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The Steering Committee of the European Bank Coordination Vienna Initiative endorsed the report in April 2024.

Executive summary

The European Bank Coordination Vienna Initiative established a working group on climate change and financial stability, which operated between 2021 and 2023 and, among other activities, delivered a series of seminars and related materials on the issues covered by its objectives and mandate. The overall objective was to reinforce financial stability in Central, Eastern and South-Eastern Europe¹ through the coordination and sharing of best practices related to climate change risks. The specific mandate of the working group was to improve cross-border cooperation on classifying and assessing climate change risks to the financial sector; identify key data and reporting gaps in this assessment; and improve understanding of climate-related supervisory and regulatory challenges. To support the fulfilment of the objective and mandates, a learning curriculum on the green transition of key sectors and pathways for financial institutions was initiated, and a review of banks' client questionnaires on green topics was undertaken. As part of the coordination, three workstreams were launched: (i) climate-related data availability and quality; (ii) regulation and supervision; and (iii) transition pathways.

The availability and quality of climate-related data are significant hurdles in tackling climate change challenges faced by the financial sector. The lack of relevant data can make it difficult for banks to manage climate-related risks and can hinder prudential supervision. Exposures to physical risks are especially hard to capture in quantitative indicator variables because these exposures intrinsically depend on complex, idiosyncratic phenomena, such as the precise physical location of facilities.

Data challenges seem especially acute in Central, Eastern and South-Eastern Europe. Major corporations in the European Union are adapting to more stringent disclosure requirements, but even for them, achieving comparability and reliability may be difficult. Small and medium-sized enterprises (SMEs) and microenterprises – especially important in Central, Eastern and South-Eastern Europe – do not generally collect certain relevant information, and awareness of what might be needed and the risks they may be facing is often limited. Meanwhile, banks need to comply with increasingly elaborate environmental, social and governance (ESG) disclosure requirements, the usefulness of which depends on the quality of the underlying data.

Workstream 1 examined the existing methods of gathering information for measuring the climate risks that borrowers face, and how they may be enhanced. Data may come from primary and secondary information sources. Primary sources are those that reflect information coming directly from the counterparties concerned, such as borrowing firms. Secondary sources are those that reflect other, indirect information, such as industry averages or reports from other countries.

One primary source is firms' own disclosures. Data on emissions and other metrics will soon be as available as audited information, at least for larger firms. In Europe, two directives (the Corporate Sustainability Reporting Directive and the Non-Financial Reporting Directive) set the overall framework. The standards cover all material ESG impacts, risks and opportunities, not just climate-related risks. Listed small and medium businesses and smaller financial institutions will have to publish ESG reports starting with 2024 data, and a simplified standard will be offered to other small and medium businesses on a voluntary basis.

Banks can use questionnaires to collect information about the climate change risks faced by clients. Several standardised questionnaires have been developed by commercial banks, central banks and other institutions and associations. Use of such a questionnaire can help not only banks but also companies to better understand exposures to climate change risks, identify opportunities and explain strategies to partners and stakeholders. These questionnaires vary in size, from 200 to fewer than 20 questions; focus (covering the whole ESG spectrum or only some aspects related to climate risk); and timing, since they can be collected once on the occasion of a single transaction or on a regular basis. In addition, the resulting data are not always systematically stored in dedicated and centralised information technology platforms. Such platforms are costly to operate and require a

¹ The CESEE comprises EU member states, such as Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia; and candidate and potential candidate countries of the Western Balkans such as Serbia, Bosnia and Herzegovina, Montenegro, Kosovo, North Macedonia Albania. The designation of Kosovo is without prejudice to positions on status and it is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

team of experts operating on a stable basis. Harmonisation of the questionnaires would benefit banks operating across several jurisdictions, such as cross-border banks operating in markets in Central, Eastern and South-Eastern Europe, as well as clients with multiple banking partners, who are spared the burden of responding to numerous, slightly different questionnaires. The different approaches of gathering information are likely to gradually converge, in parallel with the legislation that is entering into force.

Where primary data are unavailable, often a preliminary assessment of risk can be obtained through careful use of secondary data. For example, the National Bank of Romania surveyed approximately 11 000 Romanian firms (mostly SMEs)² about emissions, energy costs, mitigation strategies and investments, and physical risks. Statistics are reported by size, sector and region, and the results are indicative of the typical performance of a small or medium business. These results can be used by banks in Romania and elsewhere as approximations for typical firms in different industries.

Workstream 2 involved analysis and best practice sharing about climate-related regulatory and supervisory issues in Central, Eastern and South-Eastern Europe. Regulatory and supervisory practices related to financial risks from climate change are rapidly evolving, and national authorities and commercial banks in Central, South and South-Eastern Europe face challenges in developing the necessary capacities, defining realistic phase-in schedules and adapting global or EU standards to local conditions. The working group discussed various topics including prudential standards, supervisory methodologies and actions, banks' progress in meeting the standards, methodologies for climate stress tests, and carbon transition plans.

In contrast to EU supervisors, who are setting standards for banks to manage climate-related risks, most non-EU supervisors are only beginning to address climate risks and are facing more obstacles than their EU counterparts. This is because the national infrastructure underpinning sustainable finance (green taxonomies, sustainability reporting, etc.) is largely absent. The working group is advising non-EU supervisors to follow developed frameworks, for example EU frameworks, and to issue soft regulatory instruments, such as guidelines, recommendations or supervisory expectations, which set the standards for identifying, measuring, managing, controlling and reporting banks' climate-related risks. Banks should self-assess against these standards and prepare action plans for closing any identified gaps. In parallel, supervisors could follow European Banking Authority recommendations to update their supervisory review and evaluation process methodologies to capture climate risks. Supervisors should also encourage banks to embed climate risks in all their activities, including in their internal capital adequacy assessment process and internal liquidity adequacy assessment process frameworks, risk strategies and appetite, data infrastructure and stress testing frameworks.

EU banks participating in the activities of the working group shared practices for integrating climate risks in their strategies and business models, considering sustainability as a key business opportunity where banks are not only providers of financial services but also technical advisors for their customers. Banks are embedding sustainability in their governance frameworks and many banks have established new internal structures tasked with coordinating actions on sustainability and/or environmental, social and governance risks across their banking groups. In that context, foreign-owned local subsidiaries can be catalysts in developing a sustainable finance market across non-EU countries. Local subsidiaries can rapidly implement group policies on sustainability following programmes implemented in their home countries. Some foreign-owned subsidiaries may even start addressing climate risks *before* national supervisors set the standards, effectively becoming a source for host supervisors of good practices for the local market.

Embedding climate risk within credit risk underwriting and monitoring is challenging for banks. Regulatory standards recommend that banks run climate risk scenarios to test their resilience to transition and physical risk events. Although currently at a preliminary stage, climate stress testing may identify shortcomings in climate risk management frameworks that can be addressed during the supervisory review and evaluation process.

Regarding the disclosure requirements on sustainability for banks, EU banks are subject to general corporate disclosure requirements on ESG, and also have to disclose risk information in so-called Pillar 3 supervisory disclosures. Expanding disclosures requires care to avoid reliability issues that can generate legal risks related to the inaccuracy of information (that is, greenwashing risks). Hence, in non-EU countries, regulators should balance the introduction of prudential disclosures against the progress made by the sector. Continuous guidance to banks is needed to increase comparability and reliability of banks' disclosures.

² Published in the National Bank of Romania's Survey on the access to finance of non-financial corporations in Romania, October 2022.

In addition, banks and supervisors should foster international engagement. Active participation in international forums can accelerate the climate work of central banks and banking supervisors, including through membership and active participation in the Network for Greening the Financial System (NGFS). Home and host authorities should coordinate their actions (supervisory colleges) to ensure consistent approaches to climate risk and to avoid gaps and overlaps when dealing with climate risks for banking groups. Simultaneously, banking groups need to step up their efforts in implementing an effective framework for dealing with climate risks to subsidiaries.

Workstream 3 discussed the challenge of decarbonisation in Central, Eastern and South-Eastern Europe. In particular, the role of decarbonisation in the electricity sector and the sectors related to buildings and energy efficiency. Transition plans for banks (comprising banks' targets and actions needed to realise the transition to a low-carbon economy), and their role in the green transition, were also analysed.

Decarbonisation of the electricity sector will facilitate the decarbonisation of many other sectors of the economy. Globally, the energy sector needs to decarbonise rapidly, and Central, Eastern and South-Eastern Europe is no exception. The energy sector has been traditionally important for the economy and is a key client of banks. Global disruptions in energy markets and Russia's aggression against Ukraine have marked the return of energy security as a primary objective in most of the countries of Central, Eastern and South-Eastern Europe, which have traditionally been heavily dependent on Russian natural gas. The impact of the discontinuation of this resource is significant, especially in the context of the reduction in the use of coal-fired power plants.

Substantial investments in energy transmission, distribution, energy efficiency and renewable technologies, particularly solar photovoltaics and wind, are needed to meet the goal of net zero emissions by 2035 and the concurrent anticipated surge in electricity demand from 2020 to 2030, driven by decarbonisation efforts in the transportation, industrial and building sectors. In Central, Eastern and South-Eastern Europe, the proportion of renewables in electricity consumption is projected to increase from approximately 30% currently to 50% by 2030 and to 75-85% by 2050. Also, significant expansion of the transmission and distribution network is needed to meet growing demand for electricity. In Central, Eastern and South-Eastern Europe, public spending for clean energy, energy efficiency and public transport will need to be proportionally higher than that in Western Europe. The increased investment in the electricity sector, mostly in assets that are capital-intensive, provides an opportunity for private long-term finance. However, attracting low-cost, long-term finance requires a stable regulatory framework, and many risks remain for financing the power sector (electricity price risk, market design risk and policy target risk). Such risks were analysed in Workstream 3 to develop understanding about a complex technical field that is significant for the banking sector and its transition to a low-carbon economy.

Energy efficiency, which increases security of energy supply, improves competitiveness and reduces carbon intensity, is vital for achieving climate goals in Central, Eastern and South-Eastern Europe. Despite substantial current investments in energy efficiency, investments in the residential and industrial sectors need to be doubled or even tripled from current levels to reach the EU 2030 targets and net zero carbon emissions by 2050. Renovating existing buildings is crucial for reducing the energy consumption of buildings. Put differently, for the commercial banking sector, exposure to the current inefficient building stock represents a significant source of transition risk that needs to be addressed.

A large share of firms in Central, Eastern and South-Eastern Europe is taking measures to improve energy efficiency, according to the EIB Investment Survey,³ as almost all firms in the region are concerned about the energy shock. However, energy efficiency has not always been among their top priorities over the last few years. Mandatory policies and regulations with minimum energy efficiency performance requirements are driving some energy efficiency investments. However, investment barriers such as asymmetric information impede improvements in energy efficiency. The accumulation of identified investment barriers in residential building renovations and small and medium businesses (fragmentation, financial constraints, lack of technical expertise and subsidised prices) makes these two sub-sectors particularly challenging. The current rate of renovation across Europe must substantially increase to achieve a fully decarbonised building stock by 2050, even if the most efficient standards are adopted for new builds.

Transition plans, which specify targets and actions needed by an entity to realise their transition, are emerging as an important tool for financial institutions and non-financial corporations wishing to achieve their climate targets. Regulators are also interested because transition plans can support the alignment of the private sector with national or international sustainability objectives, and the management of climate-related risks in the

³ European Investment Bank. (2024), EIB Investment Survey – CESEE overview.

financial system. Transition plans can be voluntary, mandatory or prudential. The first two types are aimed at all companies, whereas the third type focuses exclusively on financial institutions. Preparing a transition plan entails analysing the current position (understanding current climate-related risks, etc.), setting ambitions, developing an action plan and ensuring accountability for delivery (including monitoring and reporting).

Aligning sustainability reporting with financial reporting is also a necessary step to deliver the European Green Deal. More specifically, the European Sustainability Reporting Standards have been developed by the European Financial Reporting Advisory Group (EFRAG), as mandated by the Corporate Sustainability Reporting Directive, to help EU efforts to align sustainability reporting. The Corporate Sustainability Reporting Directive broadens the scope of application for sustainability reporting as it includes entities of various sizes, with a phased approach (from 2024 to 2028) for reporting, depending on the size of the entity, and mandates the use of the European Sustainability Reporting Standards. These standards cover four areas: (i) governance, (ii) strategy, (iii) impact, risk and opportunity management, and (iv) metrics and targets.

The elements covered by this report are complementary. For example, improvements in data availability and quality are necessary for risk management by banks and the supervision thereof by authorities. Formal disclosure requirements may help accelerate better collection of relevant data. Sectoral and firm-specific transition plans will drive bank financing and the identification of lagging firms, which will become increasingly risky.

In summary, the working group provided a collection of analyses and tools – from data gathering to regulation, and from sector-specific expertise on transition plans to sustainability reporting standards – to interpret the climate change-related challenges faced by the financial sector in Central, Eastern and South-Eastern Europe. This best-practice sharing activity across banks and institutions in Central, Eastern and South-Eastern Europe has been instrumental in developing and improving knowledge and awareness of climate change and climate finance topics, and the capabilities to face such challenges, thereby contributing to financial stability in the region.

Background

On 28-29 October 2020, the Vienna Initiative Full Forum in Split, Croatia endorsed the establishment of a new working group on climate change and financial stability. All interested Vienna Initiative members, – that is, representatives of both public and private institutions from countries in Central, Eastern and South-Eastern Europe, as well as international institutions such as the European Investment Bank (EIB), the European Bank for Reconstruction and Development, the International Monetary Fund, the World Bank, and the European Commission – were invited to participate in the working group. The EIB was assigned to coordinate the work.

Rationale

Underinvestment, particularly in climate change, is a significant impediment in Central, Eastern and South-Eastern Europe. Recent research⁴ confirms that investment in climate sustainability remains below optimum and lower than that in Western Europe. In addition, technical expertise and skills are in short supply and can exaggerate pre-existing green investment gaps.

Still, awareness of the importance of climate change is rapidly building and banks and regulators are more prudent and prepared for the climate transition compared to a few years ago. Climate services within financial institutions are now closely cooperating with decision-making bodies and climate risk management is a central part of the overall risk assessment. Some banks offer preferential conditions for clients that invest in a sustainable manner or have already implemented solid transition plans. Similarly, clients seek funding from banks or international financial institutions with such characteristics. In addition, green regulation of the banking sector, as well as reporting standards for enterprises and banks, are rapidly evolving. Both are becoming increasingly standardised and harmonised, providing a better understanding of underlying investment decisions by the private sector and the public sector.

However, many issues remain unsolved and numerous questions still need addressing. In particular:

- a) **How to improve cross-border cooperation on classifying and assessing climate change risks to the financial sector.** Numerous banking groups in Central, Eastern and South-Eastern Europe operate across various jurisdictions, with banking regulations at very different stages of sophistication when considering climate change.
- b) **Whether key climate data are still “white noise” and whether reporting gaps narrowed in recent years.** Moreover, questions of how to protect climate data from misinterpretation, how much public value such data pose and how to better harmonise and interpret the data are far from being answered.
- c) **Coordinating and sharing best practices to contain climate risks and reinforce financial stability are largely missing.** It is reassuring that institutions are acting within their mandates and that regulation now integrates climate topics. However, rapid evolution means that climate change financial regulation and reporting sometimes miss key stakeholders, creating confusion on how to best move forward. Thus, further coordination is needed.
- d) **How key economic sectors will transition and what the pathways are for financial institutions.** There is huge technological uncertainty on what will drive climate transition across sectors.

The Vienna Initiative is a unique forum where such questions can be openly discussed between international financial institutions, regulators and banking groups. As there are many ongoing initiatives on climate change, this working group wanted to avoid duplicating the work of other working groups. Therefore, the scope of the working group was limited to the following contributions:

- i) Data availability and quality, analysed in Workstream 1, and reported in Chapter 1 of this report.
- ii) Banking regulation and supervision, analysed in Workstream 2 and reported in Chapter 2.
- iii) Transition pathways, analysed in Workstream 3, and reported in Chapter 3.

⁴ European Investment Bank. (2002). Business resilience in the pandemic and beyond: adaptation, innovation, financing and climate action from Eastern Europe to Central Asia, European Investment Bank. <https://data.europa.eu/doi/10.2867/832329>.

The climate finance compendium presented in this report is based on input from speakers, including experts from institutions participating in the Vienna Initiative and from other institutions, participants of the seminars (a series of 15 webinars and one in-person two-day meeting in Ljubljana, Slovenia) and the institutions coordinating this report.

Participating institutions

In addition to numerous seminars and teleconferences, the working group held one physical meeting, hosted by the EIB and Banka Slovenije on 30 September 2022 in Ljubljana, Slovenia.

The following institutions participated in the various meetings:

1. Erste Group Bank
2. European Bank for Reconstruction and Development
3. European Commission
4. European Investment Bank
5. International Finance Corporation
6. KBC Group
7. Oesterreichische Nationalbank
8. Slovenian Banking Association
9. Raiffeisen Bank International
10. UniCredit Bank
11. World Bank

Structure of the report

Chapter 1 is devoted to climate-related data availability and quality for banks. This has been identified as one of the most significant challenges in the transition process.

Chapter 2 is dedicated to regulatory and supervisory issues.

Chapter 3 analyses a broad range of additional relevant topics: decarbonisation pathways in different sectors, banks' transition plans, and European Sustainability Reporting Standards (ESRS).

Chapter 4 concludes the report and formulates its policy recommendations.

Chapter 1: Data availability and quality

Summary

Climate-related data availability and quality is one of the greatest challenges in addressing climate change issues facing the financial sector. Data availability is problematic for banks and authorities in all countries, including those covered by the Vienna Initiative.

The current scarcity of relevant data is a major hindrance to banks' management of climate change risks and the provision of financing for the transition to sustainability and adaptation to the effects of climate change. Banks and their enterprise clients share a need to map out sectoral transition paths, so that they understand potential growth areas and which assets may become stranded. Detailed information on current exposures constitutes the starting point. Banks are being asked by supervisors and markets to comply with elaborate environmental, social and governance (ESG) disclosure requirements, which are only worthwhile if underpinned with sound, comparable data. Poor data complicate prudential supervision and oversight of market conduct and impede the assessment of how climate change may affect financial system stability and macroeconomic performance.

Small and medium businesses and microenterprises, which are especially important in the Vienna Initiative region, do not generally collect relevant information, and awareness of what might be needed and the risks they may be facing is often limited. Likewise, information on the household sector is variable. In contrast, large European corporates are preparing to meet stricter disclosure requirements. However, even in those businesses, the quality of disclosures should not be assumed, and having a few annual observations is a poor basis for projecting into the future.

