

HOW BANKS CAN SEIZE OPPORTUNITIES IN CLIMATE AND GREEN INVESTMENT

Climate change presents risks and opportunities for the financial sector in both emerging and advanced economies. Financial institutions cannot afford to be outside of the transition path to low-carbon economies. Energy subsidies, emission standards, and carbon prices will all have a direct impact on the financial positions of these institutions' clients, making climate risk an important element of any credit decision. Financial institutions will also need to understand the climate risks associated with their non-green assets and design measures to mitigate them. Yet there are also significant opportunities for financial institutions to provide innovative financing products for energy efficiency upgrades, renewable power generation, green buildings, green transport, and climate-smart agriculture and architecture. And there is a growing community of investors seeking new climate and environment friendly opportunities, which financial institutions can use to diversify their funding base and reduce their funding costs.

The Paris Agreement on climate change that took effect in November 2016 was “an unmistakable signal to business and investors that the global transition to a low-carbon economy is urgent, inevitable, and accelerating faster than we ever believed possible,” according to the World Business Council for Sustainable Development.¹

Implementation of the landmark agreement is expected to foster policies and technological innovation that will accelerate investment toward low carbon and climate resilient projects and assets. In addition, as part of the agreement, signatories to the agreement have produced nationally determined commitments to reduce greenhouse gas emissions that will inevitably incentivize or discourage certain economic activities.

While national commitments submitted so far fall short of the agreement's goal of holding the global temperature increase to less than two degrees Celsius above pre-industrial levels, the agreement incorporated a ratchet mechanism designed to raise national commitments every five years.

These national commitments differ in their level of detail but typically require substantial financing and, therefore, imply an expanded role for local banks in emerging market countries. Banks, in addition to governments, are the traditional financiers of infrastructure and so are exposed to risks emanating from projects that fail to meet sustainability standards.

Climate Risks in the Financial Sector

The G20's Financial Stability Board has identified three climate risk categories for the financial sector:²

Physical risks include the impact on insurance liabilities and financial assets that result from climate and weather-related

events such as floods and storms that damage property or disrupt trade. Consequences are greatest for the insurance sector, but also extend more broadly.

Liability risks occur when and if parties who have suffered loss or damage from the effects of climate change seek compensation from those they hold responsible. Such claims could come decades in the future, creating liabilities for carbon extractors and emitters and their insurers.

Transition risks are the financial risks that could result from the process of adjustment toward a lower-carbon economy. Changes in policy, technology, and physical risks could prompt a reassessment of the value of a large range of assets as costs and opportunities become apparent. And a particularly rapid re-pricing could threaten financial stability.

When financial institutions are unprepared to assess or respond to the climate risks described above, they may face additional legal risks from inaction. For example, a 2016 EU directive adopted requires pension funds to assess environmental, social and governance risks, including climate risks.

Transition risks in the financial sector are closely linked to adjustments in real sectors and can be triggered by:

- Mandatory or voluntary changes in emission control policies that companies need to comply with, possibly entailing additional costs;
- Declining profitability and cash flows of projects underwritten by financial institutions resulting from higher

capital and operating expenditures required to mitigate and adapt to climate change;

- Low-carbon technologies and innovations that render previous technologies or products financed by financial institutions obsolete; and,
- A shift by consumers away from high-carbon emitting products.

Green Finance and Climate Finance

The goals of climate finance are to reduce emissions, enhance greenhouse gas sinks, and maintain and increase the resilience of human and ecological systems to climate change.¹

Green finance, by contrast, can be understood as the financing of investments that provide benefits in the broader context of environmentally sustainable development. These benefits include reductions in air, water, and land pollution, reductions in greenhouse gas emissions, improved energy efficiency from existing natural resources, and mitigation of and adaptation to climate change.

While green finance refers to a broader set of activities than climate finance, there is considerable overlap in terms of environmental externalities, risks to the financial system and the private sector, and the challenges and opportunities in financing both. For that reason, this document does not distinguish between green finance and climate finance and most of the issues and proposals presented here are relevant for both.

IFC's 2010 study on climate risks for financial institutions highlighted that, for equity investments, climate-driven deviations from expected results that affect an investment's valuation are relevant for projecting returns on equity and planning exit strategies.³

Climate risks are also material to a company's earnings and expenses, and so can lead to a deterioration of its financial position and its ability to service its debt.

