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THE IMPACT OF ESG REGULATION ON MACROPRUDENTIAL POLICY AND BANK ACTIVITIES IN THE EU

Abstract

The aim of the study is to present the impact of legal regulations in the field of sustainable development on the directions of macroprudential policy evolution and the activity of banks in the EU. The main ESG directives and regulations in force in the European Union countries will be presented, in relation to macroprudential policy tools and banks' activities, from operational plans to strategic plans. Regarding ESG regulations, banks' obligations resulting from non-financial reporting will also be presented, which further stimulate the process of evolution of the business models of banks and other public trust entities. The conclusions of the analyses point to the importance of capital requirements and systemic risk buffers in banks and the consideration of the CSRD, ESRS and CSDD regulations. Banks' operational activities and strategies are evolving towards a gradual change in the product offer financing green investments in the form of, for example, green loans and bonds. Among the components of business models, banks adjust primarily in the following areas: balance sheet management strategy and customer profile. The actions taken relate to all activities in the following areas: corporate governance (e.g. business strategy, risk, responsible banking, sustainable supply chains), environmental governance (e.g. green

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finance products, environmental impact of operating activities or TCFD reporting), stakeholder relations – social (e.g. relations with employees, customers, and society).

Keywords: banks, ESG, taxonomy, macroprudential policy, UE

JEL Classification: G15, G18, G20, Q54

Paper type: Empirical research article

Introduction

A wide package of regulations in the form of directives and orders creates the basis for the implemented regulations in the field of sustainable development, covering the following issues: Environmental, Social, Corporate Governance (ESG). These regulations are also closely related to the provisions on financial and non-financial reporting (eligibility and disclosure). These regulations cover a wide subjective scope of financial and non-financial institutions as well as subject matter. Financial supervision institutions, in turn, are obliged to monitor compliance with legal regulations by entities on the financial market and to limit various risks (physical, transfer or ultimately systemic).

Many challenges await supervisory institutions and entities implementing micro- and macro-prudential policy, including in terms of establishing adequate tools to improve ESG implementation processes and counteract the escalation of systemic risks. Among financial entities, banks are one of the first groups of entities that became obliged to comply with ESG regulations and non-financial taxonomies at the earliest. This means that banks are obliged to align their operational, financial, and capital activities and strategic plans in the form of business models and value creation. Since ESG risk, including climate risk, is characterized by a high degree of multidimensionality, the scope of challenges and opportunities for entities wishing to maintain a competitive advantage on the market is wide.

The aim of the study is to present the impact of ESG regulation on the evolution directions of macroprudential policy and banks' lending and investment activities. The main directives and orders in ESG in European Union countries will be presented, regarding macroprudential policy tools and ESG risk management in banks and the possible consequences for lending, investment activities and operational and strategic plans. With reference to ESG regulations, banks' non-financial reporting obligations will also be presented, which further stimulate the process of evolution of business models of banks as well as other public trust entities.

1. Main ESG regulations

Legal regulations in the field of ESG (environmental, social, and corporate governance, ESG) have been developed for several years by the European Commission as part of the work of institutions such as: European Central Bank (ECB), European Banking Authority (EBA), European Financial Reporting Advisory Group /EFRAG Sustainability Reporting Board (EFRAG/EFRAG SRB).

Among main one's regulations EU regulating development balanced they find Aug : Regulation Sustainable Finance Disclosure Resolution (SFDR), taxonomy on reporting : Nonfinancial Disclosure Reporting Directive (NFRD), Corporate Sustainability Reporting Directive (CSRD), European Sustainability Reporting Standard (ESRS), Corporate Sustainability Due Diligence Directive (CSDD) and guidelines Task Force on Climate – Realized Financial Disclosures (TCFD).

The European Central Bank's guidelines on climate risk disclosures have been in force since May 2020. The SFDR Directive on the disclosure of information on sustainable investments by financial market participants (Regulation 2019/2088) aims to increase market transparency and prevent the so-called greenwashing. It covers two groups of entities: financial market participants offering financial products defined in the SFDR (Article 2) and financial advisors providing insurance and investment advisory services. The SFDR Directive entered into force in March 2021 (replacing the previously existing NFRD) and requires financial market participants to present how ESG risks are integrated in the investment process.

The NFRD Directive (2014/95/EU) defined the basis for non-financial reporting. This directive was an amendment to Directive 2013/34/EU on the annual financial statements, consolidated financial statements and related reports of certain types of undertakings. The initial personal scope of the directive included the so-called public interest entities[2]. These entities, in accordance with the NFRD directive, were obliged to include additional statements on non-financial ESG information in their activity reports. While the NFRD did not impose a specific form of disclosure by reporting entities and it was difficult to compare non-financial reports of different entities, the CSRD guidelines already standardized the rules and requirements for non-financial reporting.

The CSRD Directive (EU/2022/2464) is part of a comprehensive package of legislative changes for the sustainable financing of economic growth

[2] Public trust entities in accordance with Art. 2 of Directive 2013/34/EU implemented through Art. 2 of the Act of 11 May 2017 on statutory auditors, audit firms and public supervision (Journal of Laws, item 1089, as amended) are: domestic banks, branches of foreign credit institutions, branches of foreign banks, pension funds, issuers securities, investment funds, insurance and reinsurance companies, cooperative savings and credit unions.

aimed at achieving climate neutrality by the EU by 2050. The CSRD is Directive (EU/2022/2464) of the European Parliament and of the Council of 14 December 2022) and one of the most important EU legal acts specifying which entities and from what year are subject to the ESG reporting obligation. The CSRD introduced changes to four legal acts:

- EU Regulation No. 537/2014 on specific requirements for statutory audits of the financial statements of public-interest entities (2013/34/EU).
- Directive 2004/109/EC on the harmonization of transparency requirements for information about issuers whose securities are admitted to trading on a regulated market.
- Directive 2006/43/EC on statutory audits of annual accounts and consolidated financial statements.
- Directive 2013/34/EU on the annual accounts, consolidated financial statements and related reports of certain types of undertakings.

