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Climate Change Fever: Can Deposit Insurers Stay Cool?

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CLIMATE CHANGE AND DEPOSIT INSURANCE

Executive summary

Whereas research regarding the impact of climate change on the global financial system is ever growing, the impact of climate change and risks related therewith on deposit insurance has remained largely undealt with in literature. As global financial standard-setters have set the treatment of climate risks high on the agenda¹, this Policy Brief represents the first attempt to identify five core challenges that climate change may pose to the activity of deposit insurers and their ability to deliver on key objectives. The paper also classifies the challenges as to their risk-nature (Table 1).

Given the novel nature of these issues as well as the high uncertainty and long time horizon inherent to them, the discussion here is by no means meant to be exhaustive. Also, the scale and degree to which climate change affects deposit insurers may vary significantly. This may be so due to differences in mandates or geographical exposure to climate risks. Nevertheless, the breath and scope of climate change-related risks as well as financial standard-setters' omnipresent activities in the field make this topic of strategic interest to the deposit insurance community. The links between these challenges and the IADI Core Principles underscores the strategic urgency of this contemporary policy issue.

Challenge 1: Climate change risks may impact on a deposit insurer's operational capacities.

- Climate-related operational risks may have a direct impact on deposit insurers' core activities. Given the global increase in extreme weather events, the relevance of this challenge is expected to grow, even though risk exposure may differ significantly geographically. As with other operational risks, tools and procedures are available for deposit insurers to manage this risk.
- Climate-related operational risks to the deposit insurer's infrastructure, to banks' infrastructure and to the infrastructure of the financial system as a whole may impact on deposit insurers' ability to safeguard timely payouts (**Core Principle 15**).
- Operational risks (e.g. as to the availability of deposit records or reimbursement proceedings) should be identified and managed appropriately. Where relevant, deposit insurers' contingency planning should take appropriate account of climate risk as a potential source of operational risk (**Core Principle 6** and Guidance on Risk management and internal control systems²).

Challenge 2: Climate risks may amount to financial stability risks.

- Through potential negative impacts on financial stability, climate change may eventually impact negatively on deposit insurers. As financial stability risks are all-encompassing, they relate to many traditional risk categories. Given the research focus of international financial standard setters on this topic, as well as its multi-factor complexity and its public good nature, deposit insurers may contribute to addressing this challenge.
- The principle public policy objective of deposit insurance systems includes contributing to financial stability (**Core Principle 1**). Deposit insurers may hence consider supporting research efforts in understanding systemic risks of climate change.

Challenge 3: Climate risks may impact on bank default risks and on net resolution costs.

- Through their potential impact on individual bank default risks, climate risks impact on deposit insurers. These risks may emanate both from physical and transition risks. Up to a certain scale, tools and mechanisms seem to be available for deposit insurers to anticipate and address these risks. The risks for DIs associated with this challenge are mainly bank failure and market risks. The latter may materialise in climate-change related decreases in asset prices on bank balance sheets ("stranded assets"), which may negatively impact on DIs recovery rates.

¹ Van Roosebeke & Defina (2021), setting out general emerging trends in deposit insurance.

² IADI (2020)

- Assessing whether and to what extent climate risks have a material impact on individual bank default risks may be very complex and depending on their mandate also, deposit insurers may or may not wish to build in-house capability in this field. Irrespective of this policy decision, there may be merit in the sharing of data and information with other domestic safety net participants (**Core Principle 4**) and foreign jurisdictions (**Core Principle 5**) on the climate-risk exposure of individual financial institutions. Deposit insurers may support international efforts for increased and standardised disclosure of climate-risk exposure by corporates and banks as this would assist them in identifying and eventually pricing climate-related risks.
- Climate-risks may have an impact on individual bank default probabilities and thus on the likelihood of the DI incurring costs for reimbursement or resolution activities. At the same time, net costs to deposit insurers following recovery may increase if climate risks materialise into stranded assets at a defaulting bank (**Core Principle 16**). Such scenarios may impair continued compliance with **Core Principle 9**, requiring a fund target size sufficient to participate in the resolution and payout of a number of small bank failures or several medium-sized bank failures and to guarantee prompt reimbursement.

Challenge 4: How to consider climate risks in financial risk assessment and oversight.

- Given efforts by financial supervisors globally on integrating climate risk into prudential supervision, for those deposit insurers with a supervisory mandate, this challenge is highly relevant and may be associated with reputational risks in supervision.
- Deposit insurers with a risk assessment and supervisory mandate may consider investing efforts in building capacity to integrate climate risks into their risk analysis and financial oversight. This may assist in continuing compliance with the need for a financial safety-net that provides for early detection through supervision also (**Core Principle 13**).

Challenge 5: Climate risks and deposit insurers’ investment fund management.

- As investment fund managers, deposit insurers must soundly invest and manage their funds (**Core Principle 9**). For this reason, climate risks should find adequate consideration in asset management practices when relevant.
- Deposit insurers’ public policy objectives – prompt reimbursement and contributing to financial stability – should not be put at risk. Thus, when considering investment in sustainable finance markets (e.g. in green sovereign bond markets), risks to liquidity and market risk (e.g. green-washing – the misleading labelling of an asset or activity as climate-friendly may cause asset price adjustments upon its detection) should be considered, given the developing character of these markets.
- Deposit insurers may wish to anticipate possible future demands regarding transparency and green investment practice and the potential reputational and reporting risks these may present.