One reason for poor data availability is that obtaining useful data is costly for banks and their customers. The high costs partly reflect the fact that the data needed are often highly granular, because exposure to flood risk, for example, depends on very local conditions, and because there can be considerable heterogeneity across otherwise similar firms or locations. Capturing exposure to physical risks generally requires very idiosyncratic information (for example, on the geographical location of facilities). But transition risk related to emissions also depends on the exact characteristics of the firm involved: Scope 1 emissions (greenhouse gas emissions from own activities such as burning fossil fuel) depend on which fuel is burned, and how efficiently; Scope 2 emissions (greenhouse gas emissions from energy use, such as electricity consumption) depend on the mix of energy sources used in generation, which varies greatly over time and across countries; Scope 3 emissions (those embedded in the value chain, for example emissions produced in manufacturing rebars used in construction) are not typically measurable by any one firm within that chain.

Firms lack strong incentives to spend resources (a) on measurement, especially for emissions not subject to a carbon tax; (b) on indicators whose effects are likely to be significant only in the medium term (for example, chronic physical risks, such as persistent drought); and (c) on variables that capture downside but not upside risks. Moreover, many of the variables (such as CO₂ equivalent (CO₂e) emissions at the beginning and end of a supply chain, that is, the quantity of CO₂ emissions with the same global warming potential as one unit of another greenhouse gas such as methane) are non-economic and difficult to link to economic performance. This lack of intuitiveness contributes to questions about quality control, for which there are few established benchmarks. In addition, even when a firm tries to compile relevant data, classification systems (for example, of energy efficiency) differ and judgment needs to be exercised in selecting measurement techniques and models. High costs in many cases may also reflect a lack of expertise.

Key messages

The most significant issues connected to data availability and quality are: (i) proportionality (adjustment to the respondent's situation); (ii) adaptation of demands on different sectors (for example, carbon intensity, degree of exposure to physical risks); (iii) the promotion of consistent approaches; (iv) the choice of sources; (v) the data needs of the authorities themselves; and (vi) setting realistic supervisory expectations.

A review of current practices in compiling information used to quantify climate risks facing borrowers showed wide variation. This variation in part reflects differences in the relative importance of different variables (for

example, emissions by type or exposure to various physical risks) and the relative difficulty of obtaining information on these variables, especially for small and medium businesses.

Data may come from primary information sources, such as borrowing firms, and secondary information sources, such as surveys from other countries, samples of firms, or empirical modelling of the effects of climate change.

A major issue is the design and use of client questionnaires for collecting indicators of exposure of small and medium businesses to transition and physical risks. Such questionnaires have already been deployed by some banks and other organisations, such as non-profit organisations concerned with climate change. Since small and medium businesses have limited information and incentives in this area, a crucial issue in questionnaire design is how to achieve proportionality, that is, how to streamline the questionnaire to achieve a good cost-benefit balance and enable even less-capable firms to prepare useful responses. Any questionnaire should also help meet current and anticipated disclosure requirements. Another topic is whether to store results in a central database, and how to do so with due regard to confidentiality.

Some specific topics are related to:

- challenges in obtaining information on Scope 3 emissions, that is, those embedded in supply chains;
- special challenges regarding data on changing exposure to physical risks;
- coordinating data compilation with the needs of risk management and disclosure.

The first workstream incorporated information from the other workstreams and provided them with information, for example, on the level of detail to set in disclosure requirements.

This chapter excludes some associated topics to keep the discussion focused on climate change risks. Thus, lending to large firms and to households was not directly addressed. Financial sector issues related to non-climate environmental risks, biodiversity preservation, social issues, and governance and probity share many characteristics with climate change issues but are not the focus of this chapter.

Primary sources

Primary sources are bank borrowers and other counterparties, who may be asked to provide data on a relevant entity's CO₂e emissions, energy intensity, gross and net exposure to different physical risks, and other environmental, social and governance matters. Primary data are desirable if the relevant entity has a fairly accurate measurement of those variables and is willing to provide them.

A primary source that is growing in importance is firms' own disclosures. Data on emissions and other metrics should eventually be as readily available as financial information, at least for larger firms. In Europe, the Corporate Sustainability Reporting Directive and the Non-Financial Reporting Directive set the overall framework. Large firms (with at least 250 employees, including large banks and large subsidiaries of non-EU companies) will have to publish environmental, social and governance reports starting with 2023 data, using the European Sustainability Reporting Standards drafted by the European Financial Reporting Advisory Group.⁵ These standards cover all material environmental, social and governance effects, risks and opportunities, and not only climate-related risks.⁶ Listed small and medium businesses and smaller financial institutions will have to publish environmental, social and governance reports starting with 2024 data, and a simplified standard will be offered to other small and medium businesses on a voluntary basis. Disclosures are subject to external quality controls, which are due to be tightened over time.⁷

Banks can obtain information on climate change risks faced by clients by asking them individually. Responses can be cross-checked with information from other sources (such as geophysical databases). For larger projects, such an intense interaction may be worthwhile, even if the bank needs to obtain specialist expertise (for example, in physical risk assessment; terms of insurance contracts; the development of low-carbon technologies in individual sectors; and Scope 3 emissions embedded in a complex, international supply chain). Some topics, such as exposure to certain physical risks, or even reputational risk, may be so firm-specific and complex that they are best addressed in such an interactive manner.

⁵ The European Financial Reporting Advisory Group is a private association established in 2001 with the encouragement of the European Commission. It provides technical advice to the Commission in the form of fully prepared draft EU Sustainability Reporting Standards and/or draft amendments to these standards.

⁶ The European Sustainability Reporting Standards are designed to be highly consistent with the Global Reporting Initiative, Task Force on Climate-Related Financial Disclosures, and the International Sustainability Standards Board principles.

⁷ Nonetheless, there are concerns that firms have incentives and means to bias disclosures to favour their image. For example, see Lepere, M., Aikman, D., Dong, Y., Drellias, E., Havalddar, S. D., & Nilsson, M. (2023). *Emissions gaming? A gap in the GHG Protocol may be facilitating gaming in accounting of GHG emissions*. Online: King's College London, No. 1 ed.

Questionnaires

Several standardised questionnaires have been developed by banking associations and some outside providers to elicit primary ESG data from clients in a consistent and comprehensive manner.⁸

ESG questionnaires can be useful to banks in providing much of the information needed to make their own disclosures as well as the information on a client needed to underpin loan pricing and risk management. Harmonisation of the questionnaire may benefit a bank operating across several jurisdictions, which nonetheless has to manage risks on a consolidated basis. Using the same questionnaire (or very similar questionnaires) in all markets ensures that comparable definition and metrics are used, and data can be consolidated into a coherent, analysable dataset.

Harmonising the questionnaire may also benefit clients with multiple banking partners, who are spared the burden of responding to numerous, slightly different questionnaires and data requests. Responding to such a questionnaire can help an enterprise understand its own exposure to climate change-related risks and environmental, social and governance factors, identify opportunities and explain its strategy to other stakeholders.

Design

The questionnaires generally aspire to align with environmental, social and governance disclosure requirements (see above). Consequently, the questionnaires are broadly similar in structure, and some specific questions reoccur across several questionnaires with very similar language.

Questions reflect so-called dual materiality, that is, the objective of achieving relevance to both climate science and economic performance. Some questions are mainly related to economic effects (for example, spending on various fuels as a share of turnover) and others are more related to environmental and social impact (such as questions on recycling). Questions on emissions relate to environmental impact (effect on atmosphere composition) and economic impact (due to any carbon tax or emissions trading system). Sectoral add-on questions are available for carbon-intensive sectors.

Many of the questions demand a quantitative response, whereas others are more narrative or demand a yes or no (Boolean) response. Often the quantitative questions are couched in terms of physical units (CO₂e tonnes or MWh) rather than in monetary terms. It is standard to ask for quantitative data covering three years of observations. The narrative questions are predominantly in the sections on firm strategy and social and governance topics, but sometimes relate to exposure to physical risks, which are hard to quantify in a few standard variables, and expectations about future risks.

Critique

The questionnaires are usually very long, sometimes with more than 200 questions, which can raise doubts as to whether firms are able or willing to answer to a consistently high standard. However, the questionnaires often have helpful features, such as drop-down menus and links to standards, sources of information and advice on techniques for estimating emissions. In addition, proportionality has been applied (see below). Nonetheless, most firms (especially small and medium businesses) probably lack the necessary expertise to respond well to all questions, or even to exercise internal quality control.

The challenges in estimating CO₂e emissions have been mentioned above. Even for Scope 1 and 2 emissions, volumes of ordinary materials (for example, petrol or electricity) need to be translated into emissions of various greenhouse gases (CO₂, methane, nitrous oxide, etc.) using certain conversion factors, some of which may depend on fluctuating local conditions, such the fuel mix in electricity generation. The various gases then need to be aggregated using other weights. Estimation of Scope 3 emissions requires the use of models and information on technology used by others up and down the value chain. Many variables are involved, and although so-called life cycle carbon footprint estimates are available (the total CO₂e emissions typically associated with the production, use, and disposal of a product), these are subject to considerable model and measurement risk and may not be accurate for any one firm.

Information on exposure to physical risks is especially problematic because multi-dimensional phenomena must somehow be summarised. A firm's exposure to any one physical risk may depend on the exact characteristics of

⁸ Among Vienna Initiative countries, questionnaires have been and are being developed by groups of banks in Austria, Croatia and Slovenia. Outside providers include the Carbon Disclosure Project (CDP) and TranspArEEnS/CRIF (a project dedicated to small and medium-sized enterprises). A questionnaire is available from the Banking Association of Singapore, and banks in Scandinavia are reportedly developing a common questionnaire.

numerous locations where it operates, in addition to climatic conditions (a subject outside the expertise of small and medium businesses), and economic vulnerability may depend on the interplay of its exposure with myriad provisions contained in private and public insurance schemes. Estimation of future risk exposure needs to incorporate projections for local climate change and adaptation measures. All of this cannot be captured by a few indicators or even a short narrative text.

The questionnaires do not always provide information relevant to financial-economic management and the assessment of creditworthiness. For example, a carbon tax or a carbon border adjustment imposes a cost in proportion to the relevant firm's emissions of CO₂e that are covered by the tax, not on its total CO₂e emissions. Despite this, existing questionnaires address total CO₂e emissions and provide little or no information on tax exposure. Thus, a firm may have large total emissions, but insofar as they come from sources not covered by the tax, they are not an economic risk. Another firm may have low Scope 1 and Scope 2 emissions but high Scope 3 emissions and thus potential tax exposure through counterparts in its value chain. Also, a non-EU firm's exposure to the European Union's forthcoming carbon border adjustment depends on its exports to the European Union, which may be large or small relative to its total emissions.

Proportionality

Questionnaires, like disclosure requirements, need to incorporate proportionality, that is, adjustment to the scope and detail of demands considering the respondent's situation. It makes sense to ask fewer and simpler questions of a small firm whose climate impact and climate risk exposure are minor in absolute terms and who would probably be unable to provide reliable answers to a long and complex questionnaire. A client with no awareness or expertise might give irrelevant answers and would be better served with hands-on help in building understanding and capacity. Initial experiences with questionnaires confirm that smaller firms encounter more difficulty in responding adequately, especially on topics that are not part of their core business. However, it also makes sense to ask more from firms operating in traditionally carbon-intensive industries, such as energy generation and production of metals, where the impact is large and the firms are probably aware of the issues.

Proportionality can be achieved by removing some questions for a defined set of responding firms (for example, small firms in low-carbon sectors such as services). In such cases, it may be appropriate to delete questions that are likely to be most challenging to answer, such as those on Scope 3 CO₂e emissions. In contrast, most firms should be capable of responding on their spending on fuel, electricity and heating.

A more differentiated approach would make certain questions compulsory for large firms (in line with disclosure requirements) and optional for medium firms. Small firms might get simpler questions, or be asked to report on an "if available, please report..." basis, or to respond to a yes or no question, which could later be followed up on with the firm.

The questionnaire can be further simplified by removing questions that can be better answered by other means. For example, exposure to some physical risks might be more reliably assessed based on geophysical data, using expertise on catastrophe risk unavailable to firms, and supplemented with interview questions on insurance coverage. Prior guidance from regulators or responsible agencies could help align the units and elements of measurement, as well as quality controls to better manage the data.

Managing response data

Designing and distributing a questionnaire is only worthwhile if the data collected are stored in a stable and secure, yet accessible, manner. Individual responses will be more interpretable if they can be analysed in the context of a dataset, which enables the calibration of relationships between firm characteristics and risk exposures, identification of performance ranges, and exercising quality control. The objective is to create a panel of observations on many economic and non-economic variables, plus readable qualitative information, which can all be readily updated. Preparation of a questionnaire therefore needs to be accompanied by the development of a matching information management system.

Some banking sectors have agreed to set up centralised data platforms to collect environmental, social and governance questionnaire responses. Such a platform enables the aggregation of information, so that a representative sample can be accumulated quickly. A centralised platform may be especially useful to small banks and the authorities concerned about system-wide effects. However, operating a data platform is expensive, and may complicate individual banks' information management.

Secondary sources

Where primary data are unavailable, a satisfactory assessment of risk can often be obtained through careful use of secondary data. Such data come from sources other than the counterparty (the potential borrower for a bank), and sometimes from countries other than that where the counterparty is located. Secondary data may be based on:

- an average by sector or product, possibly across several countries or the world;
- an average by region, for example, of elevation and climate behaviour;
- an estimate scaled up from sub-sample information, for example, where data disclosed by large firms is assumed to be representative of the respective sector. If the raw sub-sample data are available, not only an average but also higher moments of the distribution can be estimated;
- data from other countries. Again, in some cases a range of values is available, giving a sense of what is typical and what is found in the tail of the distribution;
- environment-enhanced input-output tables, which are often prepared by research institutes. Even where such tables are based on data from other countries, they are useful in estimating how much emissions are embedded in products as they move along a value chain;
- non-economic databases, for example, on geographical and geophysical variables, such as precipitation behaviour. These databases may be prepared by research institutes, such as meteorological offices, or commercially oriented agencies (for example, some insurance associations publish maps of flood risk).

An example of a valuable secondary source is the survey conducted in 2022 by the National Bank of Romania, covering approximately 11 000 Romanian firms (mostly small and medium businesses).⁹ The questionnaire addresses emissions, energy costs, mitigation strategies and investments and some physical risks. Statistics are reported by size, sector and region. Although the survey was conducted for other purposes – such as identifying firms’ efforts to address climate risks – the results are indicative of the typical performance of small and medium businesses, by sector, in many Vienna Initiative countries.

There are many external sources, some of which may not be easy to find. However, the Network for Greening the Financial System working group¹⁰ on bridging data gaps has produced a searchable directory of relevant variables and sources.¹¹ The directory presents available variables and sources, structured according to seven stakeholder categories (for example, credit institutions), eight use cases for climate-related data (for example, exposure quantification), seven metric categories (for example, physical vulnerability) and ten types of raw data (for example, emissions).

It is often necessary to compile variables from several sources to obtain an estimate of exposures measured in economic terms. For example, the 2022 European Central Bank/European Systemic Risk Board (ESRB) report¹² on the macroeconomic challenge of climate change documented that it may be possible to match up information on the location of a firm (or at least the headquarters), the firm’s assets, physical hazards by (small) geographical area, and projections of the impact of catastrophes of various magnitude (for example, depth of flooding) to yield an estimate of the firm’s economic exposure to physical risks. The next step is to relate those possible economic losses to the firm’s financial strength and banks’ claims on that firm, with the aim of estimating the effects on probabilities of default and loss given default. The approach can be extended by projecting physical risk hazard rates and magnitudes under different climate change scenarios, which are obtained from other databases. However, it is essential to remain aware of the many heroic assumptions that underly the resulting estimates, the neglect of certain factors (adaptation measures, insurance coverage) and the high standard errors (for example, due to model risk about possible changes in catastrophe hazard rates occasioned by climate change).

⁹ Published in the National Bank of Romania’s Survey on the access to finance of non-financial corporations in Romania, October 2022.

¹⁰ The Network for Greening the Financial System is a network of more than 100 central banks and financial supervisors that aims to accelerate the scaling up of green finance and develop recommendations for the role of central banks in climate change.

¹¹ The directory can be browsed at <https://ngfs.dev.masdkp.io/browse>.

¹² The European Central Bank/European Systemic Risk Board Project Team on climate risk monitoring. (2022). The macroprudential challenge of climate change, July 2022.

Conclusions and recommendations

There are challenges regarding the availability of suitably granular, firm-specific data on exposure to climate change risks and opportunities that are needed by banks to manage those risks. In addition, prudential supervisors are hindered in their work of assessing vulnerabilities to climate change risks and setting supervisory priorities by the scarcity of relevant information. Across variables, those related to physical risk, those indicating the dispersion of characteristics across firms (rather than the mean), and those that reflect cross-firm linkages (notably Scope 3 emissions) are typically the most problematic. The challenges are especially great in the sectors of small and medium businesses and microenterprises.

Nonetheless, progress is being made, and authorities and financial institutions have much to gain by sharing their expertise. First, larger firms, including many large carbon emitters, are beginning to release detailed environmental, social and governance performance information, accompanied by some external quality checks. Second, many external databases and other resources are available and being updated. Information from these sources can be used and combined to provide rough estimates or proxies of values for enterprises in Vienna Initiative countries. Regarding primary sources, banks have a better idea of what they should ask their customers, either through customised interviews or through a common questionnaire. Banks in several countries have begun using harmonised environmental, social and governance questionnaires, modelled on the forthcoming disclosure requirements but with various features designed to reduce the burden on less sophisticated firms and prioritise carbon-intensive sectors. All these techniques and resources can be adapted to local needs by Vienna Initiative participants from the private and public sectors, so that even those who are only now focusing on climate change-related risks can quickly approach the frontier of good practices.

Going forward, the major commercial banks need to pursue their programmes of collecting relevant information from clients and analysing that information in a way that is fully useable for the purposes of risk management and strategy formulation. A rich database of this information will take time to accumulate. One area that requires attention is the development of mechanisms to assess the quality of data and their comparability across firms and countries. International banks in Central, Eastern and South-Eastern Europe can set a good example for local banks, which may be less exposed to the evolving international norms and are less able to cover the fixed costs of designing dedicated information systems. Banking supervisors and potentially banking associations can help “laggard” banks catch up and can promote consistency (for example in questionnaire design) where that would reduce the regulatory burden on banks and their clients. Supervisors also need to set realistic expectations of what banks can achieve in terms of collecting and exploiting data: at least for the first few years, a bank’s efforts should be acknowledged even if significant data gaps remain.

Finally, much work is needed to increase awareness of climate change issues among bank clients, and then build skills, knowledge and processes. Commercial banks, other financial institutions and public authorities can all contribute to making enterprises understand that they have an interest in knowing about climate risks (their upside, in terms of opportunities, and their downside), and that basic expertise can be achieved without undue costs.

Chapter 2: Regulatory and supervisory issues

Summary

Regulation and supervisory practice related to financial climate risks affecting banks¹³ has evolved rapidly in recent years, and major changes are being introduced. National authorities and commercial banks are challenged in developing the necessary skills and processes, defining realistic phase-in schedules, and adapting global or European standards to local conditions in Vienna Initiative countries. Progress has been uneven owing to limited resources and the demands from other priorities. However, there may be large efficiency gains from sharing techniques that have already been developed, and consistency across the region could help reduce the regulatory burden for banks and their customers. Hence, the Vienna Initiative and the working group are seen as a significant platform for exchanging expertise and experience and facilitating a dialogue between regulators and banks at European, regional and national levels.

