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# Analysing climate risk in the banking sector: To what extent should the onus be on banks to fund the ‘green deal’ while focusing on their own climate change and ESG risk profile?

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**Abstract** Planet Earth’s temperature has risen by about 1.1 degrees Celsius on average since the 1880s, confirmed by satellite measurements and by the analysis of hundreds of thousands of independent weather station observations from across the globe. This rate of warming is in an order of magnitude faster than any found in the past 65 million years of paleoclimate records — the rapid decline in the planet’s surface ice cover provides further evidence of this.<sup>1</sup>

The banking industry is the custodian of global finance. It therefore has a central role to play in mitigating against this trend. After all, these are the institutions that occupy a key position as important catalysts in reorienting financial flows towards sustainable activities, supporting industries and governments in meeting climate risk and their environmental, social and governance (ESG) targets.

However, should the onus be on the banking sector to drive this agenda? Yes, it has an important role to play, but should it be writing the overall global narrative?

We will look at what banks are doing now to measure, and act upon, their own climate risk and ESG profile, and look at how much we should expect them to fund the overall ‘green deal’ or ‘clean’ strategy throughout 2022 and beyond. However, let us not forget, the banking sector has been focussing on money rather than ESG matters for centuries. For those new to the subject, we will also use this paper to provide some step-by-step advice and suggestions for what banks should be doing now to prepare for ESG issues.

The paper opens with the theory, then moves into the practical, with a series of first-hand case studies. These cover the measures that Razor Risk’s banking clients have been introducing to mitigate against climate risk, providing a critical reference point for the sector as a whole.

**Keywords:** *ESG, risk management, climate risk, credit risk, liquidity risk, operational risk, regulatory risk*

## INTRODUCTION

It is widely recognised that continued emissions of greenhouse gases will cause further warming of the Earth, and that warming above 2 degrees Celsius (2°C) relative to the pre-industrial period, could lead to catastrophic economic and social consequences for the globe.

In the face of evidence of the growing recognition of the risks posed by climate change, in December 2015, nearly 200 governments agreed to strengthen the global response to this threat by ‘holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels’, referred to as the Paris Agreement.<sup>2</sup> The large-scale and long-term nature of the problem makes it uniquely challenging, especially in the context of economic decision making. Climate science tells us that further warming is unavoidable over the next decade, and probably beyond that as well.

In this uncertain environment, banks must act on two fronts:

- they need to manage their own financial exposures and
- they need to help finance climate change that will be critical to mitigate the impact of global warming.

An imperative in both cases is agile and considered climate risk management.

The physical risks of climate change are powerful and pervasive. Warming caused by greenhouse gases could damage both our health and economic output — for example, through the higher probability of lethal heatwaves. Global warming will undermine food systems, physical assets, infrastructure and natural habitats. The risk of a significant drop in grain yields of 15 per cent or more and damage to capital stock from flooding will double by 2030. In aggregate, potentially around one-third of the planet’s land area will be affected in some way.<sup>3</sup>

Disruptive physical impacts will give rise to transition risks and opportunities in the economy, including shifts in demand, the development of new energy resources and innovations arising from the need to tackle emissions and manage carbon, as well as necessary reforms in food systems. Sectors that

will bear the brunt include oil and gas, property, the motor industry, transport, power generation and agriculture. In oil and gas, for example, demand could fall significantly over the next decade.

The good news is that these changes should also precipitate a sharp decline in emissions. January 2020 was the warmest January on record. As temperatures rise in this way, it is incumbent on banks to manage the relevant risks and opportunities effectively.

Furthermore, regulation increasingly *requires* banks to manage climate risk. Some have made a start, but many must still formulate strategies, build their capabilities and create risk-management frameworks. The imperative now is to act decisively and with conviction, so effective climate risk management will be an essential skill set in the years ahead.

