



Society of Actuaries in Ireland

ESG in Banking Climate Change Risk Management

by

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To the current list of risks facing banks which include credit risk, liquidity risk, funding risk, market risk, AML-CFT risks, legal risk, cyber risk, and strategy risk, we must now add risks arising from climate change.

We can split the risks arising from climate change into four broad categories:

1. Physical risk;
2. Transition risk;
3. Litigation risk; and
4. Reputation risk.

Physical Risk

Physical risk arises from heatwaves, extreme cold temperatures, wildfires, riverine flooding, coastal flooding, and increasingly intense storms. Physical risk also includes slower moving, more imperceptible climate change risks like rising sea levels, gradually increasing temperatures, and oceans absorbing increasing amounts of carbon dioxide, which, when combined with water, produces carbonic acid, thereby increasing the acidity of oceans.

To illustrate the effects of one physical risk, let's consider possible impacts of rising temperatures which may:

- (i) change the geographic location of certain types of agriculture; for example, rising temperatures may shift the current growing of vines in France to more northern climates like that of Sweden; and
- (ii) increase drought and the availability of water.

While by no means an exhaustive list of methods of examination, physical risk can be partly assessed by:

- (i) identifying the physical location of a bank's assets, including assets posted to the bank as collateral such as mortgaged properties;
- (ii) examining the extent of exposure to hazards such as coastal erosion, rising sea levels, flooding, storm damage, etc.; and
- (iii) considering the mitigating effects of any insurance cover in place in respect of the relevant assets.

In the case of corporate customers of a bank, the assessment must also consider a similar identification and examination of the physical location of the suppliers including energy suppliers to and means of transportation to and from corporate customers of the bank.

Critical suppliers to and distribution networks of corporate customers may be disrupted by damage to property, causing an interruption to the production process, destruction of inventory caused by flooding, power lines being down for a considerable period, and transportation routes disrupted.

Here is an example of this type of supply chain disruption. In 2000, a fire damaged a Royal Philips Electronic¹ semiconductor plant and forced it to close. The plant supplied critical components to Ericsson Telecom A.B., a manufacturer of mobile phones. As a result of the closure of the plant, Ericsson had to halt its mobile phone production for six weeks.

Physical risk also considers the impact on entire geographical regions and individual economic sectors. Such risk may arise from widespread damage to infrastructure, property, and inventory. The credit risk implications can be negative for local government borrowers whose disaster recovery expenses rise sharply and whose tax revenues drop significantly following such damage.

As an example of the impact of physical risk on entire geographic regions, the Center for American Progress, reports² that in 2005, an estimated 1.5 million people from Alabama, Mississippi, and Louisiana fled their homes in the face of Katrina. Roughly 40 percent of the people who left, particularly those from Louisiana, were not able to return to their pre-Katrina homes. Absent various forms of insurance on their homes and cars, many of these people are likely to experience difficulties in repaying their loans. The implications for banks in the region are multiple and include possible loan losses, loss of customers, and loss of staff.

Transition Risk

Transition risk considers the implications for a bank's customers of a shift from an economy with high greenhouse gas emissions to one with low greenhouse gas emissions.

Transition risk also has a physical location element to it but here the issue is jurisdictional location. For example, an international bank may have lent to two companies in the same industry but in different jurisdictions. Let's call them jurisdiction A and jurisdiction B. In jurisdiction A, the law has defined strict emission policies, requires companies to purchase emission allowances, and imposes and strictly enforces heavy penalties for non-compliance. By contrast, in jurisdiction B, the law governing emission policies is less stringent, and there is little evidence of enforcement of breaches. The cost of doing business in A is much higher than in B, and this will affect the free cash flow available to the corporate in A for debt repayment. Similar issues arise where the relative cost of energy, such as electricity, differs materially between A and B and where consumer preferences for sustainable manufacturing and delivery differ between the two jurisdictions.

¹ Source: Wildfire Insurance Coverage Series, Part 4: Coverage for Supply Chain Related Losses | Insurance Recovery Blog | Hunton Andrews Kurth LLP | 21 June 2022

² Source: <https://www.americanprogress.org/article/when-you-cant-go-home/>

Transition risk also encompasses economic activity. It looks at the impact on individual customers forced to change their lifestyle and corporate customers forced to change their operating model as part of the adjustment to climate change arising from shocks such as the imposition of a tax on greenhouse gas emissions, supply chain shortages, changes in government policy, and changes in society's attitudes. For example, a coal mining firm will be affected in a much greater way by climate change risk than a food delivery company that uses couriers making deliveries on electric bicycles. Similarly, dairy and meat producers face risks arising from a change in consumer preferences towards plant-based foods while wind farm operations are likely to present a much lower risk.

