



TC NOTES

PRACTICAL **LEADERSHIP**
AND **GUIDANCE** FROM
TORONTO CENTRE

CLIMATE CHANGE: ISSUES FOR BANKING SUPERVISORS

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CLIMATE CHANGE: ISSUES FOR BANKING SUPERVISORS

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CLIMATE CHANGE: ISSUES FOR BANKING SUPERVISORS

Introduction¹

Climate change is becoming an increasingly important issue. Global average temperatures have risen by more than 1°C since the late 1800s. This upward trend is continuing, and there is a risk that the Paris Agreement² to limit global warming “to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels” may not be met.³ Action to mitigate and adapt to climate change is required as a matter of urgency.

In most emerging market economies the banking sector is by far the largest channel of financial intermediation, through its lending to businesses and, in some cases, as a holder of equity and bonds issued by non-financial corporates.

This raises two key issues for banking supervisors.

First, the physical, transition and other risks arising from climate change are likely to have an adverse impact on the credit, market, operational, legal, reputational and strategic risks faced by banks. There may also be risks to financial stability. Banking supervisors need to ensure that banks are aware of these risks and are taking appropriate actions in response.

Second, the banking sector is likely to play a key role in the financing of activities that will have an impact on climate change. Some of these activities may have an adverse impact on climate change, while others may have a positive impact by reducing harmful emissions. Banking supervisors therefore need to consider whether, and if so how, they should facilitate, encourage, incentivise, or even require banks to act in ways that limit climate change.

This Note explores the possible supervisory and regulatory responses in the banking sector to climate change-related risks, and to climate change more generally. It complements other Toronto Centre Notes on climate change, which focus more on the insurance sector and on sustainable finance.⁴

¹ This Note was prepared by Clive Briault.

² United Nations (2015).

³ Intergovernmental Panel on Climate Change (2018) and International Monetary Fund (2019).

⁴ Toronto Centre (2017 and 2019a).

Wider context

Financial intermediation does not take place in a vacuum. It responds to the pricing, risks and profitability of lending and investment opportunities. In the context of climate change there is a problem with externalities – some activities may generate harmful (or beneficial) impacts on global warming and give rise to social costs (or benefits) that are not fully reflected in the market pricing of those activities.

For example, households and businesses may cause pollution but they may not be charged for the social cost of this pollution. They therefore have no economic incentive to take this pollution into account when deciding on their activities, and the profitability of their activities – and their attractiveness to investors and lenders - may be inflated as a result.

Financial intermediation is likely to be more effective in allocating resources in a world where pricing internalises these social costs and benefits, for example through:

- taxation (such as carbon taxes, emissions trading schemes, minimum carbon pricing, and carbon border taxes that penalise imports from high carbon countries/manufacturers);
- subsidies (for example on renewable energy sources and investment in energy-efficient and zero carbon emission technology); and
- direct government interventions (for example through regulations that set minimum emission standards for buildings, vehicles, appliances and power generation).⁵

This does not mean that a combination of market forces and government intervention will necessarily solve all climate change related problems. And there is clearly considerable political opposition in many countries to the introduction of optimal carbon taxes.

If a ‘first best’ pricing structure was in place then financial intermediation should respond in a way that delivers good outcomes consistent with reducing further global warming, with less need for regulatory and supervisory interventions in the financial sector. But in the absence of ‘first best’ pricing it will always be an uphill struggle for financial institutions to replicate the results of socially optimal pricing, however much this is encouraged and facilitated through good risk management, disclosures, and even incentives and targets.

Some supervisory responses to climate change should be pursued under all states of the world, in particular to ensure that banks adopt good risk management practices and make clear disclosures. Moving beyond this as a banking supervisor or regulator should be considered carefully in the wider context of what governments are – or are not – doing on climate change.

⁵ International Monetary Fund (2019) and Federal Reserve Bank of San Francisco (2019).

Risks to banks from climate change

Climate change creates risks to individual banks and to financial stability more generally. There are two broad categories of risk to banks from climate change – physical risks and transition risks⁶:

Physical risks from climate change - specific weather events (such as heatwaves, floods, wildfires and storms) and longer term shifts in climate (such as changes in precipitation and extreme weather variability, sea level rise and rising mean temperatures) can have an adverse impact on the creditworthiness of a bank's borrowers, on the value of collateral held by a bank, and on the value of other bank assets.