The table below summarises the main risks to deposit insurers posed by the challenges identified. Risk categories relate to definitions in IADI (2020).

	Operational Risk	Bank Failure Risk	Liquidity Risk	Market Risk	Reporting Risk	Reputational Risk
Challenge 1	✓					
Challenge 2	✓	✓	✓	✓	✓	✓
Challenge 3		✓		✓		
Challenge 4						✓
Challenge 5			✓	✓	✓	✓

Table 1: Risk-nature of the five Challenges

1 Introduction and Purpose

Climate change is a source of emerging risks that may potentially reshape a broad suite of policy responses. The increase in likelihood of “low frequency-high impact” environmental events such as devastating forest fires and floods places additional stress on supply chains and heightens exposures in highly inter-connected global financial systems. Global coordination on dealing with the public good that climate change is, is essential for mitigating its current and future impact. Eminent British economist Nicholas Stern characterised greenhouse gas emissions as representing “the biggest market failure the world has seen”.³

This global coordination takes the form of the United Nations Framework Convention on Climate Change (UNFCCC), which was adopted at the “Rio Earth Summit” in 1992 and entered into force in March 1994. It now has near-universal membership. 197 countries have ratified the Convention. Together with the Convention, the Kyoto Protocol (1997) and the Paris Agreement (2015) establish the institutional agreements for the intergovernmental climate change process.⁴

The UN Paris Climate Agreement provides that the increase in the global average temperatures should be limited to well below 2°C – if possible, to 1.5°C – as compared with pre-industrial levels. As a follow-up to the Paris Agreement, in November 2021, the 26th UN Climate Change Conference (COP26) takes place.

Climate change is increasingly seen as a risk for financial stability as a whole. Climate-related risks may materialise and impact on the value of assets or on financial stability as a physical risk through gradual changes in climate or adverse weather events such as storms or floods; and a transition risk through adjustments to climate change such as carbon pricing, product regulations or technological innovations. Liability risk resulting from parties being held liable for environmental damage is particularly relevant for insurance firms offering cover for such risk.

Climate change has been largely under-examined in the global deposit insurance community. This Policy Brief seeks in part to highlight the current state of dialogue and analyse the extent to which it may be relevant to deposit insurers. A recent conference held by the Perbadanan Insurans Deposit Malaysia and Korea Deposit Insurance Corporation titled *A Race Against Time – Climate-Related Risks and Financial Stability Implications* offered a forum to the deposit insurance community to engage in productive dialogue on the topic.⁵ This has signalled a potential increased attention for the topic of climate change. Such a trend has also been observed at the Federal Deposit Insurance Corporation, which recently identified that “while the issue of the potential impact of climate on the financial sector seems to be gaining momentum among domestic and international regulatory bodies, it is worth noting that FDIC supervisors have long expected financial institutions to consider and appropriately address potential climate risks that could arise in their operating environment as a meaningful safety and soundness concern”.⁶

It is acknowledged that the implications of climate change are subject to a great deal of uncertainty. There are also a considerable number of external factors at play that are either partially or completely outside the control of deposit insurers. This imposes limitations on potential policy approaches and raises broader questions about the deposit insurer’s role in responding to this issue. However, given the breath and scope of climate-related impacts on financial stability and on individual financial institutions, deposit insurers may increasingly treat climate change as a matter of strategic importance.

Research on deposit insurers and climate change is in its infancy. As such, this Policy Brief identifies five core challenges that climate change may pose to the activity of deposit insurers.⁷ The mandate of the deposit insurer, geographical factors and other structural issues are likely to affect the degree of relevance to individual deposit insurers.

This Policy Brief sets out in Part 2 some of the most important climate-related risk activities of global financial standard setters. Part 3 identifies the main challenges climate risks may pose to deposit insurers. Part 4 concludes with an outlook.

³ Stern (2008).

⁴ More information available at <https://unfccc.int/>.

⁵ For more information please consult [PIDM - Webinar discusses climate-related risks and implications on financial stability](#)

⁶ McWilliams (2021).

⁷ This paper in part is motivated by Van Roosebeke (2021).

2 Climate-related risk activities of global financial standard setters

Nearly all international financial standard setters have put in place initiatives to highlight the implications of climate change on the global financial system. While these initiatives vary in their detail and application, the broad and unequivocal nature of these responses have highlighted the urgency of this issue. Below is a selection of international responses.

Network for Greening the Financial System. At the Paris “One Planet Summit” in December 2017, eight central banks and supervisors established the Network for Greening the Financial System (NGFS). Since then, membership has grown dramatically and currently encompasses 92 members (mainly central banks and supervisors) and 14 observers (mainly international financial standard setters). The Network aims at strengthening the global response required to meet the goals of the Paris agreement and to enhance the role of the financial system to manage climate risks and to mobilise capital for green and low-carbon investments. To this end, the NGFS defines and promotes best practices and conducts or commissions analytical work on green finance. The NGFS has been particularly active in creating standardised climate scenarios. IADI is not yet an observer in the Network for Greening the Financial System (NGFS), while the Bank for International Settlements (BIS), the Basel Committee on Banking Supervision (BCBS), the Financial Stability Board (FSB) and the International Association of Insurance Supervisors (IAIS) are.