## REGULATORY AND COMMERCIAL PRESSURES ARE INCREASING

Banks are under rising regulatory and commercial pressures to protect themselves from the impact of climate change and to align with the global sustainability agenda. Banking regulators around the world, now formalising new rules for climate risk management, intend to roll out demanding stress tests in the months ahead. Many investors, responding to their clients’ shifting attitudes, already take into account environmental, sustainability and governance (ESG) factors in their investment decisions and are channeling funds to ‘green’ companies.

The commercial imperatives for better climate risk management are also increasing. In a competitive environment where banks are often judged on their green credentials, it makes sense to develop sustainable finance offerings and to incorporate climate factors into capital allocations, loan approvals, portfolio monitoring and reporting. Some banks have already made significant strategic decisions, ramping up sustainable finance, offering discounts for green lending and mobilising new capital for environmental initiatives.

This increased engagement reflects the fact that there are climate change-related physical risks on a ten-year horizon (not far beyond the average maturity of loan books), and transition risks are already

becoming real, forcing banks, for example, to write off stranded assets. Ratings agencies, meanwhile, are incorporating climate factors into their assessments. S&P Global Ratings saw the ratings impact of environmental and climate factors increase by 140 per cent over two years amid a high volume of activity in the energy sector.<sup>4</sup>

In order to translate climate change into financial risks, recent literature such as the Bank for International Settlements' (BIS) *Climate-Related Risk Drivers and Their Transmission Channels*,<sup>5</sup> published in April 2021, discusses the concept of climate risk drivers, the climate-related changes that impact on economies. There is broad consensus within literature that climate risk drivers can be grouped into one of two categories:

- *Physical risks*: which arise from the changes in weather and climate that impact the economy; and
- *Transition risks*: which arise from the transition to a low-carbon economy.

Climate risk drivers have several distinct features, including unprecedented frequencies, speeds and intensities and the non-linear form that the risks are expected to take. Together, these factors give rise to a material level of uncertainty as to how climate risk drivers and their impacts will evolve.

The adequate quantification of climate risks to banks' balance sheets remains a major challenge, however — due to an unprecedented combination of impacts in the short and medium to long-term horizon inherent in climate risk — and innovation in forward-looking modelling is necessary to identify prospective financial losses. The capacity of climate change to trigger feedback loops between non-financial and financial sectors further compounds the modelling difficulties. Losses suffered by the financial system could cause reductions in lending by banks and coverage by insurance firms, which in turn could lead to widespread reductions in financial sector support to the real (or non-financial) economy.

As climate risk seeps into almost all commercial contexts, boards have to address both the main prudential challenges and commercial opportunities in the short and medium term, protecting the balance sheet and climate change financing.

## PROTECTING THE BALANCE SHEET FROM UNCERTAINTY

As physical and transition risks materialise, corporates will become increasingly vulnerable to value erosion that could undermine their credit status. Risks may be manifested in such effects as coastal real-estate losses, land redundancy and forced adaptation of sites or closure. These, in turn, may have direct and indirect negative impacts on banks, including an increase in stranded assets, uncertain residual values and the potential loss of reputation if banks, for example, are not seen to support their customers effectively.

One bank assessed properties located at sea level, based on one of the scenarios included in an exercise carried out by a geophysics institute on the rise in sea level over the next 30 years according to different rates of increase in temperatures. The bank estimated the value of the portfolio materially exposed to the risk of a rise in sea level and then calculated the estimated loss on its real estate portfolio, by multiplying the material exposure at risk (eg properties closer to the coast which could also be damaged by minor floods), the probability of damage to the building and the impact on the value of the building.

Recent analysis of portfolios at 46 European banks showed that, at any one time, around 15 per cent of them carry increased risk from climate change. The relevant exposure is mostly toward industries (including electricity, gas, mining, water and sewerage, transportation and construction) with high transition risks.

## CLIMATE CHANGE FINANCING: A NEW OPPORTUNITY

Renewable energy, refurbishing plants and adaptive technologies all require significant levels of financing. These improvements will cut carbon emissions, capture and store atmospheric carbon, accelerate the transition away from fossil fuels and build resilience along supply changes. Some banks have already acted by redefining their goals to align their loan portfolios with the aims of the Paris Agreement.