In examining economic sectors for transition risk, it is the extent to which a company's ability to deliver for its customers is currently dependent on greenhouse gas emissions, how their cash flow would, for example, be affected by different levels of taxation on greenhouse gas emissions, and the company's ability to adapt its production process to a net-zero emissions world. At some level of taxation on greenhouse gas emissions, certain businesses may no longer be economically viable.

In an orderly transition scenario, capital shortfalls at banks are likely to be negligible. By contrast, in a disorderly transition, although capital shortfalls are likely to be absorbed within the banking sector, the capital shortfalls are likely to be sizeable and concentrated in a small number of entities³.

As the world transitions from high- to low-carbon activities, several factors such as new government regulations that limit the use of fossil fuels either directly or through carbon taxes, changes in demand for products, and legal action against high emitters, could lead to assets no longer being used and ending up as a liability long before the end of their anticipated economic lifetime, in effect becoming 'stranded assets'. These factors may also lead to some businesses being no longer viable.

Reputation Risks in the Transition Phase

In the transition phase, the value of assets held as collateral may become impaired by reputation risk. For example, customers turning away from a business guilty of exaggerating the real impact of its environmental policies by revelations that its practices are neither sustainable nor beneficial.

According to the Global Climate Change Litigation Database at Columbia University, on 11 June 2022, there were 107 cases of climate change litigation outside of the United States against corporations or individuals⁴.

The cases listed on the Columbia University website cover issues as varied as:

- Access to a bank's investment documents to assess its compliance with the Paris Agreement.

³ Ojea Ferreiro, Javier & Reboredo, Juan & Ugolini, Andrea. (2022). The impact of climate transition risks on financial stability. A systemic risk approach.

⁴ Source: <http://climatecasechart.com/non-us-case-category/suits-against-corporations-individuals/page/2/> Accessed: 11 June 2022.

- Whether the Belgian National Bank’s purchasing of bonds from fossil fuel companies violated EU law.
- Whether the pollution and greenhouse gas emissions from the operation of the Sendai Power Station in Japan violates the citizens’ right to a peaceful life.
- Whether Eni’s Diesel+ advertising campaign constituted an unfair commercial practice by misrepresenting the “green” benefits of its Diesel+ fuel.
- Whether an advertisement on emissions from an airline was misleading.

While we now turn our attention to focus on litigation risk and reputational risk for banks, it is important to realise that activities like ‘greenwashing’ may give rise to a combination of reputation risk and a litigation risk. The latter may be initiated either by regulators, customers, or non-governmental organisations. Thus, litigation risk and reputation risk are not distinct risks; one of these risks may well give rise to the other.

Litigation Risk

The third type of climate risk that banks face is litigation risk. Table 1 below shows a sample of cases taken against banks in Belgium, Australia, and the Netherlands, not all of which resulted in a victory for the plaintiff.

Table 1⁵

Jurisdiction	Date	At Issue	Outcome of Case (where resolved)
<u>Belgium</u> Brussels Court of First Instance	April 2021	ClientEarth filed suit against the Belgian National Bank for failing to meet environmental, climate, and human rights requirements when purchasing bonds from fossil fuel and other greenhouse-gas intensive companies.	<u>December 2021</u> The Brussels Tribunal of First Instance rejected ClientEarth’s application on procedural grounds. ClientEarth announced in early 2022 that it appealed the judgment to the Brussels Court of Appeal.
<u>Australia</u> Federal Court of Australia	2017	Shareholders of the Commonwealth Bank of Australia (CBA) sued the bank, alleging that it violated the Corporations Act of 2001 with the issuance of its 2016 annual report, which failed to disclose climate change-related business risks—specifically including possible investment in the controversial Adani Carmichael coal mine.	Before the court issued any decision, the shareholders withdrew their suit after the CBA released a 2017 annual report that acknowledged the risk of climate change and pledged to undertake climate change scenario analysis to estimate the risks to CBA’s business.
<u>Netherlands</u> National Point of Contact for OECD Guidelines (‘NPC’)	2017	BankTrack, Greenpeace Nederland, Milieudefensie, and Friends of the Earth collectively filed a complaint against ING for failing to commit appropriately to achieving targets under the 2015 Paris Agreement.	In its initial assessment, the Dutch NCP accepted the case for further examination, noting the complexity with respect to the calculation of CO2 emissions. It opined that this deliberation could purposely enhance the effectiveness of the guidelines. The final statement by the NCP held that ING is obliged under the OECD Guidelines for Multinational Enterprises to set climate goals that are aligned with the Paris Agreement.
<u>Australia</u> Federal Court of Australia	October 2014	The Australasian Centre for Corporate Responsibility filed an application against the Commonwealth Bank of Australia , seeking declarations that their proposed resolutions relating to greenhouse gas emissions could be validly moved at the annual general meeting of the Commonwealth Bank of Australia	<u>July 2015</u> The Court rejected the proposed resolutions. Australasian Centre for Corporate Responsibility filed an appeal. <u>June 2016</u> The appeal Court rejected the proposed resolutions.