These adverse impacts can arise from the effects of climate change on the revenues, costs and productivity of borrowers and issuers, feeding through to the probability of default and loss given default:

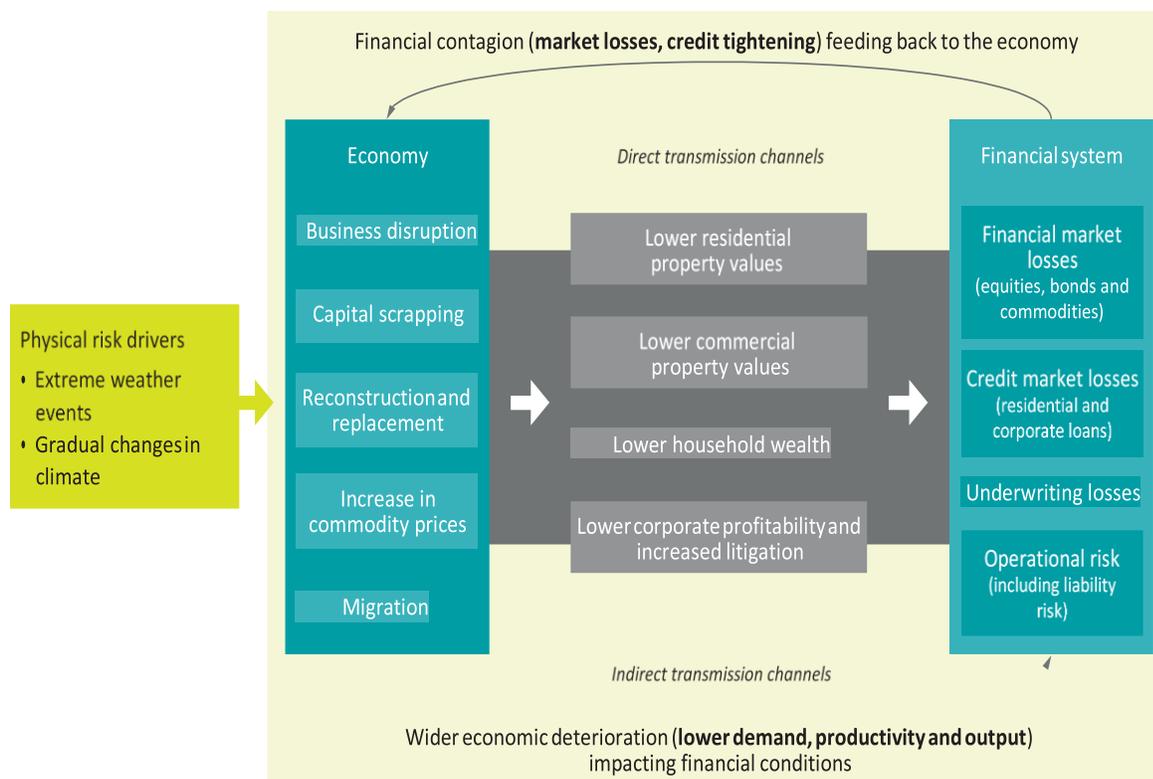
- Price movements in response to shifts in the supply and demand for commodities and products;
- Lower productivity of assets and equipment, and more rapid asset depreciation;
- Higher operating costs;
- Higher insurance costs and reduced availability of insurance;
- Meeting regulatory environmental requirements to upgrade facilities or equipment;
- Litigation costs⁷;
- Higher contingency reserves; and
- Higher country risks.

Figure 1: Physical risks from climate change⁸

⁶ Task Force on Climate-related Financial Disclosures (2017a), Network for Greening the Financial System (2019), and Prudential Regulation Authority (2019).

⁷ For example, Pacific Gas & Electric, a Californian energy company, filed for bankruptcy protection in January 2019 after being sued for damages on the basis that its equipment was partly to blame for a series of wildfires in California in recent years. At one stage PG&E faced potential liabilities in excess of US \$30 billion.

⁸ Source: Network for Greening the Financial System (2019), p. 14.