Oil and gas, power generation, real estate, automotive and agriculture present significant green-investment opportunities. In the United Kingdom, for example, 30 million homes will require sizable

expenditure if they are to become low-carbon, low-energy dwellings.<sup>6</sup> In energy, opportunities are present in alternatives, refining, carbon capture, aviation, petrochemicals and transport. As some clients exit oil and coal, banks have a role in helping them reduce their level of risk in supply contracts or in creating structured finance solutions for power purchase agreements. In renewables, significant capital investment is needed in energy storage, mobility and recycling. According to United Nations Environmental Programme, for the fifth year in a row, investments in renewable energy capacity have exceeded investments in fossil fuel generation.

Banks that pro-actively seek opportunities in new markets or types of assets may be able to diversify their activities and better position themselves for the transition to a lower-carbon economy. Opportunities exist for organisations to access new markets through collaborating with governments, development banks, small-scale local entrepreneurs and community groups in developed and developing countries as they work to move to a lower-carbon economy.

## A SHARPER FOCUS: FIVE CRITICAL FACTORS FOR CLIMATE RISK MANAGEMENT

As they seek to become effective managers of climate risk, banks need to quantify climate factors across the business and put in place the tools and processes needed to take advantage of them effectively. At the same time, they must ensure that their operations are aligned with the demands of external stakeholders. Five critical factors will support this transformation. They should be applied flexibly as the regulatory landscape changes.

- 1) *Governance — climate risk*: It will be of crucial importance for senior management to set the tone on climate risk governance. Banks should nominate a leader responsible for climate risk; chief risk officers (CROs) are often preferred candidates. To ensure that the board can keep an eye on exposures and respond swiftly, banks should institute comprehensive internal reporting workflows. There is also a cultural imperative: responsibility for climate risk management must be cascaded throughout the organisation.
- 2) *Modify business and credit strategy*: Climate considerations should be deeply embedded in risk frameworks and capital-allocation processes. Many banks have decided not to serve certain companies or sectors, or they have imposed emissions thresholds for financing in some sectors. Boards should regularly identify potential threats to strategic plans and business models.
- 3) *Align risk processes*: To align climate risk exposure with risk appetite and the business and credit strategy, risk managers should inject climate risk considerations into all risk management processes, including capital allocations, loan approvals, portfolio monitoring and reporting. Some banks have started to develop methodologies for assessing climate risk at the level of individual counterparties.
 

Counterparty credit scoring requires detailed sectoral and geographic metrics to interpret physical and transition risks as a view of financial vulnerability, whilst considering mitigation measures. The resulting risk score can be used to inform credit decisions and to create a portfolio overview. The score can also be embedded in internal and external climate risk reporting, such as responses to the disclosure recommendations of the Financial Stability Board (Task Force on Climate-Related Financial Disclosures — TCFD) or the European Banking Authority (Non-Financial Risk Disclosure Framework).
- 4) *Undertake scenario analysis and stress testing*: Scenario analyses and stress tests, which are high on business and regulatory agendas, will be critical levers in helping banks assess their resilience. In preparing for tests, they should first identify important climate hazards and primary risk drivers by industry, an analysis they can use to generate physical and transition risk scenarios. These in turn can help banks estimate the extent of the damage caused by events such as droughts, floods and heatwaves. Finally, banks must quantify the impact by counterparty and in aggregate on a portfolio basis. Risk-management teams should also prepare a range of potential mitigants and put in place systems to translate test results into an overview of the bank's position. Since regulators are prioritising stress testing for the coming period, acquiring the necessary climate-modelling expertise and climate-hazard and asset-level data is an urgent task.
- 5) *Invest in technology, data and people*: Banks often lack the technical skills required to manage climate risk. They will need to focus on acquiring these skills and developing a strategic understanding of how physical and transition risks may affect their activities in certain locations or industry sectors. Banks usually need 'quants', for example — the experts required to build climate-focused

counterparty or portfolio-level models. They should therefore budget for increased investment in technology, data and talent.