The uniform non-financial reporting framework has been prepared in accordance with the ESRS standards (31 July 2023), as mandatory and common standards for sustainability reporting. The unified reporting standards are intended to ensure the comparability and reliability of disclosed data, which will be subject to mandatory verification by statutory auditors and, depending on the arrangements in individual Member States, by other certified assurance service providers.

The ESRS includes three principles for disclosing material information:

- three layers (sector-independent, sector-specific, entity-specific),
- three reporting areas (strategy, implementation, effect measurement),
- three topics (environment, society, corporate governance).

In terms of ESRS materiality analysis (2023): the principle of double materiality has been introduced, i.e. impact on the environment or only on the financial consequences for the company or meeting both criteria.

From 2024, the CSDD corporate due diligence directive will apply. The directive highlights companies' obligations to identify actual and potential harmful impacts on human rights and the environment and establishes liability for breaches of these obligations. The scope of the CSDD directive covers companies' own activities, activities of subsidiaries, and entities in the value chain with which the company has regulated business relationships - direct or indirect.

In addition, banks and other financial institutions have guidelines for granting and monitoring loans in force since June 30, 2021 (EBA/GL/2020/06). From June 2022, disclosures regarding ESG risk are part of the so-called Pillar III under the capital requirements of CRR 2 *(Capital Requirements regulation).*

The amended CRR package includes provisions enabling the EBA [3]to introduce requirements in sustainable finance (ESG):

1. CRD 2 Art. 98(8): EBA was obliged to assess the potential inclusion of ESG risk in the process of review and supervisory evaluation of processes. For this purpose, it is necessary to define: a uniform definition of ESG risk, methods for assessing ESG risk and criteria and methods for assessing | the impact of ESG risk on institutions.
2. CRR2 Art. 434a: EBA was obliged to develop standards to specify disclosure requirements. On January 24, 2022, EBA published the final draft implementing technical standard (EBA/ITS/2022/01 – Final draft implementing technical standards on prudential disclosures on ESG risks in accordance with Article 449a CRR*)* specifying detailed requirements for ESG disclosures under Pillar III. The regulation applies from June 28, 2022. Large institutions that have issued securities admitted to trading on a regulated market of any Member State will disclose information on ESG risks, including physical and transition risks. In Polish conditions, these requirements are important for other systemically important institutions in accordance with Art. 131 of Directive 2013/36/EU.

The changes introduced in connection with the implementation of Basel IV in EU countries obliged banks to deal with climate risk (ESG) in the risk management system, in terms of: assessing, limiting and monitoring exposures sensitive to this risk.

2. EU taxonomy

The first non-financial reporting guidelines, although initially in any form of reporting by public trust entities, were contained in the NFRD Directive, which was then developed as part of the CSRD Directive, which introduced uniform standards and expanded the scope of entities obliged to comply with it.

The CSRD Directive provides for the mandatory use of EU reporting standards, i.e. European Sustainability Reporting Standards (ESRS). The identified indicators covered by the CSRD reporting obligation include:

- in the field of environmental protection: climate change, drought and water scarcity, biodiversity, land use, raw materials management, pollution and waste;

[3] EBA plays an important role in supporting the European banking sector in achieving its goals of transitioning to a more sustainable economy and mitigating risks from climate change and broader environmental, social and governance factors. EBA implements the Eco-*Management and* Audit *System Scheme*, EMAS) as part of its commitment to reduce its environmental impact and carbon footprint. EBA's annual environmental statement reflects the Authority's progress in implementing these commitments.

- in the sphere of impact on society: employee issues, occupational health and safety, human rights, relations with the environment, product safety;
- in corporate governance: corporate governance, ethical standards, counteracting corruption and bribery, privacy protection and data security.

Pursuant to CSRD regulations, reporting entities are obliged to include and demonstrate the impact of ESG factors in business decisions and energy and climate transformation programs. These requirements impose an obligation to confirm the need for the company to conduct a reliable analysis of the financial and business impact of ESG factors on its value and strategy. This means it is necessary to include non-financial factors in operational processes. Thus, while ensuring the value of the company in business models, banks are forced to consider ESG assumptions in their long-term management and business strategies.

Mandatory non-financial reporting elements under the CSRD include:

- materiality testing study) in accordance with the principle of two-way materiality,
- preparation of a report in accordance with uniform EU standards for reporting sustainable development issues ESRS,
- analysis and inclusion in the report of the so-called taxonomy, i.e. information on how and to what extent the activities of this enterprise are related to economic activities that qualify as environmentally sustainable (percentage of turnover, CapEx and OpEx),
- presentation in the form of an XHTML report with appropriate tagging,
- submission of an audit report by an independent entity – a company authorized to audit financial statements.