Broadly speaking, the financial performance of banks and non-bank financial institutions alike can be weakened by:

- Supply and demand changes due to climate factors (for example, weather conditions that affect productivity and logistics regionally or globally);
- Efficiency, output, and performance of assets and equipment affected by changing climate conditions, with impact on revenues (for instance, hydro power plants are affected by hydrology changes);

- Operating expenses that increase due to changes in the price, availability, or quality of inputs;
- Increases in insurance premiums in regions that are prone to climate change;
- Capital expenditure increases that result from asset damage, decreased asset performance, or compliance costs associated with emission control regulations;
- Accelerated asset depreciation due to climate change conditions, and their impact on projected cash flows;
- Loss contingency projections—or reserves required to deal with potential disasters or other known risks—which may increase as the risks of climate change become more likely and better quantified;
- Intensification of country risk due to climate change.

Climate Opportunities in the Financial Sector

In addition to the many risks enumerated above, the transition to low-carbon economies also presents an enormous opportunity for the financial sector. There is increasing demand for capital to finance long-term projects in emerging markets where economic growth and lower carbon intensity policies are intertwined with the urgent need to strengthen climate resilience.

Governments from 114 countries submitted their national plans to aggressively reduce carbon emissions under the Paris Agreement. These plans include renewable energy, low-carbon cities, energy efficiency, sustainable forest management, and climate-smart agriculture. The financing needed to fulfill these commitments is enormous and private sector participation is crucial to ensure that these national commitments materialize.

Adjustment to climate change and shifting climate zones creates demand for new and different products and services. That will require investment in measures to enhance the resilience of infrastructure, water-intensive industries, and agriculture. Climate resilient technologies and practices in agriculture and food security include drought tolerant seeds, improved irrigation systems, and more sustainable land management practices. Water management to address higher rainfall variability ranges from the harvesting of rainwater by households to ecosystem-based adaptation of entire watersheds. Disaster risk reduction entails the deployment of tools such as risk and vulnerability assessments, and climate information and early warning systems.⁴

Currently the vast majority of climate change adaptation is financed by the public sector. Of a total of \$361 billion in climate financing in 2014, just \$25 billion was for climate change adaptation. Of that, a mere \$141 million, or less than 0.6 percent, was by the private sector.⁵ This imbalance between private and public financing represents a significant opportunity for private enterprises, including financial institutions.⁶

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In 2016, IFC conducted a survey of its emerging market financial institution clients to understand their strategies and approaches to climate risks and opportunities. Over 60 percent of the 135 respondents are already active in financing climate-related and green projects. In addition, another 9 percent of banks expressed interest in pursuing investment opportunities in this space. Renewables and energy efficiency topped the list with 61 percent and 54 percent respectively.

An analysis of the national climate change commitments and underlying policies in 21 emerging markets (representing almost 62 percent of the world's population and 48 percent of global greenhouse gas emissions) has led IFC to project that there will be nearly \$23 trillion of climate investment opportunities in these markets from 2016 to 2030.⁷

Forward-looking financial institutions in emerging markets should be able to position themselves to tap into this vast financing opportunity. In addition to the push from governments, many private sector initiatives have also been thriving. According to CDP (formerly the Climate Disclosure Project), which works with shareholders and corporations to disclose greenhouse gas emissions:

- More than 5600 companies around the world have responded to their carbon disclosure questionnaires;
- Some 827 investors with a combined \$100 trillion in assets have requested climate information from potential investee companies;
- Nearly 90 supply chain corporations representing a combined purchasing power of over \$2 trillion have started tracking the carbon footprint of their supply chains, spanning multiple regions.

All of these push and pull actions from the public and private sectors have begun to effect behavioral changes in the real sector, resulting in an increase in demand for low-carbon investment that financial institutions can support. There are multiple opportunities banks can explore, including:

Energy Efficiency, which has a positive impact on profitability and competitiveness while at the same time reducing or deferring the pressure of putting additional power generation capacity on the grid.

