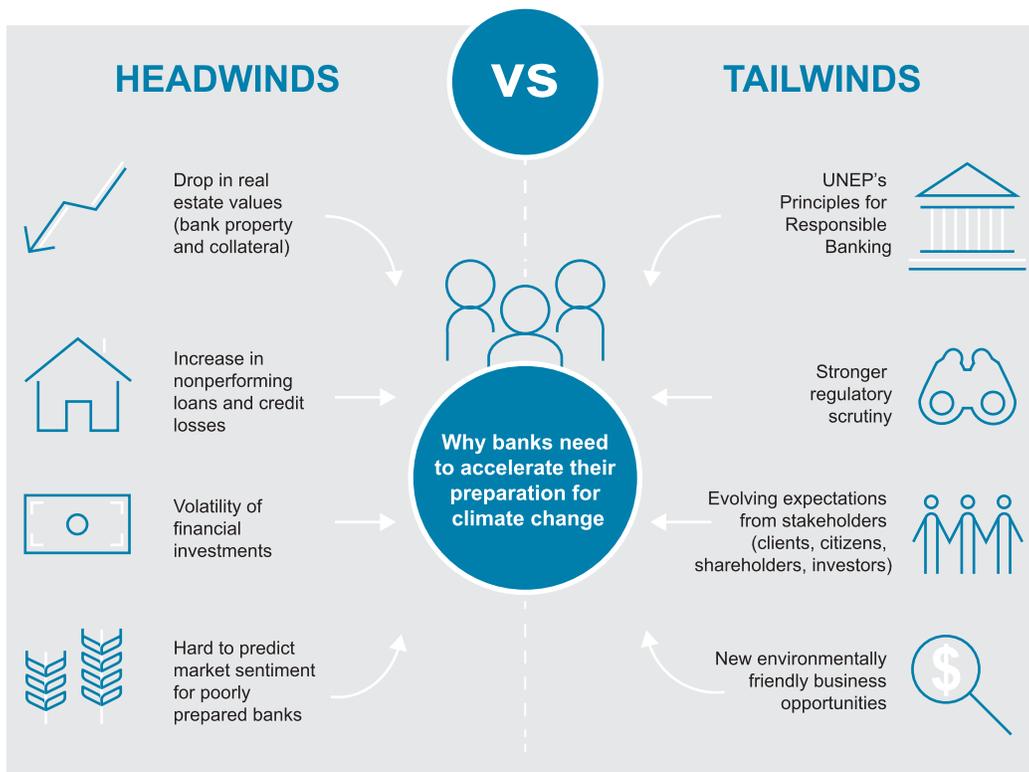


# Climate Change: Can Banks Weather The Effects?

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## Climate-Related Financial Risks For Banks



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## Key Takeaways

- The global transition to lower carbon emissions poses a challenge to financial stability, due to physical and transition risk for banks, alongside operational and credit costs.
- Nevertheless, the need for action could also present banks with a business opportunity.
- We see as positive regulators' initiatives to encourage banks to better quantify climate-related risks and embed them in strategy and risk appetite setting, as well as to improve and standardize data transparency.
- Climate change considerations could radically transform the way banks operate in the future and eventually have a greater influence on their creditworthiness, since some banks will inevitably be better prepared than others.

Although climate change poses risks that may materialize well beyond banks' typical business planning period, it's clear that they need to act now. Strategic decisions can take a long time to implement, and the consequences could become more difficult to manage the longer they wait. As the Bank of England's Governor, Mark Carney, said in a 2015 speech: "We don't need an army of actuaries to tell us that the catastrophic impacts of climate change will be felt beyond the traditional horizons of most actors – imposing a cost on future generations that the current generation has no direct incentive to fix."

S&P Global Ratings sees an accelerated rise in global temperatures, a frequent occurrence of extreme weather events; the direct and indirect effects on businesses; and the likely direct human consequences, such as migration and water scarcity, as factors that financial systems will need to adjust to. Studies show that the value of global financial assets could drop and losses rise exponentially with the average increase in temperature between 2015 and 2100. Understanding the main climate change risks for the banking industry is therefore of paramount importance for banks to minimize future climate-related costs and the impact on their creditworthiness.

