

Planetary and Social Boundaries in European Banking: Comparative Content Analysis of Sustainability Reports from Western and Central-Eastern Europe (2017–2024)

Răzvan-Octavian GIURCĂ

Bucharest University of Economic Studies, Doctoral School of International Business and Economics, Romania

 0009-0000-2051-6926

giurcarazvan23@stud.ase.ro

Abstract

Earth's ecosystems face increased pressure from human economic activities, which has led businesses to adopt various sustainability principles in their operational frameworks and disclosure systems. This research examines the degree to which major Western and Central-Eastern European banks include the planetary and social boundaries defined by Rockström et al. (2009) and Raworth (2012) within their sustainability disclosure reports. The content analysis of 134 official sustainability reports from leading banks in Germany, France, Netherlands, Spain, Italy, Austria, Poland, Hungary, Romania and the Czech Republic, between 2017 and 2024, reveals selective sustainability reporting practices. Banks throughout both regions maintained continuous focus on climate change since the European Union introduced its Green Deal in 2019. However, other planetary boundaries such as biodiversity loss, freshwater use and land-system change received minimal attention. Social boundaries, including education, employment, gender equality, income and healthcare received significant attention from banks because of the socio-economic disruptions, especially during and after the COVID-19 pandemic. Western European banks demonstrated stronger environmental regulatory compliance, while Central-Eastern European banks focused on developing their socio-economic aspects. The study demonstrates that European banking sector sustainability reporting is primarily compliant rather than transformational, underscoring a need for enhanced regulatory frameworks and strategic sustainability integration to achieve systemic change.

Keywords: Sustainability reporting; planetary boundaries; social boundaries; corporate social responsibility (CSR); banking.

JEL Classification: Q50; F69; G20; O10; P46.

DOI: <https://doi.org/10.24818/ejis.2025.17>

1. Introduction

The Anthropocene era brought human economic activities that exceeded Earth's sustainable ecosystem boundaries in the past centuries. Human civilization experienced a period of stability during the Holocene era, which lasted for about 10,000 years, before industrialization, fossil fuel consumption and destructive farming techniques disrupted this balance. According to Rockström et al. (2009, p.2), multiple planetary boundaries have been exceeded by human activities, threatening the ecological systems needed for future generations. Businesses, operating as leading economic entities, must adopt sustainability practices for their operations

while keeping their sustainability progress transparent to stakeholders. Similarly, the development of Corporate Social Responsibility (CSR) started as a crucial element of corporate sustainability initiatives which have existed for decades.

Primarily, the early twentieth century saw the origin of Corporate Social Responsibility according to Dolan and Zalles (2022), until scholars Bowen (1953) and Carroll (1979) expanded its definition to include economic, legal, ethical and discretionary responsibilities to it in the mid-twentieth century (Witkowska, 2016, p.2). After that, Corporate Social Responsibility has transformed into an essential business strategy, which unites environmental considerations with social aspects. The traditional corporate focus of CSR now concentrates on ESG reporting, which includes external sustainability effects, as well as fulfilling investor needs and regulatory standards (Kassier, 2024, p.9).

Closer to the present, the environmental crises of the 1980s led to sustainability reporting development because corporations needed to increase their accountability levels. Social reporting increased during the 1990s and became increasingly popular (Landrum & Ohsowski, 2018, p.3). The progress in reporting standards led to the creation of the Global Reporting Initiative (GRI) during the late 1990s, as the framework offered established disclosure protocols for sustainability reports.

Through time, the reporting frameworks have evolved by incorporating ESG metrics, while meeting worldwide initiatives, including the UN Sustainable Development Goals (SDGs).

Notably, the worldwide expansion of company sustainability reports coincides with national government support for these, as documented by dos Santos et al. (2020, p.100). Sustainability reporting has always remained optional, but its mandatory status is increasingly adopted by businesses.

For this, financial institutions, including banks, dedicate their operational framework to corporate social responsibility (CSR) through stakeholder sustainability expectations (Sebastião et al., 2024, p.4). Baldissera (2023, p.7) indicates that institutions with better financial performance and larger assets also produce more detailed sustainability data for disclosure. For this, banks achieve better sustainability reporting standards by providing detailed information across various topics.