## **GREAT (OR REGULATORY) EXPECTATIONS**

Regulators say that while the banking industry's approach towards climate-related risks varies depending on the size, business model, complexity and geographic location of the bank, most have predominantly approached the topic from the perspective of corporate social responsibility and have yet to develop a comprehensive risk management approach.

Banks broadly acknowledge the materiality of physical and transition risks and the increasing need to assess and incorporate climate-related risks into their risk management processes. Even though most banks have implemented one or more sustainability policies, most do not have the tools to assess the impact of climate-related risks on their balance sheet. More specifically, only a small number have fully incorporated climate-related risks into their risk management framework through, for instance, a risk measurement approach, by defining their risk appetite, performing stress tests and scenario analyses, and assessing the impact on their capital adequacy.

The impact of climate risk is becoming more apparent to banks and supervisors alike, and the COVID-19 pandemic has led to an increased focus on the need to speed up progress in the management and disclosure of such risks. The economic costs of physical risks are growing steadily and, at the same time, transitional risks are on the rise, as public policies are increasingly targetting the climate neutrality and environmental sustainability of economic activities. Recent analysis published by the European Systemic Risk Board shows that the macroeconomic costs of delaying action for too long are significant and banks might be adversely affected, particularly in a transition risk scenario of an abrupt tightening of policies aimed at mitigating climate change.<sup>7</sup>

Despite the increasing awareness of climate-related risks and the growing involvement of high-level decision-making bodies in monitoring such risks, few banks incorporate climate risk comprehensively in their risk management frameworks.

Furthermore, institutions do not yet properly disclose their climate-related risk profile, and considerable efforts are still needed to promote transparency in financial markets regarding climate-related and environmental risks to which institutions are currently exposed.<sup>8</sup>

An assessment of significant institutions' public disclosures of climate-related risks shows sparse and heterogeneous disclosure practices. The level of disclosures is correlated with size: the larger the institution, the more comprehensive the disclosures. Of the institutions that disclose climate-related and environmental risks, very few institutions are transparent about the definitions and methodologies used. Only a minority of institutions' disclosures are in line with the recommendations by the TCFD.

Nonetheless, regulators have observed that several institutions are involved in initiatives that promote broader and more comparable climate risk management. Regulators are starting to publish climate risk guidelines within the current prudential framework. These risk guidelines include the following:

- Banks are expected to understand the impact of climate-related and environmental risks on the business environment in which they operate, in the short, medium, and long term, in order to make informed strategic and business decisions.
- When determining and implementing their business strategy, banks are expected to integrate climate-related and environmental risks that have an impact on their business environment.
- The management body is expected to consider climate-related and environmental risks when developing the bank's overall business strategy, business objectives and risk management framework, and to exercise effective oversight of climate-related and environmental risks.
- Banks are expected to explicitly include climate-related risk in their risk appetite framework.
- For the purposes of internal reporting, banks are expected to report aggregated risk data that reflect their exposures to climate-related and environmental risks, with a view to enabling the management body and relevant sub-committees to make informed decisions.
- Banks are expected to incorporate climate-related risks as drivers of existing risk

categories into their risk management framework, with a view to managing and monitoring these drivers over a sufficiently long-term horizon, and to review these arrangements on a regular basis.

- Banks are expected to identify and quantify these risks within their overall process of ensuring capital adequacy. In their credit risk management, banks are expected to consider climate-related and environmental risks at all relevant stages of the credit-granting process and to monitor the risks in their portfolios.
- Banks are expected to consider how climate-related events could have an adverse impact on business continuity and the extent to which the nature of banks' activities could increase reputational and/or liability risks.
- Banks are expected to monitor, on an ongoing basis, the effect of climate-related and environmental factors on their current market risk positions and future investments, and to develop stress tests that incorporate climate-related and environmental risks.
- Banks with material climate-related and environmental risks are expected to evaluate the appropriateness of their stress testing with a view to incorporating these risks into their baseline and adverse scenarios.
- Banks are expected to assess whether material climate-related and environmental risks could cause net cash outflows or depletion of liquidity buffers and, if so, incorporate these factors into their liquidity risk management and buffer calibration.
- For the purposes of their regulatory disclosures, banks are expected to publish meaningful information and key metrics on climate-related and environmental risks that they deem to be material.