However, not all banks are moving at the same speed when it comes to incorporating key climate change risks, setting up priorities, or implementing best practices. What's more, quantitative metrics to manage or monitor climate change risks are still unclear. The supervisory authorities have helped lay the foundation for banking sectors and individual banking groups to build upon. But there is as yet no cohesive global effort to address the issues for banks.

## Why Climate Change Matters For Banks

We see climate change risks for the banking industry manifesting through physical and transitional channels (see examples in the table) in line with the definitions of the Task Force on Climate-Related Financial Disclosures (TCFD). The Financial Stability Board (FSB) set up the TCFD in 2015 to develop recommendations for financial institutions on providing information about their climate-related financial risks. In our view, any economy's failure to achieve the Paris Agreement's goal of climate neutrality before the end of the century would likely translate into increased credit and operational costs for the financial industry.

## Examples Of Climate-Related Financial Risks For Banks

	Market risk	Credit risk
Physical risk	--Losses from a reduction in the value of assets owned by banks (buildings, land, etc.) and damaged by climate-induced extreme weather events --Losses from a reduction in the value of shares/bonds in the bank portfolio issued by firms whose performance is affected by climate change material effects (eg. because of less productive, energy-water dependent, etc.)	--Extreme weather events affect the output of firms/households and make them more financial vulnerable therefore reducing their ability to repay their debts --Extreme weather events affect the value of the collateral of indebted firms/households. If losses are uninsured possible systemic effects in the affected areas with spillover on the local banking system
Transition risk	--Losses/profits from a reduction/increase in the value of shares/bonds/assets in the bank portfolio issued by firms whose future performance is affected by climate change policies (eg. coal generating utilities, energy intensive companies, companies operating in the oil and gas sector, and recent policies to limit land use)	--Losses due to nonperforming loans from firms whose future performance is affected by climate change policies (eg. coal generating utilities, energy intensive companies, companies operating in the oil and gas sector)
Systemic risk	--If the effects (in particular of transition risk) are affecting an entire sector (constructions, energy production, and distribution, agriculture, etc.) there is a risk of spillover effect across the financial system.	

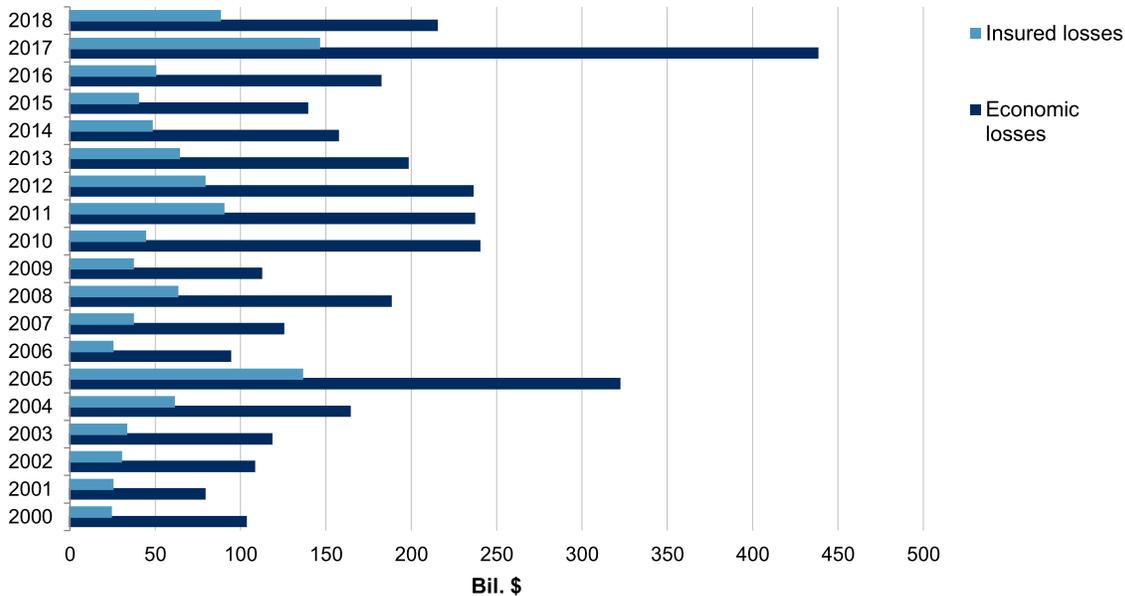
Source: Bank of Italy.