On the other hand, Rockström et al. (2009, p.6) identified nine planetary boundaries that sustain Earth's stability, including climate change and biodiversity loss. According to Richardson et al. (2023, p.4), six out of these nine planetary boundaries have been already crossed, which threatens the sustainability work of corporations. At the same time, Raworth (2012, p.10) created 11 social boundaries that link environmental sustainability with social equity. According to Raworth (2012, p.10), the "doughnut" model suggests that organizations should unite environmental sustainability with human well-being when making strategic decisions.

Though, theoretical advancements in sustainability frameworks do not translate into effective corporate reporting solutions for core environmental and social issues. Research shows that businesses focus on climate change efforts, yet they disregard crucial planetary boundaries that include biodiversity loss, water depletion and land deterioration (Kassier, 2024, p.21). The current reporting deficiencies reveal the need for sophisticated sustainability reporting methods that go beyond standard compliance requirements in order to create substantial transformative changes.

During the following chapters, this research examines how major European banking institutions incorporate planetary and social boundaries mentions into their sustainability reporting. The research evaluates financial sector sustainability principles integration through the assessment

of sustainability and non-financial reports from leading German, French, Dutch, Spanish, Italian, Austrian, Polish, Hungarian, Romanian and Czech Republic banks. This research performs a longitudinal content analysis to track how selected banks integrate planetary and social boundaries mentions in their discourse throughout 2017 to 2024. The research used ATLAS.ti qualitative data analysis software to analyze corporate reports for sustainability related term frequencies.

The research examined three essential questions about European banks' documentation of planetary and social boundaries within their official sustainability reports. First, it assessed the extent of planetary and social boundary mentions by banks during the entire analyzed period, spanning from 2017 to 2024.

With the second research question, it targeted the discovery of important shifts in bank discussions regarding these boundaries across various years. The research evaluated the sustainability methods and reporting approaches of Western European banks compared to Central-Eastern European banks, because of regional elements including local regulations and socio-economic priorities. The comparative examination exposed both, distinctive aspects and common elements about how these two major European regions incorporate planetary and social boundaries mentions.

The research results will support corporate sustainability field, by exposing both, successful strategies and reporting weaknesses and offering guidance for improved sustainability communication systems. The research aims to add knowledge about sustainability reporting advancements in order to promote corporate responsibility and an equitable global economy.

2. Literature Review

The Earth experienced various environmental transformations since its beginning, being unstable on the long-term. The period from 10,000 years ago until the Industrial Revolution brought stability which enabled human civilization to grow and develop substantially during the Holocene era. Then, after that period, another challenging one arose - the Anthropocene era, in which humankind became powerful enough to produce environmental changes by its actions. The results of these intense human activities with heavy reliance on fossil fuels or industrialized forms of agricultures could be irreversible damaging to the stable state of the Earth, a state which could have continued for over 1.000 years without the human intervention (Rockström et al., 2009, p.2). In this context, companies face increasing pressure to implement sustainable practices as part of CSR, while disclosing their environmental impact (Kassier, 2024).

The concept of Corporate Social Responsibility (CSR) emerged in the early 1900s during the time of corporate paternalism, which defined the first phases of welfare capitalism (Dolan & Zalles, 2022). The contemporary definition of CSR comes from H.R. Bowen, who introduced the idea in 1953 through his foundational piece titled "Social Responsibility of the Businessman". According to Bowen, business leaders should establish policies and make decisions which support both societal values and overall societal goals while understanding the central role of social responsibility in corporate operations (Witkowska, 2016, p.2).

Multiple attempts to define Corporate Social Responsibility have been made since then, in order to combine more dimensions into the concept's core essence. Carroll (1979, pp. 497-505) developed the CSR framework by combining legal duties with economic obligations, ethical

requirements and discretionary philanthropic responsibilities within his three-dimensional model that functions as a fundamental reference in CSR research (Kassier, 2024, p.6). According to widely accepted definitions, businesses must fulfil four types of responsibilities which incorporate their economic, legal, ethical and discretionary (also known as philanthropic) obligations to society, at any given time (Carroll & Shabana, 2010, pp. 85-89).