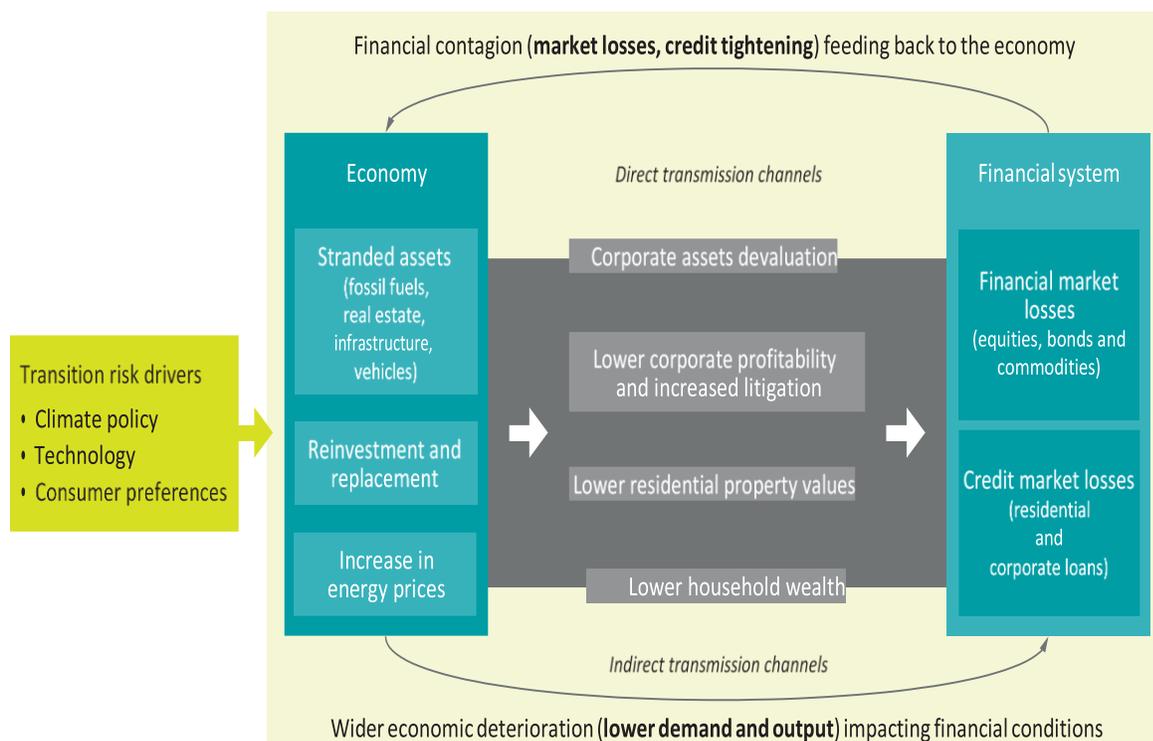


Transition risks from climate change – the process of adjustment towards a low-carbon economy may have an adverse impact on some credit risks, asset prices and price volatility. Climate-related developments in taxes and subsidies, policy and regulation, the emergence of disruptive technology or business models (including reductions in the costs of renewable sources of energy), shifting public sentiment and preferences, and evolving legal interpretations could prompt a reassessment of the value of a large range of assets and reduce the value of banks’ credit exposures.

One specific aspect of transition risk is the potential emergence of ‘stranded assets’ as borrowers and issuers fail to adjust to a low-carbon economy and become non-viable as a result. Coal and other hydrocarbon resources are examples of assets that may become stranded (no longer able to earn an economic return) as the world engages in a fossil fuel phase-out. There could also be a transition risk impact on the value of part of the housing stock and commercial real estate as a result of tighter energy efficiency standards for buildings and higher risks of flooding.

Figure 2: Transition risks from climate change⁹

⁹ Source: Network for Greening the Financial System (2019), p. 17.



In addition, banks may face other types of risk arising from climate change:

Operational risk – climate change could increase banks’ operational risks as a result of an adverse impact on their access to offices, networks, infrastructure, utility supplies and outsourced services.

Litigation risks – in addition to borrowers and issuers facing litigation risks, banks may themselves face litigation for not taking sufficient account of, or for not disclosing, the climate change implications of their lending and investment decisions.

Reputational risks – various stakeholders may take actions against banks (such as moving their business elsewhere or selling bank shares) if they perceive that banks are not contributing sufficiently to meeting environmental goals.

Banks and their supervisors also need to take account of some distinctive features of the financial risks arising from climate change, including the far-reaching scope and magnitude of these risks across multiple lines of business, sectors and geographies; the potentially non-linear, correlated and irreversible nature of these risks; and the uncertain and extended time horizons over which these risks may materialise.

Supervisory and regulatory responses to climate change

The responses of banking supervisors and regulators to climate change are in the early stages of development, and vary considerably across countries. Banking supervisors and regulators are beginning to set expectations, provide guidance, and take supervisory action so that the climate change-related risks to the financial system, banks and consumers are being addressed effectively.

For example, the Network for Greening the Financial System, a network of central banks and financial sector supervisors¹⁰, has recommended that central banks and supervisors should:

- integrate climate-related risks into the supervision of banks and financial stability monitoring;
- integrate sustainability factors into own-portfolio management (central bank reserves and pension funds);
- bridge data gaps;
- build awareness and intellectual capacity and encourage technical assistance and knowledge sharing;
- support robust and internationally consistent climate and environment-related disclosure; and
- support the development of a taxonomy of economic activities.¹¹

More generally, there is an emerging emphasis among banking supervisors on:

- a) identifying the risks to banks arising from climate change;
- b) encouraging or requiring banks to identify and manage these risks effectively, including through scenario analysis and stress testing;
- c) encouraging banks to disclose their risk management practices relating to climate change risks, and some data on banks' own environmental footprints; and
- d) in a small number of cases, encouraging or requiring banks to meet targets for 'green' financing.