This workstream on regulatory and supervisory issues has been covering the following areas:

- recent and prospective development of prudential standards in this area, including the appropriate degree of flexibility in the timetable for banks to meet the new requirements, and where additional guidance and definition of supervisory expectations are needed;
- how authorities are embedding climate risks in their regular supervisory methodologies and actions, such as horizontal assessments and peer reviews;
- banks' past and prospective progress in meeting climate risk standards related to strategies and business plans; corporate governance and organisational structures; and the integration of climate risk in their credit and operational risk management;
- methodologies for climate stress tests, how tests should be designed given several objectives (for example, identifying climate risk management capacities and priorities for development), and current limitations (for example, on data availability and scenario customisation);
- under what circumstances it may be advisable to lower capital requirements for green assets (through so-called "green supporting factors");
- the strengthening of disclosure requirements, as included for example in the European Banking Authority templates on climate risks, and the associated need to ensure the reliability of these requirements, which often include non-financial data and other materials;
- the implementation of the requirement to prepare annual risk-based carbon transition plans and the associated need to build appropriate skills and processes in this area, for example, to estimate emissions;
- special challenges facing European non-EU jurisdictions, which closely monitor EU developments in this area but retain some flexibility to adjust the content and timeline of requirements. In some cases, the authorities are very resource-constrained, or the legal framework has gaps (for example, a defined green taxonomy);
- the possible role of prudential authorities in establishing and developing a sustainable finance market, or at least support efforts by others who have a mandate in this area.

This report does not provide the full details of the activities of this workstream. Rather, the aim is to distil some main themes and lessons. The next section discusses the key areas of regulation and supervision, while the last section presents the main lessons from the workstream.

¹³ This note refers variously to "climate risks," "climate-related and environmental risks," or "climate-related financial risks." The note uses the definition of the Basel Committee on Banking Supervision of "climate-related financial risks" as "the potential risks that may arise from climate change or from efforts to mitigate climate change, their related impacts and their economic and financial consequences."

Key messages

Regulation and guidance

European supervisors have made remarkable progress in setting the standards that banks should follow to effectively manage their climate-related risks. As a first step, and in line with global standard setters,¹⁴ many EU supervisors have issued soft regulatory instruments in the form of guidelines, recommendations or supervisory expectations,¹⁵ that set the standards for identifying, measuring, managing, controlling and reporting their climate-related risks. These standards typically cover the following areas:

- integration of climate risks into banks' strategies and business plans;
- the organisational framework for managing climate risks;
- the internal control framework for measuring and controlling climate risks;
- the risk appetite, strategy and infrastructure for dealing with climate risks;
- credit, operational, market and liquidity risk management standards for dealing with climate risks;
- disclosure of climate-related risks.

The choice of soft, principle-based regulatory instruments provides supervisors with the required flexibility for gradually becoming more demanding when scrutinising banks' compliance. As this topic is relatively new for supervisors and banks alike, the choice of a soft law instrument is understandable. Supervisors have also given banks extended timelines for compliance. For instance, the European Central Bank expects banks to become fully compliant with its Guide on climate-related and environmental risks for banks by the end of 2024, more than four years after its introduction, whereas other supervisors have set different deadlines for meeting recommendations.¹⁶

Once the standards are issued, banks are usually required to self-assess against them and prepare action plans for closing the identified gaps. Harmonised templates can enable supervisors to easily compare banks to obtain the current situation of sector-wide climate risk practices, while also comparing the ambitions of banks' planned activities.

Oversight

After banks have been given enough time to start implementing the recommendations, authorities can undertake their oversight activities, in accordance with their regular supervisory cycle. Supervisors can clarify expectations for banks by identifying climate risks as a supervisory priority and outlining the supervisory activities they intend to perform during the period.¹⁷

Supervisors commonly engage banks in this area through off-site activities. Thematic reviews or horizontal assessments can be useful to gauge progress in this area for all or a significant part of the banking sector and to identify best practices. Annual surveys are a less resource-intensive technique to measure banks' progress. On-site, targeted inspections can be used for verifying compliance with the requirements once banks have made further progress, although use of such inspections by supervisors is currently limited. The European Central Bank, for instance, discussed its programme involving on-site inspections reviewing the energy efficiency of real estate portfolios (including the data sources and methodological approaches for calculating energy intensiveness) or the policies, procedures and practices through which banks manage the transition risks of their corporate loan portfolios, including by estimating the carbon intensity of their activities.

Some supervisors have published best practice documents, through which they provide banks with further detail on supervisory expectations.¹⁸ In parallel, supervisors are incorporating climate risks into their supervisory

¹⁴ In June 2022, the Basel Committee on Banking Supervision published its principles for the effective management and supervision of climate-related financial risks. The document sets 12 principles for banks and six principles for banking supervisors. The document has been complemented with the publication of frequently asked questions on climate-related financial risks (December 2022). <https://www.bis.org/bcbs/publ/d532.pdf>

¹⁵ See, for example, the European Central Bank's Guide on climate-related and environmental risks, November 2020.

¹⁶ See the case of the National Bank of Hungary, which published its first Recommendations on climate-related and environmental risks in April 2021 (Recommendation No 5/2021 (VI.15)), to issue a new Recommendation No 10/2022 (VIII.2).

¹⁷ See, for example, the identification of climate risks as a supervisory priority by the Single Supervisory Mechanism during the last few years. https://www.bankingsupervision.europa.eu/banking/priorities/html/ssm.supervisory_priorities202212~3a1e609cf8.en.html.

¹⁸ See, among others: ECB, Walking the talk: banks gearing up to manage risks from climate change and environmental degradation, November 2022; ECB, Good practices for climate risks and environmental risk management, November 2022; ECB, Supervisory assessment of institutions' climate-related and environmental risks disclosures: ECB report on banks' progress towards transparent disclosure of their climate-related and environmental risk profiles, March 2022.

methodologies and processes. Following publication of a European Banking Authority Report,¹⁹ authorities are considering updating their supervisory review and evaluation process methodologies to capture climate risks and other environmental, social and governance risks. Key methodological changes are expected in several areas:

- business model assessments to factor the way banks are managing sustainability and how climate risk may impact the banks' strategies and business models;
- internal governance and risk management practices to identify, among other aspects, how banks' management bodies and internal control functions integrate and manage climate risks;
- risks to capital, particularly the impact that transition risks may have on banks' credit risk portfolios, and how physical risks can influence banks' exposure towards credit and operational risks;
- risks to funding and liquidity, as transition and physical risks may also negatively affect the liquidity position of banks.

Supervisors also expect that banks progressively embed climate risks in all their activities and in key regulatory and risk management processes. Among other elements, banks are expected to fully integrate climate risks into frameworks for their internal capital adequacy assessment process and their internal liquidity adequacy assessment process, in their risk strategies and appetite, in their data infrastructure framework and within their stress testing frameworks.

Banks' activities

Banks, when dealing with managing climate risks, have made significant progress. However, the headway is uneven – decisive steps have been taken in some areas, but there is significant room for improvement in others.

Sustainability is considered a key business opportunity:²⁰ Banks see themselves not only as providers of financial services but also as technical advisors for their customers, helping them adjust to the new sustainability requirements, which is a challenging task for most corporates due to the continuous proliferation of new standards in this field. Consequently, banks are designing and offering a wide array of "green" or "sustainable" products to clients. These products are frequently loans or credits but can include investment products or even deposits. Setting sustainability-based key performance indicators is a common practice across European banks, typically linked to business plans.

Likewise, banks are making progress in embedding sustainability in their governance frameworks. Banks' boards are now paying attention to sustainability matters, directors with expertise in this area are joining boards, and training programmes are being implemented. Many banks have established an area of sustainability and/or environmental, social and governance that is tasked with coordinating the actions across their group. In addition, banks' internal control functions are increasingly active in assessing and reviewing climate risks.

A key challenge perceived by banks is embedding climate risk within the underwriting and monitoring of credit risk. Banks are implementing ratings and other tools to evaluate their clients' sustainability. The tools and rating systems are usually introduced for borrowers operating in economic sectors identified as highly sensitive to transition risks and will be gradually rolled out to other sectors. These rating systems consider the borrower's exposure to climate risks (physical and transition risks), their alignment with the Paris Agreement, their carbon transition plans, and their management practices on climate risks.

Credit risk tools facilitate banks' engagement with clients in this area. The tools use public and non-public information on sustainability gathered from clients. Such information can be obtained from corporate public disclosures, or specific questionnaires submitted for banks not subject to disclosure requirements. Where primary sources of information are not available, banks usually complement them with proxies and other data obtained through indirect sources. Rating systems enable banks to identify outliers (borrowers who are

¹⁹ See European Banking Authority Report on management and supervision of ESG risks for credit institutions and investment firms (EBA/REP/2021/18).

https://www.eba.europa.eu/sites/default/documents/files/document_library/Publications/Reports/2021/1015656/EBA%20Report%20on%20ESG%20risks%20management%20and%20supervision.pdf.

²⁰ For a comprehensive analysis of banks' best practices, see European Central Bank. (2002). Good practices for climate-related and environmental risk management. Observations from the 2022 thematic review. To gauge the annual progress of the banking sector, see the National Bank of Hungary. (2023). Green Finance Report. <https://www.mnb.hu/letoltes/zold-penzugyi-jelentes-2023-eng-digitalis-2.pdf>.

operating in highly sensitive sectors and do not have any sustainability practices and alignment plans) and adjust their credit risk strategies and policies in response.

Banks may take measures to address clients' shortcomings on sustainability. These measures may include a closer engagement with clients or extending loans to facilitate their transition plans (commonly in line with the EU taxonomy for sustainable activities), consistent with their perceived role as both advisors and financiers for sustainability. Reducing the credit exposure or terminating it altogether are only indicated for egregious cases as a last resort.

Obtaining data on the physical risk profile of banks' clients raises challenges for banks. Data sources are not only expensive, but also diverse, and include different assumptions and data points that can hamper sector comparability. This is now a key matter after Pillar 3 disclosure requirements²¹ on physical risks came into force in 2023 for certain EU banks. Financial institutions consider that supervisors can issue further guidance to help banks meet their new requirements and report physical risks in a more harmonised manner.

Banks are well advanced in integrating physical hazards within their operational risk management framework. Institutions are defining scenarios that consider key physical events in their business continuity frameworks.

Stress testing

Regulatory standards usually recommend banks to run scenario analyses and stress tests when assessing their exposure to material climate-related risks.²² Consequently, banks are expected to regularly run climate risk scenarios to test their resilience to transition and physical risk events.

European authorities have conducted supervisory stress tests²³ to comprehensively assess the banking sector's resilience to climate risks. The European Central Bank's exercise in 2022 was a key development in this area. The exercise was a bottom-up, microprudential stress test that sought to estimate the impact of several climate risk scenarios on banks' capital adequacy. The exercise entailed two short-term physical risk scenarios, and short- and long-term²⁴ transition risk scenarios.

Emerging experience shows that supervisory climate stress tests are crucial learning exercises for banks and authorities. During such tests, banks typically focus their efforts on gathering data and refining and developing new methodological capabilities to translate climate risks in their capital adequacy. The identification of best practices when estimating banks' greenhouse gases Scope 3 emissions is noteworthy.²⁵

For some supervisors, an exercise like that of the European Central Bank may be unduly complex. During workshops, other supervisors discussed simpler, proxy-based approaches that they used for stress testing non-significant institutions. Non-EU supervisors can use similar approaches when they implement their own supervisory climate stress tests.

The still nascent stage of climate stress testing does not allow the test results to be used for setting or adjusting banks' capital requirements.²⁶ Nonetheless, the tests are useful for identifying shortcomings in climate risk management frameworks that can be addressed during the supervisory review and evaluation process, which allows a bank's risk profile to be assessed consistently.

²¹ Basel 3 comprises three pillars: Pillar 1 refers to capital and liquidity adequacy and minimum requirements; Pillar 2 outlines supervisory monitoring and review standards; and Pillar 3 promotes market discipline through prescribed public disclosures.

²² See, for example, Principle 12 of the Basel Committee on Banking Supervision Principles for the effective management and supervision of climate-related financial risks (<https://www.bis.org/bcbs/publ/d532.pdf>) or Expectation 11 of the Single Supervisory Mechanism (SSM) Guide on climate-related and environmental risks (<https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.202011finalguideonclimate-relatedandenvironmentalrisks~58213f6564.en.pdf>)

²³ Climate stress tests can be broadly categorised into macroprudential and microprudential stress tests. Typically, macroprudential tests seek to assess the resilience of the banking or financial sectors to different climate stress scenarios, generally using top-down approaches. Microprudential stress tests aim to gauge the impact that the scenarios have on the capital adequacy, asset quality and risk profile of individual institutions, frequently taking a bottom-up approach. Although in both exercises authorities face similar data constraints and methodological shortcomings, the dynamics of bottom-up microprudential stress tests make these exercises more resource-intensive.

²⁴ The long-term transition risks were based on those defined by the Network for Greening the Financial System. See <https://www.ngfs.net/ngfs-scenarios-portal/>.

²⁵ See the ECB's *Good practices for climate-related and environmental risk management* (November 2022) <https://bankingsupervision.europa.eu/ecb/pub/pdf/ssm.thematicreviewercercompendiumgoodpractices112022~b474fb8ed0.en.pdf> and its *Report on good practices for climate stress testing* (December 2022) https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.202212_ECBreport_on_good_practices_for_CST~539227e0c1.en.pdf.

²⁶ Including either Pillar 2 capital requirements or capital guidance.

Green-sensitive capital requirements

The current consensus on green-sensitive capital requirements is that there is still insufficient evidence to justify amending the current Pillar 1 framework for setting capital requirements.²⁷ Any unaddressed or insufficiently addressed risk within Pillar 1 should be covered by banks and reviewed by supervisors as part of the Pillar 2 framework. The predominant view across prudential authorities is that green supporting factors (that is, lower capital requirements for green assets) or brown penalising factors (that is, higher capital requirements for “brown” assets), if unexplained by a risk differential, can undermine prudential rules, as they will introduce political considerations when measuring asset riskiness.

The National Bank of Hungary is setting green preferential capital requirements, including a green supporting factor. In 2019²⁸ and 2020,²⁹ the National Bank of Hungary introduced the option of lowering internal capital adequacy assessment process capital requirements³⁰ for certain categories of green assets, such as energy-efficient housing loans, certain loans to corporates or municipalities (that is, funding renewable energy projects, electromobility or sustainable agriculture) or investments in green bonds. Although limited in total exposures (5-7% of the exposure) and subject to a global cap, the scheme enabled the construction and purchase of 8 600 energy-efficient properties. These features limit the impact of the scheme on the participant banks’ capital adequacy.³¹ The scheme is temporary – its application will be reviewed when the programme reaches its current deadline by the end of 2024. Although the scheme has not been supported by the existence of a “green risk factor,” the National Bank of Hungary says it has brought benefits for banks’ risk management by encouraging the funding of sustainable projects, which, in turn, may have decreased banks’ exposure to transition risks. Likewise, as the applicability of the supporting factor is linked to banks reporting the schemed loans, the scheme has also expanded the available green data for banks and the supervisor.

Overall, authorities are reluctant to introduce any far-reaching amendments to the current Pillar 1 rules for determining banks’ capital requirements, at least until sufficient evidence on the green risk differential emerges. Nevertheless, consistent with Pillar 2 rules, banks should assess whether their material climate risks are sufficiently captured by Pillar 1 capital requirements. If this is not the case, banks should allocate internal capital during their internal capital adequacy assessment processes to ensure risks are soundly covered.

Climate risk prudential disclosures

EU banks are facing increasing disclosure requirements on sustainability. Banks are not only subject to general corporate disclosure requirements on environmental, social and governance matters and sustainability but are also required to disclose risk information as part of the Pillar 3 disclosures.

Prudential disclosures of climate-related risks were introduced in 2023 for European banks and will be phased in progressively.³² Disclosures of climate risks can provide critical information for equity and debt investors and other stakeholders, facilitating market discipline. However, if risk disclosures are imposed before banks have been given sufficient time to address climate risks, the resulting disclosures can be irrelevant and ineffective, undermining investors’ confidence in the prudential framework and potentially raising greenwashing legal risks.

The European Union has introduced the disclosure of the Green Asset Ratio for large corporates, with a mandate to the European Banking Authority to adapt it to banks. Banks will be required to measure and disclose their taxonomy-aligned assets. The Green Asset Ratio disclosure requirements will progressively come into force as

²⁷ See, for instance, the stated position of the European Banking Authority in *The role of environmental risks in the prudential framework* (discussion paper EBA/DP/2022/02). Likewise, the Basel Committee on Banking Supervision, in Principle 5 of *Principles for the effective management and supervision and climate-related financial risks*, recommends that banks cover climate-related financial risks within their internal capital, including by resorting to forward-looking techniques such as stress testing, but refrains from making any recommendation or reference to Pillar 1.

²⁸ In 2019, the National Bank of Hungary implemented a green supporting factor for housing loans for improving the energy efficiency of the Hungarian housing stock.

²⁹ In 2020, the National Bank of Hungary introduced a green supporting factor for corporate and municipal loans and certain investments in green bonds. The preferential capital treatment was extended for five years.

³⁰ Banks’ participation in the scheme is voluntary.

³¹ The overall maximum reduction of the scheme should not be higher than 1.5% of the banks’ total capital requirements.

³² These are Pillar 3 Disclosures on ESG Risks under Article 449a of the Capital Requirements Regulation. The key information templates regarding climate-related and environmental risks are the following: (i) climate transition risks: bank exposures to high-carbon sectors and their counterparties’ Scope 1, 2 and 3 emissions; (ii) climate transition risks: loans collateralised by real estate and their collateral energy efficiency; (iii) climate physical risks: bank exposures (and their maturity) that are subject to physical risk; (iv) mitigating actions, including Green Asset Ratio and Banking Book Taxonomy Alignment Ratio; (v) metrics on banks’ alignment towards international sustainability goals; and (vi) other mitigating actions (beyond taxonomy-aligned).

from 2024. Through Green Asset Ratio disclosures, investors should theoretically be able to assess the banks' exposures to sustainable assets as defined by the EU Taxonomy (green assets). Although no minimum level will be required, this mandatory disclosure seeks to put peer pressure on banks reporting lower levels of green assets by encouraging them to aim for higher levels.

However, several uncertainties surround the calculation and reporting of the Green Asset Ratio. This ratio excludes certain assets from both its numerator and denominator (these assets are sovereign bonds, derivatives, trading book, etc.), whereas others are excluded only from its numerator (assets such as loans to small and medium businesses not subject to obligations on corporate sustainability, non-EU corporates, consumer loans, etc.). These rules have raised concerns that some banks might be unfairly identified as less sustainable due to business model features that have little to do with their sustainability. For example, banking groups with large unsecured consumer loan portfolios or, more relevant in the context of the Vienna Initiative, those with material subsidiaries in non-EU countries. This perceived problem has been addressed through encouraging banks reporting on a voluntary basis on all their green assets, including estimates, and the introduction of a complementary prudential indicator: the Banking Book Taxonomy Aligned Ratio. This ratio allows banks to include certain Green Asset Ratio-excluded assets in the denominator if the banks have reliable information on the alignment of their loans to the EU taxonomy for sustainable activities. Banking Book Taxonomy Aligned Ratio disclosures can incentivise banks to collect information on sustainability for clients not subject to sustainability disclosures, such as small and medium businesses and corporates located in non-EU countries.