Bank for International Settlements. The BIS has provided considerable leadership on the issue of climate change. A growing number of publications look at the implications of climate change for financial stability, the financial sector and central banks. A prominent piece in recent times relates to climate-induced events with systemic implications, termed ‘green swan’ events.⁸ This important contribution to the literature reviews ways in which central banks can seek to address risks stemming from climate-related sources within existing financial stability mandates. On June 2-4 2021, the BIS co-sponsored The Green Swan Conference with the Banque de France, IMF and the NGFS, focussing on ways in which the financial sector can take immediate action against climate change-related risks.

Basel Committee on Banking Supervision. In February 2020, the BCBS established the Task Force on Climate Risks (TFCR), chaired by Frank Elderson (ECB) and Kevin Stiroh (FED). The TFCR has undertaken several initiatives, including stocktakes of existing initiatives, analytical reports and identification of effective supervisory practices to mitigate climate-related financial risks. The TFCR has published a survey result report and two analytical reports on the transmission channels and measurement methodologies of climate risk.⁹

Financial Stability Board. The FSB established the Task Force on Climate-related Financial Disclosures (TCFD) in 2015 to develop a set of voluntary disclosure recommendations for use by companies in providing decision-useful information to investors, lenders and insurance underwriters about the climate-related financial risks that companies face. The TCFD published its disclosure recommendations in 2017 and in July 2021, G20 Economy and Finance ministers promoted these further.¹⁰ The FSB has also published a report on the implications of climate change for financial stability and performed a stock-taking on how authorities include climate risk in their financial stability monitoring.¹¹

International Association of Insurance Supervisors. Through active collaboration with the Sustainable Insurance Forum, a leadership group of insurance supervisors and regulators working on sustainability issues facing the insurance sector, the IAIS has issued publications on the Implementation of the TCFD Recommendations¹² and on the supervision of climate-related risks.¹³ Recently, the IAIS, with the BIS, NGFS and the UN Sustainable Insurance Forum have launched the Climate Training Alliance (CTA) as a training tool for central banks and supervisors on climate risks.

⁸ Bolton et al (2020). Green swan alludes to “black swan events” that are used in economic literature to describe events that are unexpected and rare but have far-reaching impacts and that can only be explained ex-post. Examples include terrorism, catastrophes, or sudden changes in technology.

⁹ BCBS (2020), BCBS (2021a) and BCBS (2021b).

¹⁰ G20 (2021).

¹¹ FSB (2020a) and FSB (2020b).

¹² IAIS (2020).

¹³ IAIS (2021).

International Financial Reporting Standards Foundation (IFRS). The IFRS aims at establishing an International Sustainability Standards Board (ISSB) to set global standards on sustainability reporting and disclosure that meet the information needs of global capital markets. These will focus on climate-related reporting first and will build upon existing work of the TCFD.¹⁴ A final decision about this new board is expected by the November 2021 United Nations COP26 conference. A Technical Readiness Working Group (TRWG), which includes membership of the TCFD and IOSCO (International Organisation of Securities Commissions), has already been set up to provide proposals and strategic recommendations to the future ISSB.

3 Five Challenges Climate Change may pose for Deposit Insurers

It is challenging to conclusively determine the ways in which climate change may potentially impact deposit insurance. This is the case given the breadth and magnitude of climate change related risk, the considerable degree of uncertainty associated with the materialisation of these risks in the (sometimes rather distant) future, and the interaction between climate, policy initiatives and the economy and financial system at large. This sums up to a complex picture. In addition to traditional impacts on deposit insurers by policy initiatives, the financial and real economy, climate factors impact on deposit insurers – through policy initiatives and economic factors – in a more or less direct way.

This Policy Brief identifies five challenges that climate change may potentially cause for deposit insurers. The aim of this Policy Brief is to contribute to the understanding of how climate change may relate to day-to-day deposit insurance operations and to assist deposit insurers in considering the need for action. Where relevant, this paper highlights connections with the IADI Core Principles.¹⁵ The relevance to individual deposit insurers of the challenges identified here will depend upon a number of factors, such as the exact mandate or the geographical location.

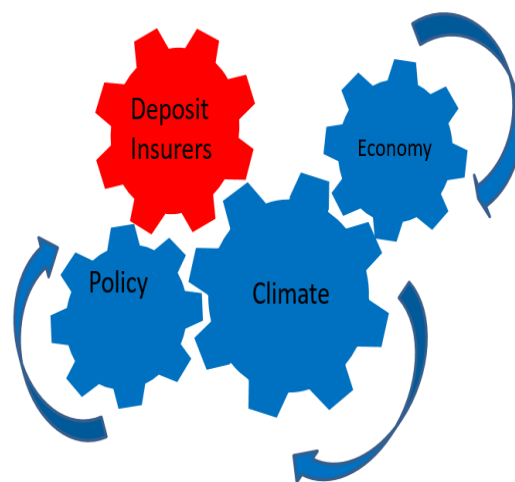


Figure 1: Impact of climate change on deposit insurers

Challenge 1: Climate risks may impact on a deposit insurer's operational capacities

The first challenge relates to the impact that climate change may have as an operational risk on deposit insurers.