There is scope to go further here, although each of these possibilities would need careful consideration taking account of government tax, subsidy and other interventions, and of the mandates and objectives of supervisory authorities.¹²

¹⁰ The Network of Central Banks and Supervisors for Greening the Financial System (NGFS) was established in December 2017 and currently includes 36 members and 6 observers, from five 5 continents. The purpose of the NGFS is to strengthen the global response required to meet the goals of the Paris Agreement and to enhance the role of the financial system to manage risks and to mobilise capital for green and low-carbon investments in the broader context of environmentally sustainable development.

¹¹ Network for Greening the Financial System (2019).

¹² The ability and willingness to make these types of regulatory intervention may depend in part on a regulator's mandate and objectives. See Toronto Centre (2019b).

For example, banking supervisors and regulators could consider:

- e) providing clearer definitions of ‘green’ financing, preferably on an internationally agreed basis;
- f) turning the Financial Stability Board Task Force on Climate-Related Financial Disclosures (TCFD) recommendations¹³ into national requirements;
- g) requiring banks to calculate and to disclose publicly some measure (even if imperfect) of their contribution to the carbon emissions generated as a result of their lending, investing and other activities; and
- h) encouraging, incentivising or requiring banks to lend to or invest in ‘green’ or ‘sustainable’ financing of low, zero or reducing carbon emission activities, and disincentivising lending and investment in ‘brown’ sectors.

This Note considers each of these possible supervisory and regulatory responses.

Banks’ climate change risk management

Banks need to ensure that their governance, risk management and stress testing take adequate account of the risks to them from climate change. In turn, banking supervisors need to reach their own assessment of the likely impacts of climate change on banks and on financial stability more generally, and of whether banks are dealing adequately with these risks.

In response to the growing magnitude of climate change-related risks, supervisors should require banks to include climate change as a specific element of their strategic and business planning, risk management frameworks, risk modelling, stress testing and public disclosures.

One example of this is the UK Prudential Regulation Authority’s supervisory expectations¹⁴ that banks (and insurers) should:

- embed the consideration of the financial risks from climate change in their governance arrangements;
- incorporate these risks into existing risk management practices;
- use (long-term) scenario analysis and stress testing to inform strategy setting and risk assessment and identification; and
- disclose the financial risks from climate change and how each bank is addressing these risks (see Annex 1).

In addition to setting standards for banks’ own risk management, supervisors should also:

- raise awareness about climate change-related risks in banks;

¹³ Task Force on Climate-related Financial Disclosures (2017a).

¹⁴ Prudential Regulation Authority (2019).

- consider climate-related risks when making both macro- and micro-level risk assessments, including through supervisory-led scenario analysis and stress testing;
- assess the quality of banks' risk management in dealing with climate-related risks;
- review the actions being taken by banks;
- intervene to strengthen banks' risk management policies and practices, where necessary; and
- use Pillar 2 capital add-ons where banks do not meet supervisory expectations, or have concentrated exposures to climate change-related risks.

Stress tests for climate change scenarios

Banks and their supervisors should be developing climate change scenarios to form the basis of stress tests, in order to assess the potential impact of a range of climate change outcomes. The TCFD¹⁵ and the Intergovernmental Panel on Climate Change¹⁶ have both set out detailed climate change scenarios (and their potential impacts on physical and transition risks) based on alternative future paths for global warming. These global scenarios can provide a basis from which national or regional scenarios can be developed.

These climate change scenarios are not predictions or forecasts, but describe hypothetical possible future paths for global warming. They provide a basis for banks and their supervisors to build an understanding of the risks, explore emerging risks and enhance their critical thinking about the future. These scenarios can support both qualitative and quantitative analyses of risks, including stress testing, which can take account of the specific conditions in individual countries (so the impact of a scenario for global warming may differ across countries, depending on the vulnerability of each country to the effects of climate change).

Some banks are already using a range of climate change scenarios as the basis for stress testing.

Banking supervisors should:

- promote scenario analysis and the stress testing of climate change-related risks to identify potential impacts on banks' loan and securities portfolios;
- assess carefully both the range of scenarios used by banks in their stress-testing of climate change-related risks, and the plausibility of the impact of these scenarios on banks' capital ratios – supervisors need to be alert to the possibility that banks will underestimate the impact of climate change-related risks;
- run their own stress tests, to cover both the risks to individual banks and the risks to financial stability more generally;

¹⁵ Task Force on Climate-related Financial Disclosures (2017b, pp. 25-30).