In accordance with the evolution of reporting requirements for public trust entities, the CSRD directive provides for subsequent reporting years 2024-2028 for groups of entities depending on whether they meet 2 of 3 criteria, i.e. balance sheet total, net sales revenues, and number of employees (Table 1).

Table 1. Non-financial reporting obligations according to CSRD

Fiscal year	Report submission deadline	Entities	Balance sheet total	Net revenues from sales	Number of employees
2024	2025	Large entities and those with the status of public interest entities			>500
2025	2026	Other large enterprises	≥20 million EUR	≥€40 million	≥250

Continued Table 1

2026	2027	Medium and small enterprises with issuer status*	<20 million EUR	<EUR 40 million	<250
			<EUR 4 million	<EUR 8 million	<50
2028	2029	Companies from outside the EU	Turnover > EUR 150 million		

*The number of medium and small enterprises throughout the EU is over 50,000 and in Poland there are a total of 3,500 companies (as of June 30, 2022).
Sources: CSRD (2023).

Banks and other entities can choose reporting methods that suit their needs and legal conditions, but usually one of three methods is chosen:

- Activity report with added ESG data, in which the annual report presents key ESG indicators supplemented with more extensive information, e.g. on the bank's website.
- Report in the form of a sustainable development report, i.e. a separate report apart from the annual financial report.
- An integrated report that combines both the financial report and sustainable development issues in one document, showing the strategy and model of building company value. This form of an integrated report is most often chosen by the largest banks, which treat this form as information for clients and investors interested in cooperation with an active entity financing the ESG transformation. Such activities effectively support the bank's competitiveness and increase its market value.

Reported ESG indicators, the so-called greenness, in accordance with the guidelines of the EFRAG group (2023), include two cross-sectional standards and three thematic standards, which were adopted on October 23, 2023. The scope of reporting data and the degree of their detail is significant. Thus, these indicators will enable an in-depth diagnosis of the situation in the reporting company and its investment intentions and cooperation with partners within the supply chain, in addition to the financial data published as part of the annual financial reporting. The transparency of information about the company's activities will have a broad impact on operational, financial and investment activities, and thus on adapting business models to ESG conditions and ultimately on the financial results, competitiveness, and value of the company (Table 2).

Table 2. ESG indicators according to CSRD cross-sectional and thematic standards, according to EFRAG nomenclature

Type of standard		Designation and name
Cross-sectional	General	ESRS 1General requirements ESRS 2General disclosures
Thematic	Environmental	ESRS E1 Climate change ESRS E2 Pollution ESRS E3 Water and marine resources ESRS E4 Biodiversity and ecosystems ESRS E5 Resources and circular economy
	Social	ESRS S1 Own workface ESRS S2 Workers in the value chain ESRS S3 Affected communities ESRS S4 Customers and end-users
	Governance	ESRS G1 Governance, risk management and internal control ESRS G2 Business conduct.

Sources: EFRAG (2022).

The purpose of non-financial reporting is to obtain information by entities obtaining financing (borrowers, issuers of debt securities) and entities providing financing. Banks will be able to more precisely analyze the risks associated with a given borrower (financed project), i.e. determine risk weights and capital adequacy more precisely. Those purchasing securities, e.g. green bonds, will have more detailed knowledge about the use of funds from these bonds for investment purposes.

In banking activities, the entire reporting process (in accordance with the concept of supply chain) includes environmental reporting:

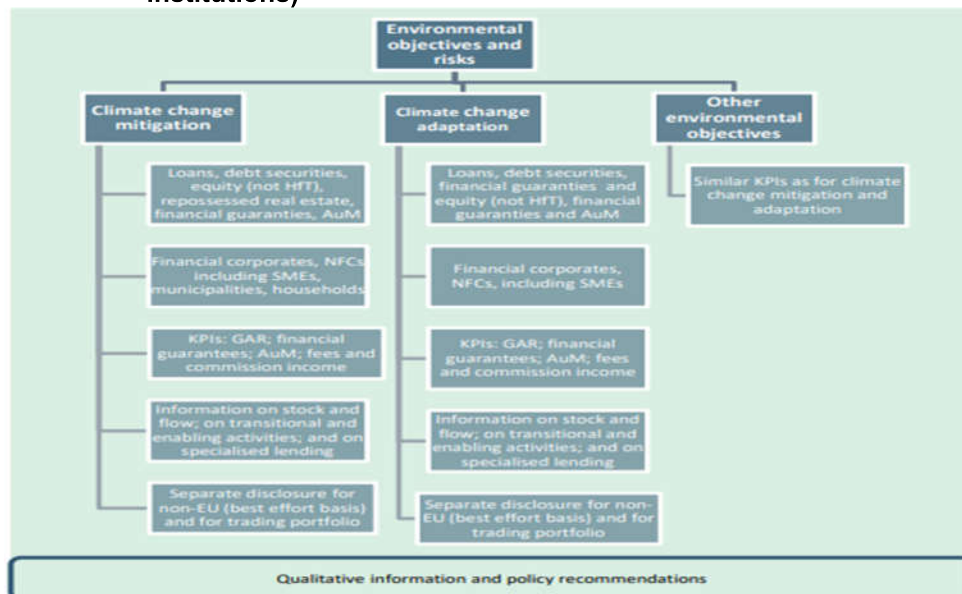
- entities providing financing for the purpose (project),
- entities using financing for a given purpose (project),
- entities related to the entity using financing for a given investment process or project.