Other prudential disclosures raise further concerns regarding the reliability and comparability of banks' prudential disclosures. For example, the requirements to disclose the energy efficiency of banks' real estate portfolios, the carbon intensity (including Scope 3 emissions) of certain loan portfolios or information on banks' exposures to physical risks.

Prudential transition plans

Prudential transition plans are also among the possible future prudential requirements. The Prudential transition plans are just one type of climate transition plans, which is exclusive for financial institutions, whereas two other types of transition plans (voluntary and mandatory disclosure-based transition plans) are aimed for all companies. More details on different climate transition plans and their role in supporting the green transition could be found in chapter on Workstream 3.

Typically, in a transition plan, a firm periodically sets its targets for reducing its greenhouse gas emissions to ensure its alignment with the objectives set in the Paris Agreement³³ and defines the actions for achieving them. A bank may set different greenhouse gas targets for the short, medium and long term and outlines the main actions through which it intends to address them. The prudential transition plan which is required by the regulator can also include areas related to governance and data infrastructure.³⁴

Currently, several EU regulatory initiatives contemplate forcing banks and other corporates to prepare and disclose their climate transition plans.³⁵ A key breakthrough in the prudential framework is expected with the future approval of new amendments of the Capital Requirements Directive (CRD VI). In Articles 76 and 87, and particularly in the new Article 87a of the draft CRD VI, Member States are requested to ensure that banks prepare and submit prudential carbon transition plans to their supervisors, with the issuance of guidelines for such plans being delegated to the European Banking Authority to flesh out their contents.

Prudential transition plans, approved by banks' governing bodies, can be vital elements in the management and supervision of banks' climate risks. If approved, banks will need to submit their consolidated plans to the supervisor. Supervisors will review the plans from a prudential, risk management perspective, focusing on the

³³ Including the nationally defined contributions (NDCs) of the countries in which it operates. Whereas the Paris Agreement sets a global goal of limiting the increase in global temperatures to "to well below 2°C (3.6°F) above pre-industrial levels, and preferably limit the increase to 1.5°C," each country makes different commitments to contribute to the Paris Agreement. This results in different greenhouse gas reduction pathways for countries and industries, which can significantly complicate the preparation of carbon transition plans for banks operating in multiple jurisdictions.

³⁴ For a comprehensive study of the current situation on transition plans, see Network for Greening the Financial System. (2023). Stocktake on financial institutions' transition plans and their relevance to micro-prudential authorities. The report acknowledges that there is not a unique understanding of transition plans, but they can be broadly divided between two categories: (i) strategy-focused plans, which are primarily aimed at providing transparency to external audiences on a firm's strategic approach to meet specific climate targets; and (ii) risk-focused plans that are focused on the management of risks associated with the transition to a lower-carbon economy.

³⁵ See, for example, Article 19 of the Corporate Sustainability Reporting Directive.

reliability and accuracy of the data infrastructure or on the soundness of the governance practices that underpin the plans.

The introduction of prudential transition plans is not expected for a few years, as the CRD VI has just recently been approved. There are still many complexities and uncertainties surrounding prudential transition plans, evidencing that the plans are still at a very early stage. Significant questions were raised on: (i) the approaches to set reduction targets for greenhouse gas emissions and the most suitable pathways (top-down vs. bottom-up approaches); (ii) the wide range of existing methodologies for estimating Scope 3 emissions; (iii) target comparability across the banking sector, particularly concerning when or if the plans are subject to disclosure; and (iv) the specific challenges facing cross-border banking groups, etc.

Special challenges for non-EU European countries

Supervisors

Most non-EU supervisors have only started to address climate risks.³⁶ Some have prepared, and most are preparing, their multi-year strategies and roadmaps for dealing with climate risks.³⁷ Before the approval of such roadmaps, authorities usually launch surveys and undertake quantitative assessments to gauge the state of the sustainable finance market in their countries, including banks' exposure to climate risks and their climate risk management practices.

Authorities and banks operating in non-EU countries usually face more challenging obstacles than their EU counterparts. First, the infrastructure underpinning sustainable finance is predominantly absent in non-EU countries. Although these countries have committed to reforming their regulatory frameworks to EU standards on sustainability,³⁸ the convergence process is still nascent. Most non-EU countries have yet to implement green taxonomies, sustainability reporting or green product labels, and this can hamper the development of a sustainable finance market. Second, market practices on sustainable finance and climate risk management are less developed within most non-EU countries.

Non-EU authorities can benefit from the experiences of EU supervisors. Non-EU host supervisors, in charge of supervising subsidiaries of EU banking groups, can benefit from multilateral coordination, through supervisory colleges, and bilateral coordination. They can also identify the best practices implemented by EU banking supervisors, particularly for actions and measures implemented for entities jointly supervised by the Single Supervisory Mechanism and the national authorities, for example in Croatia, Slovenia, Slovakia, etc., as these measures may be more appropriate for their banking systems.

Banks

Foreign-owned local subsidiaries can catalyse the development of a sustainable finance market and implement climate risk practices across non-EU countries. Local subsidiaries can quickly implement group policies on sustainability. Western banks with networks of cross-border subsidiaries have a specific approach to sustainability, including the management of climate risks. Banks explained that their programmes were first implemented in their home countries (and sometimes in a few jurisdictions), before being rolled out to other subsidiaries, including those in non-EU countries, in the following years. This means that some foreign-owned subsidiaries may start actively addressing climate risks well before the supervisor sets the standards, effectively becoming a source of knowledge for the host supervisors. Local subsidiaries can also benefit from extensive support from their parent companies through the provision of methodologies, tools and systems for managing climate risks.

³⁶ All the participating authorities are in various stages of the process of joining the European Union, and therefore, have comparable regulatory frameworks to the European Union.

³⁷ See for example, the Banking Agency of the Federation of Bosnia and Herzegovina. (2023). The strategic priorities on the management and supervision of climate-related risks and environmental risks in the banking sector for the 2023-2025 period. Sarajevo, February. https://www.fba.ba/upload/docs/7the_strategic_priorities_on_the_management_and_supervision_of_climate_related_risks_and_environmental_risks_1oF.pdf. A similar document was approved and disclosed by the Banking Agency of Republika Sprska: https://www.abrs.ba/data/documents/2261/ABRS_Strateski%20okvir%20upravljanja%20ESG%20rizzicima%202023-2025_Objava.pdf.

³⁸ See the Sofia Declaration on the Green Agenda for the Western Balkans, November 2020. <https://www.rcc.int/docs/546/sofia-declaration-on-the-green-agenda-for-the-western-balkans-rn>.

Conclusions and recommendations

Prudential authorities should continuously engage in the establishment and development of a sustainable finance market

The role of central banks and banking supervisors in dealing with climate risk is limited to their mandate: microprudential supervision for banking supervisors, and preserving financial and price stability for central banks. The mandate of authorities seldom includes creating and developing a sustainable or green financial market,³⁹ and therefore these authorities are not responsible for setting up the infrastructure for a sustainable finance market (green market). The development of a green taxonomy is not, and should not be, the responsibility of a prudential authority. However, this does not mean authorities do not have an important stake in the development of this market. Likewise, other key regulatory pieces for a sustainable finance market, such as green bond standards, green labels for loans and other financial products, or sustainability disclosures for large corporates, do not directly address climate risks but can indirectly support the efforts of supervisors and banks for sound management of their climate-related risks.

Need for supervisory proactivity and guidance in an iterative engagement with the banking sector

Addressing climate risks is a relatively new area for banks and supervisors. The first steps for supervisors commonly entail issuing principle-based guidance. However, banks may perceive this guidance as rather generic, demanding more clarity from authorities. Supervisors, especially at the beginning, need time and resources to identify the best available practices, which can be achieved through continuous engagement with banks while seeking guidance from international organisations such as the Network for Greening the Financial System.

It is a good practice for supervisors that, when climate risks are identified as a priority for banking supervision within their supervisory planning process, authorities disclose it and clarify the activities they plan to undertake for their coverage.

Addressing climate risks in the banking sector requires a paced, sequenced approach

Implementing a framework for managing climate risks can be challenging for banks and supervisors. Compliance with the standards demands resources from banks, whereas supervisors need to progressively develop skills, methodologies and procedures to address climate-related risks. Ultimately, both parties need to ensure that climate risks are addressed as part of their internal procedures. Some good practices are emerging.

- Once the standards have been issued, authorities can require banks to self-assess against them, analyse their gaps and formulate action plans to close them, ideally through standardised templates to ensure comparability.
- Banks can benefit from an extended compliance schedule, with progressive deadlines. Authorities can also gradually tighten the criteria upon which they assess compliance with the standards, as best practices become available. Supervisors may set different deadlines for complying with the different components of the standards.
- Once banks have had enough time to comply with the standards, authorities can deploy their regular supervisory tools. Initially, authorities can conduct horizontal reviews – which are key in identifying banks’ best practices – where they can use different techniques (that is, regular surveys or proper supervisory engagements). Further steps may involve targeted on-site inspections to verify how banks are managing certain aspects of climate risks.
- To provide banks with more concrete guidance, authorities regularly identify and disclose best practices in the banking sector.
- Caution is advised for supervisors when imposing quantitative requirements based upon climate risk assessments. However, supervisors can recommend or require qualitative measures targeting improvements in governance or risk management practices (that is, requesting or recommending improvements in risk management, governance practices or data quality) when supported by the shortcomings identified.

Prudence in embedding sustainability in Pillar 1 capital requirements

As there is insufficient evidence of the existence of a “green factor,” some recommendations have been made.

³⁹ An exception being the National Bank of Hungary.

- Authorities should closely follow international guidance (the Basel Committee on Banking Supervision) on how to address climate risks within the capital framework, particularly on Pillar 1. Caution is advised for implementing green supporting or brown penalising factors.
- Banks and authorities may include their material climate risks within their Pillar 2 policies. Banks can consider their material risks in their internal capital adequacy assessment processes, allocating internal capital where justified. Supervisors can integrate climate risk assessments within the policies and procedures for their supervisory review and evaluation process, especially when they use supervisory reviews and evaluation processes for determining Pillar 2 capital requirements.

Integration of climate risks into risk management and supervisory prudential frameworks

Climate-related risks are not new risk sub-categories but are risk factors that may materially affect other existing risk categories, mainly in credit, operational, market and liquidity risks. Banks' approaches for assessing and managing their climate risks should be embedded into their regular capital, liquidity and risk management processes, for instance by explicitly considering these risks within their risk appetite, risk management frameworks or internal capital adequacy assessment process and internal liquidity adequacy assessment process frameworks.

Similarly, prudential authorities should update their existing methodologies, policies and procedures for a comprehensive coverage of banks' climate risks. In the European context, updating supervisory review and evaluation process methodologies is vital, as climate risks can be significant factors of the different elements of the supervisory review and evaluation process, including (i) the business model, (ii) the internal governance and risk management frameworks, and (iii) credit, operational, market and liquidity risk levels and controls. Continuous cooperation between supervisors and banks is required to overcome data quality and availability challenges.

Data quality and availability are key challenges. Data issues arise in every risk management or regulatory exercise: credit risk ratings, stress tests and scenario analyses, and internal and external reporting all demand data of sufficient quality.

While banks are the main users of climate data, supervisors also need data on a system-wide basis. In this regard, authorities need to understand available primary and secondary data sources for estimating climate risks, including proxies, to identify and communicate the available best practices.

Stress testing as learning exercises for authorities and banks

Different approaches to climate stress testing have emerged in recent years, covering both microprudential and macroprudential exercises. Past experiences can be helpful for authorities. To date, climate stress testing has been mostly a learning exercise, where both authorities and banks were able to improve their understanding of the key elements for managing climate risks. The stress tests have been beneficial for closing data gaps or developing advanced methodologies.

Moreover, as the complexity of these exercises is relatively high, before embarking on such exercises supervisors must clearly understand the resources required for the exercises. As for other recommendations, engagement with other authorities is crucial.

Prudential disclosures need to be balanced against the progress made in gathering reliable and comparable data

Prudential disclosures on banks' exposures to climate financial risks can be instrumental for assisting investors in their understanding of banks' risk profiles.

Authorities are recommended to:

- balance the introduction of prudential disclosures against the progress made by the sector. Expanding disclosures should not be done at the expense of their reliability, as this can create legal risks related to the inaccuracy of information (that is, greenwashing risks);
- provide continuous guidance to banks on prudential disclosures, to increase comparability of banks' disclosures.

Banks are recommended to:

- exercise caution in disclosing quantitative information. Information sources can be clarified by, for example, indicating when the data were obtained using proxies rather than directly from the client and explaining the limits on the accuracy of the information;

- make efforts to extend the coverage of the Banking Book Taxonomy Alignment Ratio to borrowers not subject to sustainability disclosures. Questionnaires are a key tool for collecting direct information from corporate borrowers in non-EU countries.

Banks and supervisors should pay close attention to prudential transition plans

Prudential transition plans can be a cornerstone in the regulatory and supervisory architecture for dealing with climate risks. Mindful of the future relevance of these plans, it is recommended that:

- banks consider preparing their prudential transition plans even before these plans become a new prudential requirement. If climate transition plans are required as a non-prudential tool,⁴⁰ banks can prepare them from a risk management perspective;
- supervisors start reviewing banks' plans for their alignment to the Paris Agreement as soon as possible. The focus should be on data quality, sound methodological approaches, risk management perspectives and governance mechanisms for estimating greenhouse gas emissions and setting short-, medium- and long-term targets.

Banks and supervisors should foster international engagement, including with international financial institutions

Active participation in international forums can accelerate the climate work of central banks and banking supervisors. Membership and active participation in the Network for Greening the Financial System ensures the availability of a very active platform for exchanging experiences and practices in this area.⁴¹ Several documents have been published by the Network for Greening the Financial System in a broad array of areas,⁴² including on regulating and supervising climate risks, designing and executing climate stress tests, or integrating sustainability in the monetary policy toolbox.

Authorities and banks, especially in non-EU countries, may also request the support of international financial institutions in developing their prudential frameworks for supervising and/or managing climate risks, and in building supervisory capacity.

Fostering supervisory coordination, including through supervisory colleges

It is recommended that home and host supervisors engage in continuous coordination, mainly through supervisory colleges but also through bilateral engagement. Home and host authorities should coordinate their actions when supervising climate risks for banking groups, to ensure consistent approaches and avoid gaps and overlaps. Supervisory coordination is particularly important for the Vienna Initiative participants.

The need for coordination is especially important for non-EU European supervisors, as they can benefit from the approaches implemented by home authorities. Therefore, it is recommended that:

- home authorities proactively include their supervisory actions on climate risks in the supervisory colleges;
- host authorities explain their planned supervisory actions on climate risks;
- if possible, home and host authorities undertake joint inspections or similar supervisory techniques involving close cooperation.

Banking groups should step up their efforts to implement climate risk management frameworks at the group level

Banking groups with a network of local subsidiaries, especially those operating in European non-EU jurisdictions, can step up their efforts in implementing an effective framework for dealing with climate risks, including by applying the framework to subsidiaries. Implementing effective sustainable finance practices, including the management of climate risks, can be beneficial not only for the subsidiaries themselves but also for the market, as these subsidiaries can be catalysts for developing market practices in these countries.

⁴⁰ For instance, banks, as other corporates, are required to disclose their carbon transition plans by referring to other laws and regulations.

⁴¹ Even non-EU European supervisors have recently joined the Network for Greening the Financial System (Bank of Albania, National Bank of Ukraine, National Bank of the Republic of North Macedonia, Central Bank of Montenegro, and National Bank of Serbia).

⁴² The Network for Greening the Financial System issues guidance on various topics related to climate risks and which are fundamentally addressed to central banks. Key microprudential documents include: (i) Guide for supervisors: Integrating climate-related and environmental risks into prudential supervision (2021); (ii) Climate scenarios for central banks and banking supervisors (2022); and (iii) Stocktake on financial institutions' transition plans and their relevance to micro-prudential authorities (2023).

Determining authorities' role on sustainability and climate risks

Central banks and banking supervisors are making significant progress in measuring and supervising climate-related risks. Most authorities believe that their role in these areas is strictly limited to their legal objectives and statute (that is, price and financial stability). Therefore, their activities do not typically involve fostering the development of a sustainable finance market but do ensure that banks and other supervised financial organisations properly govern, measure, manage, control and report their climate-related risks. Supervisors must also have a thorough understanding of how these risks can affect financial stability and banks' individual situations.

Chapter 3: Gearing up to decarbonise the industrial sector in Central, Eastern and South-Eastern Europe

Summary

The challenge of climate change requires long-term structural change to the economies of Central, Eastern and South-Eastern Europe – to decarbonise, on the one hand, and build resilience to current and future climate change, on the other. This chapter covers the banking opportunities and risks arising from this structural change to key parts of the economy.

The chapter begins with two subsections focusing on the pathway to net zero: decarbonising power generation (electricity sector) and boosting energy efficiency in buildings. The third subsection focuses on the climate transition plans of banks, highlighting best practice in meeting rising regulatory and stakeholder expectations. A final subsection covers the European Sustainability Reporting Standards.

This chapter is designed to help develop intuition in a complex technical field and underscores the importance of robust technical and regulatory project due diligence, associated with sound lending policies for each sub-sector. Simultaneously, the chapter analyses the role of banks' transition plans as key tools to achieve their climate target and as part of their disclosure and, especially, their overall strategy.

Decarbonisation pathways: The electricity sector

Rapid decarbonisation of the electricity sector in Central, Eastern and South-Eastern Europe requires a significant increase in investment, mostly in capital-intensive assets. Access to low-cost, long-term sustainable finance is critical to reducing the cost of capital and keeping the transition affordable. The electricity sector therefore presents an enormous opportunity to the banking sector. While the global energy crisis and Russia's aggression against Ukraine accelerated investment in energy efficiency and renewable energy, they also increased some of the shorter-term challenges to preserve energy security in the region.