## Physical risks

Physical risks include the direct financial and operational implications for organizations from natural catastrophes as well as long-term climate change. Beyond the operational impact of disrupted business continuity and damaged infrastructure (premises and IT), this could lead to much higher credit costs. According to the Network for Greening the Financing System (NGFS), the number of extreme weather events has more than tripled since 1980, while worldwide economic costs from natural disasters have exceeded the 30-year average of \$140 billion per annum over the past eight years (see chart 1).

Chart 1

**Global Weather-Related Economic And Insured Losses**



Source: S&P Global Ratings, and AON - Weather, Climate & Catastrophe Insight Report 2018.  
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With non-life insurance coverage representing less than 10% of GDP, even in developed countries (Source: Bank of England), the proportion of uninsured losses from such events falls directly on households and on companies' balance sheets. This could lead to a significant increase in credit risk for banks stemming from decreased debt-repayment capacity, impaired collateral values, and higher lending costs.

Severe weather events could also stunt economic growth, hamper employment, and weaken national infrastructure. As a result, they may restrict governments' budgetary flexibility and increase their contingent liabilities, weighing on their creditworthiness (see "The Heat Is On: How Climate Change Can Impact Sovereign Rating," published Nov. 25, 2015, on RatingsDirect). In turn, higher sovereign risk could erode the value of government securities in banks' investment portfolios.

**Transition risks**

Transition risks include the policy, legal, technological, and reputation challenges linked to reducing carbon-dioxide emissions, and their associated costs. The Prudential Regulation Authority's first report on climate risk for the U.K. banking system, published October 2018, and the TCFD's report on the application of its recommendations have both highlighted that, so far, there's been little progress on awareness of climate change risk or on the opportunities associated with moving toward a low-carbon-emission economy.

This, alongside the complex nature of those risks, is in our view by far the biggest challenge for

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banks' risk management and strategic objective-setting. The faster economies achieve the goal of keeping the annual global temperature increase to less than 2 degrees Celsius, the lower the volatility of banks' asset revaluations. Companies that take a long time to adjust to the low-carbon transition could experience a decline in creditworthiness, which could weaken the asset quality of banks' lending to them or investing in their debt instruments.

Transition risk is particularly relevant for financial institutions with large exposure to carbon-intensive sectors such as auto, oil, gas, energy, and coal, which are more vulnerable to a change in climate policies and are subject to gas-emission restrictions. The U.K. legislator's decision in 2011 to end the sale of conventional cars and vans by 2040 illustrates this risk. In 2017, the share of alternative fuel vehicles in licensed cars in the U.K. was only 1.5%. However, according to the Bank of England, the major banks' car financing portfolios totaled roughly £20 billion (including loans to manufacturers, firms in the supply chain, dealerships, and consumers, but excluding lending by auto-finance subsidiaries of banks). Given this significant exposure and an average vehicle age at scrappage of approximately 14 years (source: The Society of Motor Manufacturers and Traders), the residual value of conventional vehicles remains a balance-sheet risk for banks if the proportion of alternative-fuel vehicles does not increase.

More stringent regulations and well-informed consumers could lead to increased costs as banks move to adopt new business models. For example, in its draft guidelines on loan origination and monitoring proposed in June 2019, the European Banking Authority encouraged institutions that originate green credit facilities to develop lending policies and procedures specifically tailored to granting and monitoring them. At the same time, it is encouraging financial institutions to include risks and opportunities related to environmental, social, and governance (ESG) factors in their risk management policies, credit risk policies, and procedures.

A growing number of banks are including environmental factors along with social and governance factors in loan pricing. Those linked loans have emerged as the latest lending innovation (see "Why Linking Loans To Sustainability Performance Is Taking Off," published Sept. 3, 2019).

Moreover, the European Central Bank is contemplating the inclusion of green metrics in its collateral framework for the asset purchase program. Although a taxonomy for green assets is still far off, such requirements could make central bank cash unavailable to banks that don't comply with the tenets of climate friendly investments. However, we expect this will be a gradual process. Likewise, greater consumer awareness, leading to increased scrutiny of the environmental impact of a bank's operations and financing could create additional reputation risks.