Such a reporting process means a wide range of collected individual data: not only between the lender and the borrower, but also, more broadly, between cooperators. This means that decision-making processes will begin in the supply chain: from the borrower (bank) through the borrower to his last contractor. This means that all entities will become interdependent, and the result may be limited cooperation with entities with a low level of ESG transformation.

The EU Taxonomy is a framework for classifying and identifying environmentally sustainable activities. It comprehends a set of technical screening criteria determining whether an economic activity can

be considered environmentally sustainable. By providing a common classification system for sustainable activities, the EU Taxonomy serves as a tool for green finance. It is intended to help financial market participants identify environmentally sustainable economic activities and channel capital toward that (Figure 1).

Figure 1. Scope of the disclosures on environmentally sustainable economic activities under Article 8 of the Taxonomy Regulation (credit institutions)



Source: EBA (2021, p. 12).

The Green Asset Ratio (GAR) is a new key performance indicator for EU banks, intended to provide a standard and comparable measure of the percentage of a lender's assets invested in environmentally sustainable projects and activities. This indicator shows the proportion of assets that are environmentally friendly and that contribute significantly to the objectives of climate change mitigation or adaptation, or that enable other actions to achieve these objectives. According to the EBA guidelines, the GAR indicator should cover all exposures in the banking book to financial and non-financial enterprises and local governments. It's a part of a major effort to accelerate the adoption of sustainable banking practices, where the European Banking Authority (EBA) has taken a decisive step by announcing that starting in 2024, about 150 large EU lenders will be required to disclose this new metric.

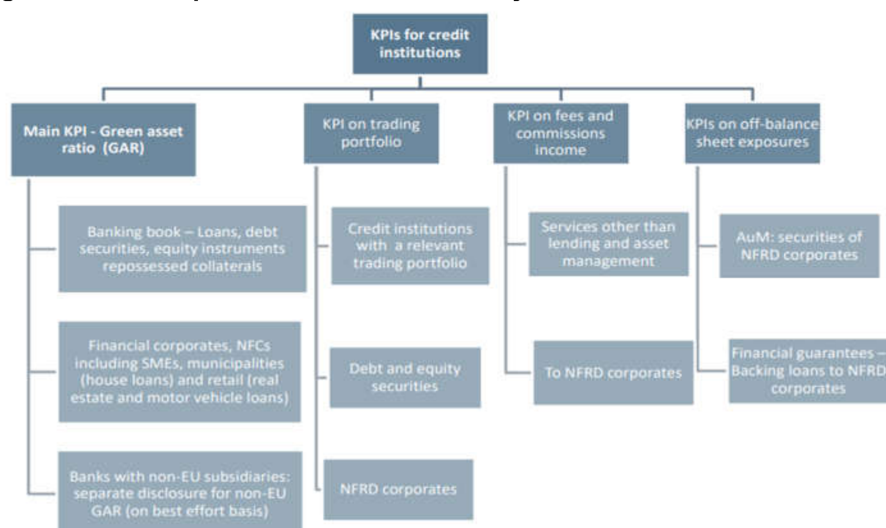
The EU taxonomy and GAR are strictly related to each other and serve the same purpose of transitioning to a greener financial system and economy. According to taxonomy key performance indicators (KPIs), European banks are currently required to disclose seven KPIs related to their assets (Table 3, Figure 2).

Table 3. Taxonomy key performance indicators (KPIs)

	Range of indicators
1.	Taxonomy-eligible activities
2.	Taxonomy-non-eligible activities
3.	Exposure to undertakings that are not obliged to NFRD
4.	Exposure to derivatives
5.	Exposure to on-demand interbank loans
6.	Exposure to trading books
7.	Exposure to central governments, central banks, and supranational

Source: EBA (2021).

Figure 2. KPIs – quantitative disclosures by credit institutions



Source: EBA (2021, p. 24).

As show at Table 3 and Figure 2 the granularity required for taxonomy reporting is high, and with the Green Asset Ratio, things are about to level up even further. Therefore, banks require more than granularity and precision in data management to quantify environmental, social and governance (ESG) aspects.

Reasuming, in 2023 year, for the first time, European banks had to include in their reporting ratios related to taxonomy-eligible

exposure and to entities not subject to the Non-Financial Reporting Directive (NFRD). These novelty requirements came from the Article 8 of the Sustainable Finance Taxonomy Regulation and represent the first step towards more comprehensive reporting obligations that will be required starting 2024 year with the implementation of the GAR.

3. ESG risk and macroprudential policy challenges and tools

Generally, ESG (*environmental, social, and corporate) risk governance*, ESG) in financial institutions, including the banking sector, is understood as the risk of negative financial effects that result from the impact of ESG factors on customers and contractors or balance sheet items of banks. The aim of ESG risk management is to support sustainable development and build the bank's long-term value through integrated management of the impact of ESG factors.

ESG risk management considers the perspective of double materiality, i.e. the impact of ESG factors on the bank's operations, financial result and development, and the impact of the bank's activities on society and the environment. The bank manages ESG risk as part of managing other types of risk, due to their interdependence. ESG risk is not a separate type of risk, but a cross-sectional risk [4]that affects individual types of risk. Banks' loan portfolios of companies operating in high-emission industries, i.e. those emitting greenhouse gases (GHG), are directly exposed to ESG risk. Climate risk management (climate-related risk) are supported by all committees operating in the bank. The effect of banks' activities in the ESG area is also the promotion of corporate social responsibility activities social responsibility (CSR).