This subsection highlights three interrelated issues at the core of providing sustainable finance to the sector:

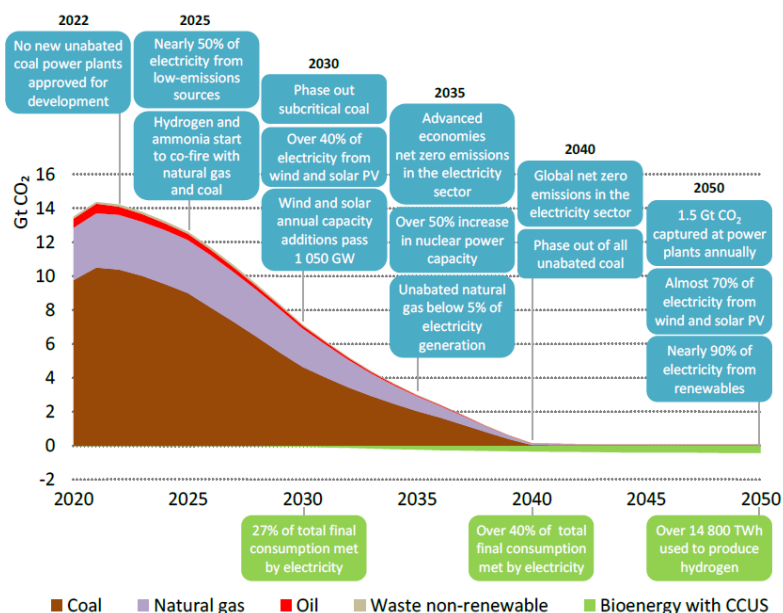
- very high investment needs, notably in low-carbon generation and electricity grids;
- re-emphasis on energy security, with a recalibration of the role of natural gas;
- wholesale electricity prices becoming more volatile and ambiguous for investors.

Large investment is needed in the electricity sector

The electricity sector needs to decarbonise fast globally, and Central, Eastern and South-Eastern Europe is no exception to the rule. The electricity sector is the first sector to decarbonise, facilitating the decarbonisation of other sectors of the economy. According to the International Energy Agency's Net Zero Emissions (NZE) Scenario (see Figure 1), the electricity sector in advanced economies needs to reach net zero emissions by 2035.

Simultaneously, the demand for electricity is expected⁴³ to increase by 25% from 2020 to 2030 to support decarbonisation of the transport, industry or building sectors – even accounting for energy efficiency measures designed to reduce demand for electricity.

Figure 1: CO₂ emissions by source and key milestones in the electricity sector in the NZE Scenario, 2020 to 2050.



Source: International Energy Agency (IEA), World Energy Outlook 2022.
 Note: CCUS stands for carbon capture, utilisation and storage.

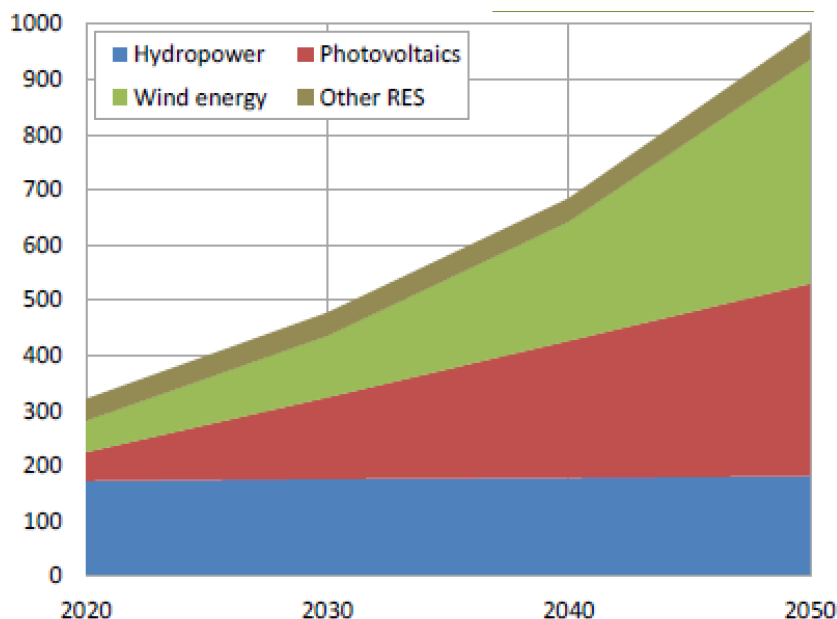
Reaching such targets requires significant additional investment in renewable technologies, notably in solar photovoltaics and wind. Figure 2 shows that in the Central and South-Eastern Europe energy connectivity⁴⁴ (CESEC) region, the share of renewables in electricity demand is set to increase from around 30% today to 50% by 2030 and to 75-85% by 2050. This is estimated to require investment of up to €8 billion per year by 2030. Other low-carbon technologies are likely to play a role in this region, including nuclear power generation.

The transition in the electricity sector also requires significant expansion of the transmission and distribution networks. Grid investment is needed to meet growing demand for electricity, to integrate sizeable new investments in power plants and to ensure that electricity can flow across large regions to tap the complementarity of renewables sources. This requires careful project preparation: the lack of public acceptability towards overhead transmission lines can be a significant factor in constraining or slowing adequate expansion.

⁴³ Under the International Energy Agency’s NZE Scenario, the share of electricity in global final energy consumption jumps from 20% in 2020 to 26% by 2030 and to approximately 50% by 2050. This amounts to doubling the consumption of electricity between 2020 and 2050 – or is, as the International Energy Agency says, equivalent to adding an electricity market the size of India every year.

⁴⁴ The Central and South-Eastern Europe energy connectivity (CESEC) works to accelerate the integration of regional gas and electricity markets.

Figure 2: Increasing share of renewables (wind and solar) in electricity generation in the Central and South-Eastern Europe energy connectivity (CESEC) region by 2030.



Source: Figure 3.16 of [Study on the Central and South Eastern Europe energy connectivity \(CESEC\) cooperation on electricity grid development and renewables](#).

Note: The results shown refer to a scenario with high shares of renewables, reflecting 2030 shares required to strengthen EU climate ambition with strong cross-border cooperation. RES stands for renewable energy sources.

Significant additional investment is needed in the electricity sector in Central, Eastern and South-Eastern Europe. Investment needs to at least triple over the next decade to reach net zero emissions. Private and public finance are both essential in this investment. In Central, Eastern and South-Eastern Europe, public spending for clean energy, energy efficiency and public transport represents between 2% and 4% of gross domestic product (GDP) – which is typically higher than the proportion in Western Europe. Significant EU funding is available through several funds⁴⁵, the EU Emissions Trading System (ETS) revenues (1-2% of GDP) and the REPowerEU package (the plan presented by the European Commission in 2022 to reduce dependence on Russian fossil fuels and accelerate the green transition). Additional public finance is critical as an incentive to attract a considerable increase in private sector investment.

Ensuring electricity security during the rapid energy transition

Global disruptions in energy markets and the Ukraine war have also marked a return of energy security as a primary objective in countries in Central, Eastern and South-Eastern Europe. This region has traditionally relied heavily on Russian natural gas, and the phasing out of this resource is being felt strongly, at a time when coal-fired power plants are also being phased out. Coal and lignite have long been considered important domestic pillars of energy security: in 2022, EU coal-fired power generation rose by 7% compared to 2021.⁴⁶

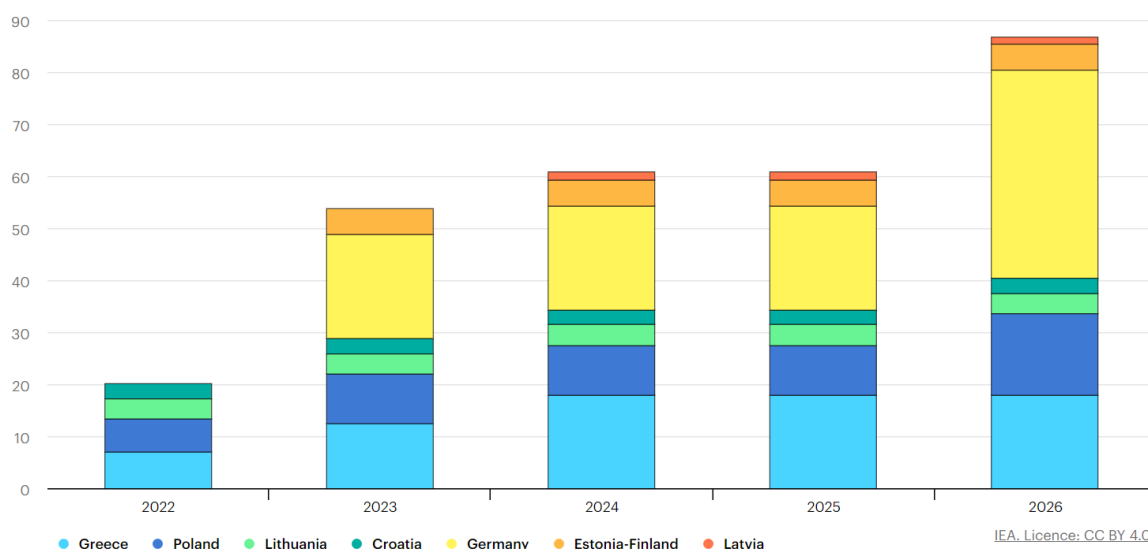
In the immediate term, investment in this region is aimed at diversifying regional gas supply; this includes increased domestic gas production and gas storage and liquefied natural gas (LNG) regasification capacity (see Figure 3). However, a combination of higher prices and policy push will likely reduce regional dependency on natural gas over the longer term. This is illustrated by the rapid growth in the heat pump market in the region⁴⁷ to replace fossil fuel-fired boilers. Recent concerns about gas security may reinforce some countries' plans to build new nuclear power plants.

⁴⁵ More specifically, the Just Transition Fund, Cohesion Policy Funds, Connecting Europe Facility, Recovery and Resilience Facility, ETS Modernisation Fund, ETS Innovation Fund and Social Climate Fund.

⁴⁶ It is difficult to conclude whether a significant switch from gas to coal was made in 2022, as various simultaneous changes were made on the power supply side. These changes include a shortfall in nuclear power – mostly associated with France – with generation down by 22% at EU level on 2021; a very significant drought leading to reduced hydro production – down by 20% from 2021; and a sharp reduction in demand for electricity in the fourth quarter of the year.

⁴⁷ See [The economic case for heat pumps in Poland](#) in pv magazine.

Figure 3: Liquefied natural gas (LNG) import capacity in Central and Eastern Europe 2022-2026.



Source: International Energy Agency, [Accelerating energy diversification in Central and Eastern Europe – Analysis](#)

However, against the backdrop of energy decarbonisation and security targets, the economic lifetime of new investment in gas assets may be short, especially for those associated with the power sector that needs to be fully decarbonised within 15 years. This is evident in Figure 1, where under the International Energy Agency’s NZE Scenario, the unabated use of natural gas dips to below 5% of global electricity generation in 2035.

Will market prices incentivise sufficient investment?

Electricity price signals are becoming more volatile and ambiguous. Investment in power generation is expected to be driven predominantly by market prices. The energy crisis in 2022 has seen wholesale electricity prices reach levels that were totally unexpected a few years ago. While average EU electricity prices have been fluctuating around €50/MWh (plus/minus €20/MWh) for more than 20 years, record-high gas prices pushed baseload electricity prices above €400/MWh for several months in 2022.

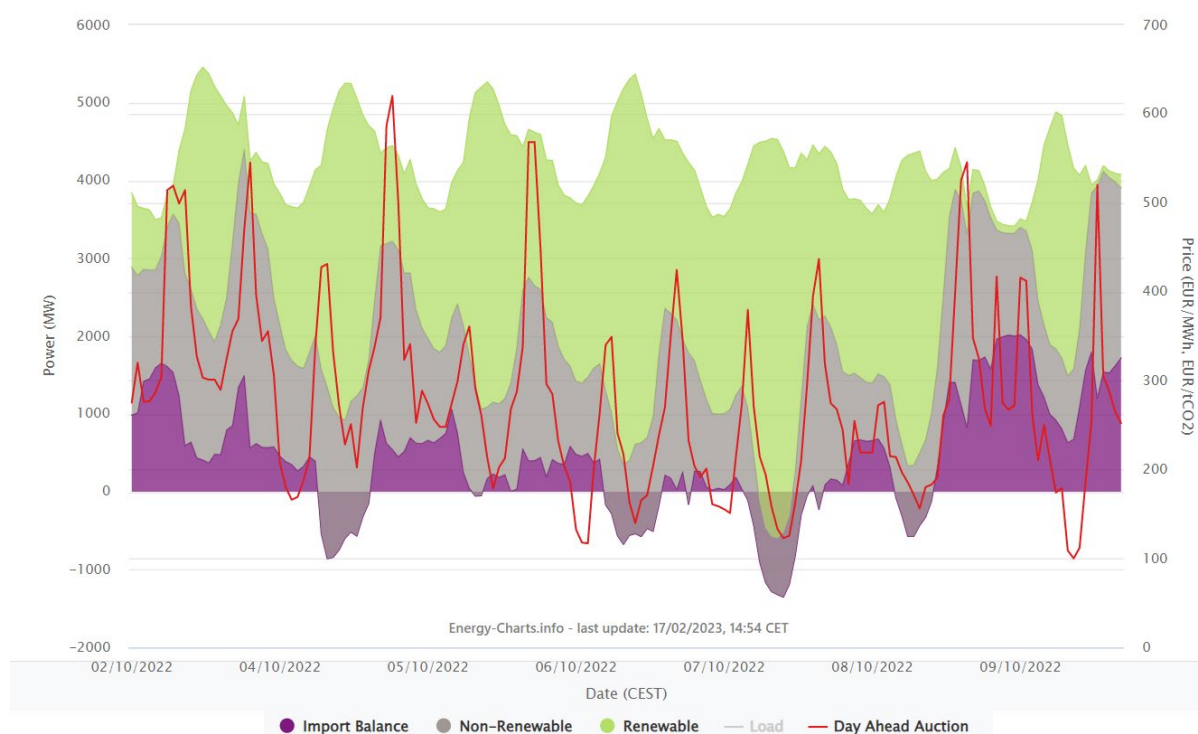
It is likely that electricity prices will remain elevated for some time. This creates very strong incentives to invest in low-carbon generation. Generation costs of solar photovoltaics remain in the range of €40-60/MWh in regions with good resources. However, as the share of intermittent renewables in the power system increases, the prices captured by solar or wind projects are, in practice, likely to fall. The volatility in hourly electricity prices is set to increase, with a growing gap between the price in hours of excess and hours of relative scarcity of renewable generation.

The so-called “duck curve” effect, first associated with solar photovoltaics in the Californian market,⁴⁸ is a structural change in pricing dynamics associated with the increasing share of variable renewables. Figure 4 illustrates this key point for the Greek power market during the first week of October 2022, that is, at the height of the energy crisis. Prices reached €600/MWh in the morning peak, reflecting the high spot market prices for gas. However, by the middle of the afternoon on 6 and 7 October 2022, generation from renewable sources exceeded demand and prices were negative.⁴⁹

⁴⁸ In the US context, see [Confronting the Duck Curve](#). For a full discussion in the European context, see Hirth, L. (2013). The market value of variable renewables: The effect of solar wind power variability on their relative price. *Energy Economics* 38, 218-36.

⁴⁹ At the regional scale, negative pricing reflects network congestion, that is, lack of capacity on the transmission and distribution grid. It is still common today that renewables need curtailing during peak hours to maintain system stability.

Figure 4: Price volatility in the Greek power market during October 2022.



Source: [Spot Market Prices | Energy-Charts](#).

Very low prices during some hours provide a strong incentive to invest in storage. Consider the Greek example: a battery owner could charge the battery with almost free electricity in the late afternoon and discharge the following morning at several hundred euros per megawatt hour. The greater the volatility in hourly prices, the greater the potential revenues from short-term storage or demand response solutions, that is, assets that provide flexibility in the power system. Forecasting this volatility over the medium term is difficult: the larger the daily volatility, the greater the business case for investment in flexible assets, which in turn helps reduce the daily volatility.

There are further sources of uncertainty in pricing, notably regulatory uncertainty as policymakers respond to the energy crisis. The timing of policies to phase out coal-fired power plants may affect supply and therefore prices. To address the distributive effects of high prices, many national governments have adopted, at least temporarily, price caps and tax measures. Several countries in Central, Eastern and South-Eastern Europe had not phased out regulated retail electricity prices and could control the price increase.

The European Union also responded to the requests of Member States by launching a fifth electricity market design review in 2023. This review seeks to address increasing price ambiguity through greater clarity for long-term arrangements such as corporate power purchase agreements and government-backed contracts for differences, while preserving the EU internal energy market *acquis* (the common rights and obligations that are binding for all EU Member States).

Regional integration

To date, the European electricity market has been remarkably resilient during the energy crisis. The current market arrangements have enabled countries to continue exchanging power across borders despite the swings in the costs of generation. Furthermore, wholesale prices have been similar among countries in Central, Eastern and South-Eastern Europe, irrespective of different generation mixes.

Maintaining well-functioning cross-border electricity markets is essential to decarbonising the power sector at least cost and to ensuring electricity security. This is particularly important in countries in Central, Eastern and South-Eastern Europe that have relatively small electricity systems and different potential for renewables resources, thus offering large benefits from reinforced regional cooperation on renewable deployment.

Commercial power purchase agreements can create competition between new renewable projects across borders. In addition, the procurement of renewable energy backed by governments with contracts for differences may, at some point, be facilitated by further regional cooperation. The EU internal energy market creates opportunities to ensure a more efficient location of new renewable capacity and to lower the costs of decarbonisation of the power sector of Central, Eastern and South-Eastern Europe.

Opportunities and risks in financing the electricity sector in Central, Eastern and South-Eastern Europe

Attracting low-cost long-term finance requires a stable regulatory framework, that is, a clear political commitment to decarbonisation supported by predictable market and regulatory frameworks. This section highlights some of the key risks for financing the power sector: electricity price risk, market design risk and policy target risk.

Energy price risk

Access to long-term, competitive debt finance for power generation projects critically depends on the revenue risks associated with the sale of electricity. As discussed above, prices have become more ambiguous for investors. The prices are expected to remain high for some time, reflecting fuel prices (though subject to regulatory interventions), and have increasing volatility due to variable renewable deployment that may be partially offset over time with new sources of flexibility.

Price signals send important messages about relative value in the system and there is a strong logic to keeping these incentives with project developers and operators. However, it will typically be difficult for project developers to raise large volumes of bank debt unless this revenue risk is substantially mitigated.

This challenge of mitigating price risk to access long-term debt markets is not limited to the power generation market. Price arbitrage is one large source of revenue for flexible assets such as battery storage and demand response – as shown by the example of the Greek power market in Figure 4. There is appetite in the market for higher risk projects and a limited number of projects can be financed with specific risk products. However, as in the case of generation, massive deployment of battery storage seems unlikely without widespread access to debt markets.

Large energy corporates – with a diversified generation portfolio – may be able to bear risks on the balance sheet, including by offering corporate power purchase agreements to buy power from third parties. Large energy consumers, such as IKEA and Google, may be able to offer competitive corporate power purchase agreements too. However, rapid deployment of low-carbon technologies may require more support, particularly if relatively small independent power providers are to access the power market. How can this risk be mitigated? One option is designing markets that allocate risk to parties best placed to bear it. This highlights the continued need for government-backed contracts for differences.