¹⁶ Intergovernmental Panel on Climate Change (2018).

- collaborate with others to develop data and analytical tools; and
- develop data on climate changes, and the impacts of these changes, in their own country.

The Bank of England is planning to include the impact of climate change in its UK bank stress tests, possibly as early as 2019. This would initially be in the form of an ‘exploratory scenario’ designed to assess how well banks are able to run stress tests for climate change as a specific type of risk, rather than in the form of a pass/fail stress test exercise.

Risk-based supervision

Climate change risks can be incorporated within a banking supervisor’s system of risk-based supervision.¹⁷ It is not necessary to specify climate change as a new risk category, but it is important to incorporate climate change-related risks within a supervisor’s assessment of each bank’s credit, market, operational, legal, reputational and strategic risks, taking account of the materiality of climate change risk within each existing risk category.

Similarly, the quality and effectiveness of a bank’s climate change risk management can be assessed as part of the supervisor’s review of the bank’s governance, senior management and internal controls, and can be taken into account in the supervisory review of the adequacy of a bank’s financial resources.

Disclosure

“Sunlight is the best disinfectant.”¹⁸

The TCFD was established by the Financial Stability Board in December 2015 to develop a set of recommendations for consistent, comparable, reliable, clear and efficient climate-related disclosures by companies:

“Creditors and investors are increasingly demanding access to risk information that is consistent, comparable, reliable, and clear. There has also been increased focus, especially since the financial crisis of 2007-2008, on the negative impact that weak corporate governance can have on shareholder value, resulting in increased demand for transparency from organizations on their risks and risk management practices, including those related to climate change.”¹⁹

¹⁷ Toronto Centre (2018).

¹⁸ Attributed to William O. Douglas.

¹⁹ Task Force on Climate-related Financial Disclosures (2017a, p. 1).

The TCFD recommendations²⁰ are that companies (not just financial institutions) should disclose information about their:

Governance – the firm’s governance around climate-related risks and opportunities.

Strategy - the actual and potential impacts of climate-related risks and opportunities on the firm’s businesses, strategy and financial planning.

Risk Management – the processes used by the firm to identify, assess and manage climate-related risks.

Metrics and Targets - the metrics and targets used by the firm to assess and manage relevant climate-related risks and opportunities.

In addition, the TCFD made specific recommendations²¹ that banks should:

- disclose their climate change-related risks (physical and transition) in their lending and other business activities;
- characterise their climate change-related risks in the context of traditional banking industry risk categories such as credit risk, market risk, liquidity risk, and operational risk;
- describe any risk classification frameworks used;
- provide the metrics used to assess the impact of climate change-related risks (physical and transition risks) on their lending and other business activities in the short, medium, and long term;
- describe significant concentrations of credit exposure to carbon-related assets; and
- disclose the amount and percentage of carbon-related assets relative to total assets as well as the amount of lending and other financing connected with climate-related opportunities.

Disclosure is clearly important, in particular if it enables investors and depositors in banks and other stakeholders to exercise their own preferences based on how banks might be affected by climate change-related risks and on how banks are managing these risks, just as investors in funds are increasingly taking environmental, social and governance (ESG) factors into account.

Banking supervisors should therefore consider – in conjunction with securities supervisors – whether to encourage or even to require banks (and other firms) to follow the TCFD recommendations, and how this could be monitored and enforced. Incorporating the TCFD recommendations within Pillar 3 disclosure requirements for banks would be one means of taking this forward.

²⁰ Task Force on Climate-related Financial Disclosures (2017a).

²¹ Task Force on Climate-related Financial Disclosures (2017b, pages 23-27).

However, although climate change-related disclosures by banks remain at an early stage some caution should be expressed about how much the TCFD recommended disclosures can achieve. As in many other areas (for example transparency and disclosure as an element of consumer protection, and Pillar 3 disclosures by banks), disclosure alone may not be sufficient to change depositor and investor behaviours significantly.

This may also be related to the mostly minimal and inconsistent climate risk-related disclosures made by banks to date²², and to the absence of agreed international (or in most countries even national) definitions and taxonomies for classifying the extent to which lending or investments can be regarded as being 'green' or consistent with targets for limiting global warming.²³

Finally, and perhaps most importantly, the TCFD recommendations do not cover the climate change impact of the activities of a bank's borrowers, so do not provide any indication of the extent to which a bank's lending and investment activities are contributing to climate change through the activities of the firms and projects the bank is financing.