The changes introduced in connection with the implementation of Basel IV in the EU obliged banks to process climate risk (ESG) in the risk management system. ESG climate risk is also treated as one of the challenges for financial stability. European Systemic Risk Board (ESRB) and the European Central Bank (ECB) are actively engaged in analyzing and monitoring the impact of climate risk on the financial system, recognizing it as one of the main systemic risks in the European Union (EU).

The key scope of sustainable development (ESG) is the environment and the related climate risk. Climate risk can impact the financial system and the real economy through two risk channels:

- Physical risk (*physical risk)* covers the economic costs and financial losses resulting from the increasing severity and frequency of extreme weather events caused by climate change.

[4] Due to the cross-sectional specificity of socio-environmental risks, which are not separate risks but are part of classic risk categories, banks do not distinguish them as a separate category.

– Transformation risk (*transition risk)* is related to the costs generated by the need to adapt the economy to a more sustainable and low-emission development path, will materialize before a significant part of the physical risk materializes. Climate transition risk is the risk that arises when, during the transition to a low-carbon economy, there are adjustments to the value of financial assets that investors do not fully anticipate or hedge against (UNEP, 2020). There are several reasons why this may be the case (OECD, 2017; Monasterolo, Battiston 2020, p. 52–72), e.g. if the transition is late and sudden ESRB (2016), and therefore "disorderly" (NGFS, 2019).

**The essence of the relationship between ESG (climate) risk and the appropriateness of using macroprudential policy is the fact that physical and transformation risks may increase systemic risk in the financial sector, the monitoring and management of which is the responsibility
of supervisory institutions conducting prudential policy.**

Supervisory institutions pursue a micro-prudential policy addressed to individual institutions (banks) to strengthen their resilience and ability to hedge financial risks, including climate ones. Macroprudential policy applies to the entire financial system or a significant part of it, is a significant complement to microprudential activities, extends the scope to common exposures, feedbacks between the real economy and the financial sector. Macro-prudential policy can help manage unequal risks at the level of countries and regions, and addresses systemic risk by limiting risk build-up, increasing resilience to escalating climate risk and mitigating the prospects of extreme events materializing. Therefore, macroprudential policy is intended to ensure that all institutions take a prudent approach to various risks and threats that may become systemic, including ESG risk.

To support the effects of the supervisory institution, cooperation in both its dimensions, i.e. micro- and macro-prudential, is important, because the final effects of mitigating ESG risks that may escalate systemic risk depend on it. The materialization of systemic risk could adversely affect the provision of products and services by the financial system and, in extreme cases, seriously harm economic growth. The essence of macroprudential policy is to protect the stability of the financial system. A strong and healthy financial system is better able to withstand shocks, which helps avoid the most serious effects of crises.

Objectives of macroprudential policy including counteracting threats to financial stability related to ESG (climate) risk, also include: risk monitoring, increasing resilience to increasing climate risks and mitigating the prospects for the materialization of extreme events.

The main challenges facing macroprudential policy include the following:

- ESG (climate) risk is characterized by a high degree of multidimensionality.
- Different degrees of exposure to climate risk in individual EU countries, sectors and enterprises (Kaenzig, 2022; Kalkuhl, Wenz, 2020).
- Diversified loan portfolios of banks with corporate credit exposures in dirty sectors or entities related to them.
- Climate risks may affect the solvency of borrowers (business entities, households) as well as the value of collateral for real estate loans (residential and commercial).
- Banks' vulnerability to combined transition and credit risks through their loan portfolios may exacerbate increased shocks to economies.
- Diverse state of climate transformation between EU countries and their financial and non-financial institutions.
- The essence of climate risks is the mechanism of increasing and perpetuating losses, especially those related to weather changes (temperature, precipitation, hurricanes, etc.).
- The greatest challenges in managing ESG/climate risk concern the sectors most exposed to this risk, i.e. sectors related to electricity, mining, gas and trade.

Since ESG risk is treated as an element of systemic risk, the most important tools that should be used include capital buffers and systemic risk buffers (Table 4).

Table 4. The most important tools of macroprudential policy from the perspective of ESG risks

Level	Tools
Banks	• capital requirements, • concentration thresholds, • supervisory monitoring, • general system risk buffer (SyRB) • and sector systemic risk buffer (sector SyRB)
Customers	• instruments of influence on the borrower (borrower *based measures,* BBM)

Sources: The author`s own compilation: NBP (2022); Giuzio et. al., (2019); Gross, Población (2017).

A particularly important tool, already proven at EU level, is the general systemic risk buffer (SyRB). A sectoral systemic risk buffer could provide additional support, but its application requires ESG data at the sectoral level. In addition to tools addressed directly to banks as institutions, to diagnose credit exposures, tools addressed to bank clients (households, business

entities) should also be used in the form of a more detailed analysis of creditworthiness, allocation of credit funds for green projects, etc. (Vermeulen et.al., 2021; ESRB, 2020; Weyant, 2017, pp. 115-137).

4. The impact of ESG regulations on banking activities

Due to the wide subjective and objective scope of ESG regulations, their impact on the activities of banks is significant. ESG regulations affect both current (operational), financial and capital activities as well as medium- and long-term plans. Since ESG regulations and non-financial reporting also verify the financial products offered to customers, or the cooperation of banks with various entities as a whole, the impact of ESG is observed in the developed business and value creation models.