⁵ Source: <http://climatecasechart.com/non-us-case-category/suits-against-corporations-individuals/> Accessed: 20 June 2022.

‘Greenwashing’

Greenwashing can be broadly defined as the process of misleading consumers either about:

- (i) the environmental benefits of a service or product; or
- (ii) about the environmental practices of a company.

Greenwashing has received significant media attention in recent times.

In June 2020, the EU passed the Taxonomy Regulation defining criteria for sustainable investments. Prior to the passing of the law, banks could unilaterally decide what they considered a ‘green’ or sustainable investment. The governance regime in a bank could manage the risk of allegations of greenwashing using the tests in Table 2.

Table 2

Category of Greenwashing	Concept	Example
Statement is False	A statement in a marketing brochure or advertisement that has no basis in fact and lacks proof in relation to the claims made for a service or a product.	Claiming that a product is recyclable when it is demonstrably not recyclable.
Statement is Misleading	Statements using vague concepts or terms that have no agreed definition and which create the impression that the bank or a service or product offered by the bank has an environmental benefit.	Making statements about planting trees and transitioning to net zero while failing to note the bank’s not insignificant lending to fossil fuels companies.
Labels that Signal False Virtues	Putting a label on a product indicating that it has been certified by an independent third-party as meeting certain environmental standards when in fact it has not been so certified.	Indicating that the bank only lends to companies whose activities are sustainable as defined in the Taxonomy Regulation when that is not the case.
Misleading Symbols	Using a symbol in connection with a service or a product of the bank that creates a false impression of positive environmental alignment when in fact there is no such alignment.	Printing the bank’s documents on green paper with windmills in the background and using screens with green backgrounds showing a forest on its website and apps.

A New Form of Climate Litigation

Researchers⁶ have found that in California’s Sierra Nevada, over the past 20 years, each one-degree Celsius increase in mean summer temperature increased the risk of a fire starting on a given day by something of the order of 20% and increased the area burnt by about 23.5%.

In January 2019, California-based PG&E, filed for voluntary Chapter 11 bankruptcy after members of the communities affected by wildfires began filing lawsuits against PG&E⁷ based on the company’s alleged role in its power lines sparking and causing a series of wildfires.

PG&E is not insolvent; it has filed for bankruptcy voluntarily. The Chapter 11 bankruptcy filing allows PG&E to continue its electrical supply operations while restructuring its debts and liabilities, which primarily relate to wildfire claims.

⁶ <https://www.science.org/doi/10.1126/sciadv.abe6417> Accessed: 20 June 2022.

⁷ Source: Skikos Attorneys at Law | <https://www.pgelawsuitguide.com/pge-bankruptcy/> Accessed 20: June 2022.

Reputation Risk

Banks are facing increased scrutiny of their actions in relation to the mitigation of climate change. It could be argued that a bank that: (i) establishes a board-level committee dedicated to climate change risk; and (ii) makes accurate disclosures about its resilience to physical and transition risks and in relation to its plans to increase that resilience is more likely to be protected from reputation risk than one not making such disclosures.

The disclosures to protect reputation risk might include identifying a board-level committee dedicated to the management of climate change risk as a subset of overall risk management. Other disclosures may include details of the frequency of meetings of such a committee, describing the engagement with external stakeholders in relation to climate change risk, providing disclosures of the results of the financial impact indicated by scenario analysis, and a description of how remuneration is linked to specific climate change performance metrics.

The Task Force on Climate-related Financial Disclosures (TCFD) was launched by the Financial Stability Board in December 2015. Its aim is to use financial disclosures as a means to inform investors and other stakeholders about the climate change risks companies face and how those risks are being managed. In making climate change risk disclosures, a number of banks have adopted the core elements of the TCFD disclosure framework which include strategy, scenario planning, risk management, governance, and metrics & targets.

In March 2022, the Financial Times⁸ reported that the ECB threatened to ‘*name and shame banks after finding that none of the 109 lenders it oversees meet its climate risk disclosure expectations.*’ Frank Elderson, an ECB executive board member, was quoted in the article as saying that the banks it oversees produce ‘*a lot of white noise and no real substance*’.