Climate change has the potential to impose strain on deposit insurers' operational capacity due to the unpredictable and significant nature of environmental events. This operational risk originates from the physical risks that climate change may cause. Physical risks represent the economic costs and losses associated with the exposure of infrastructure and/or people to climate-related hazards, e.g. adverse weather events.¹⁶ Climate-related operational risks to deposit insurers may take the form of storms or flooding preventing the continued availability – e.g. through power outages – of critical staff or of crucial IT-systems necessary for preparing or actually conducting reimbursements or resolution activities.

Climate-related operational risks may be relevant to deposit insurers and relate to the Core Principles:

- Climate-related operational risks may have a direct impact on deposit insurers' core activities. Given the global increase in extreme weather events, the relevance of this challenge is expected to grow, even though risk exposure may differ significantly geographically. As with other operational risks, tools and procedures are available for deposit insurers to manage this risk.

¹⁴ See IFRS at <https://www.ifrs.org/news-and-events/news/2021/03/trustees-announce-strategic-direction-based-on-feedback-to-sustainability-reporting-consultation/>.

¹⁵ IADI (2014).

¹⁶ Bolton et al. (2020), p. 17

- Deposit insurers' contingency planning should take appropriate account of climate risk as a potential source of operational risk (**Core Principle 6** and Guidance on Risk management and internal control systems).^{17, 18} Contingency planning and crisis management have recently been placed in the spotlight due to the COVID-19 pandemic.¹⁹ Building and maintaining operational resilience within a deposit insurance system during times of unanticipated stress is a challenging exercise. A prerequisite for a contingency planning framework is that the deposit insurer has in place the necessary tools and procedures to perform their normal operations in accordance with its mandate.²⁰
- Climate-related operational risks to the deposit insurer's infrastructure, to banks' infrastructure and to the infrastructure of the financial system as a whole may impact on deposit insurers' ability to safeguard timely payouts (**Core Principle 15**).²¹ Such risks (e.g. as to the availability of deposit records or reimbursement proceedings) should be identified and managed appropriately. Contingency plan testing may consider such scenarios. Understanding and managing climate-related operational risks relates to challenge 2 (financial stability risk) and challenge 4 (prudential oversight).

Challenge 2: Climate risks may amount to financial stability risks

As a second challenge to deposit insurers, climate risk may cumulate to a risk to financial stability as a whole.

The relevance of climate risk to financial stability is arguably the main focus of climate-related financial research. Systemic financial risks have the potential to cause adverse spill-overs to the economy, along with imposing structural damage that constrains growth prospects in the medium-long term. Given the scale of climate related events and the speed in which they can occur, the probability of systemic linkages to climate may be substantial. However, the incorporating of climate-related risks into the analytics of financial stability monitoring is challenging, given considerable uncertainty associated with the physical, regulatory and economic dynamics of climate change.

The small, but fast-growing body of literature on climate-related financial stability risks focusses on **physical risks**, **transition risks** (associated with the financial impact resulting from a transition to a low-carbon economy which may be driven by changes in technology, in consumer preferences or in regulation) and **liability risks** (resulting from companies being held liable for environmental damage).²² These risks may affect sovereigns, financial institutions, corporates and households through materialising into traditional risk categories such as **credit risk**, **market risk**, **operational risk**²³, and **liquidity risk** (see Figure 3).

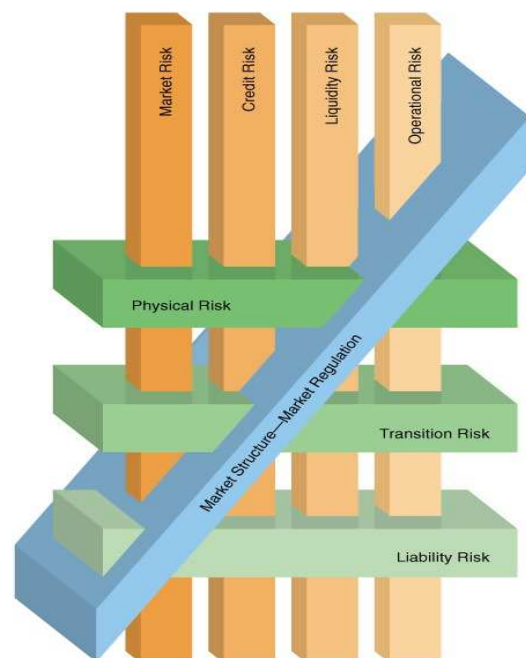


Figure 2: Climate Risk as a Financial Stability Risk (Alvarez & Patel (2020))

¹⁷ IADI (2014): Core Principle 6 *Deposit Insurer's Role in Contingency Planning and Crisis Management*.

¹⁸ IADI (2020), Guidance Point 1: "DIs should have in place a risk management framework and an internal control system that allows them to identify, assess, manage, respond, control and report risks that could affect their ability to fulfil their mandate and achieve the public policy objectives of deposit insurance."

¹⁹ Defina (2021) and IADI (2021).

²⁰ IADI (2019).

²¹ IADI (2014): Core Principle 15 *Reimbursing Depositors*.