Later, through environmental reports, sustainability reporting emerged in the 1980s, which addressed environmental disasters before social reports became available due to ethical issues in the 1990s (Landrum & Ohsowski, 2018, p.3). Back then, businesses recognized that their environmental and social initiatives' promotion would boost both reputation and financial gains. After that, the 2000s marked a turning point for CSR, this because organizations began treating it as a strategic imperative which embeds universal values into their operational framework and decision-making processes (Werther & Chandler, 2006). ESG (Environmental, Social and Governance) criteria now dominate reporting while CSR focuses on internal objectives despite their shared growth in prominence (Kassier, 2024, p.9).

Sustainability Reporting demonstrates how businesses dedicate themselves to sustainable practices and its adoption continues to increase. Sustainability reporting is becoming more widespread worldwide, as more companies release such reports and governments across nations establish policies to support this development (dos Santos et al., 2020, p.100).

In 2016, GRI introduced the GRI Standards as the first set of global sustainability reporting standards, which shifted from providing voluntary guidelines (GRI, 2025).

Sustainability reporting remains voluntary by tradition, yet dos Santos et al. (2020, p.100) note that the practice has started to become mandatory for many organizations. The European Union's directives established mandatory disclosure requirements for large companies. They need to reveal both, non-financial data and diversity information, thus showing a shift toward required sustainability reporting. Current market trends demonstrate that sustainability reporting needs to merge with traditional financial reporting to deliver a complete understanding of business operations and policies. Integrated sustainability reports have become increasingly popular among industries and stakeholders because they show that substantial funding is necessary to transform businesses sustainably and make these transformations appealing (dos Santos et al., 2020, pp. 100-101).

Financial sector banks have shown intense dedication to corporate social responsibility (CSR) by ensuring their operational methods match the sustainability standards of their stakeholders. Research by Sebastião et al. (2024, pp. 4-5) reveals reputational factors serve as a primary reason for which banks reveal sustainability data. He reinforces that many businesses now also treat their sustainable development investments as strategic opportunities to gain competitive advantages. Banks serve as essential promoters of sustainable economic development by investing financial resources into ESG criteria-backed initiatives. The authors highlight how ESG integration affects financial systems mostly in emerging markets, since banking institutions remain the main funding channel for organizational and individual needs.

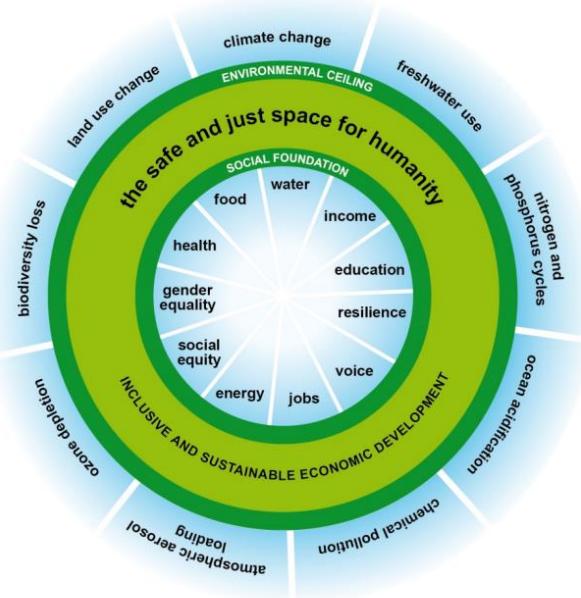
According to the study of Sebastião et al. (2024, p.16), banks face mounting pressure to develop formal sustainability strategies because it helps them address disclosure challenges. Some organizations implement sustainability reporting frameworks voluntarily, yet others do so because of regulatory requirements. Banks across the world are shifting their operations to match sustainability targets at local, national and international scales. The research by Baldissera (2023, p.7) identifies organizational characteristics such as size, age, financial performance and corporate structure as key determinants of sustainability reporting practices in banking. The study highlights that German banks use disclosure to prove their legitimacy while

addressing social obligations. Similarly, Baldissera (2023, p.7) shows that bigger financial institutions, with better performance outcomes, tend to reveal extensive sustainability data. Sustainability reporting has undergone qualitative development because banks now report more diverse themes alongside increased disclosure amounts.