Market design risk

In the European Union, the energy crisis has reignited the question of the design of the electricity market, triggered by high electricity prices. In essence, the reform seeks to generalise existing regulatory instruments, such as commercial power purchase agreements and contracts for differences, to support renewables and better align electricity bills with the cost of low-carbon power. Government-backed contracts for differences remain an attractive instrument to partially de-risk investment, leaving only a fraction of revenues exposed to market price risk and a merchant tail after the duration of the contracts for differences or commercial power purchase agreements has elapsed. Long-term regulatory arrangements around contracts for differences and commercial power purchase agreements can help strengthen access to long-term competitive finance and thus drive down the cost of capital.

The issue is similar for flexibility assets, with the additional point that their revenues can depend on relatively complex market rules. The detailed rules of ancillary services markets and capacity remuneration mechanisms can markedly affect the profitability of storage or demand response investments. The market price risk also needs to be mitigated, but any change to these rules by transmission system operators and regulators creates market design risk for investors in flexibility assets.

Therein lie key challenges. The review needs to maintain investors' confidence and be swift. The reform of market design remains complex as it involves many stakeholders, long-term arrangements, support schemes, capacity remuneration mechanisms and technical short-term markets. Previous reforms took approximately ten years, a luxury that the European Union does not have if it wants to meet 2030 targets.

Policy/target risk

Market expectations in the electricity sector are shaped fundamentally by long-term political objectives to decarbonise. Credible long-term policies that overrun any political cycle are paramount. In terms of delivering large investment, the 2030 deadline is rapidly approaching. There remains a risk that targets could lose credibility as they are seen as too difficult to achieve in technical terms (for example, a high share of renewables) or too costly (nuclear or hydrogen), or because the social consequences or energy security cannot be addressed (policies to phase out coal or impact on energy prices). In practice, some investors may anticipate that government targets will not be met on time. As market prices depend on the pace of deployment of renewables and other technologies, this policy/target risk can profoundly affect the profitability of investments and their financing.

Conclusions

Rapid decarbonisation in the electricity sector is imperative and needs substantial investments in capital-intensive assets. Access to low-cost, long-term sustainable finance is crucial in making the transition affordable and presents a significant opportunity for the banking sector. Challenges include the re-evaluation of natural gas in the context of energy security, increasing volatility in wholesale electricity prices, and the complexity of market dynamics influenced by renewable energy intermittency. Despite these challenges, there are potential benefits from regional cooperation, well-functioning cross-border electricity markets, and government-backed contracts and policies to attract private finance.

The discussion also highlights the financial risks associated with energy price ambiguity, market design complexity, and policy/target uncertainties. While acknowledging the timeline is tight for meeting climate targets, this subsection underscores the interconnected challenges of decarbonisation, energy security and financing, and emphasises the role of supportive policies and regional collaboration in navigating the transition effectively, particularly in Central, Eastern and South-Eastern Europe.

Decarbonisation pathways: buildings and energy efficiency

Energy efficiency is instrumental for achieving climate action objectives in Central, Eastern and South-Eastern Europe. This is enshrined in the Energy Efficiency First principle, a guiding principle of the EU energy policy.⁵⁰ The opportunities for investment are very significant. Although current investments in energy efficiency are sizeable, a much larger scale is needed to reach the EU 2030 targets and net zero carbon emissions by 2050. According to the European Commission,⁵¹ under the 55% greenhouse gas scenario, investments in residential and industrial sectors must double or even triple from current levels. Global disruptions in energy markets and the Ukraine war have added a new sense of urgency in accelerating energy efficiency investments. Energy efficiency simultaneously increases security of energy supply, improves competitiveness and reduces carbon intensity. Thus, the cheapest, safest and most secure form of energy is the energy we do not use.

Buildings account for 40% of the European Union's energy consumption, 36% of its CO₂ emissions and 55% of its electricity consumption. The stock of buildings in the European Union is relatively old, with more than 40% built before 1960 and 90% before 1990. Older buildings use much more energy than new buildings. The current renovation rate of existing buildings is low, with only 1-2% of the building stock renovated each year. Renovation of existing buildings is crucial for reducing the energy consumption of buildings. Put differently, for the commercial banking sector, exposure to the current inefficient building stock is a major source of transition risk that needs managing.

Energy saving goes beyond the energy performance of buildings alone. Europe's industry is being called upon to play a key role, notably around 25 million small and medium businesses.⁵² The share of EU firms investing in measures to improve energy efficiency is gradually increasing but is still at only 40%.⁵³

Although the EU 2020 energy efficiency target (20% reduction as compared to the baseline scenario) may have been achieved due to the exceptional circumstances created by the COVID-19 pandemic, an increased and

⁵⁰ Commission Recommendation (EU) 2021/1749 of 28 September 2021 on Energy Efficiency First: From principles to practice – Guidelines and examples for its implementation in decision-making in the energy sector and beyond.

⁵¹ European Commission (2020). Commission Staff Working Document. Impact Assessment accompanying the document Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Stepping up Europe's 2030 climate ambition, 17.9.2020.

⁵² Energy Efficiency Financial Institutions Group (EEFIG). Further improvements of energy efficiency in industry. Final report. 2022.

⁵³ EIB Investment Survey (EIBIS) 2022.

prolonged ambition is required to deliver the 2030 targets and the ultimate goal of achieving a net zero EU economy by 2050.

The EU Fit for 55 package⁵⁴ initially proposed an energy efficiency target of 36% (against the final energy consumption baseline scenario, 39% for primary energy), a target equivalent to a reduction of 9% in energy consumption by 2030 from current levels. However, the sum of national contributions communicated by Member States in the national energy and climate plans would only result in a reduction of 29.4% for final energy consumption and 29.7% for primary energy consumption. Therefore, an overall ambition gap of around 7 percentage points exists compared to the collective EU target.

According to the European Commission,⁵⁵ under the 55% greenhouse gas scenario, investments in the residential sector must increase from an average of €83.7 billion (in the period 2011-2020) to between €150 billion and €215 billion in the present decade, and from €41.7 billion to between €75 billion and €90 billion in the tertiary sector. Industrial investments must increase from €9 billion (in 2011-2020) to between €6.9 billion and €22 billion. In summary, energy efficiency investments must double or even triple from current levels.

Under the Energy Performance of Buildings Directive and as part of the national plans, all EU countries must adopt a long-term renovation strategy to support the renovation of their national building stock into a highly efficient and decarbonised stock by 2050.

The European Commission has adopted the Renovation Wave Strategy with the objective of at least doubling the annual energy renovation rate of residential and non-residential buildings by 2030 and fostering deep energy renovations. Approximately 85-95% of the buildings that exist today will still be standing in 2050, but the weighted annual energy renovation rate is low at 1-2%.

The European Commission has also proposed a revision of the Energy Efficiency Directive and Energy Performance of Buildings Directive, with a phased introduction of mandatory minimum energy performance standards for existing buildings, minimum levels of renewables in buildings and the proposed revision of the EU Emissions Trading System to fully cover emissions from heating in buildings (currently, only district heating and electricity are included).

After Russia's invasion of Ukraine, the European Commission adopted an updated communication on energy prices and energy security with several short-term actions targeting energy efficiency and demand-side response, and a separate communication – EU Save Energy⁵⁶ – focused on medium- to long-term actions. The target for the annual renovation rate of existing buildings was increased from 2.0% to 2.3%, with an additional €45 billion of investments per year.

Energy efficiency is a strong driver to achieve 2030 and 2050 climate targets. Despite policy attention, the target remains challenging to deliver. Global energy demand increased sharply in 2021, returning to pre-pandemic levels. However, even before the pandemic, energy intensity improvement had slowed. If the trend in energy consumption continues in the coming years, reaching the 2030 targets for primary and final energy consumption could be at risk.

Investment barriers

Only around one-third of firms in Central, Eastern and South-Eastern Europe take measures to improve energy efficiency.⁵⁷ Although the number is improving over time, energy efficiency is still a low priority for firms, especially considering the potential gains. On average, EU firms believe that only one-third of their building stock meets high energy efficiency standards. This is despite the relatively high cost of energy in Europe and the fact that energy cost concerns are determining firms' investment decisions.

Similarly, building renovation by households is far from targeted levels: The annual weighted energy renovation rate of residential buildings is estimated at approximately 1% within the European Union, with marked differences between countries. Renovation rates significantly decrease when moving from "light" to "medium"

⁵⁴ The Fit for 55 package is the European Union's target of reducing net greenhouse gas emissions by at least 55% by 2030.

⁵⁵ European Commission (2020). Commission Staff Working Document. Impact Assessment accompanying the document Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Stepping up Europe's 2030 climate ambition, 17.9.2020.

⁵⁶ European Commission. (2022). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, EU 'Save Energy', 18.5.2022. [EUR-Lex - 52022DC0240 - EN - EUR-Lex \(europa.eu\)](#).

⁵⁷ The ratio is similar to the overall EU figure. EIB. (2020). *Going green: Who is investing in energy efficiency, and why it matters*.

and “deep” renovations. The annual number of deep renovations in the European Union is estimated to be only around 0.3%.

The European Commission has assessed the collective impact on EU-wide targets of the National Energy and Climate Plans. One of the conclusions is that taken in aggregate, “the objectives, targets and contributions of the plans appear insufficient for the collective achievement of the European Union’s energy efficiency objective for 2030.”⁵⁸ The European Commission recommends that Member States explore the potential for speeding up building renovation and support for small and medium businesses.

Several other studies⁵⁹ indicate that the largest unrealised potential in the European Union is in the renovation of building stock (particularly residential) and energy efficiency investments by small and medium businesses. Although relatively simple in terms of the technical components (retrofitting of buildings with the insulation of the building envelope, the replacement of windows or the modernisation of heating and cooling systems), markets can often fail to deliver energy efficiency investments due to a number of different investment barriers. Most of these barriers are common across all Member States. When the investment barriers are specific to certain countries, this is specified.

Regulation

Mandatory policies and regulations with minimum energy efficiency performance requirements are among the main drivers for energy efficiency investments. These include mandatory minimum energy performance standards for appliances and equipment, mandatory building codes, fuel economy standards and targets for industry.

The 2012 Energy Efficiency Directive (2012/27/EU), amended by Directive 2018/2002, established a set of binding measures to help the European Union reach its targets. For buildings, minimum requirements were introduced by the Energy Performance of Buildings Directive in 2010, revised in 2018 (2018/844/EU). In this context, important measures have been adopted throughout the European Union to improve energy efficiency, placing Europe as the largest market worldwide for energy efficiency investments.⁶⁰

However, despite the progress achieved, some of the measures remain incomplete or fragmented across the European Union, constituting a significant barrier for the uptake of energy efficiency investments. In particular:

- a) Lack of minimum performance standards for existing buildings. A major investment barrier for renovations is the lack of an obligation to renovate the buildings. The Energy Performance of Buildings Directive and the national building codes establish minimum performance standards for major renovations (“cost-optimal levels”), but they are applicable only after the decision to renovate has been taken.

The European Commission has proposed a recast of the Energy Performance of Buildings Directive,⁶¹ introducing new EU-level minimum energy performance standards for existing buildings. These standards require the worst-performing 15% of the building stock of each Member State to be upgraded from an energy performance certificate grade G to at least grade F by 2027 for non-residential buildings, and 2030 for residential buildings (and to grade E by 2030 and 2033, respectively).

Given this initial focus on the lowest performing buildings, typically owned by low-income households, the European Commission is proposing a new emissions trading scheme, complementing the Social Climate Fund. This scheme is in addition to the Recovery and Resilience Facility and the Multiannual Financial Framework, totalling €150 billion until 2030, to cover the upfront costs and ease compliance with the new requirements.

The expansion of the Emissions Trading System (ETS), if finally adopted, will accelerate the uptake of energy efficiency renovations of existing buildings.

⁵⁸ European Commission. (2022). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, An EU-wide assessment of National Energy and Climate Plans, 17.9.2020. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0564&from=EN>.

⁵⁹ See, for instance, International Energy Agency. (2018). Energy Efficiency 2018.

⁶⁰ According to the International Energy Agency (Energy Efficiency 2018) “Europe continues to see the most energy efficiency investment at \$75 billion, 32% of the global total.”

⁶¹ Directive recast [proposal-recast-energy-performance-buildings-directive.pdf \(europa.eu\)](#)
Annexes [annex-proposal-recast-energy-performance-of-buildings-directive.pdf \(europa.eu\)](#)

- b) Lack of consistency between the EU taxonomy requirements for new buildings and energy performance certificates. The EU taxonomy⁶² requires the primary energy demand of new buildings to be “at least 10% lower than the threshold set for the nearly zero-energy building (NZEB) requirements in national measures,” and to certify the energy performance “using an as built Energy Performance Certificate (EPC).”

However, energy performance certificates are not always consistent with these requirements, making it difficult to correct the verification of the EU taxonomy requirements. Only in a few Member States does the energy performance certificate clearly identify the primary energy demand of the building and the minimum requirement in the national building regulation, showing the percentage of improvement.

Developing a common template for energy performance certificates, requiring them to show the percentage of improvement against the minimum requirement in the regulation, will benefit the verification of the EU taxonomy requirements.

- c) Lack of harmonisation of energy performance certificates. More generally, the scales of energy performance classes of the energy performance certificates are not harmonised across Member States. In some Member States, the highest class is A, whereas other Member States have higher classes (A+ or A++). Buildings with the same category (for example, energy performance certificate class B) but located in different countries may have very different performance levels.

The recast of the Energy Performance of Buildings Directive proposes that the energy performance classes of the energy performance certificates be rescaled, with the highest class, A, representing a zero-emission building, and the lowest class, G, including the 15% worst-performing buildings in the national building stock.

- d) Insufficient obligation to have an energy performance certificate. The obligation to have an energy performance certificate only applies to building units that are offered for sale or rent. The Energy Performance of Buildings Directive recast proposes to extend this obligation to buildings undergoing major renovation, buildings for which a rental contract is renewed and all public buildings.

This proposal, if adopted, will expand the use of energy performance certificates and promote their consideration in investment decisions.

- e) Lack of harmonisation of minimum energy performance standards (for renovations and new construction). The different climatic conditions and construction standards justify that building performance standards are defined by applying national conditions. However, the level of harmonisation remains insufficient. Underlying assumptions (such as energy price scenarios, the evolution of demand, investment cost standards or discount rates) offer room for further harmonisation.

In some Member States, non-residential buildings (offices, schools, elderly care centres, hospitals) are divided into several sub-categories to better capture the potential for cost-efficient measures. However, other Member States place all non-residential buildings in a single category, leading to incorrect assessments and consequently to efficiency losses.

The number of categories of reference buildings and the underlying assumptions offer large opportunities for harmonisation.

- f) Definition of minimum performance standards focused on primary energy demand and lack of harmonisation of conversion factors. Minimum building energy performance standards are defined with a metric that generally focuses on primary energy terms instead of final energy consumption. The use of different conversion factors (from primary to final energy) by Member States makes comparisons among the standards impossible, impeding the identification of the best performance standards available in the market.
- g) Obligation schemes and alternative measures. Under the Energy Efficiency Directive, EU countries must set up an energy efficiency obligation scheme. This scheme requires energy companies to achieve yearly energy savings of 1.5% of annual sales to final consumers. Some Member States have opted for a system of energy saving certificates (“white certificates”). White certificates oblige utility companies to offer their customers incentives to invest in energy-efficient equipment. White certificates are tradable and are combined with an obligation to achieve a certain target of energy savings. However, regulation of white certificates is only at the national level and excludes energy efficiency projects that are generating savings across countries. An EU-wide white certificate scheme could incentivise new transnational projects and is consistent with having an EU-wide energy efficiency target instead of national targets, as implemented by the recast of the Energy Efficiency Directive in 2018.

⁶² [Commission Delegated Regulation \(EU\) 2021/2139](#).

Market size and structure

The low uptake of energy efficiency, particularly in buildings, is a long-standing paradox often referred to as the energy efficiency gap. This gap is usually attributed to informational problems, such as imperfect information (about the real energy performance of a building or an industrial process) or asymmetric information (in screening, signalling, moral hazard, and price discrimination).

Imperfect information can be illustrated through the role of energy audits. Consumers' awareness of energy efficiency benefits is critical for the uptake of energy efficiency measures. The share of firms investing in energy efficiency measures is considerably higher when the firms have completed an energy audit. On average, three in five firms that carried out an energy audit also invested in energy efficiency.⁶³ Energy audits tend to be more frequent in larger firms and energy-intensive sectors across the EU members. In 2019, almost two-thirds (60%) of large firms conducted an energy audit. This share dropped to two-fifths (40%) in medium firms and approximately one-fifth (22%) in small firms. The availability of energy audits for small and medium businesses is therefore a crucial driver of energy efficiency interventions.

Information asymmetries appear to be greater in building rental, in particular when rents include utility expenditures. Rented dwellings are less efficient than owner-occupied ones (split incentives between tenants and landlords). This may be due to rigid regulations that prevent landlords from passing investment costs onto rents.

Besides market-failure barriers to energy efficiency, behavioural anomalies have been identified in decisions on energy efficiency. Consumers seem to value energy savings in a way that is inconsistent with perfect rationality. Much research on this topic has focused on feedback experiments with peer comparison, in which consumers are provided with information about how their energy use compares with that of their neighbours. Overall, such interventions are found to strengthen conservation behaviours, but with low persistence. This suggests that social norms influence individuals' behaviour, a feature not captured by standard models.

Another typical investment barrier for energy efficiency investments concerns the fragmentation of projects across multiple, small beneficiaries. Building refurbishments have large economies of scale that penalise individual investments. Whereas large projects have positive economic returns, individual investments can have much lower, even negative, returns.

From a technical point of view, there are also some elements of an energy efficiency project (for example, renovation of the façade of a multi-apartment building) for which the only acceptable solution, for thermal insulation, is a complete (not partial) renovation.

From the commercial side, fragmentation poses similar barriers, as transaction costs for planning and financing can be disproportionately high, and individual energy efficiency measures do not attract the full commercial attention of owners, tenants and financiers due to their often limited size. Smart aggregation approaches are needed but are often difficult to implement in practice.

The appropriate response in these cases is the aggregation of small projects in larger schemes. In addition, technical assistance for the implementation of the works and the offering of one-stop shop services to final beneficiaries seem equally important, for example, energy efficiency mortgages, which offer long-term financing to individuals and sufficient guarantees to commercial banks.

Another investment barrier is the subsidisation of prices for domestic electricity and heating. In many countries, end-user prices for electricity and particularly for heating, are heavily subsidised. Even where tariffs do reflect all commercial costs, they are unlikely to reflect the full social cost of associated greenhouse gas emissions and local air pollution. In some Member States, low-income homeowners are eligible for heating cost compensation and hence face only weak incentives to invest in energy efficiency measures. Circumventing these incentives requires combining financial products with some form of grants.

Energy cost concerns are becoming a key determinant of EU firms' investment decisions. In 2019, almost one-third of European firms reported energy costs as a major obstacle to investment compared with approximately one-tenth of firms in the United States. The role of energy costs in firms' investment decisions differs considerably across EU members and sectors. In 2019, the share of firms that reported energy costs as a major obstacle to investment ranged from 6% to 56%.

Although high energy prices represent a strong motivator to invest in energy efficiency, the rise in construction costs since 2021 is also impacting project returns, particularly in the building sector.