²² Recent court rulings in Europe are showing an early tendency for extending liability for environmental damage towards an introduction of broader, climate-change based legal obligations for sovereigns and corporates alike. In March 2021, the German Constitutional Court ruled the German Federal State must take action to achieve climate neutrality (German Constitutional Court (2021)). In May 2021, a Dutch Civil Court ordered Royal Dutch Shell to reduce CO2 emissions of the Shell group, its suppliers and customers, by the end of 2030 to a net 45% of the 2019 level. The Court order is particularly controversial as it in effect extends obligations emanating from the intergovernmental Paris Agreement to corporates. The Court order can still be appealed. (The Hague District Court, 2021).

²³ Climate-risk may be an operational risk to financial institutions if it leads to forced office closures of the unavailability of otherwise essential infrastructure.

Climate risks may materialise on the level of an individual institution only, hence affecting individual bank default probabilities and impacting on deposit insurers (see Challenge 3).

However, these climate risks may also materialise on an aggregated level and accumulate to a risk for financial stability as a whole. Given that deposit insurers' principal policy objectives are protecting depositors and contributing to financial stability (**Core Principle 1**), climate risks may thus affect deposit insurers as well.²⁴ Risks to financial stability may occur for a number of reasons²⁵:

- Improper pricing and management of risks by market participants, e.g. because of insufficient or inadequate information, the large extent of uncertainty surrounding climate risks and the difficulties in diversifying portfolios if wide-spread increases in risk premia were to occur suddenly;
- Procyclical behaviour, e.g. through sudden, event-driven changes in risk premia and sizable asset sales;
- Feedback loops within the financial sector as well as between the financial and real economy, e.g. reduced bank-lending as a result of climate-related credit losses due to a deterioration of bank borrowers' creditworthiness as a consequence of regulation, or the materialisation of physical, transition or liability risks, or a geographical concentration of climate risk in supply chains;
- Deterioration of sovereign ratings as a consequence of public authorities assuming climate-related losses from banks, households or corporate holdings. Such loss-sharing may occur because of increasing difficulties in the (affordable) insurability of climate-risks or because of the significant protection gap – an estimated 70% of weather-related losses are uninsured.²⁶
- Climate-risks may be non-linear, with the reaching of tipping points dramatically increasing the probability and/or impact of climate-related adverse events.

Traditional risk-management tools cannot adequately capture climate-related risks to financial stability. These tools heavily rely on correct market pricing, normally distributed shocks and the explanatory power of historical data. These assumptions do not apply or are regularly not fulfilled in the case of climate-related risks. Ongoing research focusses on forward-looking, scenario-based methods, which is however often hampered by the lack of available granular data (see Box on ECB Climate Stress Test, ECB 2021).

Climate induced risks to financial stability may be relevant to deposit insurers and relate to the Core Principles.

- Through potential negative impacts on financial stability climate-change risks may eventually impact on deposit insurers. Given the high priority international financial standard setters allocate to this risk, deposit insurers should treat it accordingly. Because of the multi-factor complexity and public good nature of financial stability, deposit insurers cannot address this risk on an isolated basis but may consider contributing to increasing the understanding of this challenge. Financial stability risks are encompassing and may relate to a large number of traditional risk categories.
- Deposit insurers' principle public policy objectives include contributing to financial stability (**Core Principle 1**). Deposit insurers may hence consider supporting research efforts that reinforce the understanding of climate-related risks as a source of systemic risk. Building up and/or increasing such capability may contribute to enabling more effective anticipatory policy action, potentially lowering overall systemic risks.

²⁴ IADI (2014), Core Principle 1 *Public Policy Objectives*

²⁵ Bolton et al. (2020), FSB (2020a), Alvarez & Patel (2020).

²⁶ IAIS (2018). Other estimates point to protection gaps for natural catastrophe losses of 39% (North America), 56% (Latin America), 60% (Europe), 72% (Asia) and 82% (Africa) (SwissRe in FSB (2020a)).

Challenge 3: Climate risks may impact on bank default risks and on net resolution costs

As deposit insurers insure the risk of an individual banking failure, their natural interest exceeds the impact of climate-related risks on financial stability as a whole and runs down to understanding the impact of climate risks on institute-specific default risks.

Correct understanding of default risks assists deposit insurers in delivering on their objectives and may mitigate moral hazard issues. From a practical perspective, measuring the climate impact on bank default risks is challenging for at least two reasons.

- **Data Gaps.** Informed characterisation of bank default risk needs data. There are significant shortages in this space, particularly in terms of the availability of granular data (both spatially and temporally) that details regional and sectoral bank exposures as regards to climate change. Climate stress-test (see ECB climate stress test) may serve as a source of such data, but ideally, access to data must occur in a timely manner to enable near-real-time analytics for the deposit insurer. Coordinating such access may involve the provision of information sharing with other safety net participants via formal agreements that do not compromise confidentiality (Core Principle 4).²⁷ In addition, adequate consideration of cross-border flows (and associated risks) may require collaboration with other jurisdictions (Core Principle 5).²⁸

International standard setters have recognised the necessity for a more ambitious approach towards making available granular and comparable data on climate risks. Efforts point towards a further tightening of – possibly mandatory – disclosure by banks and corporates of climate exposure, based on TCFD standards²⁹ and by accounting standards such as IFRS. The EU has already introduced a disclosure obligation for large publicly traded corporates (over 500 employees and turnover exceeding EUR 40 million) and for all banks and insurers as of January 2022.³⁰ At the same time, market-led pressure towards disclosure of carbon footprints and similar climate-related information has risen dramatically in recent times.³¹

- **Knowledge Gaps.** Market pressure or a legal obligation to disclose climate impact (by corporates) or climate risk exposure (by banks) will not easily allow for assessing the impact of climate risks on credit, market and liquidity risks and thus on banks' default risks.