## ROADMAP TO INCORPORATING CLIMATE RISK MANAGEMENT

As banks ponder how to incorporate climate change considerations into their risk management activities, they will find that it is important to remain pragmatic. Stakeholders want robust action and banks feel pressure to respond. Those that make haste, however, increase the risk of badly judged steps. The best strategy is adequate, compre-

hensive preparation: a bank can create a value-focused road map setting out an agenda proportional to its circumstances, which considers both the physical and regulatory status quo. Once the road map is in place, banks should adopt a modular approach to implementation, ensuring that investments are tied to areas of business value by facilitating finance, offering downside protection and meeting external expectations.

There are three key steps in developing a comprehensive approach to risk management, which should be attainable in four to six months.

### 1) Define and articulate the bank's climate risk strategy and appetite

Effective climate risk management should be based on a dedicated strategy. Individual banks must be sure about the role they want to play, and identify the client segments and industry sectors where they can add the most value. They should also establish and implement governance frameworks for climate risk — frameworks that include the use of specialist senior personnel, as well as a minimum standard for reporting up and down the business.

Some are already taking action. One bank made its CRO the executive accountable for climate change and head of the climate-change working group. Another bank divided these responsibilities among the board of directors, executive management, business areas, group functions and the sustainable-finance unit.

### 2) Build the foundations

Banks should urgently identify the processes, methodologies and tools they will need to manage climate risk effectively. This entails embedding climate factors into risk and credit frameworks — for example, through counterparty-scoring methods. Scenario analyses and stress tests will be pillars of supervisory frameworks and should be considered essential capabilities. Outcomes should be mapped into reporting and disclosure frameworks. Banking, like most sectors, does not yet have the climate risk resources it needs. The industry must therefore accumulate skills and build or buy relevant IT, data and analytics.

### 3) Construct a climate risk-management framework

Banks must aim to embed climate risk factors into lines of defence and decision making across their front and back-office activities and for both financial and non-financial risks (including operational, legal, compliance and reputational risks). Data will be a significant hurdle. Data is needed to understand the fundamentals of climate change, as well as the impact it will have on activities such as pricing, credit risk and client relationship management. However, a paucity of data should not become an impediment to action. As far as possible, banks should measure climate exposures at several levels, including by portfolio, sub-portfolio and even transaction. This will enable the creation of heat maps and detailed reports of specific situations where necessary. In corporate banking, this kind of measurement and reporting might support a climate-adjusted credit scorecard (covering cash flows, capital, liquidity diversification and management experience) for individual companies. Banks may then choose to assign specific risk limits. Indeed, some banks have already moved to integrate these types of approaches into their loan books.

As providers of capital, banks play a crucial role in economic development that now includes managing the physical and transition risks of climate change. Exposure mapping and risk measurement methodologies for climate-related financial risks can be differentiated according to physical risk and transition risk drivers, with each risk type having unique characteristics that drive measurement approach decisions.

In general, physical risk can be linked to financial exposures, using damage functions that define the impacts of specific hazards on the real assets and activities that generate financial flows. The disruptions to assets, activities and their corresponding financial flows can then be integrated into established risk models that measure financial risk parameters. A challenge when using damage functions is the degree to which empirical functions are available or complete for all sectors, exposures and hazards.

The impacts of the shift from a high to a reduced carbon economy (transition risk) could be estimated using models linking specific transition risk drivers to the economic factors that generate financial

flows. Similar to physical risks, projected disruptions to financial flows could be integrated into conventional models of financial risk measurement.

Given their distinct features, physical and transition risks are often viewed and assessed separately. However, several features relating to climate change are increasing the likelihood that these risks may be dependent on each other, which may require their being considered jointly.