Studies from the International Energy Agency and the World Bank Group estimate that about 40 percent of identified energy efficiency gains have already been achieved. Global investment in energy efficiency in 2015 is estimated at \$221 billion and significant economic potential remains for future energy efficiency savings in manufacturing industries.⁸ As additional efficiency standards are introduced, industries in emerging markets will continue to modernize and upgrade processes and

Green Finance in China

China will require some \$600 billion per year to deliver on its climate commitments. Available public funds fall far short of that amount, so much of the financing will fall to private sources. Policymakers believe that China's financial system is key producing this funding and promoting the shift to a green economy.

China approved a set of Green Credit guidelines in 2012, and it is the first country to have officially released its Green Bond Directives and Green Bond Catalogue, which incentivize financial institutions to establish and implement environmental and social risk management systems and actively engage in green finance. Lending emission projects, while the government increased its support for energy conservation and emissions reduction.

As of June 2016, green credit from China's 21 largest banks (accounting for about 80 percent of China's banking assets) now constitutes roughly 10 percent of their total loan balance. China also has the fastest-growing green bond market.

facilities, a process that requires significant capital expenditure.

Green building construction is another area with significant potential for financial institutions.⁹ Population growth coupled with urbanization and rising incomes has resulted in a significant increase of new buildings, both residential and commercial, in developing countries, with a concomitant increase in greenhouse gas emissions.

As countries enact building codes with energy efficiency requirements and developers employ green building certification schemes such as Leadership in Energy & Environmental Design (LEED), the demand for green construction finance is expanding. IEA estimates the building sector needs an additional investment of up to \$296 billion per year in addition to the \$358 billion flowing to it annually.

In the white goods sector, energy efficient appliances represent yet another set of opportunities for financial institutions with consumer financing products. Lighting via compact fluorescent lamps and light-emitting diodes, space cooling appliances such as air conditioners, and energy efficient household appliances such as washers and dryers are the types of retail assets that financial institutions can target with consumer finance programs and/or distributor network finance.

For example, the lighting market is projected to reach a value of 110 billion euros by 2020. The United Nations estimates that replacing all inefficient lighting worldwide could save 1,044 terawatt hours of electricity annually, equivalent to 530 million

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metric tons of carbon dioxide emission reduction and \$120 billion in electricity bills. There are currently over 250 standards and labeling policies in place in nearly 40 countries for lighting products, which makes it easy for financial institutions to recognize and target these types of assets. Similarly, energy efficient air-conditioners and heaters in developing markets also present immediate demand for financing that financial institutions can support

Renewable Energy

Renewable energy—and solar photovoltaic generation in particular—is poised to disrupt conventional electricity systems worldwide. There are many opportunities for financial institutions to develop innovative financing schemes to either support direct investments by households or businesses, or to provide loans to energy service providers. 2015 was the first year that the amount of added renewable energy capacity (excluding large hydro) accounted for more than half of all new energy generation capacity.

While renewable energy generation represents a paradigm shift in the power sector globally, distributed solar photovoltaic generation below 1 megawatt is at the forefront of the transformation in both developed and emerging markets.¹⁰ The market for it in 2015 was \$67.4 billion, a quarter of all new renewable generation investment that year.

Rooftop solar systems offer millions of households and companies the potential to produce electricity and, in some cases, to inject it into the grid and receive an economic return. Research predicts that distributed solar photovoltaic technology will change the utility landscape in developing countries, economically outperforming grid-based coal and diesel generation, and will relieve widespread power shortages in regions such as Sub-Saharan Africa and South Asia.

With the rapid innovations and steep declining costs of solar panels and battery components, rooftop and captive solar photovoltaic systems are becoming commercially viable in many markets. Solar power generation is also an attractive off-grid solution for remote communities and households that depend on diesel and kerosene.

Financing for solar photovoltaic system in the form of loans or leases is already well established in the United States and Europe. Financial institutions in developing countries can use the support of development financial institutions such as IFC and team up with solar technology providers and/or energy service companies to quickly penetrate this segment.

Another interesting financing opportunity exists in combining home mortgage loans with solar home systems loans, which has

Commercial Viability of Rooftop Photo Voltaic Systems

Distributed solar has achieved grid parity—its cost is less than or equal to price of electricity from the grid—in many markets with high electricity costs. And in many emerging markets the primary driver of these technologies is the lack of access to grid electricity, or its unreliability.