Banks' business and value creation models also consider ESG regulations and taxonomy reporting requirements. Because the business model reflects the company's operating philosophy and describes all elements of the market environment and the company as well as the relationships between them that are important for achieving the company's goals and creating value (e.g. Saebi, Foss, 2014, p. 2; Zoot, Amit, 2010, p. 216-226; Santos, Spector, Heyden, 2009, p. 5-13). Moreover, business models allow to express the business logic of the company (Nosowski, 2012) and specify strategic assumptions in the area of how to create value in it (Pyka, 2013). Since in banks' business models, in addition to commercial goals, the goals of financial security and market activity are important, ESG risk management is also related to them.

Among the conditions affecting business models, in addition to economic conditions, there are also new legal regulations that affect banking activity profiles, which is emphasized by, among others: Altunbas, Manganelli, Marques- Ibanez (2011); Ayadi , Arbak, Pieter, De Groen (2011); Biron, Córdova, Lemus (2019). Therefore, the changes in ESG regulations as well as economic and social regulations in the banking environment result in the need to adapt banking business models. Gaining a competitive advantage and functioning satisfactorily on the market requires compliance with ESG, which means a growing number of conditions on which banks have limited influence and must adapt.

In the case of banks and other financial institutions, EU sustainable development regulations clearly affect activities related to lending, investing and internal governance, as well as changes in the strategy of the entire institution. Because effective implementation of ESG strategies is only possible with full commitment at various levels of the organization: from management bodies to front- office employees.

Therefore, potential key success factors include:

1) appropriately shaped internal organization and a transparent system of responsibility,

2) expanding the scope of credit and investment analyses,
3) effective internal reporting (effectiveness indicators),
4) adequate control mechanisms,
5) remuneration policy considering ESG,
6) the role of compliance (the process of introducing new products) and internal audit.

Although bank business models, as a result of ESG regulations, are evolving primarily in terms of the following components: 1) customer profile – building their pro-ecological awareness and preferences, and 2) product offer – increasing the so-called green financing (Table 3). However, the process of expanding the scope of ESG regulations and taxonomies, which has been ongoing for several years, causes spillover effects on all components of business models, defined differently by individual banks.

Table 3. Types of loans and bonds financing sustainable development

Financial instrument	Characteristic
Sustainability-linked loans (SIL)	These are any type of credit or conditional instruments (such as security lines, guarantee lines or letters of credit) that encourage the borrower to achieve ambitious, pre-defined ESG performance targets. The borrower's performance is measured through sustainability objectives, which include key performance indicators, ratings or equivalent indicators and which measure the improvement of the sustainability profile. Depending on the goals achieved, customers can count on lower financing costs.
Ecological bonds (EB)	These are any development bond instruments the proceeds of which, or an equivalent amount, will be used exclusively to finance or refinance, in part or in whole, new or existing eligible environmental projects.
Sustainability Linked Bonds (SLB)	It is any type of bond instrument whose physical or structural characteristics may vary depending on whether the issuer achieves pre-defined sustainability or environmental, social policy and governance objectives.
Sustainability Bonds (SB)	These are all development bond instruments where the proceeds or an equivalent amount will be used exclusively to finance or refinance a combination of environmental and social projects.

Source: ICMA (2020, 2021), LMA (2019).

In response to ESG regulations, banks prepare various detailed reports in which they present the required reporting elements and their individual implementation practices. In the case of Santander BP SA Group (2023), these are the most important policies and regulations.

G-Corporate Governance: 1) A corporate governance model for the Group and its subsidiaries. 2) Detailed principles of corporate governance and the General Code of Conduct 3) Information policy and counteracting conflicts of interest. 4) Code of conduct on securities markets. 5) Anti-money laundering policy, anti-corruption program. 6) Sustainable development and remuneration policy.

E-Environmental: 1) Minimizing the impact of banking branches and activities on the environment (considering the internal environmental footprint, e.g. energy consumption, facility operation). 2) Promoting pro-ecological products and services and considering and assessing the impact of financed projects on climate change. 3) In terms of operational activities, offering the so-called green products and solutions, supporting the transformation of the economy into low- and zero-emission, educational activities, adapting to the requirements of international ESG regulations, conducting initiatives reducing the bank's environmental footprint.

S-Social – reports from: 1) bank employees, 2) customers and stakeholders, and 3) society.

Regulations regarding sustainable development are important determinants of models and strategies undertaken by banks, which in practice determine opportunities and challenges.

The opportunities include, for example:

1) increased demand for green financial products related to the 2022+ fuel crisis and the search for alternative sources of investment financing, e.g. in the area of energy, construction of new renewable energy sources,
2) growing expectations of investors and clients of financial institutions not only in terms of profitability, but also the impact of the investment or product on the environment, which is why banks see ESG not only as a regulatory necessity, but also as a development impulse and opportunities to improve their competitive position,
3) the product offer includes more and more so-called green sources of financing (loans, bonds) to finance renewable energy sources, projects increasing the share of green energy in the so-called energy mix or financing the increase in electrification, e.g. in transport.

The challenges include:

1) the need to expand source systems with ESG data,
2) some banks' business models and exposure portfolios may be particularly exposed to climate-related risks, e.g. related to economic sectors sensitive to climate-related physical threats, EU regulations on CO_2 emissions or the transformation towards a low-emission economy,

3) the implementation of new strategies and business models in the context of ESG requirements requires appropriate employee competences, the acquisition of which may be a great challenge,
4) an increase in ESG risk in banks, due to its multidimensionality, may escalate a simultaneous increase in credit, market, liquidity, operational and reputational risk.