The changes in climate that are already locked in with existing greenhouse gas concentrations, and the acceleration of impacts that could occur if tipping points are surpassed, could both perpetuate and compound climate-related damage despite current actions to reduce greenhouse gas emissions. Therefore, transition risk scenarios may still require assessment of physical risks.

Also, the increased frequency and severity of physical risks are likely to put pressure on policy makers to take decisive actions with the aim of mitigating physical risk impacts in the future, thereby increasing the probability that transition risks could happen at the same time as physical risks — which in turn would necessitate incorporating an increased probability of transition risk alongside physical risk assessments.

The task is difficult, and the models and assumptions needed to align the business with climate priorities will inevitably be revised and refined over time. However, as temperatures rise, speed is of the essence in managing the move to a more sustainable global economy.

### CASE STUDY-LED EXAMPLES OF GOOD PRACTICE FOR CLIMATE RISK MANAGEMENT

In its guide on climate-related risks, published in November 2020, the ECB set out supervisory expectations for banks with a view to addressing these risks, when formulating and implementing their business strategy, and their governance and risk management frameworks. The European Central Bank (ECB) asked significant institutions to conduct a self-assessment of their current practices against the supervisory expectations and to submit implementation plans detailing how and

when they would bring their practices into line with the guide. Unfortunately, none of the banks is close to fully aligning their practices with the supervisory expectations.

Banks are aware of this, as they themselves deem 90 per cent of their reported practices to be only partially or not at all aligned with the ECB's supervisory expectations. They have been candid about their need to improve their management and disclosure of climate risks. The ECB identified a set of good practices across different expectations that originated from firms spanning a range of business models and sizes.

The good practices range from strategy-setting procedures to specific qualitative and quantitative indicators in risk-appetite statements, and from materiality assessments to credit risk management. Across the board, the good practices demonstrate the ability of banks to develop relevant risk management capabilities for the sound, effective and comprehensive management of climate risks.

They also demonstrate the importance of taking a strategic approach, especially in areas where data and methodological gaps are perceived to hinder the full implementation of the expectations in the short term. A selection of such practices is described in this report for illustrative purposes.

## THE INTEGRATION OF CLIMATE RISKS INTO ASSET ALLOCATION

Fully embedded transition risk and physical risks into the banks' asset allocation process consists of the following steps:

- a. The starting point is the establishment of a *risk taxonomy* to identify the most exposed business activities.
- b. In a second step, *assess the sensitivity of sectors to regulatory, technological and market risk drivers*. This process allows the bank to identify key metrics for assessing the impact of physical risks and transition risk on the business models of counterparties, to understand their adaptive capabilities and possible performance under different transition scenarios.
- c. Within each sector, *break down exposures into three categories*: very high, high and medium sensitivity.

Identify the total exposure at default affected by transition risk and physical risks.

- d. Set up a *key risk limit to monitor and control exposure* to sectors classified in the high and very high sensitivity categories. The monitoring and maintenance of the limit should be assigned to one specific business area. The limit is then used to steer asset allocation and constrain the most exposed business activities: when exposures to these activities reaches the threshold, further risk-taking related to counterparties belonging to the same categories is not allowed.

This process should be incorporated into group policies and scheduled to take place every year. By concretely and comprehensively mapping the drivers of risk, a bank has also advanced its understanding of its data needs. Indeed, it has rolled out specific templates to collect data from counterparties and facilitate the integration of these risks into its risk management framework.

## CASE STUDIES

### Credit risk, physical risk estimation as applied to real estate

Several of our banking clients have developed practices to measure the impact of physical risks on real estate using proxies to overcome obstacles to data availability and to reflect the forward-looking nature of the climate risks.

One bank made use of a tool to calculate the exposure and value of the portfolio vulnerable to the main extreme weather events (drought, heat stress, and ocean and river flooding). This tool segments these four extreme weather events into four risk profiles (A, B, C and D). The bank allocated responsibility for observing changes in the severity and frequency of each extreme event over the last decade to a steering committee. Based on this analysis, the bank decided what kind of mitigating action could be taken to limit exposures and risk (eg, no more financing in high-risk areas or insuring property against this type of damage). Taking fluvial flood as an example, the percentage of the portfolio that would be affected if the water level rose by more than 2.5 metres was less than 30 per cent. As a follow-up action, the bank then checked building installations located on the first

floor or higher to estimate the impact of the extreme weather event and consider whether mitigation measures were necessary.