That said, the gradual shift to a low-emission economy offers the banking sector sustainable growth opportunities, at a time when revenues for many are under pressure from the low-interest-rate environment, increasing regulations, and competition from new entrants (fintechs and Big Tech). The International Energy Agency estimates that full implementation of the Paris Agreement's emission-reduction pledges would require the global economy to invest about \$45 trillion in energy efficiency and low-carbon technologies by 2030. Alongside the resulting increase in demand for green project financing and investments, banks will likely need to develop structuring approaches for new green asset classes to reap some of the benefits of these investments. Acquiring the necessary experience and expertise could offer first movers a key advantage.

## How Climate Risks Inform Our Analysis Of Banks

We consider climate change risk and the potential for related disruptions of banking systems in our assessment of banks' creditworthiness. That said, it is generally difficult to accurately quantify some of these risks and opportunities, especially since the variables are rapidly evolving.

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Also, climate change factors have not been significant drivers of bank ratings, and are unlikely to be in the near term.

Our starting point for rating a bank in a particular country is the anchor we derive for all banks in that country under our Banking Industry Country Risk Assessment methodology. Material direct and indirect effects of climate change on a banking industry could therefore affect our assessment of systemwide industry and economic risks and--by extension--the anchor and bank ratings.

At the bank-specific level, risks related to climate change could influence an institutions business position, capital, earnings, and risk position.

In analyzing a bank's business position, we consider the stability of the business model. For example, banks heavily exposed to sectors or countries vulnerable to climate change risk could see a reduction in revenue. Expected losses or operational losses can also weigh on our projections of a bank's earnings and weaken capitalization as measured by our risk-adjusted capital (RAC) ratio. The components of our RAC ratio take into account credit, market, and operational risk elements of a bank's activities, while our assessment of the risk position incorporates risks that our capital model does not capture directly. This could include climate-risk-related exposure from assets held as collateral against loans to sectors or issuers vulnerable to transition risks (including evolving regulations).

A look back at 60 ESG-related rating actions on financial institutions over July 2016 to July 2018 show that only five were driven by environmental factors, mainly caused by climate change events (see "How Environmental, Social, And Governance Factors Help Shape The Ratings On Governments, Insurers, And Financial Institutions," published Oct. 23, 2018). Despite this low number, we believe that if banks ignore the implications of climate change for their businesses, risks to credit quality will only increase in the long term.

## Global Authorities Are Actively Pursuing Change

Since the Paris Agreement was reached in 2015, awareness of the threats to financial systems around the world has been rising in official circles. The TCFD's framework for consistent, voluntary financial disclosure linked on climate related exposure aims to improve financial markets' reactions to climate change risks. But the TCFD's work is also fueling many initiatives at the national and regional levels.

For example, in 2018, the Network for Greening the Financial System (NGFS), comprising 36 regulators and supervisors, was created. This is one of the latest illustrations of global efforts to ensure financial institutions are fully prepared for climate change. The network recently published recommendations for central banks, policymakers, and financial institutions, which we see as a step toward creating a common framework for financial institutions to discuss how best to tackle the repercussions of climate change.

### The NGFS call for action: What central banks, supervisors, and policymakers can do

The need for coordinated action to mitigate and adapt to climate change led the NGFS to develop the following recommendations for the financial sector:

- Integrating climate-related risks into financial stability monitoring and micro-supervision.
- Integrating sustainability factors into own-portfolio management.
- Bridging the data gaps.
- Building awareness and intellectual capacity and encouraging technical assistance and knowledge sharing.
- Achieving robust and internationally consistent climate and environment-related disclosure.
- Supporting the development of a taxonomy of economic activities.

