 degrees consistent fashion.
32. Two prominent examples of “mainstreaming” of climate are the OECD Economic Surveys as part of which a set of green growth and climate change indicators was adopted in 2014, as well as the recent call by the Bank of England for better disclosure of financial institutions’ exposure to climate policy. An analogy can be drawn to the way that central banks carefully communicate on interest rates and use this communication itself as a policy tool; the difference being that in the case of climate, financial sector regulators do not set the ‘cost

⁷ See <http://www.unepfi.org/publications/> for recent UNEP Financial Initiative publications in this area.

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of carbon': that is the job of climate policymakers. This underscores the need for dialogue between the two governance spheres, so that each can better understand the other's objectives and intentions as well as areas of mutual interest. This dialogue could increase financial sector awareness on climate-related issues – a fundamental step towards mainstreaming of climate change across its decision-making frameworks. Nevertheless, it must be recognized that widespread comprehension of climate-related challenges – and opportunities – has not yet occurred across financial institutions, even if improvements have been made.

33. This underscores the need to engage financial sector policy and regulatory bodies on these topics. This will serve to efficiently address the systemic risks and opportunities posed by climate change, and to develop the financing solutions to mitigate it. In the companion paper to this policy note (Morel et al. 2015) we introduce a conceptual framework which can help to better locate and understand opportunities to integrate climate into the mainstream financial governance at the international and the national level.

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