Another bank<sup>8</sup> assessed properties located at sea level, based on one of the scenarios included in an exercise carried out by a geophysics institute on the rise in sea level over the next 30 years according to different rates of increase in temperatures. The bank estimated the value of the portfolio materially exposed to the risk of a rise in sea level and then calculated the estimated loss on its real-estate portfolio, by multiplying the material exposure at risk (eg, properties closer to the coast that could also be damaged by minor floods), the probability of damage to the building and the impact on the value of the building.

### **Operational risk, litigation risk arising from climate-related controversies**

Several of Razor Risk's banking clients have developed practices to account for climate-related litigation and reputation risks:

- One assessed the litigation risk that might arise from controversies, in addition to the reputational impact, related to its involvement in the fossil fuel sector.
  - a. The bank initially identified the types of fossil fuel financing that are the subject of campaigns by environmental activists (eg, all extraction techniques, deep-sea drilling, and shale gas extraction).
  - b. As a second step, it initiated a comprehensive review of its processes to identify sources of legal risk, including: 1) the appropriate governance of transactions which present climate and environmental concerns, 2) communication policies related to fossil fuel financing, and 3) considerations with respect to such financing and the alignment of the business strategy with the Paris Agreement.
- Another one of our banking clients put in place a process to ensure that when its exposure to environmental risks exceeds its risk appetite, this does not result in legal risks.
  - a. Specifically, the bank mandated its legal department to review and advise on lending

contracts established with counterparties which involved particularly high levels of environmental risk.

- b. In such cases, environmental safeguards (in the form of minimum environmental standards or objectives) are included in the contract with the counterparty to ensure that it takes action to improve its environmental profile. This helps to mitigate both climate risks for the counterparty in general and litigation risk for the bank.
- c. The bank's credit committee continually monitors developments in the environmental risk profile of counterparties and if such counterparties have not complied with the environmental actions established in the contract, it acts.
- d. To the extent that the bank can demonstrate a breach of contractual obligations, not only can the financing relationship be terminated, but the bank can also take legal action against the counterparty for any incurred damage driven by the environmental risk profile.

### **Market risk, the integration of climate-related criteria in sector and investment policies**

One bank has integrated climate risks into its market risk-management framework through the application of exclusion and phasing-out criteria to sector policies for exposures that are particularly prone to climate risks. The sectoral investment and exclusion policy applies to market activities in general, irrespective of their accounting designation (ie, irrespective of whether they are in the banking book or in the trading book), and delineates clear boundaries for investments in specific sectors and transactions with counterparties operating in such sectors. Investment boundaries can be summarised as follows. Investments or transactions with counterparties can:

- a. be excluded from the market risk portfolio (specific phasing-out criteria);
- b. not be considered for future inclusion in the market risk portfolio (counterparties and businesses operating in specific sectors are automatically excluded from the possible investment universe);

- c. be added to the market risk portfolio, provided that they only conduct part of their business in sectors that are specifically permitted by the investment policy.

#### Examples of phasing-out criteria:

- Once a business activity is added to the exclusion list, all related net market risk positions shall converge to 0 in a maximum period of two months.
- Single positions shall converge to 0 in a maximum period of four months.

#### Examples of excluded business activities:

- coal developers
- coal power producers.

#### Example of specific thresholds to delineate the boundaries of excluded sectors/companies:

- Investments in power-producing companies are only allowed if:
  - a. installed coal-based production capacity is less than 3GW.
  - b. the share of coal in the production mix is less than 10 per cent.

### Stress testing, definition of baseline and adverse stress scenarios for physical risks and transition risks

One bank has developed detailed definitions of possible stress-testing scenarios both for transition risk and for physical risks, together with the estimation of the potential impact of each scenario on the bank's credit portfolio.