First, disclosed data is unlikely to be sufficiently comparable and granular in the near future. This is so as disclosure obligations may be based on national/regional taxonomies, which are likely to vary.³² Also, a significant part of the disclosure debate seems to focus on carbon dioxide emissions. Although highly relevant from a climate policy point of view, the degree to which a corporation emits carbon dioxide is only one element of the wider climate risks it may be exposed to.

Second, regulatory changes in the climate policy field are likely to heavily impact on the degree of climate-related

ECB climate stress test

In September 2021, the ECB published the results of an economy-wide climate stress test. The test assesses the impact of three climate scenarios on firms and Euro-area banks over a period of 30 years.¹

In a first step, which has been finalised in March 2021, the ECB had analysed the resilience of 4 million bank counterparties in the real economy under various climate scenarios and at the firm-level.

The stress test looks into the macroeconomic impact of three different scenarios: (1) a scenario of 'orderly transition' where timely and effective climate policies successfully limit global warming and physical risks; (2) a late, sudden and 'disorderly' transition with limited physical costs but high transition cost and (3) a 'hot house world' with no new climate policies.

Relying on internal datasets and models, the ECB finds clear benefits in acting early. In the hot house scenario, in 2050, the average corporate loan portfolio of a euro area bank is 8% more likely to default than under an orderly transition. Portfolios most vulnerable to climate risk are 30% more likely to default in 2050.

In the second half of 2021, the ECB will consider the dynamic responses of banks to climate change (e.g. portfolio reshuffling) to estimate second-round effects on the real economy.

¹ ECB (2021a)

²⁷ IADI (2014): Core Principle 4 *Relationships with Other Safety-net Participants*.

²⁸ IADI (2014): Core Principle 5 *Cross-border Issues*.

²⁹ The Financial Stability Board created the Task Force on Climate-related Financial Disclosures (TCFD) to improve and increase reporting of climate-related financial information. In 2017, the TCFD released climate-related financial disclosure recommendations designed to help companies provide better information to support informed capital allocation.

³⁰ EU (2020), Art. 8 and Van Roosebeke (2020).

³¹ Global asset manager BlackRock announced in January 2020 their intention to integrate climate risks in their future investment decision making. See BlackRock (2020) for further details.

³² See NGFS (2021a) stressing the importance of a common and consistent set of global disclosure standards based on minimally accepted global taxonomy.

risk exposure. Depending upon policy decisions, available data may have to be revisited to allow for an appropriate risk assessment. Monitoring regulatory changes can be challenging, given that climate-related policy decisions in foreign jurisdictions are increasingly expected to have considerable impacts on local bank exposure. To avoid carbon leakage, i.e. the relocation, due to emissions costs, of carbon-intensive production to countries with no or only low emissions costs, a number of jurisdictions increasingly consider measures with de-facto extra-territorial effect which may negatively affect the creditworthiness of bank lenders in remote jurisdictions.³³

Third, markets for green and sustainable financial assets are growing fast but are still immature. The valuation of these assets is subject to a number of challenges, such as lacking and imprecise data, but also to the risk of green-washing, i.e. the misleading labelling of an asset or activity as green. Increased transparency and disclosure may lead to a sudden revaluation of such assets and banks' portfolio.

Private rating agencies are increasingly incorporating climate-related risks into their risk models and assessments. Nevertheless, the above-mentioned challenges and gaps apply to rating agencies as well. As such, deposit insurers might consider investing in building and sustaining technical capability in the monitoring and analysis of climate-related regulatory changes on credit, market and liquidity risks. Given the cross-border effects of regulation, cooperation amongst deposit insurers may be of added value.

For deposit insurers with a wider mandate, a related concern is the potential impact of climate risks on resolution. Not only may climate risks increase the likelihood of bank failures, they may also increase net resolution costs. Bank assets may lose significant value ("stranded assets") because of climate-related technological or regulatory changes such as phasing out the use of fossil fuels. Also, disclosure obligations or changing consumer preferences may lead to a revaluation of assets. In such cases, lower recovery rates may lead to higher net resolution costs. Least cost resolution frameworks may cause these dynamics to shape resolution decision making.

The impact of climate risks on bank default risks and net resolution costs may be relevant to deposit insurers and relate to the Core Principles.

- Through their potential impact on individual bank default risks, climate risks impact on deposit insurers. These risks may emanate both from physical and transition risks. Up to a certain scale, tools and mechanisms seem to be available for deposit insurers to anticipate and address these risks. The risks associated with this challenge are mainly bank failure and market risks (e.g. stranded assets).
- Given considerable complexity in assessing whether and to what extent climate risks have a material impact on individual bank default risks, deposit insurers may or may not wish to build in-house capability in this field. Irrespective of this policy decision, sharing of data and information with other domestic safety net participants (**Core Principle 4**) and foreign jurisdictions (**Core Principle 5**) on the climate-risk exposure of individual financial institutions may be helpful to protect depositors and contribute to financial stability. Deposit insurers may support international efforts for increased and standardised disclosure of climate-risk exposure by corporates and banks as this would assist them in identifying and eventually pricing climate-related risks.
- Climate-risks may have an impact on individual bank default probabilities and thus on the likelihood of the DI entering into resolution or reimbursement. At the same time, net costs to deposit insurers following recovery may increase if climate risks materialise into stranded assets at a defaulting bank. Such scenarios may impair continued compliance with **Core Principle 9**, requiring a fund target size sufficient to participate in the resolution and payout of a number of small bank failures or several medium-sized bank failures and to guarantee prompt reimbursement.³⁴
- For those deposit insurers with a role in liquidation and recoveries from the estates of failed institutions (**Core Principle 16**) climate change may have an effect on the value and disposition of assets and hence recoveries.