On the other hand, Rockström et al (2009, p.6) developed a system of nine planetary boundaries that define the safe limits for maintaining the current planetary state. These boundaries define operational limits for human activities based on the Earth's biological systems, along with their processes which include climate change, biodiversity loss, disruptions of nitrogen and phosphorus cycles, stratospheric ozone depletion, ocean acidification, global freshwater consumption, land-use changes, chemical pollution (novel entities) and atmospheric aerosol accumulation. The innovative framework included quantified boundary limits to preserve Earth's Holocene like state. According to O'Neill et al. (2018, p.1), four out of seven planetary boundaries had exceeded their limits by 2015. The number of surpassed planetary boundaries grew to six out of nine according to Richardson et al. (2023, p.4) in 2023.

The 11 social boundaries Raworth (2012, p.10) added to the planetary limits defined by Rockström et al. (2009, p.6) served as an enhancement to their framework. The framework developed from discussions that took place at the UN Conference on Sustainable Development (Rio+20), in June 2012, and the High-Level Summit on the Millennium Development Goals in 2013. The main objective of these events focused on uniting efforts between poverty reduction goals and environmental protection targets (Raworth, 2012, p.4). The similar author presents the following illustration (Fig. 1), which shows the 11 social boundaries derived from Rio+20 government priorities, together with the 9 planetary environmental boundaries identified by Rockström et al (2009).

Figure 1. "A safe and just space for humanity to thrive in"



Source: Raworth (2012, p.4).

The measurement of social and planetary boundaries shows that humanity remains outside the "doughnut" framework. Raworth (2012, p.5) points out that severe inequalities continue to exist, as 900 million people suffer from hunger, 1.4 billion live on less than \$1.25 per day and 2.7 billion lack access to clean cooking facilities. Environmental stress intensifies poverty,

while poverty makes environmental degradation worse. The design of policies determines whether these crises will worsen or improve. Proper strategies can unite poverty reduction with sustainability to move humanity toward “the doughnut”. The current data indicates that reaching the social foundation for all existing people requires only a minimal increase in resources. The elimination of hunger needs only 1% of global food resources, electricity provision generates less than 1% of CO₂ emissions and poverty elimination requires 0.2% of worldwide income (Raworth, 2012, p.5).

Through a longitudinal content analysis, Kassier (2024, p.3) looked into top companies from the South African JSE/FTSE’s top 40 index and found that corporate social reporting fails to address essential planetary boundaries like biodiversity loss, freshwater consumption and land system change, all these which are essential for sustaining life. The increasing use of climate-related terms such as CO₂ and biodiversity in reports is limited to compliance and business-focused approaches. The discussion about employment focuses primarily on costs and risks instead of its role in promoting social welfare. According to the author, this weak sustainability perspective does not solve the fundamental changes needed to establish protected life spaces for human beings. The economy needs fundamental changes together with innovative approaches to establish sustainable social and ecological boundaries.

The highlighted boundaries represent a valuable starting point for further research in the Sustainability Reporting field. It can evolve on various business categories or geographical regions. In the next sections, the present research aims to find out to what extent leading banking businesses in Europe, from both, Western European region and Central-Eastern Europe, incorporated the mentioned planetary and social boundaries in their Sustainability Reports, Non-Financial or Annual Reports published over time.

3. Methodology

The research method of content analysis requires objective coding to discover patterns and themes (Guthrie & Abeysekera, 2006). Through multiple established criteria, the process requires coding every paper that remains in the sample. The examination process focuses on two types of data: specific terms, like word occurrences, and conceptual phrases that indicate particular perspectives. Content analysis becomes possible for broader time periods when data allows it. The research methods fall under longitudinal studies which Piquero & Carmichael (2005, pp. 97-101) described as observational methods that track specific phenomena across extended periods. The research design of cross-sectional studies provides only a single momentary view of phenomena at a specific time point. Through the analysis, the research aims to answer the following three main research questions:

1. To what extend is planetary and social boundaries framework applied in the sustainability publications of the banking companies from Europe, in the period between 2017 to 2024?
2. Was there a shift in usage, in the analysed period, in regards of planetary and social boundaries from the companies in Europe? What was the evolution in their documents over time?
3. How did Western European banks compare to Central-Eastern European banks in regards of planetary and social boundaries framework applications in their official publications from 2017 to 2023?