Banks' own additional initiatives

Some banks are – individually or collectively – taking various initiatives not only to respond to climate change-related risks but to alter the course of climate change. Examples of such initiatives include:

First, 28 banks from five continents worked to develop the UN Principles for Responsible Banking.²⁴ These principles are intended to set the benchmark for what it means to be a responsible bank, covering not just environmental issues but also the UN SDGs more generally. Under the principles banks should identify the most significant positive and negative social, economic and environmental impacts resulting from their activities, products and services; set and publish targets; and report on outcomes (see Annex 2).

Second, bank members of the Global Alliance for Banking on Values²⁵ have committed to track, monitor and disclose the carbon impact of their portfolios of loans and investments. For this purpose these banks will use a measurement methodology developed by a group of Dutch banks known as the Platform for Carbon Accounting

²² Task Force on Climate-related Financial Disclosures (2018 and 2019).

²³ For example, the European Commission (2018b) has proposed that fund managers could use two carbon impact benchmarks, with the 'low carbon' benchmark based on an asset portfolio with less carbon emissions than the assets that comprise a standard benchmark, and a 'positive carbon impact' benchmark where the underlying assets are selected on the basis that they generate net carbon emissions savings and are therefore aligned with the Paris agreement objective of limiting global warming to below 2°C.

²⁴ United Nations Environment Programme Finance Initiative (2018).

²⁵ Global Alliance for Banking on Values (2019).

Financials, working with Navigant, a consultancy firm. This is a promising example of how banks might assess the extent to which they contribute to climate change through their lending and investments.

Third, some individual banks have set themselves targets for the financing of environmentally-friendly projects. For example, in 2013 Citi²⁶ set itself a 10-year US\$ 100 billion environmental finance goal.

These initiatives are to be welcomed, and they provide examples of good practice that supervisors might choose to encourage (through statements of good practice, voluntary codes or guidance) or even require (through rule making) in their own countries.

However, where supervise encourage such initiatives they should consider:

- What exactly are the targets adopted by these banks and on what basis are they set?
- Who monitors delivery against these targets, and enforces if they are not delivered?
- What further development is required to improve measures of how banks affect climate change through their lending and investment activities?
- How do environmentally-friendly targets for a percentage of a bank's total assets balance against the potentially less environmentally-friendly impact of the rest of a bank's lending and investments?

Removing obstacles to green financing

Supervisors should consider whether there are any unjustifiable obstacles to banks providing products and services for 'green' customers (however such a customer is defined). For example, there could be issues in authorising a new entrant bank looking to specialise in 'green' financing, or even for an existing bank seeking to shift the direction of its business towards 'green' financing.

Regulatory interventions

There is growing interest in – and pressure for – interventions by banking regulators to encourage or promote 'green' financing. These may be sub-optimal responses to climate change-related risks (as discussed in the section above on the wider context) but two approaches in particular can be highlighted.

First, some emerging economies with development agendas (and pressing climate issues) are setting their banks various types of target for 'green' exposures (again the definition of 'green' may not be precise, or consistent across countries). For example, the Central Bank of Bangladesh has taken a lead here in setting banks credit quotas

²⁶ Citi (2015).

according to which at least 5 percent of bank loans should be directed to ‘green’ sectors.²⁷

Second, there has been discussion of offering banks capital treatment incentives and penalties for ‘green’ and ‘brown’ exposures respectively, for example by setting lower risk weights than currently on banks’ exposures to ‘green’ borrowers, projects and investments, and higher risk weights on ‘brown’ exposures. For example, this was included as a possible action in the European Union (EU) Commission’s March 2018 action plan on sustainable finance,²⁸ where it was referred to as the possibility of introducing a ‘green supporting factor’ in the EU prudential rules for banks and insurance companies. No progress has yet been made on this in the EU.

There is a tension here between risk-sensitive capital requirements and social policy. Most banking regulators are against imposing non-risk sensitive risk weightings:

“Altering prudential regulations may not be the best way to address climate risks. There have been proposals to adapt capital risk weights, liquidity standards, and other prudential regulations to provide incentives for low-carbon investment. However, alterations to prudential rules seem far less suited as a tool to address climate-related externalities and would hamper their effectiveness at achieving their primary goal of maintaining the resilience of financial firms. The focus of financial regulation should remain on building resilience to shocks, with a systemic approach accounting for all material risks to the financial system, including from climate events, and ensure adequate capitalization, risk management, and disclosure.”²⁹

Most regulators would therefore only support reduced capital requirements for a bank if the risk on a ‘green’ exposure was demonstrably lower. However, some regulators may be more prepared to contemplate higher capital charges if banks have exposures to polluting industries, to reflect the potentially higher risks on such exposures resulting from the physical, transition and other climate change-related risks discussed above.