³³ Examples include the EU's attempt to oblige non-EU airlines to purchase emission certificates for the full journey when flying to/from the EU or recent negotiations on a carbon border adjustment tax, effectively applying the European carbon pricing mechanisms also to non-European producers whose domestic legislation is less ambitious.

³⁴ IADI (2014): Core Principle 9 *Sources and Uses of Funds*.

Challenge 4: How to consider climate risks in financial risk assessment and oversight

Those deposit insurers with a loss or risk minimiser mandate that have risk assessment and supervisory powers may be confronted with considering climate risk in their supervisory work.

The integration of climate risks into financial oversight is still at an early stage and is undertaken only in a limited number of jurisdictions.³⁵ Supervisors' strategies in this field still vary significantly and reach from mere awareness-building to setting supervisory expectations. Nevertheless, there are signs for convergence of recommendations and strategies that focus on governance, disclosure and stress testing/scenario analysis to emerge.

Learning from global supervisory practice, the NGFS has published five recommendations to supervisors on how to integrate climate risks into prudential supervision:³⁶

- # 1: Determine local climate-related risks to the economy and financial sector and identify material risks to supervised entities;
- # 2: Develop a strategy to integrate these risk into supervision, including setting up an organisational approach and allocating resources thereto;
- # 3: Identify climate risks in supervised institutions' exposures, identify data gaps and run stress tests to assess the exposures and potential losses at institutions. This process may take up to one year and requires scenario analysis using external data, e.g. on carbon exposure and energy efficiency.
- # 4: Issue supervisory expectations of appropriate granularity and proportionality. These should include a) governance arrangement, i.e. climate risks being assigned to sufficiently senior decision levels; b) strategy, i.e. climate risks being an element in scenario simulation testing capital adequacy and potential leading to changes in banks' business models; c) risk management which incorporates climate-related risks; d) public disclosure of climate related risk exposure.
- # 5: Adequately manage climate risks at supervised entities by incorporating them in existing risk categories (especially credit, operational and liquidity risk) and – if necessary – apply capital surcharges or other, less intruding supervisory measures.

While supervisors globally are investigating ways to integrate climate risks into prudential oversight, a universally agreed approach has not yet emerged. One observable tendency is the wide-spread use of scenario analysis instruments as an alternative to traditional risk modelling methods.³⁷

Prudential oversight and climate risks: Selected International Observations

- Through a recent stocktake amongst its members, the **Basel Committee on Banking Supervision's** taskforce on Climate-related Financial Risks (TCFR) concluded that the majority of its members considers it appropriate to address climate risks through existing regulatory and supervisory frameworks. Also, 40% of BCBS-supervisors have already issued (or will shortly issue) principle-based guidance on how banks should incorporate climate-related risks into governance, strategy or risk management.¹ The TFCR is expected to identify effective supervisory practices dealing with climate risks.²
- In November 2020, the **European Central Bank** in its capacity as Eurozone banking supervisor, has made public its expectations to banks relating to climate-related risk management and disclosure.¹ Banks were to self-assess in how far they meet these expectations and to set up action plans in early 2021. In 2022, the ECB will benchmark banks' practices and conduct a supervisory review. Also in 2022, the ECB will conduct a supervisory stress test on climate-related risks.
- The **Bank of Japan** has, under its Climate Coordination Hub, announced it will support banks in identifying and managing climate-related financial risks. To quantify these risks, the BoJ has signalled the use of scenario analysis as useful in measuring relevant risks.³ The Japanese Financial Services Agency's (FSA) expert panel on sustainable finance has published a report stressing i.a. the importance of financial institutions using scenario analysis as an element of climate-related risk management. Supervisory guidance will be developed.⁴
- The **Federal Reserve** has recently established the Supervision Climate Committee, which will identify and assess financial risks from climate change and will develop a program to ensure the resilience of or supervised firms to those risks.

¹ BCBS (2020)

² Stiroh (2020)

³ Bank of Japan (2021)

⁴ FSA (2021)

³⁵ FSB (2020b).

³⁶ NGFS (2020a).

³⁷ The NGFS has made available practical advice to supervisors, including a set of climate scenarios, see NGFS (2020b) and NGFS (2021a).

Climate risks in financial risk assessment and financial oversight may be relevant to deposit insurers relate to the Core Principles.