Similarly to Kassier (2024, p.7), our analysis starts from defining specific keywords for each of the planetary and social boundaries established by Rockström et al (2009) and Raworth (2012). The keywords defined are mentioned in Table 1 below. To ensure accuracy, we chose to define three keywords for each boundary. The criteria for keywords definition were the explanations given by Raworth (2012, p.10) for each category. Those keywords will be analysed using ATLAS.ti, which is a convenient qualitative data analysis software (Paulus et al, 2015, p.6). The use of ATLAS.ti enables a faster and robust analysis and facilitates more coherent results (Adelowotan, 2021, p.201).

Table 1. Keywords defined for Planetary and Social boundaries

Type	Category	Keyword 1	Keyword 2	Keyword 3
Planetary boundaries	Climate change	Climate change	Climate mitigation	Carbon footprint
	Rate of biodiversity loss (terrestrial and marine)	Biodiversity loss	Species extinction	Ecosystem degradation
	Stratospheric ozone depletion	Ozone	CFC emissions	UV
	Ocean acidification	Ocean acidification	Coral reef decline	Marine ecosystem danger
	Global freshwater use	Water stewardship	Sustainable water management	Water scarcity
	Change in land use	Urban sprawl	Deforestation	Land conservation
	Chemical pollution	Chemical pollution	Toxic chemicals	Plastic waste
	Atmospheric aerosol loading	Air pollution	Air quality	Particulate matter
	Interference with the nitrogen and phosphorus cycles	Nitrogen	Phosphorus	Nutrient pollution
Social Boundaries	Food security	Food security	Food access	Malnutrition
	Income	Wealth	Income inequality	Poverty
	Water and sanitation	Water and sanitation	Clean water access	Hygiene
	Health care	Health care	Healthcare access	Public health
	Education	Education	Education access	School
	Energy	Clean energy	Energy access	Energy poverty
	Gender equality	Gender equality	Gender pay gap	Gender inclusion
	Social equity	Social equity	Wealth distribution	Economic disparity
	Voice	Democratic Quality	Freedom of speech	Democratic rights
	Jobs	Jobs	Employment	Work conditions
	Resilience	Social safety	Social resilience	Social Support

Source: Author's work based on the planetary and social boundaries framework detailed by Raworth (2012).

For the present study, starting with the Western European region, the biggest banks from Germany, France, Netherlands, Italy and Spain were chosen as follows: Deutsche Bank from Germany, BNP Paribas from France, ING Bank from Netherlands, UniCredit Bank from Italy and Banco Santander from Spain. The chosen banks represent five of the most significant economies in Western Europe. Each selected bank is the largest in its respective country in terms of total assets under management. Deutsche Bank (Germany) is the largest German bank, with substantial global operations. BNP Paribas (France) is the largest French bank, with prominent international presence and considerable asset volume. ING Bank (Netherlands) is the dominant banking institution in the Netherlands, with major European and global operations. UniCredit Bank (Italy) is the largest Italian bank by assets, with extensive presence

in Italy and Central-Eastern Europe and Banco Santander (Spain) is the largest Spanish bank, widely recognized as one of the most influential financial institutions in Europe and globally.

Deutsche Bank is listed on the Frankfurt Stock Exchange (Xetra and regional trading venues) and the Berlin Stock Exchange, as well as a Global Registered Share (GRS), on the New York Stock Exchange. BNP Paribas is publicly traded on Euronext Paris (CAC 40) and additionally listed on London (SEAQ International), Frankfurt, and Milano exchanges. ING Bank's main listing is on Euronext Amsterdam, with listings also on Euronext Brussels and American Depository Receipts (ADRs) on the New York Stock Exchange. UniCredit shares are traded on Borsa Italiana (Milano), with secondary listings on Frankfurt and Warsaw exchanges, while Banco Santander is listed on the Spanish continuous market (Madrid, Barcelona, Bilbao, Valencia), plus secondary listings on London (LSE), New York (ADR), Mexico, and Warsaw, among others. These banks operate under similar regulatory frameworks governed by European Union directives, ECB oversight, and international sustainability reporting standards.