Conclusions

Banking supervisors should give careful consideration to the climate change-related risks faced by the banks they supervise, and to what role banking supervisory authorities might play with respect to climate change more generally.

This Note suggests that banks and their supervisors should assess the physical, transitional and other risks arising from climate change which might have an adverse

²⁷ Bangladesh Bank (2014 and 2017).

²⁸ European Commission (2018a).

²⁹ International Monetary Fund (2016).

impact on the creditworthiness of borrowers, and on the value of collateral and other assets held by banks.

Banking supervisors should require banks to identify and manage these risks effectively, including through scenario analysis and stress testing.

In addition, banking supervisors should consider whether to encourage, or even to require, banks to follow the TCFD recommendations on banks to disclose their risk management practices relating to climate change risks and the extent to which they might be affected under alternative climate change scenarios.

Banking supervisors could also go further here in requiring banks to disclose the extent to which they contribute to climate change through their lending and investment activities; and in considering whether regulatory requirements might be used to encourage or require banks to lend and invest in 'green' financing.

These additional possibilities would need careful consideration taking account of the wider national context, other government policies and regulations, and of the mandates and objectives of supervisory authorities.

Annex 1: Supervisory expectations of banks' climate change risk management

The UK Prudential Regulation Authority (PRA) has set out its supervisory expectations for enhancing banks' and insurers' approaches to managing the financial risks from climate change.³⁰

The PRA's desired outcome is that banks (and insurers) should take a strategic approach to managing the financial risks from climate change, by taking into account current risks and risks that could plausibly arise in the future, and identifying the actions required to mitigate these risks.

The supervisory statement sets out the PRA's expectations concerning how banks (and insurers) should:

- embed the consideration of the financial risks from climate change in their governance arrangements;
- incorporate these risks into existing risk management practice;
- use (long-term) scenario analysis and stress testing to inform strategy setting and risk assessment and identification; and
- develop an approach to disclosure on the financial risks from climate change.

Governance

A bank's board should understand and assess the financial risks from climate change that affect the firm, and to be able to address and oversee these risks within the firm's overall business strategy and risk appetite. The board and its relevant sub-committees should exercise effective oversight of risk management and controls, and the board should ensure that adequate resources and sufficient skills and expertise are devoted to managing the risks. The bank's approach should take a sufficiently long-term view of the risks that can arise beyond standard business planning horizons.

A bank should monitor and manage the risks from climate change in line with its risk appetite statement. The risk appetite statement should include the risk exposure limits and thresholds for the financial risks that the bank is willing to bear, and should take account of the results of stress and scenario testing and of the uncertainty around the timing and the channels through which the financial risks from climate change may materialise.

Risk management

Banks should seek to understand the potential current and future impacts of the physical and transition risk factors on their clients and counterparties. Where banks do not have the necessary information they should engage with clients and counterparties where this information is considered material to the bank's own risks.

³⁰ Prudential Regulation Authority (2019)

Banks should address the risks from climate change through their existing risk management frameworks, in line with their board-approved risk appetite, while recognising that the nature of the risks requires a strategic approach. Banks should identify, measure, monitor, manage, and report on their exposure to these risks. Banks should be able to evidence this in their written risk management policies, management information, and board risk reports.

Risk identification and measurement - banks should use scenario analysis and stress testing to inform the risk identification process and understand the short- and long-term risks to their business model from climate change.

Risk monitoring – banks should consider a range of quantitative and qualitative tools and metrics to monitor their exposure to the risks from climate change. For example, these could be used to monitor exposures to climate-related risk factors which could result from changes in the concentration of firms' investment or lending portfolios, or to the potential impact of physical risk factors on outsourcing arrangements and supply chains. Banks should also use these metrics to monitor progress against their overall business strategy and risk appetite. Banks should set out circumstances which would trigger a review of their strategy for addressing these risks.

Risk management and mitigation – where the potential impacts of climate change risks are assessed to be material (for example as a result of scenario analysis), the PRA expects banks to evidence how they will mitigate these risks and to have a credible plan or policies in place for managing their exposures and risk concentrations.

Risk reporting and management information – banks should provide their board and relevant sub-committees with management information on their exposure to climate change risks, to enable the board to discuss, challenge, and take decisions relating to the bank's exposures to, and management of, climate change risks.

Scenario analysis

Where proportionate, banks should conduct scenario analysis to inform their strategic planning and determine the impact of climate change risks on their overall risk profile and business strategy. Scenario analysis should also be used to explore the resilience and vulnerabilities of a bank's business model to a range of outcomes.