5. Concluding remarks

The wide scope of ESG regulations in the subjective and objective dimensions determines the need to take adjustment actions at the level of supervisory institutions conducting macroprudential policy and by the obligated entities, including banks. SFDR regulations, NFRD taxonomy, CSRD, ESRS, CSDD and TCFD are the pillars of changes implemented in the entire financial sector of EU countries.

The impact of ESG (climate) risks on financial stability – both for the real economy and the financial system – depends on the interplay of exposures and financial vulnerabilities. Banks with greater exposure to climate-related concentration risk (CRCR) are more likely to suffer significant losses, with large exposures to dirty sectors (Q&M, real estate, trading). The main challenges of implementing ESG regulations include limitations in access to ESG statistics, specificity of some business models and exposure portfolios related to the so-called "dirty" sectors of the economy (mining, extraction, transport, trade), acquiring employees with appropriate ESG competencies, or numerous challenges related to non-financial reporting. Macroprudential policy tools should counteract systemic climate threats by targeting the risk of banks as key lenders to the economy (general and sectoral SyRB), complemented by direct borrower risk mitigation measures (BBM).

Regulatory and market pressure in EU countries leads to pro-ecological evolution of business models and value creation by banks, in which supporting the demand for green financial products (loans, credits, green bonds) and pro-ecological customer-friendly attitudes should be developed and seen as opportunities in competitive competition on the market.

To sum up, the research conclusions indicate the importance of considering the CSRD, ESRS and CSDD regulations. The most important tools of macroprudential policy addressed to banks in the EU include capital buffers and the general and sectoral systemic risk buffer, used to counteract systemic aspects of climate risk, and BBM tools for bank clients. The operational activities and strategies of banks are evolving towards a gradual shift in the product offer financing green investments in the form of, for example, green loans and bonds. Among the components of business models, banks make adjustments primarily in the following areas: balance sheet management strategy and customer profile. The activities undertaken

concern all activities in the areas of: corporate governance (e.g. business strategy, risk, responsible banking, sustainable supply chains), environmental (e.g. products in the field of green financing, the impact of operational activities on the environment or TCFD reporting), relations with stakeholders - Social (e.g. relationships with employees, customers and society).

Limitations

Since the legislative process in the field of ESG regulations has not been completed but is still ongoing at the level of many EU institutions, as is the stage of initial implementation of the regulations by the obligated entities, the analysis presented initially presents the main areas of impact as well as challenges and opportunities.

Recommendations

1. Macroprudential policy should increase the resilience of the financial system and thus reduce the strength of unfavorable macrofinancial feedback reactions resulting from unfavorable shocks, including climate shocks. These benefits will be most visible when they create an additional stock of capital above the minimum requirements that can be released in an emergency. Higher bank capitalization may reduce the financial risk associated with tightening monetary policy (e.g. in the period of high inflation dynamics and debt in the economy). Appropriate buffers will increase the resilience of the financial system and provide greater freedom in monetary policy.
2. Macroprudential policy should counteract systemic climate threats by simultaneously using tools aimed at banks and borrowers. Buffers should be used for banks to increase the resilience of the financial system (general and sectoral SyRB), requirements for higher bank capitalization in order to reduce financial risks. The following should be assessed: the general systemic risk indicator, the sector systemic risk indicator and the differentiated SyRB sector buffer indicator related to the concentration of climate exposures at the bank level. Instruments affecting the borrower should be applied to borrowers (borrower based measures, BBM).
3. In order to reduce ESG risks, financing on the markets for sustainable development needs should be supported through the so-called green instruments, i.e. an increase in the supply of green loans and the development of green treasury and corporate bond markets in EU countries.
4. It is also postulated to increase the scope of macroprudential policy towards ESG/climate risk in the field of non-bank financial

intermediation, which has shown an increase in investment financing in recent years.

Future research areas

Future research should address two areas. Firstly, after the initial implementation period of the implementation of ESG requirements, it will be justified to analyze the first effects and propose corrections of shortcomings and solutions supporting the improvement of the effects of reducing ESG risks in the banking sector of EU countries. Secondly, a comparison of practices in the implementation of ESG regulations and taxonomies between banks or banking systems of individual countries in the EU. Such a diagnosis of differences and implementation problems would be important in finding solutions to them.

References

1. Altunbas, Y., Manganelli, S., Marques-Ibanez, D. (2011), "Bank risk during the financial crisis: do business models matter?", ECB Working Paper Series Posted, 2011/11.
2. Ayadi, R. , Arbak E. , Pieter W., De Groen, (2011), "Business Models in European Banking: A Pre-and Post-Crisis Screening:, Center for European Policy Studies.
3. Biron M., Córdova F., Lemus A. (2019), "Banks' Business Model and Credit Supply in Chile: The Role of a State-Owned Bank", BIS Working Paper, No. 800.
4. CSRD (2023), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022L2464.
5. Directive (2022/2464/EU) of The European Parliament and of The Council of 14 December 2022 amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU, as regards corporate sustainability reporting, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022L2464.
6. Directive (2014/95/EU) of the European Parliament and of the Council of 22 October 2014 amending Directive 2013/34/EU as regards disclosure of non-financial and diversity information by certain large undertakings and groups text with EEA relevance, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014L0095 .
7. EBA (2021), EBA Report Advice to the Commission on KPIs and Methodology for Disclosure by Credit Institutions and Investment Firms under the NFRD On How and To What Extent Their Activities Qualify as Environmentally Sustainable according to the EU Taxonomy Regulation EBA/Rep/2021/03, p. 12.
8. EFRAG (2022), "Draft European Sustainability Reporting Standards", EFRAG, November 2022, https://www.efrag.org