As regards transition risk, the bank defined two possible scenarios: an orderly scenario (a smooth transition towards the Paris Agreement targets) and a disruptive scenario (a fast transition towards compliance with the Paris Agreement). Each scenario foresees specific targets at sector level — for the energy-producing sector, the Emissions Trading System (ETS) sector and the non-ETS sector. Based on the defined scenarios, as well as clients' financial performance, the bank estimated (via multiples of earnings before interest,

taxes, depreciation, and amortisation) the potential investment required from its clients (without incurring any financial distress) to achieve a transition from the business-as-usual scenario to the Paris Agreement scenario.

As regards physical risks, the bank conducted a detailed mapping of the potential physical risks that could affect its client portfolio, assigned a physical risk score at client level and at collateral level for immovable property (using geospatial location data), and constructed a synthetic client-scoring system based on the estimated impact of the different physical risk scenarios.

### Liquidity risk, assessment of liquidity vulnerabilities arising from climate risk events

Another bank has integrated the first qualitative assessment of potential liquidity vulnerabilities arising from climate risk events into its risk inventory.

In identifying such vulnerabilities, the bank considers such risks from both an economic and a normative perspective, ie a multi-year assessment of a bank's ability to fulfill all of its capital and regulatory requirements. Under this approach, the portfolio is segmented into physical risks and transition risks. Physical and transition risk categories are then further broken down into more specific sub-categories to identify areas where potential liquidity vulnerabilities may arise.

The approach taken consists of the following steps:

- a. A scoring system based on the potential impact of climate risks on relevant liquidity metrics (eg, the liquidity coverage ratio — LCR), together with the definition of relevant thresholds for the bank, is used to evaluate the relevance of each climate risk area.
- b. To assess the relevance of each climate risk area, the bank defines a base LCR threshold by looking at normal market conditions and investigates deviations from this base threshold.
- c. A climate risk is assigned high relevance when it could potentially lead to a drop of about 5 per cent in the bank's LCR from the base threshold. Medium relevance is assigned to climate

risks that could lead to LCR drops of between 2 per cent and 5 per cent from the base threshold, while low relevance is assigned to drops smaller than 2 per cent.

- d. These limits are defined by the bank by looking at historical monthly changes in LCR levels over a period of three years. This analysis is considered by the bank as the starting point for the definition of more detailed and forward-looking stress test scenarios.

## STRESS TEST SCENARIO INPUT

To give an example, the bank designed a stress test scenario comprising the materialisation of the risk of greenwashing of green bonds issued, in combination with other idiosyncratic situations, and analysed the impact of such events on its LCR buffer. In particular, the bank assumed that some of the proceeds of the green bonds issued were not invested according to the eligibility criteria set forth in its previously disclosed guidelines. Such an event caused several wholesale counterparties to withdraw their funding, followed by corporate and government counterparties, as well as retail investors.

To increase the effectiveness of the exercise, the bank considered different scenarios in terms of severity and analysed the effects of such a shock on its LCR buffer over a time horizon of two years. In the most severe scenario, the bank also considered the effect of such reputational damage on future green bond issues.

## CONCLUSIONS

The ability to have a watertight ESG risk profile is no longer a nice-to-have for the banking sector, it is a must-have.

We began this paper by stating that as the custodian of world finance, the banking industry has a central role to play to mitigate against worrying global warming trends. Just as the industry is the leader in global finance, it has the perfect opportunity to carve out a role as a leader in global ESG matters.

However, banks are not — and cannot be expected to be — experts in ESG matters. Their

day-job always has always been to make money and protect the financial interests of their clients. In order to ensure the sector remains healthy, especially in the face of an ever-changing geo-political landscape, this must remain unchanged.

However, the sector has a central role to play; this cannot be ignored. By appointing its own ESG specialists — who should arguably be C-level executives forming part of every bank's management board — and working with specialist advisors who understand the landscape inside out, banks will prove they have the health of the planet as a core interest. This is something that will be welcomed by multiple generations, starting with those of us in the present, and our descendants, way into the future.

## References and notes

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