- As financial supervisors are working intensively on integrating climate risk into prudential supervision, for those deposit insurers with a supervisory mandate, this challenge is timely and highly relevant. For these deposit insurers, this challenge may be associated with reputational risks in supervision.
- Deposit insurers with a risk assessment and supervisory mandate may consider investing efforts in building capacity to integrate climate risks into their risk analysis and financial oversight and may participate in international efforts in improving methods for financial supervisors to identify, measure, assess and if necessary respond to climate-related risks at supervised entities. This may assist in continuing compliance with the need for a financial safety-net that provides for early detection through supervision also (**Core Principle 13**).

Challenge 5: Climate risks and deposit insurers' investment fund asset management

Deposit insurers have a responsibility to soundly invest and manage their funds (**Core Principle 9**).³⁸ At all times, the deposit insurer's investment policy must aim at ensuring the preservation of fund capital and maintenance of liquidity in order to safeguard prompt reimbursement. In managing funds, deposit insurers should take appropriate account of any climate-related risks to assets held. Depending on a DI's discretion in investing, the growing relevance of climate policy may well lead to assets being subject to increasing physical and transition risks.

In addition to managing financial risks, deposit insurers may also consider the reputational risks related to their investment activities. In a recent survey on "sustainable and responsible investment" (SRI) by central banks, respondents repeatedly cited reputational risk as the key motivator for engaging in SRI practices.³⁹ Depending on local particularities and preferences, it may be advisable for deposit insurers to anticipate future demands for disclosure of climate-related exposure. Public pressure towards disinvesting in certain industries or outright bans on the investment in certain assets or sectors may follow but may be more relevant for those deposit insurers that are public authorities as opposed to privately organised ones. Deposit insurers may wish to make preparations for any such demands by investigating the pros and cons of green (sovereign) bond investment and/or of negative screening, i.e. limiting or banning investment in certain sectors or technologies.⁴⁰

Those deposit insurers seeking to adjust the fund portfolio to increase investment in sustainable projects require principles and data to guide such activity. They also need clear and credible signals from the market as to which equities and financial instruments are underpinned by sustainable activities, and to what degree. The development (and wide adoption) of reporting standards denoting the relative sustainability of activities are a necessary foundation for deposit insurers to make evidence-based decisions on their investment management strategy over the medium term. Application of such standards also assists in reducing "green washing" whereby firms inappropriately market their activities as "green".

Despite considerable growth, sustainable financial markets are still of an emerging nature. It remains to be investigated whether more sustainable investments of DI fund assets may have an impact on liquidity. Market risks as well should be considered. Although market risks are inherent to any investment, sustainable investment may be subject to increased market risks given the risk of greenwashing, i.e. the misleading labelling of an asset or activity as climate-friendly. Upon detection of this, asset prices may be subject to considerable downwards adjustments. Understanding these risks and dynamics is essential in calibrating resolution activities and ensuring that the capacity to promptly reimburse depositors is not compromised.⁴¹

³⁸ IADI (2014): Core Principle 9 *Sources and Uses of Funds*, Essential Criteria 6.

³⁹ NGFS (2020c).

⁴⁰ NGFS (2021b) on similar options for central bank asset purchases.

⁴¹ IADI (2014): Core Principle 15 *Reimbursing Depositors*.

Climate risks in asset management may be relevant to deposit insurers and relate to the Core Principles.

- As investment fund managers, deposit insurers must soundly invest and manage their funds (**Core Principle 9**). For this reason, climate risks as well should find adequate consideration in asset management practices where relevant.
- Deposit insurers' public policy objectives – prompt reimbursement and contributing to financial stability – should not be put at risk. Thus, when considering investment in sustainable finance markets (e.g. in green sovereign bond markets), risks to liquidity and of green-washing (i.e. the misleading labelling of an asset or activity as climate-friendly) should be appropriately considered, given the developing character of these markets.
- Deposit insurers may wish to anticipate possible future demands regarding transparency and green investment practice and the potential reputational and reporting risks these may present.

4 Future Directions

It is uncontroversial that climate change is a vastly under-studied area of risk within the deposit insurance community. The considerable degree of prioritisation assigned to the issue by international financial standard setters lends weight to the argument that deposit insurers should view climate as an area of strategic importance. Potential future initiatives include but are not limited to the following:

Research initiatives. This paper promotes the notion of targeted research to better comprehend the potential implications of climate risk on deposit insurers. There are many issues such as climate induced risks to financial stability as well its impact on individual bank default risks and on net resolution costs which would benefit from future research.

International engagement. Sharing of climate-related considerations and experiences by deposit insurers in international fora such as the NGFS is an important means to better understand key issues, stress the particular needs of deposit insurers, and ultimately develop best practice.

Stocktaking. In light of research findings and/or learnings from international engagements, deposit insurers would be well-placed to stocktake their existing capabilities. The identification of gaps in analysing climate-related risks is fundamental in productively engaging with the issue, and in comprehending any ramifications on deposit insurers' operations.

Climate risk related standards. Although it may be too early to determine whether an international standard (e.g. a new Core Principle) concerning the treatment of climate risk by deposit insurers is needed, climate risk needs to be monitored closely and consideration given to it in the future. If needed, IADI's future updated Core Principles may be adapted as to include reference to the strategies and tools that deposit insurers should dispose of to address any challenges stemming from climate risk.

Working with member institutions. Many of the climate-related challenges to deposit insurers are channelled to them through their member institutions. As such, working with member institutions, e.g. on disclosure of climate-risks may be helpful in better understanding emerging challenges and may reap benefits for the deposit insurer downstream.

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