A bank's scenario analysis should address a range of outcomes relating to different transition paths to a low-carbon economy, and a path where no transition occurs. The scenario analysis should, where appropriate, include both a short-term assessment and a longer term assessment of the bank's exposure, based on its current business model, of a range of different climate-related scenarios. Banks should use these scenarios to understand the impact of climate change risks on their solvency and liquidity.

Where a bank relies on management actions to mitigate the financial risks from a scenario, it should consider whether these are realistic, credible, consistent with

regulatory expectations, and achievable. Banks should also consider whether any of the actions identified should be taken in advance as precautionary measures, or whether they would be relevant or desirable only if the scenario emerges.

Disclosure

Banks should consider whether further disclosures are necessary to enhance transparency on their approach to managing climate change risks. For example, the recommendations of the Taskforce on Climate-related Financial Disclosures provide tools or case studies for banks making climate-related financial disclosures.

Annex 2: UN principles for responsible banking

The November 2018 consultation on the UN Principles for Responsible Banking³¹ set out six principles relating to the UN SDGs (which include development goals relating to climate change):

Principle 1: Alignment

Alignment of business strategy to be consistent with and contribute to individuals' needs and society's goals, as expressed in the SDGs, the Paris Climate Agreement and relevant national and regional frameworks.

- Integrate the SDGs, the Paris Climate Agreement and other relevant national, regional or international frameworks into the bank's business strategy and key business decisions, including capital allocation decisions.
- Identify and assess where the bank's portfolio and service offerings generate, or could potentially generate, the most significant positive and negative environmental, social and economic impacts.
- Set and publish targets that align the bank's business with, and make a significant contribution to, the objectives and targets set out in the SDGs, the Paris Climate Agreement, and other relevant national, regional or international frameworks.

Principle 2: Impact

Increase the bank's positive impacts while reducing the negative impacts on, and managing the risks to, people and environment resulting from the bank's activities, products and services.

- Use the SDGs, the Paris Climate Agreement and other relevant national, regional or international frameworks to identify, assess and be transparent on significant (potential) positive and negative impacts resulting from the bank's capital allocation decisions and its provision of products and services.
- Define key performance indicators (KPIs) to address, reduce and mitigate significant negative impacts and to realise opportunities to expand and scale up positive impacts.
- Undertake forward-looking assessments of sustainability-related risks and opportunities at transaction, portfolio and strategic level and manage and mitigate significant risks.

³¹ United Nations Environment Programme Finance Initiative (2018).

Principle 3: Clients and Customers

Work responsibly with clients and customers to encourage sustainable practices and enable economic activities that create shared prosperity for current and future generations.

- Identify where the bank can support its clients in reducing their negative, and increasing their positive, impacts by adopting new technologies, business models and practices and where it can encourage and support sustainable behaviour and consumption choices among its retail customers.
- Develop strategies and define measures for the identified focus areas, such as development of new products and services or sustainability-related incentives and contractual conditionality.
- Ensure that retail customers have the knowledge and skills to manage their finances effectively, for example through financial literacy programs.

Principle 4: Stakeholders

Proactively and responsibly consult, engage and partner with relevant stakeholders to achieve society's goals.

- Identify and map key external stakeholders such as regulators, investors, policy makers, and civil society institutions, paying special attention to stakeholders directly or indirectly affected by the bank's business practices and lending and investment decisions.
- Engage, listen to and consult with these stakeholders to gather their expectations and advice regarding the material issues in the bank's strategy and business practices. Create partnerships that enable the bank to deliver more than it could by working on its own.
- Ensure that engagement with regulators and policymakers is aligned with the goals and objectives of these Principles.

Principle 5: Governance and Target Setting

Implement commitment to these Principles through effective governance and a culture of responsible banking, demonstrating ambition and accountability by setting public targets relating to the bank's most significant impacts.

- Assign roles and responsibilities for meeting the bank's strategic objectives regarding sustainability across all functional areas of the bank and ensure sufficient status, influence and resources.
- Establish effective policies, management systems and controls to ensure that sustainability objectives and targets are integrated into all decision-making processes across the bank.

- Actively communicate top-level buy-in and integrate performance with regards to the bank's sustainability targets and responsible banking leadership into performance assessments, remuneration schemes and promotion decisions.

Principle 6: Transparency and Accountability

Periodically review the bank's implementation of these Principles and be transparent about and accountable for the bank's positive and negative impacts and its contribution to society's goals.

- Be transparent on and accountable for the bank's significant positive and negative impact and contribution to society's goals, and on its implementation of the Principles.
- Undergo an annual individual review process.

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