⁶³ *Going Green: Who is investing in energy efficiency and why it matters*. EIB 2020.

Public sector promoter constraints

Another vital investment barrier for energy efficiency investments in the public sector is the selection of the procurement procedure. Effective preparation and implementation of the procurement procedure can significantly contribute to the success of a project, or the opposite, to its failure. Two challenging aspects of energy efficiency projects in this regard are technical complexity and long payback periods. In some cases (that is, public building renovations), the technical scope of the project is not defined when the tender is launched, and bidders are asked to propose technical solutions as part of their offers. For this reason, many Member States have chosen the “competitive dialogue process” as the applicable procurement procedure. However, this approach is costly for the bidders and complex for the public authorities, delaying the implementation of the energy efficiency projects.

Budgetary constraints are also an investment barrier for public sector promoters. Investments in energy efficiency require high upfront costs, compensated by a reduction of operating costs over the lifetime of the investments. This mismatch between the timing of the investment costs and the benefits means that finding financial solutions for the public sector promoters is crucial.

Related to this barrier is the statistical treatment of energy performance contracting (EPC), since in most cases the investment has to be counted as public debt and deficit despite the fact that a private energy service company is providing financing.

Eurostat published a guidance note in September 2017, clarifying that if an EPC contractor bears the majority of the risks and rewards associated with the use of an EPC asset, it should be considered the economic owner of the asset and thus should record the asset on its balance sheet. In May 2018, Eurostat and the EIB launched a new Practitioner’s Guide on the Statistical Treatment of Energy Performance Contracts.⁶⁴ The Guide explains in detail how these contracts work and provide an overview of the potential impact on government finances.

The lack of available information is another significant investment barrier for energy efficiency projects in the public sector. For example, according to the Energy Efficiency Directive, Member States shall establish and make publicly available an inventory of heated and/or cooled central government buildings with a total useful floor area over 500 square metres. However, in many cases this information is not available or easily accessible.

Access to finance

A fourth type of investment barrier concerns financial and capital constraints in several dimensions.

Many commercial banks face uncertainties regarding energy efficiency investments since they represent, in many cases, a relatively new asset class. Risk-sharing instruments can remove some of the uncertainty and thereby encourage greater amounts of private sector capital and make investing in energy efficiency attractive to larger numbers of financial institutions. With this objective in mind, Private Finance for Energy Efficiency⁶⁵ (PF4EE) was developed to address the limited access to adequate and affordable commercial financing for energy efficiency investments.

Another investment barrier concerns specific groups such as homeowner associations or condominiums, whose participation in energy efficiency renovations is vital for ensuring proper technical quality and scope. For projects in multi-apartment buildings, from a technical standpoint it is crucial to involve homeowners or condominium associations in the definition of the projects. However, most commercial banks and financial institutions do not lend to these associations, given their uncertain legal status in some countries and their lack of a balance sheet.

Non-financial barriers can be equally significant in practice. Some energy efficiency investments are technically complex and require expert support for initial successful identification initially and implementation later. Completing an in-depth energy audit can be costly for small and medium businesses. For this purpose, it is useful to combine technical assistance alongside access to finance, providing grants which can be used to finance costs related to feasibility and market studies, programme structuring, business plans, energy audits and financial structuring, and the preparation of tendering procedures, contractual arrangements and project implementation units.

⁶⁴ A Guide to the Statistical Treatment of Energy Performance Contracts. May 2018.

⁶⁵ Private Finance for Energy Efficiency (PF4EE) is a joint initiative between the EIB and the European Commission. The instrument aims to increase the availability of debt financing for eligible energy efficiency investments and to make energy efficiency lending a more sustainable activity within European financial institutions. For more information, see [PF4EE - Unlocking Europe’s energy savings potential through Private Finance for Energy Efficiency | EIB PF4EE Homepage](#).

Conclusions

Investment barriers constitute a considerable impediment for energy efficiency investments. Many economically and technically viable opportunities remain unrealised due to these barriers.

The accumulation of some of the identified investment barriers in residential building renovations and small and medium businesses (fragmentation, financial constraints, lack of technical expertise and subsidised prices) makes these two sub-sectors particularly challenging. The current rate of renovation across Europe must substantially increase to achieve a fully decarbonised building stock by 2050, even if the most efficient standards are adopted for new builds. For small and medium businesses, existing available technologies could significantly improve the efficiency of their energy use.

Climate transition plans and their role in supporting the green transition

Transition plans are emerging as a key tool for financial institutions and non-financial corporations wishing to achieve their climate targets. Transition plans are also attracting the attention of regulators: the plans can support the alignment of the private sector with national or international sustainability objectives, and the management of climate-related risks in the financial system.

While there is no single definition of transition plans, they are expected to be an element of an entity's strategy, specifying time-bound targets and actions needed to realise the transition to a low-carbon economy.

The process of preparing transition plans, and their precise content, will depend on jurisdictional expectations and evolving best practices. That said, transition planning is already built into leading climate-related and sustainability disclosure standards, including those from the European Financial Reporting Advisory Group (which informs requirements under the Corporate Sustainability Reporting Directive) and from the International Sustainability Standards Board (under the International Financial Reporting Standards Foundation). Standalone guidance on best practices for transition planning is already available, including from the Glasgow Financial Alliance for Net Zero⁶⁶ and from the Transition Plan Taskforce.

Climate targets are now commonplace among large financial institutions and corporations. Importantly for the global financial system, Net Zero Banking Alliance members, representing approximately 40% of global banking assets, announced their net zero targets for 2050 in the last few years. Climate target announcements have since come under scrutiny for the lack of detail on how the targets will be achieved. The scrutiny, together with the growing need for rapid decarbonisation of the global economy, has led to calls for financial institutions and non-financial corporations to be transparent about how they plan on leading the transition to a low-carbon economy. In this vein, voluntary initiatives and regulators have started preparing standards and guidance on transition planning.

It is now clear that financial institutions will be expected to plan how they can align their financial flows with the goals of the Paris Agreement. In this context, this subsection summarises core decision-useful concepts relating to transition planning by financial institutions. The subsection comprises three parts (plus concluding remarks) that respectively aim to:

- define transition plans and provide an overview of their types;
- outline leading guidance on transition plan preparation;
- present best practices on the contents of transition plans.

Climate transition plans: Definition and background

Various definitions of transition plans have been proposed during the last few years. These definitions tend to focus on the following:

- a) transition plans are an element of an entity's strategy, focused on the transition to a low-carbon economy;
- b) transition plans should specify time-bound targets and actions needed to make the transition happen.

⁶⁶ Glasgow Financial Alliance for Net Zero (2022), *Financial Institution Net-zero Transition Plans – Fundamentals, Recommendations, and Guidance*.

According to the Grantham Research Institute on Climate Change and the Environment, there are three main types of transition plans: (i) voluntary and (ii) mandatory disclosure-based transition plans, and (iii) prudential transition plans.⁶⁷ The first two types are aimed at all companies, whereas the third type focuses exclusively on financial institutions.

- a) Voluntary disclosure-based transition plans: major global banks are in the process of preparing voluntary transition plans, also to fulfil the expectations from their membership in the Net Zero Banking Alliance.⁶⁸ The Glasgow Financial Alliance for Net Zero has since published a framework to support financial institutions in transition planning.⁶⁹ Climate-related disclosure standards from the International Sustainability Standards Board (which may become mandatory in some countries) also incorporate transition plans.⁷⁰
- b) Mandatory disclosure-based transition plans: the Corporate Sustainability Reporting Directive (CSRD) will require companies to disclose their transition plans, if they have one.⁷¹ The Corporate Sustainability Due Diligence Directive is also expected to mandate companies to adopt transition plans. In the United Kingdom, the Transition Plan Taskforce was tasked with drafting the gold standards for transition plans, to support disclosures by large companies.
- c) Prudential transition plans: prudential transition plans would be aimed at financial regulators, as opposed to other stakeholders, and adhere to regulators' expectations around addressing broader risks to financial stability. For more information, see the subsection on carbon transition plans in the chapter on Workstream 2.

Guidance on the preparation of transition plans

Existing guidance for financial institutions emphasises the reduction of greenhouse gas emissions stemming from lending and investment activities. The role of emissions from own operations (for example, through office buildings or business travel) is a secondary consideration.

To support the preparation of the plans, the Transition Plan Taskforce proposed three useful principles for transition planning.⁷² The principles combined with information from other standards and pieces of guidance can be summarised as follows:

- **Ambition:** Transition plans should be grounded in the latest available science on how to meet the goals of the Paris Agreement and in broader climate efforts.⁷³
- **Action:** The plans should include concrete quantitative targets for the immediate future and for the longer term and should carefully explain the actions needed to meet these targets. These actions should be well integrated into business and risk management processes.
- **Accountability:** Companies should establish robust governance mechanisms at the board and managerial levels, which will allow the transition plans to be implemented. The plans, and any progress on fulfilling them, should be disclosed and updated periodically, with transparency.

Further, the Transition Plan Taskforce suggests four stages to preparing a transition plan, as part of a transition planning cycle.

⁶⁷ Grantham Research Institute on Climate Change and the Environment. (2022). *Net zero transition plans: a supervisory playbook for prudential authorities*.

⁶⁸ Specifically, guidance from the United Nations Environment Programme Finance Initiative, which Net Zero Banking Alliance members are expected to follow, suggests that banks "shall publish, at a minimum, a high-level transition plan."

⁶⁹ Glasgow Financial Alliance for Net Zero (GFANZ). (2022). *Final Report: Financial Institution Net-zero Transition Plans: Fundamentals, Recommendations, and Guidance*.

⁷⁰ International Sustainability Standards Board. (2023). *IFRS Sustainability Disclosure Standard: IFRS S2 Climate-related Disclosures*.

⁷¹ The Corporate Sustainability Reporting Directive (CSRD) replaces the Non-Financial Reporting Directive and requires all large European companies to publish regular reports on their environmental and social impact, and on the impact of environmental and social matters on their business.

⁷² Transition Plan Taskforce (TPT). (2022). *Disclosure Framework*.

⁷³ Transition Plan Taskforce (TPT). (2022). *Transition Planning Cycle*.

Assess your current position: This includes understanding climate-related risks and opportunities affecting a given entity, understanding the current emissions footprint, and identifying any relevant levers at an entity's disposal that could affect the footprint.

1. Set your strategic ambition: This focuses on setting concrete objectives and measurable targets and developing a prioritisation of decarbonisation measures.
2. Plan your actions: This means designing a roadmap in support of the objectives and targets.
3. Implement your plan: This involves arrangements to start implementation, disclosing the plan and ensuring accountability for the plan's delivery.

Once the four stages are completed, entities should reassess their position and complete the cycle again, as necessary.

Transition plan elements

It is expected that the content of transition plans will depend on applicable regulation in a given jurisdiction and on emerging best practices. Currently, there is no definitive framework for the contents of transition plans. The following information focuses on guidance prepared by the Transition Plan Taskforce and the Glasgow Financial Alliance for Net Zero. Although the proposed frameworks of the two organisations have different sub-elements, both frameworks include a series of core elements for transition plans:

Foundations: The transition plan needs to be underpinned by clear objectives and priorities. For financial institutions specifically, following Glasgow Financial Alliance for Net Zero, there are four main decarbonisation priorities which a financial institution needs to prioritise in their transition plan:⁷⁴

- Climate solutions: "Financing or enabling entities and activities that develop and scale climate solutions."
- Supporting those aligned: "Financing or enabling entities that are already aligned to a 1.5° Celsius pathway."
- Supporting those aligning: "Financing or enabling entities committed to transitioning in line with 1.5°C-aligned pathways."
- Managed phaseout: "Financing or enabling the accelerated managed phaseout (for example, via early retirement) of high-emitting physical assets."⁷⁵

Implementation strategy: The plan needs to include a strategy to align business activities with climate objectives, including in the areas of products and services, policies and conditions. The transition plan should also be reflected in broader financial plans.

Example: One element of the implementation strategy by a financial institution can be financing climate outcomes. In their 2021 Climate Report, Lloyds Banking Group announced that by 2024 they will provide £10 billion for green mortgages and £15 billion in sustainable finance.⁷⁶

Example: Bank policies to support decarbonisation are another element. In 2022, HSBC updated its energy policy in support of their net zero ambition.⁷⁷ In 2022 and 2023, ING announced restrictions of financing downstream and midstream oil and gas.⁷⁸

Engagement strategy: The plan should reflect actions for engaging with external stakeholders in support of the climate ambition.

Example: As per their 2021 Sustainability Report, Luminor expects that at least 90% of new lending volume to large corporates in climate risk sectors will be made to clients with a transition plan by 2025.⁷⁹

⁷⁴ Glasgow Financial Alliance for Net Zero (GFANZ). (2022). Final Report: Financial Institution Net-zero Transition Plans: Fundamentals, Recommendations, and Guidance. Available [here](#).

⁷⁵ Managed phaseout is an alternative to withdrawing financing from those owning high-emitting assets. According to the Glasgow Financial alliance for Net Zero, managed phaseout "facilitates significant emissions reduction by the identification and planned early retirement of assets while managing critical issues of service continuity and community interests."

⁷⁶ See Lloyds' climate disclosure under [this link](#).

⁷⁷ See HSBC's post on its website under [this link](#).

⁷⁸ See ING's post on its website under [this link](#).

⁷⁹ See Luminor's Sustainability Report under [this link](#).

Metrics and targets: The plan should include specific, measurable, and near- and medium-term metrics and targets in support of the longer-term ambition.

Example: In 2021, Net Zero Banking Alliance member BBVA announced short-term financed emissions targets for key sectors, including power, automotive, steel and cement.⁸⁰

Governance: The plan should reflect roles and responsibilities – at the board, management and broader level – in support of the ambition, as well as any relevant training needs.

Example: The Board of Directors of UniCredit assigned responsibility for overseeing sustainability issues to a newly created ESG committee in 2021.

Conclusions

In the last few years, transition plans have emerged as an important and much-needed element of the climate actions and disclosures of financial institutions and non-financial corporations. This has come in the wake of numerous announcements of climate targets, which initially lacked detail on how they would be achieved. The plans are also attracting attention due to increasing awareness of the need for rapid action towards decarbonisation.

Guidance on transition planning is still emerging. However, current information suggests that transition plans will be important in informing an array of external stakeholders. Aside from providing this information, the process of transition planning also offers organisations the chance to grow more resilient to climate risks and be prepared to capitalise on climate opportunities.

The European Sustainability Reporting Standards

The European Financial Reporting Advisory Group (EFRAG)⁸¹ was mandated by the Corporate Sustainability Reporting Directive (CSRD) to develop European Sustainability Reporting Standards (ESRS) to help the European Union align sustainability reporting with financial reporting. This is necessary to meet the level of ambition of the Green Deal and the EU objective of climate neutrality by 2050. The main characteristics relating to three topics are outlined below.

1. Key features of the European legal regime: the Corporate Sustainability Reporting Directive;
2. Draft European sustainability reporting standards issued by EFRAG in November 2022,⁸² and adopted as delegated acts by the European Commission in July 2023;
3. Workstream on small and medium businesses – simplified standards.

Key features of the European legal regime: The Corporate Sustainability Reporting Directive

The Corporate Sustainability Reporting Directive broadens the scope of application, as it includes all large entities⁸³ (250+ employees) and listed small and medium businesses⁸⁴ (with subsidiary exemption⁸⁵). Under the directive, reporting will be progressively phased:

- 2024 is the reporting year for Non-Financial Reporting Directive reporters;

⁸⁰ See BBVA's post on its website under this link.

⁸¹ The views expressed in this text about the European Sustainability Reporting Standards are those of the writer, except when indicated otherwise. The European Financial Reporting Advisory Group (EFRAG) positions, as approved by the EFRAG Sustainability Reporting Board, are published as comment letters, discussion or position papers, or in any other form considered appropriate in the circumstances.

⁸² This chapter was written at the beginning of July 2023 and reflects the state of play at that time. The European Commission Delegated Act for the European Sustainability Reporting Standards was adopted on 31 July 2023 [and published in the EU Official Journal on 23 December 2023](#).

⁸³ All listed and unlisted companies or public interest entities (PIEs) — including non-EU listed in the European Union — that exceed at least two of the three following criteria: (i) 250 for the average number of employees, (ii) €40 million net turnover and (iii) €20 million balance sheet total.

⁸⁴ Listed small and medium businesses (excluding micro-entities) that meet at least two of the following criteria: (i) average number of employees between 10 and 250, (ii) €700 000 and €40 million net turnover, and (iii) €350 000 and €20 million balance sheet total.

⁸⁵ Subsidiaries exemption (except large listed) — if they are in a group which publishes consolidated sustainability statements compliant with the CSRD (Corporate Sustainability Reporting Directive).

- 2025 is the reporting year for other large entities;
- 2026 is the reporting year for listed small and medium businesses, small non-complex banks and captive (re)insurance entities (with opt-out option for listed small and medium businesses until 2028);
- 2028 is the reporting year for non-EU companies with branches/subsidiaries in the European Union. More specifically, these are non-EU companies generating a net turnover of at least €150 million in the European Union and with at least one branch (generating a net turnover of at least €40 million in the European Union) or one subsidiary in the European Union (large entity or listed small or medium business).

The directive mandates the use of European Sustainability Reporting Standards (ESRS) developed by EFRAG and adopted by the European Commission through delegated acts. These standards have a comprehensive coverage of ESG sustainability matters.

The directive also introduces the key concept of double materiality (impact and financial risks/opportunities). It establishes that the location and timing of reporting is in the management report, that is, at the same time as financial statements. In addition, the directive introduces an assurance regime with mandatory limited assurance in the beginning, and reasonable assurance by the end of the decade.

Draft European Sustainability Reporting Standards issued by EFRAG

The timeline below follows the Draft European Sustainability Reporting Standards (ESRS) issued by EFRAG in November 2022 and later adopted as delegated acts by the European Commission in July 2023.

June 2021 to April 2022	ESRS exposure drafts produced by EFRAG Project Task Force
April 2022 to August 2022	ESRS exposure drafts exposed for comments
November 2022	Draft ESRS released to European Commission
July 2023	European Commission draft delegated act (following public consultation)
Fourth quarter of 2023	European Commission final Delegated Act ⁸⁶

The key elements for the European Sustainability Reporting Standards are:

- There is a total of 84 qualitative or quantitative disclosure requirements;
- The standards have a double materiality (impact⁸⁷ and financial⁸⁸). Sustainability statements shall reflect all material effects, risks and opportunities under an objective approach with thresholds. The reporting entity must implement a rigorous materiality assessment process to determine material impact, risks and opportunities;
- They cover four pillars: governance; strategy; impact, risk and opportunity management; and metrics and targets;
- They have a high level of interoperability and alignment with the International Sustainability Standards Board and the Global Reporting Initiative;
- Reporting is in digital format;
- EFRAG will contribute with: (i) implementation support, (ii) standard setting for small and medium businesses (voluntary standards for non-listed small and medium-sized enterprises (VSME); and European Sustainability Reporting Standards for listed small and medium-sized enterprises (LSME)), and (iii) sector-specific standards;
- sector-agnostic European Sustainability Reporting Standards architecture, as presented below.