In contrast to utility-scale solar photovoltaic plants, rooftop solar systems generally displace consumption from the grid or diesel generated electricity, so they compete either with the price of retail/commercial electricity or the price of diesel fuel.

Energy storage improvements will increase the competitiveness of solar photovoltaic systems where there is no grid access or the grid is not reliable. Photovoltaic solar electricity tends to work well in high temperatures and so correlates with demand for air conditioning. New solar technologies integrate easily with both diesel generators and batteries.

Such solar-battery-diesel combinations have been facilitated by the plummeting cost of batteries and the information technology capability needed to manage them. Going forward, new technologies are expected to drive battery costs down faster. A 2016 study by UBS concluded that investments in solar, electric vehicles, and stationary battery combinations should pay off in 7 to 11 years, depending on country-specific economics.

the potential to make solar financing easier while also allowing financial institutions to benefit from mortgage securitization.

The technical risks associated with small-scale distributed solar systems (up to 1MW) may call into question the viability of such electricity solutions. While this is a valid concern, these risks can be mitigated through innovative energy performance insurance products provided by insurance companies. Both IFC and the Inter-American Development Bank are actively working with insurance partners on de-risking tools for developing markets. Partnerships between insurers and financial institutions can make such solutions possible for small solar systems deployment.

Green Bonds—Raising Funding for Climate Finance

As financial institutions attempt to seize opportunities in green finance and move to originate more climate-smart assets, access to long-term capital will become a larger cause of concern. Green bonds are a natural solution.

The European Investment Bank was the first issuer of a climate awareness bond in 2007, followed by the World Bank's first labelled green bond in 2008. Since then a market for these bonds has emerged. This market was initially dominated by multilateral development banks, but has grown significantly since then and now includes a much broader universe of issuers.

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The number of green bond issuances in 2014 was triple that of 2013. During the first nine months of 2016, green bond issuances reached \$60 billion, 150 percent of the total issuance of 2015. Green bond issuances of financial institutions

What Is a Green Bond?

Green Bonds are any type of bond instrument where the proceeds are applied to finance or re-finance new or existing green projects. Such projects generally include renewable energy, energy efficiency, clean transportation, sustainable water management, climate change adaptation, sustainable agriculture and forestry, and pollution prevention and control.

In 2015, IFC issued a 5-year green Masala bond on the London Stock Exchange, the first green bond issued in the offshore rupee market. The bond raised INR 3.15 billion and attracted a broad range of international investors to private sector investments addressing climate change in India. IFC invested the proceeds of the bond in a green bond issued by YES Bank, one of India's largest private commercial banks. YES Bank will invest the bonds' proceeds in renewable energy and energy efficiency projects, mainly in the solar and wind sectors.

In 2016, IFC invested INR 2 billion (about \$75.8 million) via subscription to listed, secured INR denominated bonds complying with ICMA Green Bond Principles, issued by Punjab National Bank Housing Finance in India. This was the first green bond issued by an emerging country bank for the purposes of financing green residential buildings and facilitating the development of affordable housing. It is also expected to create jobs. Bond proceeds will be exclusively used for on-lending to developers of green buildings.

For more on green bonds see EMCompass note 25, "Mobilizing Private Climate Finance – Green Bonds and Beyond."

registered the highest growth, a sevenfold increase from 2014 to 2015.

Despite their impressive growth in recent years, green bonds remain a small and nascent segment of the overall bond market, which currently stands at almost \$100 trillion.¹¹ The momentum of demand for green bonds is expected to help drive more capital to low-carbon and climate-resilient infrastructure projects, including renewable energy projects.

For investors, green bonds can achieve attractive risk-adjusted returns along with environmental benefits, in addition to satisfying green investment mandates, without the need for time-consuming due diligence. Green bonds also offer a hedge against carbon transition risks in portfolios that include emissions-intensive assets.

Green bonds help diversify the investor base of bond issuers, attracting new institutional investors with green or climate mandates. The bonds can also deliver reputational benefits, enhancing an issuer's corporate sustainability strategy and its environmentally friendly brand.