Failure by a bank to adequately address climate change risk could lead to a boycott of the bank by a broad swathe of its customer base.

Data Requirements

A bank wishing to assess the impairment to its mortgage book arising from floods will need to forecast the depth of floods by geographic area and estimate the damage in terms like the probability of default or loss-given-default, taking into account the extent of any mitigating effects of insurance.

The assessment of physical risk is made more challenging by the additional need to identify and examine the extent to which companies depend on supply chains and distribution networks and the extent to which regional governments and companies are interconnected by tax revenues and subsidies. This makes the assessment of physical risk a very resource-intensive task which requires significant data science capabilities and access to sources of very granular, external data not only on climate change hazards but on the extent to which a bank’s counterparties are dependent on supply chains, distribution networks, tax revenues, and subsidies.

⁸ <https://www.ft.com/content/aaa06d90-0356-44b4-b637-0e47c9003ba4> Accessed 20: June 2022.

Similarly, transition risk identification and analysis require highly granular data covering industries and regional & national governments to convert climate change scenarios into metrics like the probability of default and loss-given-default. The choice of time horizon for the assessment of physical risk and transition risk is also another challenging issue. Obtaining climate risk data on the segment of a bank's portfolio that lends to small enterprises is a further challenge. Further, the length of the time horizon for assessing physical and transition risks may differ significantly for several reasons. For example, physical risks depend greatly on the development of the temperature pathway. By contrast, the transition risks most exposed to temperature pathways arise from mitigation costs throughout the economy, increases carbon prices, reductions in the demand for fossil fuel, reductions in the output of coal plants, and policy, technological, and socio-economic factors.

The past is rarely a guide in building a model to estimate the probability of relatively rare events. One possible approach might be to empirically estimate the probability of likely precursor events which are more common. Then use the probabilities of the precursor events to estimate the probability of the rare event.

Alternatively, rather than focusing on the probability of the event, it may be more productive to focus on risk mitigation to reduce the impact of the event on the bank. In this regard, banks may not be able to rely on the assignment of insurance policies by their customers to protect against losses because while a loan may be for, say, a seven-year term, property and casualty policies are annually renewable, and insurers may decide to withdraw cover for certain perils following large losses.

Regardless of the methodologies adopted, significant uncertainty regarding estimates of the impact of climate change risk on the assets, collateral, and the capital of banks remain.

Insurance policies, while mitigating losses for banks, may also pose a liquidity risk for banks. Indemnity-based insurance policies guarantee payment in an amount equal to the actual loss sustained. However, a significant amount of time may elapse in the following process: (i) the insurance company sending a loss adjuster to the property to determine the amount of the damage; (ii) the insurance company's receipt of the loss adjuster's report on the amount of damage; and (iii) negotiation between the insured and the insurance company around the specifics of the report and what is and what is not covered by the policy. Hence, there may be a liquidity requirement for banks between the date of the loss and the date of payment for the loss under the insurance policy.

The Opportunity for Banks

Aside from considering the impact that their operations have on the communities around them, banks can also receive a financial benefit because of their ESG efforts. For example, banks are intentionally lending to ESG-focused companies which share their vision of corporate responsibility. Significant levels of finance will be required to fund renewable energy projects like wind and solar electricity production, refitting of production plants to cut greenhouse gas emissions, and installing solar and air-to-water heaters in homes to transform them into real estate units that emit little or no greenhouse gases.

Sustainability linked loans ('SLLs') are an example of lending to fund sustainable economic activity and are normally structured as a revolving credit facility. SLLs carry a slightly lower rate of interest than revolving credit facilities for non-sustainable general corporate purposes,

provided the borrower meets predetermined sustainability objectives. The lower rate of interest on the loan is designed to reflect the lower transition, litigation, and reputation risk of sustainable economic activity.

The predetermined sustainability objectives of SLLs should be consistent with the borrower's stated ESG policy. They can then be translated into something of the order of three to five sustainability performance targets, such as:

1. Reducing greenhouse gas emissions, especially Scope 3 emissions⁹;
2. Reducing energy use or switching to renewable energy;
3. Using less water in the production process;
4. Reducing the number and severity of workplace accidents;
5. Increasing employee awareness of inclusion, diversity, and different cultures through training; and
6. Increasing the percentage of women in senior management positions.

Agreeing the sustainability performance targets and how they will be measured are perhaps the most time-consuming aspects of negotiating SLLs. Measurement may take the form of a percentage improvement in the historic level of a variable or a change in the absolute value of the variable.