9. EFRAG (2023), “EFRAG Welcomes the Final Adoption of The ESRS By the European Institutions”, https://www.efrag.org/News/Public-453/EFRAG-welcomes-the-final-adoption-of-the-ESRS-by-the-European-Institutions (accesses: 03.11.2023).
10. ESRB (2016), “Too late, too sudden: Transition to a low-carbon economy and systemic risk”, ASC Report, No. 6.
11. ESRB (2020), "Positively green: Measuring climate change risks to financial stability", https://www.esrb.europa.eu/pub/pdf/reports/esrb.report200608_on_Positively_green_Measuring_climate_change_risks_to_financial_stability~d903a83690.en.pdf?c5d033aa3c648ca0623f5a2306931e26.
12. ESRS (2023), “Sustainability Reporting Standards”, EFRAG, 2023, https://www.efrag.org/lab6.
13. Giuzio M., Krušec D., Levels A., Melo A. S., Mikkonen K., Radulova P. (2019), "Climate change and financial stability", Financial Stability Review, ECB, Vol. 1.
14. Gross, M., and Población, J. (2017), "Assessing the efficacy of borrower-based macroprudential policy using an integrated micro-macro model for European households", Economic Modelling, No. 61, pp. 510–528.
15. ICMA (2021), “Green Bond Principles”, https://www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks/green-bond-principles-gbp/
16. ICMA (2023), “Sustainability-Linked Bond Principles”, https://www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks/sustainability-linked-bond-principles-slbp/
17. Kaenzig, D. (2022), "The unequal economic consequences of carbon pricing", Working Paper, London Business School.
18. Kalkuhl M., L. Wenz. (2020), "The Impact of Climate Conditions on Economic Production. Evidence from a Global Panel of Regions", Journal of Environmental Economics and Management, No. 103 (C).
19. LMA (2019), “Sustainability Linked Loan Principles”, https://www.lsta.org/content/sustainability-linked-loan-principles-sllp/
20. Monasterolo, I. S. Battiston (2020), “Assessing Forward-Looking Climate Risks in Financial Portfolios: A Science-Based Approach for Investors and Supervisors”, NGFS Occasional Paper. Case Studies of Environmental Risk Analysis Methodologies, p. 52–72.
21. NBP (2022), "Macroprudential Supervision", https://www.nbp.pl/nadzormakroostroznosciowy /insrtumenty.aspx.
22. NGFS (2019), "Network for Greening the Financial System, First comprehensive report, A call for action. Climate change as a source of financial risk", April, https://www.ngfs.net/sites/default/files/ medias/documents/synthese_ngfs-2019_-_17042019_0.pdf .

23. NGFS (2019), “Network for Greening the Financial System, First comprehensive report, A call for action. Climate change as a source of financial risk”, April, https://www.ngfs.net/sites/default/files/medias/documents/synthese_ngfs-2019_-_17042019_0.pdf .
24. Nosowski, A. (2012), „Modele, strategie i metody zarządzania w instytucjach kredytowych”, [w:] A. Gospodarowicz, A. Nosowski (red.), „Zarządzanie instytucjami kredytowymi, Warszawa, C.H. Beck. (Nosowski, A. (2012), "Models, strategies and management methods in credit institutions", [in:] A. Gospodarowicz, A. Nosowski (eds.), "Management of credit institutions, Warsaw, C.H. Beck).
25. OECD (2017), "The Economic Consequences of Climate Change", OECD Publishing, Paris.
26. Pyka, I. (2013), Bankowość komercyjna (Commercial banking). Katowice: Wydawnictwo Uniwersytetu Ekonomicznego w Katowicach (Pyka, I. (2013), Commercial banking. Katowice: Katowice University of Economics Press).
27. Saebi, T., Foss, N.J. (2014), “Business models for open innovation: Matching heterogenous open innovation strategies with business model dimensions”. European Management Journal, p. 2, doi:10.1016/j.emj.2014.11.002.
28. Santander BP (2023), https://esg.santander.pl/ (access 03.11.2013).
29. Santos, J., Spector B., van der Heyden L. (2019), “Toward a theory of business model innovation with incumbent firms”, Working Paper no. 2009/16/ EFE/ST/TOM. Fontaine bleau: INSEAD, pp. 5–13.
30. UNEP (2020), "Beyond the Horizon: New Tools and Frameworks for Transition Risk Assessments from UNEP FI's TCFD Banking Programme – United Nations Environment – Finance Initiative", https://www.unepfi.org/industries/banking/beyond-the-horizon.
31. Vermeulen R., Schets E., Lohuis M., Kölbl B., Jansen D. J., and Heeringa W. (2021), "The heat is on: A framework for measuring financial stress under disruptive energy transition scenarios", Ecological Economics, No. 190, 107205.
32. Weyant, J. (2017), "Some Contributions of Integrated Assessment Models of Global Climate Change", Review of Environmental Economics and Policy, No. 11(1), pp. 115–137.
33. Zott C., R. Amit (2010), “Business Model Design: An Activity System Perspective. Long Range Planning”, Business Models, 43 (2-3), pp. 216-226.