Emerging Standards Shaping Financial Sector Actions

While innovations continue in the green finance and climate finance space, there is general consensus among development finance institutions and leading players in the green bond market about the need for harmonized approaches and methodologies in certain areas such as:

- Climate risk (physical, liability, transition) disclosure
- Measurement of green finance and impact
- Best practices and standards for green finance and bonds.

Inconsistencies in disclosure practices result in reporting that is not comparable, presenting a major challenge to incorporating climate-related risks in investment, credit, and underwriting decisions. They also make it difficult to assess system-wide potential vulnerabilities. In an effort to promote transparency and increase awareness of climate risks, the Financial Stability Board has begun an effort to harmonize climate-related financial risk disclosures for companies to share with lenders, insurers, investors and other stakeholders.

In December 2015, the FSB set up a Task Force for Climate-related Financial Disclosures. In December 2016¹², the Task Force published four recommendations on climate-related financial disclosures related to:

- The organization's governance around climate-related risks and opportunities
- The actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.
- How the organization identifies, assesses, and manages climate-related risks
- The metrics and targets used to assess and manage relevant climate-related risks and opportunities

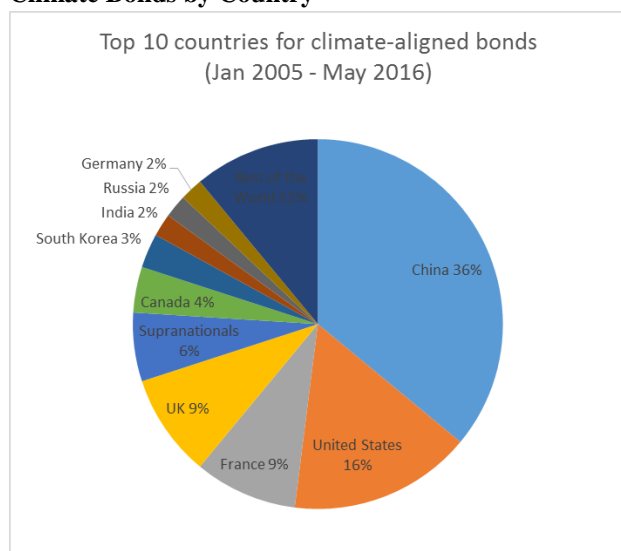
There is also a critical need for multilateral development banks and donors to harmonize definitions of climate-related assets, as well as what qualifies for development support on both the climate mitigation and climate adaptation fronts.

Financial institutions active in the climate finance space also look for reliable tools to track climate finance and the impact of their green portfolios on greenhouse gas reduction and resilience, as well as other environmental and social co-benefits. The IFC-managed Sustainable Banking Network that promotes green credit policies in 27 member countries has agreed to set up a working group on green finance measurement. It will review best practices adopted by its

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members. China, for example, has put in place a mandatory 12-category-reporting system to collect green finance data from its local banks.

Climate Bonds by Country



Source: CBI, HSBC¹³

In addition, green bond investors are concerned about reputation risk of ‘green washing’ if proceeds from a green bond issuance are used for non-green assets. There is currently a strong push for development of both international and local green bond standards. The Green Bond Principles initiated by International Capital Markets Association is the first set of international guidelines designed to shape the process of green bond issuance for transparency and integrity, and to assist issuers with launching credible green bonds.

Those efforts will also help investors to better access and evaluate the environmental impact of their investments. Some governments, including Morocco, Kenya, Nigeria, Brazil, and China, are already attempting to put in place green bond policies and guidance for their domestic markets. While all of these efforts are laudable, technical assistance is also required to make local green bond standards compatible with international best practice.

Conclusion

Greening the financial sector is an integral and inherent part of greening our economies. While the assessment and inclusion of climate risks in financial decisions is becoming more widespread, financial institutions in emerging markets would be well-advised to pay serious attention to them in order to avoid the need for costly amends in future. Proactive financial institutions can position themselves at the forefront of the green/climate finance movement, making conscious decisions to protect their assets, reduce their liabilities, and facilitate the low-carbon, resilient transformation process in real sectors.

As the impact from—and awareness of—climate change increases, it is important for financial institutions to have a clear strategy for mitigating climate risks and developing climate business portfolios. The road ahead is not always straightforward, but it is already open, with room for additional innovation. ■

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