⁸⁶ Publication on 23 December 2023 in the Official Journal, of Commission Delegated Regulation (EU) 2023/2772 of 31 July 2023 supplementing Directive 2013/34/EU of the European Parliament and of the Council as regards sustainability reporting standards.

⁸⁷ Impact materiality: Sustainability matters that pertain to the undertaking's material actual or potential, positive or negative impact on people or the environment over the short, medium or long term.

⁸⁸ Financial materiality: Sustainability matters that generate risks or opportunities that have or could reasonably be expected to have a material influence on the undertaking's financial position, financial performance, cash flows, access to finance or cost of capital over the short, medium or long term.

CROSS-CUTTING STANDARDS		
ESRS 1 <i>General requirements</i>		ESRS 2 <i>General disclosures</i>
TOPICAL STANDARDS		
Environment	Social	Governance
ESRS E1 <i>Climate change</i> ESRS E2 <i>Pollution</i> ESRS E3 <i>Water and marine resources</i> ESRS E4 <i>Biodiversity and ecosystems</i> ESRS E5 <i>Resource use and circular economy</i>	ESRS S1 <i>Own workforce</i> ESRS S2 <i>Workers in the value chain</i> ESRS S3 <i>Affected communities</i> ESRS S4 <i>Consumers and end users</i>	ESRS G1 <i>Business conduct</i>

Workstream on small and medium businesses – simplified standards

The EFRAG workstream on small and medium businesses is composed of (i) the legally binding standard for listed small and medium-sized enterprises, small non-complex banks and captive insurance and reinsurance entities (LSME) and (ii) the voluntary standard for non-listed small and medium-sized enterprises (VSME).

- The LSME standards for listed small and medium businesses stem from the Corporate Sustainability Reporting Directive and are legally binding (Art. 29c and Art. 19a (6)). The LSME will be adopted by the European Commission as a delegated act. The Corporate Sustainability Reporting Directive specifies reporting requirements for listed small and medium businesses by way of derogation (Art. 19a (6)).
- The VSME standard for non-listed small and medium businesses has been developed for small and medium businesses that are not in the scope of the Corporate Sustainability Reporting Directive, including microenterprises. The VSME standard is not legally binding (not a delegated act) but is to be interpreted as an empowering tool.

The two standards are connected via a building block system which creates consistency between European Sustainability Reporting Standards for large undertakings, LSME and VSME, to provide a system that is inclusive, allowing all companies — from the smallest to the largest — to report environmental, social and governance information. EFRAG intends to consult simultaneously on LSME, VSME and the building block system.

LSME standards shall be proportionate and relevant to the scale and complexity of the activities and to the capacities and characteristics of SMEs.

VSME is voluntary and EFRAG is working to respond to a market request for a commonly accepted set of information needed from small and medium businesses by larger corporates in the supply chain and in lending (financial market participants/lenders and investors). With VSME, EFRAG is aiming for real market acceptance, establishing a commonly accepted set of information requests. Consequently, the commitment of business counterparts of small and medium-sized firms (multinational enterprises and banks) to VSME is essential for the success of this standard.

VSME also covers micro-entities, meaning that the VSME scope is broad and includes very different levels of sophistication for current reporting requirements. Hence, a system of modules or steps has been introduced in VSME.

Conclusions

The European Sustainability Reporting Standards are pivotal in the Corporate Sustainability Reporting Directive, supporting the alignment of sustainability reporting with financial reporting in the European Union. Mandated by the Corporate Sustainability Reporting Directive, EFRAG is developing European Sustainability Reporting Standards to meet Green Deal goals. The Corporate Sustainability Reporting Directive broadens reporting obligations, introducing a phased approach until 2028, mandating the use of European Sustainability Reporting Standards with a focus on double materiality. The directive also partly addresses reporting on small and medium businesses, where a particular workstream is already in place. The evolving legislation provides legally binding standards for listed small and medium businesses (LSME) and voluntary standards for non-listed small and medium businesses (VSME), aiming for consistency and inclusivity in environmental, social and governance reporting. Crucially, the evolving legislation on reporting will stimulate more consistent and reliable data and thereby support overall climate transition.

Chapter 4: Conclusions and lessons for policy

In the pursuit of climate resilience and sustainable finance, three critical workstreams converge, with each topic playing a pivotal role in reshaping the financial landscape. The imposition of disclosure requirements increases the supply of primary information and the incentives for its collection, but supervisory expectations and detailed implementation regulations need to consider the feasibility and costs of obtaining observations on different variables. The top-down exposure calculation and stress testing exercises conducted by authorities illustrate various innovative approaches to finding proxies and combining variables from different sources. Transition plans are essential for projecting future exposure to risks and possible firm strategies, that is, to forward-looking data elements.

Chapter 1: Climate risk data challenges and progress

No analysis is possible without reliable data. Therefore, Workstream 1 begins with the challenges faced in acquiring precise, firm-specific climate change data, which is especially daunting for small and medium businesses where legislation is only slowly evolving. However, progress is evident, with larger firms releasing detailed ESG information and external databases providing valuable resources. Harmonised environmental, social and governance questionnaires are becoming commonplace, reducing the burden on less sophisticated firms. The narrative underscores the ongoing need for major banks to collect relevant data meticulously and for prudential authorities to guide them through a phased, supportive approach. Expectation is building that some of the obstacles will be addressed by evolving legislation, while informal discussions and working groups such as this one also need to be active in addressing and identifying information gaps.

Chapter 2: Prudential authorities and sustainable finance

Prudential authorities are becoming increasingly important in enabling and guiding the green transition. Although these authorities are not tasked with creating tools like green taxonomy or bond standards, their indirect support proves invaluable. The Vienna Initiative working group on climate change and financial stability demonstrates that proactive engagement and iterative guidance are paramount, advocating for a cautious integration of sustainability into Pillar 1 capital requirements. International collaboration, stress testing, and disclosure guidance emerge as key plot points in fortifying a robust sustainable finance framework.

Chapter 3: Transition of key sectors and the role of evolving legislation

Regarding the transition of key sectors, rapid decarbonisation in the electricity sector is seen as a prerequisite for green transitioning. Significant investments are deemed essential, with access to sustainable finance highlighted as the main driver. In the energy efficiency sector, challenges and barriers – including energy security re-evaluation, market complexities and investment barriers – can all hinder the green transition. Transition plans emerge as crucial elements, offering resilience to climate risks and capitalising on opportunities. On reporting, the phased approach, inclusive of legally binding standards for listed small and medium businesses (LSME) and voluntary standards for non-listed small and medium businesses (VSME), sets the stage for a comprehensive and inclusive reporting framework in the European Union, which is certainly going to evolve in the future.

In this narrative of resilience and sustainability, the **key policy conclusions** of the working group on climate change and financial stability are listed below.

1. **International financial institutions and the broader financial sector are instrumental** in supporting the green transition in the public and private sectors in countries of Central, Eastern and South-Eastern Europe. International financial institutions remain committed to supporting the banking sector transition, be it in terms of lending or through advisory support.
2. Nevertheless, significant data and other types of gaps have been identified for the green transition of the financial sector in Central, Eastern and South-Eastern Europe. Quality, cost and availability of green data from clients are too often an issue, calling for further synchronisation and quality checks. Climate-related data could be considered a public good, with possible positive externalities related to the management of climate risk, the identification of opportunities (for adaptation and mitigation financing for instance) and higher transparency for the various stakeholders of banks and small and medium businesses.
3. **Numerous bank client questionnaires on the green transition and other ESG components exist**, but there is little synchronisation between them. Evolving regulation only partly addresses this impediment, particularly for non-listed SMEs that constitute the backbone of the economies in Central, Eastern and South-Eastern Europe. Attention should be paid to developing mechanisms for assessing the quality of data and its comparability across firms and countries. International banks in the region can set a good example for local

banks, who may be less exposed to evolving international norms and less able to cover the fixed costs of designing dedicated questionnaires and information systems.

4. **Preparedness for the green transition varies substantially** across countries in Central, Eastern and South-Eastern Europe, depending on the institutional setting, primarily in terms of banking regulations. Financial institutions and corporations from EU countries are more advanced, as regulators in EU and euro area countries have taken more significant steps towards climate change regulation and reporting requirements.
5. **Regulation is evolving but needs to be gradual to take everyone on board.** This holds particularly for non-EU countries. Banking groups in these countries could leverage expertise from foreign-owned banks, while considering the sustainability infrastructure.
6. **Prudential authorities should engage in the establishment and development of a sustainable financial market.** The authorities' mandate seldom includes creating and developing a sustainable or green financial market,⁸⁹ therefore they are not responsible for taking the necessary measures for setting up the infrastructure for such a market. However, authorities could have a large stake in the development of this market.
7. **There is a need for supervisory proactivity and guidance in an iterative engagement with the banking sector.** It is good practice for supervisors, when climate risks are identified as a priority for banking supervision within their supervisory planning process, that authorities disclose this and clarify the activities they plan to undertake for their coverage.
8. **Addressing climate risks in the banking sector requires a paced, sequenced approach.** Compliance with the standards demands resources from banks, whereas supervisors need to progressively build appropriate skills and processes.
9. **Climate risks must be integrated into risk management and supervisory prudential frameworks.** Climate-related risks are not new risk sub-categories but are risk factors that may materially impact other existing risk categories – mainly in credit, operational, market and liquidity risks. Banks' approaches to assessing and managing their climate risks should be embedded into their regular capital, liquidity and risk management processes, for instance by explicitly considering these risks within their risk appetite, risk management frameworks or their internal capital adequacy assessment process and internal liquidity adequacy assessment process. In the same vein, prudential authorities should update their existing methodologies, policies and procedures for a comprehensive coverage of banks' climate risks.
10. **Banks and supervisors should pay close attention to carbon transition plans,** and banks should consider preparing their carbon transition plans even before they become a new prudential requirement. Carbon transition plans can be a cornerstone in the regulatory and supervisory architecture for dealing with climate risks.
11. **Banks and supervisors should foster international engagement,** including with international financial institutions. Active participation in international forums can accelerate the climate work of central banks and banking supervisors. This is especially important for Central, Eastern and South-Eastern Europe, so local banks can exchange best practices with parent banks in other markets.
12. **Banks and supervisors should foster supervisory coordination, including through supervisory colleges.** It is recommended that home and host supervisors engage in constant and continuous coordination, mainly through supervisory colleges but also through bilateral engagement. Supervisory coordination is particularly important for the Vienna Initiative participants.
13. **Banking groups must step up their efforts to implement frameworks for climate risk management at the group level.** Banking groups with a network of local subsidiaries, especially those operating in European non-EU jurisdictions, can step up their efforts to implement an effective framework for dealing with climate risks, including by applying the framework to subsidiaries. Implementing effective sustainable finance practices, including the management of climate risks, can benefit the subsidiaries and the market.
14. **It is important to determine authorities' role on sustainability and climate risks.** Most authorities believe that their role in these areas is strictly limited to their legal objectives and statute (that is, price and financial stability). Therefore, their activities do not typically involve fostering the development of a sustainable finance market, but to ensure that banks and other supervised financial organisations properly govern, measure, manage, control and report their climate-related risks. Supervisors must also have a thorough understanding of how these risks can affect financial stability and banks' individual situations.

⁸⁹ An exception being the National Bank of Hungary.

Annex 1: List of presentations and interventions across the workstreams

June 2022 – Climate change: Data and regulators

1. EU agenda: Prudential, disclosure, taxonomy and other regulations – Andreas Rajchl, European Commission
2. Implementation issues and detailed guidance – Dorota Siwek, European Banking Authority (EBA)
3. Supervisory expectations (reporting and risk management): Implications for the region – Patrick Amis, European Central Bank (ECB)
4. Practices in the insurance sector; identification and assessment of changing physical risks – Casper Christophersen, European Insurance and Occupational Pensions Authority

September 2022 (Ljubljana, Slovenia) – Climate change and climate finance

1. Climate data – Daniel Hardy, European Investment Bank (EIB) consultant
2. Regulatory and supervisory implications – Vahe Vardanyan, World Bank
3. Knowledge building and climate transition for sectors – Simon Savšek, EIB
4. Incorporating climate change into banks' business models – Debora Revoltella, EIB; Patrick Amis, European Central Bank; Sandra Svaljek, Central Bank of Croatia; Simona Viscardi, McKinsey; Elina Kamenitzer, EIB; Tina Zumer, Banka Slovenije; Dana Kupova, European Bank for Reconstruction and Development (EBRD); Ante Odak, Raiffeisen Bank International (RBI)
5. The EU taxonomy and the future scope of EU Directives – Andreas Rajchl, European Commission; Saskia Slomp, European Financial Reporting Advisory Group (EFRAG)
6. Central, Eastern and South-Eastern European (CESEE) supervisors and banking groups: governance & strategy – Francis Malige, EBRD; Blaz Brodnjak, NLB; Emmanuel Martinez, Société Générale; Giuseppe Zammarchi, UniCredit
7. Climate risk management – Manuela Hurmuz, Raiffeisen Bank International (RBI); Maja Ivanovic, Montenegro Central Bank
8. Capital requirements – Mario Guadamillas, World Bank; Dorota Siwek, European Banking Authority (EBA); Sonja Petrinić Turković, Croatian National Bank

Workstream 1

July 2022 – Issues on climate-related data

1. Climate data for loans origination and underwriting – McKinsey
2. Specific steps and inputs needed to design, prepare and deploy a client questionnaire on climate change-related exposures – Raiffeisen Bank International (RBI)
3. Construction and management of a consistent database on climate change-related corporate exposures – OeKB, Austrian Control Bank
4. National authorities' experience of undertaking a questionnaire on climate risk exposures – National Bank of Romania

December 2022 – Availability of data and the assessment of physical risks

1. Availability of data for physical risk – Daniel Hardy, EIB consultant
2. Assessment of physical risks indicators – Luisa Mazzotta, European Insurance and Occupational Pensions Authority
3. Physical climate risk assessment – Michaela Mei Dolk, World Bank
4. Data and measurement of physical risk – Stephan Fahr, European Central Bank; and Julien Mazzacurati, European Securities and Markets Authority (ESMA)

May 2023 – Gathering ESG data: Client questionnaires on climate risk exposure

1. Client questionnaires – Daniel Hardy, EIB consultant
2. Gathering ESG data – Monica Billio, Università Ca' Foscari Venezia and TranspArEEnS; Matthias Frisch, Raiffeisen Bank International (RBI); Kristijan Hvala, Banking Association of Slovenia; Sanja Petrinić Turković, Croatian National Bank

July 2023 – European sustainability reporting standards

1. EFRAG European sustainability reporting standards (ESRS) and main changes in the European Commission delegated acts – Chiara del Prete, EFRAG
2. EFRAG workstreams on SMEs – Elisa Bevilacqua, EFRAG
3. European sustainability reporting standards and banks' ESG questionnaires – Daniel Hardy, EIB consultant

Workstream 2

September 2022

1. Climate-related and environmental risks: supervisory actions in 2022 – Patrick Amis, European Central Bank
2. Green capital requirements – David Papp, National Bank of Hungary
3. UniCredit Group approach to sustainable lending – Guido Schellino, Chiara Pellegrini, Marco Predieri and Viktoria Denisova, UniCredit
4. Selected data-related topics from OTP approach to environmental sustainability – Andras Mornar and Gabor Szigel, OTP Group
5. Sustainable finance – Vera Economou, Raiffeisen Bank International (RBI)
6. Physical risks – Luisa Lacovara, Raiffeisen Bank International (RBI)

October 2022

1. EBA work in the area of sustainable finance and ESG Risks – Ali Erbilgic and Lievijne Neuteboom, European Banking Authority (EBA)
2. Regulatory response to climate-related financial risks and challenges – Basak Yetisen Teker, Turkish Banking Regulatory and Supervisory Agency
3. Management of environmental risks for LSIs in Croatia – Sanja Petrinić Turković, Hrvatska Narodna Banka
4. Climate exercise 2022 – Marko Bračković, Bank of Slovenia
5. Current and planned activities, challenges, and potential solutions for climate risks – Tanja Jakimova, National Bank of the Republic of North Macedonia; Maja Ivanovic, National Bank of Montenegro; Margerita Topalli, Bank of Albania; Namik Galijasevic, Banking Agency of Federation of Bosnia & Herzegovina; Srdjan Lamesic, Banking Agency of Republika Srpska

November 2022

1. Transition plans for EU banks: Regulatory landscape and risk-based perspective – Fabien Le Tennier, European Banking Authority (EBA)
2. Prudential transition plans – Patrick Amis, European Central Bank
3. How to set carbon footprint reduction plans of banks – Guido Schellino, UniCredit Group; Gabor Tamas, OTP Group; Manuela Hurmuz, Raiffeisen Bank International (RBI); Vera Economou, Raiffeisen Bank International (RBI)
4. The macroprudential challenges of climate change: third report of the ECB and ESRB Project Team on climate risks (ECB) – Dejan Krušec, European Central Bank

Workstream 3

February 2023 – Decarbonise the electricity sector

1. Gear up for power decarbonisation in Central, Eastern and South-Eastern Europe (CESEE) – Manuel Baritaud, EIB
2. Decarbonise the electricity sector – Edward Calthrop, EIB
3. Accelerating energy diversification in Central and Eastern Europe – Sylvia Beyer, International Energy Agency (IEA)
4. Reviewing and spreading electricity market design to maintain investor confidence – Zoran Vujasinovic, EU Agency for the Cooperation of Energy Regulators (ACER)
5. Doubling down on long-term contracts for renewables and low-carbon technologies – Adil Hanif, EBRD
6. Risks and opportunities for commercial banks in the region – Gabriel Marosi, Erste Group

March 2023 – Buildings and energy efficiency

1. Energy efficiency in Central, Eastern and South-Eastern Europe (CESEE) – Isidoro Tapia, EIB
2. Energy efficiency – Peter Sweatman, Climate Strategy & Partners
3. Energy efficiency: the global perspective – Cornelia Schenk, International Energy Agency
4. Energy efficiency: the regional perspective – Barbara Zielinska, BNP Paribas Polska
5. Energy efficiency: the case of green mortgages – Catia de Almeida, Union de Creditos Inmobiliarios
6. Energy efficiency in industry – Steve Fawkes, EP Group
7. Energy efficiency: financing opportunities – Gianpiero Nacci, EBRD

March 2023 – Decarbonising industry – prospects for low-carbon hydrogen

1. Decarbonising industry – Mark Mawhinney, EIB
2. Gearing up to decarbonise the industrial sector – Emanuele Bianco, International Renewable Energy Agency; Franz M. Androsch, Voestalpine: H2Future; Dolf Gielen, World Bank; Karl Voldřich, International Sustainable Finance Centre; Dimitriou Koufos, EBRD

June 2023 – The role of transition plans

1. The role of transition plans – Maya Hennerkes, EBRD
2. Transition plans – Katarina Ždraljević, ProCredit Holding; Ira Poensgen, Transition Plan Taskforce Secretariat; Céline Bruhe, EIB; Russell Bishop, EBRD