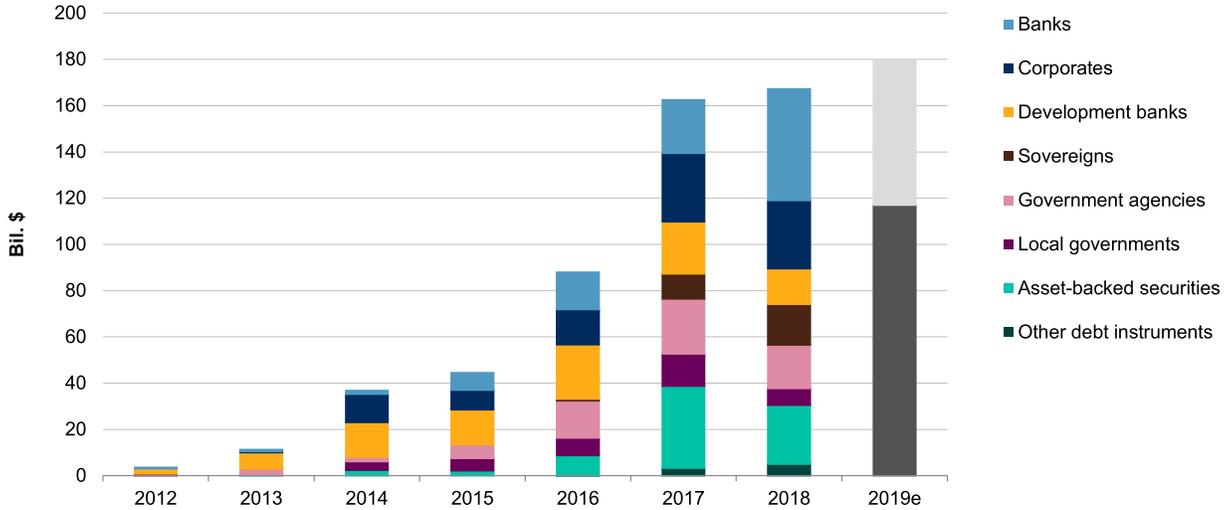
## Banks' Are Aiming For Greener Financing And Investing Activities

As of July 2019, more than 100 financial institutions globally have adhered to the Principles for Responsible Banking, which will be launched on Sept. 22 during the U.N.'s General Assembly. These principles provide the framework for a sustainable banking system and aim to help financial institutions align their business strategy with society's goals, as expressed in the U.N.'s Sustainable Development Goals and the Paris Agreement. We observe that most banks are increasingly embedding climate change risks in their strategic planning. In addition, albeit still work in progress, their risk appetite frameworks are also changing, and we see banks gradually reducing exposure to environment unfriendly sectors.

Green financing has taken off over the past five years, supported by policies and regulation across countries, new business opportunities, and long-term investors' attention to longer-term risks. For example, we expect the global green-bond-labeled market to expand by a healthy 8% in 2019 to a record \$180 billion in absolute terms, despite slowing debt markets (see charts 2 and 3). In 2018, for the first time, financial institutions led the surge in green bond issuance, a trend that we expect will continue. However, despite increasing volumes, green bond issuance still lags the levels needed to meet the 2 degree emission growth limit. The Climate Bonds Initiative estimates that issuance would need to be at around \$1 trillion by 2020, which is far from the \$180 million expected this year.

Chart 2

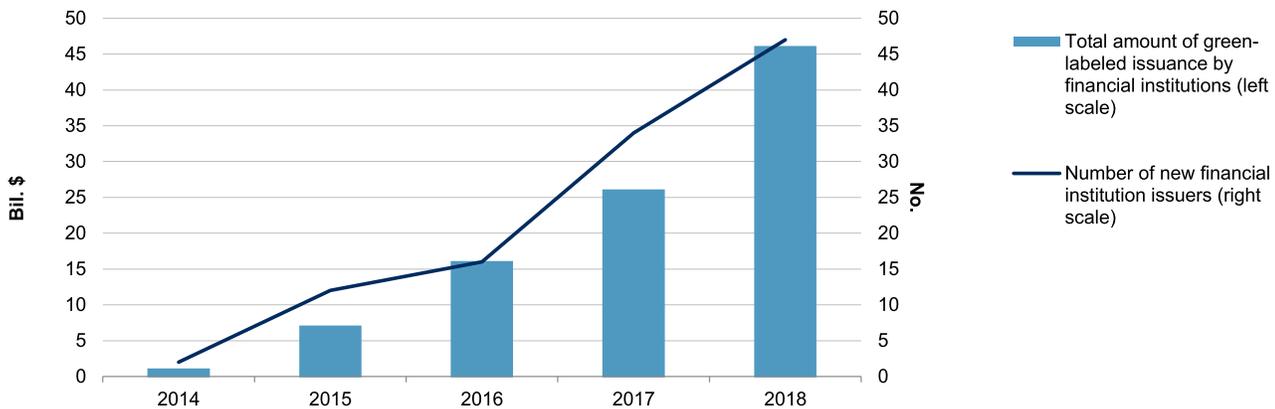
**Banks Are Now The Main Issuers Of Green-Labeled Bonds**  
Issuance by issuer type



e--Estimate. The 2019 estimate includes the \$118 billion issuance as of H1 2019 and S&P Global Ratings' issuance forecast of \$180 billion for the full year. Source: Climate Bonds Initiative. Copyright © 2019 by Standard & Poor's Financial Services LLC. All rights reserved.