The borrower will enjoy the benefit of a lower interest rate for up to a year until the performance relative to the sustainability performance targets are assessed. If the borrower: (i) meets the sustainability performance targets, the interest rate will fall; (ii) fails to meet the sustainability performance targets, the interest rate on the loan will rise.

In practice, the lower rate of interest and the rise in the interest rate are relatively small, ranging from something of the order of 1.25 basis points to 5.00 basis points. In the Irish market, for mortgages on houses with a high energy efficiency rating, the range may be wider running from 5.0 basis points to 20.0 basis points depending on the lender.

Great care must be taken to ensure that meeting the sustainability performance targets gives rise to a material improvement in sustainable economic activity for the borrower. This should provide a robust defence against allegations of 'greenwashing'. Equally, banks do not wish to be associated with borrowers likely to be accused of 'greenwashing' arising from unambitious sustainability performance targets, which if achieved would be no more than an insignificant improvement on previously disclosed sustainability goals.

However, in the case of some borrowers, the lower rate of interest is not regarded as sufficient to cover the cost of negotiating, documenting, and reporting on compliance with a loan's predetermined sustainability objectives.

⁹ Greenhouse gas emissions are categorised into three groups or 'Scopes' by the most widely used international accounting tool, the Greenhouse Gas (GHG) Protocol. Scope 1 covers direct emissions from owned or controlled sources. Scope 2 covers indirect emissions from the generation of purchased electricity, steam, heating, and cooling consumed by the reporting company. Scope 3 includes all other indirect emissions that occur in a company's value chain. Source: <https://www.carbontrust.com/resources/briefing-what-are-scope-3-emissions>. Accessed: 24 June 2022.

Regulation

Regulation has been driving a strong focus on the financial consequences of climate-risk by banks. The boards of banks have adopted climate-risk management strategies, reviewed their risk appetite in light of climate risk, and appointed individuals with responsibility for climate-risk whose role is to report to the board on climate-risk and to embed within the bank a deep awareness of climate risk in the allocation of capital and consideration of risk exposures.

This has resulted in some banks: (i) deciding not to increase their lending to certain sectors and ultimately withdrawing from such sectors; (ii) considering climate-risk issues in the underwriting of new loans to individual counterparties; and (iii) offering preferential interest rates on mortgages for highly energy efficient homes and sustainability linked loans to corporates.

Climate Risk Stress Tests

Article 100 of the EU Capital Requirements Directive requires the competent authorities to carry out as appropriate but at least annually supervisory stress tests on institutions they supervise.

In January 2022, the European Central Bank launched a supervisory climate risk stress test¹⁰. The stress test aimed to assess how prepared banks are for dealing with financial and economic shocks stemming from climate risk. The exercise was conducted in the first half of 2022, and aggregate results were published in July 2022.

The test focused on exposures and income sources that are most vulnerable to climate-related risk and aimed to identify vulnerabilities, best practices, and challenges banks face when managing climate-related risk. Its results will be taken into account from a qualitative perspective in the Supervisory Review and Evaluation Process¹¹, which may give rise to additional Pillar 2 requirements¹².

The highlights of the results included:

- (i) About 60% of the interest income of banks is heavily reliant on the top twenty-two sectors with the highest greenhouse gas emissions;
- (ii) For the forty-one banks providing projections, the estimated short-term risk losses were in excess of EUR 70bn under a disorderly three-year transition risk scenario;
- (iii) In an orderly transition scenario, the losses of banks are lower than where banks delay taking action on climate transition risk;
- (iv) While operational risks are often included in the stress-testing exercise, reputational risk was rarely included;
- (v) Something of the order of sixty per cent of banks did not have a well-integrated

¹⁰ Source: <https://www.bankingsupervision.europa.eu/press/pr/date/2022/html/ssm.pr220127~bd20df4d3a.en.html> Accessed 24 June 2022.

¹¹ The Supervisory Review and Evaluation Process is used by supervisors assess the risks banks face and check that banks are equipped to manage those risks properly. Supervisory measures to be taken following a Supervisory Review and Evaluation Process.

Source: <https://www.bankingsupervision.europa.eu/banking/srep/html/index.en.html> Accessed: 24 June 2022.

¹² Pillar 2 requirements are specific recommendations for individual banks that indicate the level of capital that the ECB expects banks to maintain in addition to their binding capital requirements. It serves as a buffer for banks to withstand stress.

- climate risk stress-testing framework; and
- (vi) Most banks plan to have physical or transition climate risk included in their risk frameworks only either in the medium-term or the long-term.

The scenarios for the test were derived from scenarios prepared by the Network of Central Banks and Supervisors for Greening the Financial System and reflect possible future climate policies and assess both physical and short & long-term risks stemming from the transition to a greener economy.

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