Chart 3

**Green-Labeled Issuance From Financial Institutions Was Up 77% In 2018**



Source: Climate Bonds Initiative. Copyright © 2019 by Standard & Poor's Financial Services LLC. All rights reserved.

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Climate change can therefore also provide new business channels for banks, enabling them to become catalysts of the economic transition. Banks could play a key role in financing the transformation into a low-carbon-emission economy. Individual, corporate, and institutional investors are showing a greater appetite for sustainable finance, and increasingly seeking responsible investments, a source of business for banks.

Yet achieving a fundamental shift in banks' strategies, priorities, and risk frameworks to allow them to capture such opportunities requires considerable time and effort. This underpins the need for prompt decision-making that goes well beyond reducing lending to carbon-intensive industries or projects. We currently observe divestment commitments to some industries with high greenhouse gas emissions from many global banks. More and more entities are aiming to achieve carbon neutrality (zero net carbon dioxide emissions) on their balance sheets, and we expect this trend will gain traction in the coming years.

That said, we've observed some proactive steps in different parts of the globe. For example, a 2018 review by the French prudential authority highlighted the increasing inclusion of climate risks on banks' high-level governance agendas, and in their risk framework as a new class of risk. In Italy, for example, some large institutions have already started incorporating climate change considerations into their risk appetite frameworks, such as by monitoring sectors most sensitive to climate change in terms of credit and reputation risk.

## How More Rigorous Disclosure Can Help

We would welcome an improvement in the disclosure of banks' climate-related risks, which is one of the TCFD's main objectives. Currently, the availability of public data is poor, with the exception of some large, listed banking groups. In addition, naming conventions and definitions in banks' climate-related reporting are not fully standardized.

That said, in an August 2019 report, the Institute of International Finance provided examples indicating a marked improvement in Scope 3 emissions, that is, indirect emissions occurring along a company's value chain as defined by the Greenhouse Gas Protocol. Those indirect emissions, not already reported in Scope 2 (purchased electricity, heat, and steam) capture upstream emissions from the bank and its employees via its premises and branches etc., and downstream emissions related to its activities as a lender or investor. However, we note substantial differences in the way banks report those amounts, and when published data are available they tend to be static. Three years ago, in response to a call from G20 leaders, the FSB began addressing the financial stability risks associated with climate change by ensuring the market had the right information to price climate risk and reward climate innovation.

The incorporation of climate change in risk management, notably stress testing and sensitivity analysis, as well as pricing, is still in its infancy. But progress is being made. For instance, the Central Bank of Netherlands requests banks to make climate risk self-assessments as part of their Supervisory Review and Evaluation Process submission. It also conducted a stress test last year to quantify the consequences of a disruptive energy transition for the Dutch financial system, using bond and equity data (€2.25 trillion) from banks, insurers, and pension funds in the Netherlands, as well as a transitional risk index to identify industries most vulnerable to a disruptive energy transition. The results indicate that the energy transition can lead to considerable losses of up to 3% of the stressed assets for banks and 10% for pension funds, or an absolute value of about \$48 billion (€159 billion) for the Dutch financial sector.

Although highly dependent on data and model assumptions, we believe such stress tests are a useful step toward identifying risk areas, approximate exposures, and costs, and ultimately mitigating the impacts. Banks' capacity to anticipate and quickly adapt their business models and

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lending policies will be crucial to their ability to withstand those risks. Moreover, banks that fail to keep up could see their creditworthiness deteriorating quickly in case of rapid climate change. Ensuring resilience to climate change risk, a major issue for regulators and financial market participants, is therefore vital for the future stability of financial systems.

## Related Criteria

- Banking Industry Country Risk Assessment Methodology And Assumptions, Nov. 9, 2011

## Related Research

- Why Linking Loans To Sustainability Performance Is Taking Off, Sept. 3, 2019
- How Environmental, Social, And Governance Factors Help Shape The Ratings On Governments, Insurers, And Financial Institutions, Oct. 23, 2018
- The Heat Is On: How Climate Change Can Impact Sovereign Rating, Nov. 25, 2015

## External Research

- Climate-Related Financial Disclosures: Examples of Leading Practices in TCFD Reporting by Financial Firms, Aug. 23, 2019
- Monetary policy and climate change, speech by Benoit Coeuré, Nov. 9, 2018
- An energy transition risk stress test for the financial system of the Netherlands, DeNederlandsche Bank, Oct. 9, 2018
- Natural Catastrophes And Bank Lending: The Case Of Flood Risk In Italy, Bank of Italy, Oct. 1, 2018
- Transition In Thinking: The Impact Of Climate Change On The U.K. Banking Sector, Bank of England, Sept. 26, 2018
- Climate value at risk of global financial assets, by Dietz, Bowen, Dixon, and Gradwell, April 4, 2016
- Breaking the tragedy of the horizon - climate change and financial stability, Mark Carney, Sept. 29, 2015 [see <https://www.bankofengland.co.uk/speech/2015/breaking-the-tragedy-of-the-horizon-climate-change-and-financial-stability>]
- The cost of inaction: recognizing the value at risk from climate change, The Economist Intelligence Unit, July 24, 2015

This report does not constitute a rating action.

## Appendix

### Box 1: Impact of flooding risks for the Dutch, U.K. and Italian banking systems

General insurance policies often exclude flooding coverage in the Netherlands. The 2017 Central Bank of Netherlands' study "Waterproof? – An exploration of climate-related risks for the Dutch financial sector," on the impact of flooding on the domestic financial system estimates flooding losses at \$20 billion-\$60 billion for the whole economy in the coming years, of which several billion are expected to be borne by the banking sector. The majority of costs fall within the residential property sector, but also affect commercial real estate and small and midsize enterprises. As illustrated by the central bank, expectations alone about flood risk are sufficient to considerably change valuations of real estate collateral in high-risk areas.

While flood insurance is generally part of home insurance policies in the U.K., the Bank of England identified a very low number of banks factoring in that the rise in hazard zones could increase insurance premiums and thus decrease the availability or affordability of home insurance over time (see "Transition In Thinking: The Impact Of Climate Change On The U.K. Banking Sector," Bank of England, Sept. 26, 2018). The latter could directly erode the market value of properties on banks' balance sheets and the loan to value ratios. These examples reflect that climate risks are not yet sufficiently included in asset valuations or risk management models.

To mitigate this risk, Flood Re was set up to promote the availability and affordability of household insurance for homes built before Jan. 1, 2009, thereby discouraging new-builds on flood plains. Flood Re accepts the flood element of a home insurance policy in exchange for below-market rates. This keeps insurance premiums affordable for those living in flood-prone areas and where insuring this risk was previously unaffordable. The scheme is meant to end in 2039 (it has a 25-year mandate), when it is expected that the people benefiting from the scheme will become more aware of flood risk and implement mitigation strategies. At the end of the scheme, there will be a free market for flood risk where insurers should offer risk-reflective but still-affordable policies.

Although flood risk is one of the most relevant sources of catastrophe risk in Italy, flood insurance penetration is very limited even for large corporates. This suggests that the industry and, by extension, the banking sector remain largely exposed to these types of natural disasters, according to a Bank of Italy study "Natural Catastrophes And Bank Lending: The Case Of Flood Risk In Italy," published Oct. 1, 2018.

### Box 2: Transition risk for residential and commercial properties in the U.K.

Transition risks could also affect mortgage lending. According to the Bank of England's 2018 report "Transition In Thinking: The Impact Of Climate Change On The U.K. Banking Sector," there is an 18% lower probability that an energy efficient property mortgage loan would be in arrears than for mortgages on less-efficient buildings.

In addition, policies on improving energy efficiency for residential and commercial buildings, such as the U.K. Minimum Energy Efficient Standard, could indirectly increase credit risk for banks since it implies penalties and renting restrictions for low performing properties. This could lead to a deteriorating credit position for landlords as well as reduced valuations for low energy efficient properties, with an implicit impact on banks' loan to value ratios.

Source: NGFS First Comprehensive report, April 2019

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