From the Central Eastern European side, to ensure relevance and similarity, the biggest banks from Austria, Poland, Hungary, Romania and Czech Republic were chosen, as follows: Erste Group Bank AG from Austria, OTP Bank from Hungary, PKO BP from Poland, Banca Transilvania from Romania and ČSOB from Czech Republic. 4 out of the 5 companies are listed under CECE BNK EUR index from Vienna Stock Exchange, which is a representative Stock Exchange from this side of Europe. The only company which is not part of the CECE BNK EUR is ČSOB from Czech Republic. The decision to pick ČSOB instead of Komercni Banka, which is the 3rd biggest bank in Czech Republic and is present in CECE BNK EUR index was made on the criteria of keeping the largest banks by assets under management from each country. Erste Group Bank AG is present on Vienna Stock Exchange (prime trading venue), Prague Stock Exchange and Bucharest Stock Exchange. OTP Bank is listed on Budapest Stock Exchange – Ordinary shares listed under “Premium Equity” (Ticker: OTP/BUD), Luxembourg Stock Exchange, under Global Depository Receipts (GDRs) and also London Stock Exchange. PKO Bank from Poland is listed on Warsaw Stock Exchange and in Prague and Frankfurt Xetra, traded via cross-border arrangements. Banca Transilvania is present on Bucharest Stock Exchange – First Romanian bank listed (since 1997) and is part of BET index, while also present on London Stock Exchange, as secondary listing. While ČSOB itself isn't directly listed, its parent Erste Group is listed on Vienna, Prague, and Bucharest exchanges. At the same time, ČSOB is member of SWIFT, indicating full participation in regulated financial systems.

Each chosen bank from Western and Central-Eastern European regions of Europe actively engages in sustainability reporting and sustainability-driven business strategies, making them relevant for evaluating the application of Planetary and Social Boundaries frameworks consistent with the research objectives mentioned above.

In the third step of the analysis, the collected documents were ordered and uploaded to ATLAS.ti software where they were again grouped based on the company they belong to. At the same time, the documents were grouped based on the year of issuance of each material. Comparing the number of documents for each year, we had 13 documents in 2017, 16 documents in 2018, 15 documents in 2019, 16 documents in 2020, 17 documents in 2021, 18 documents in 2022, 19 documents in 2023 and 13 documents in 2024. At the same time, we had 68 documents gathered from the Western European region and 66 documents gathered from the Central-Eastern European banks.

The research concentrates on the European continent because of its socio-economic and regulatory frameworks. Research on the Planetary and Social boundaries sustainability field

does not currently have studies about this geographical region. The research investigates countries and banks which display similar traits, thus generating a unique research environment. The research included Deutsche Bank (Germany), BNP Paribas (France), ING Bank (Netherlands), UniCredit Bank (Italy), Banco Santander (Spain), Erste Group (Austria), OTP Bank (Hungary), PKO BP (Poland), Banca Transilvania (Romania) and ČSOB (Czech Republic), which demonstrate both regional market trends and sustainability standards compliance. Multiple EU-aligned sustainability practices across various countries could be studied through this selection. The study covers the period between 2017 to 2024 to capture essential events like the EU Green Deal launch in 2019, alongside the COVID-19 pandemic. The banking sector shows strong corporate social responsibility (CSR) dedication through stakeholder-driven operational practice alignment, which makes them suitable subjects for this research, also according to Sebastião et al. (2024, p.4).

The research transitioned to document retrieval from official websites of each company after establishing the sample definition. The author evaluated Non-Financial Reports and their respective equivalents yet examined direct non-financial activity disclosures presented in Consolidated Annual Reports and Annual Reports from the sample companies. The research obtained 134 documents from the following distribution: BNP Paribas of France provided 16 documents, Deutsche Bank from Germany provided 14 documents, ING Bank in Netherlands offered 18 documents, Banco Santander in Spain provided 12 documents, UniCredit Bank in Italy delivered 8 documents, Erste Group Bank AG in Austria delivered 17 documents, OTP Bank in Hungary delivered 14 documents, ČSOB delivered 14 documents, Banca Transilvania provided 12 documents and PKO BP Bank provided 9 documents. All firms had complete data from 2017 to 2024. The analysis did not differentiate between Annual Reports and Non-Financial Reports since each companies had an uneven number of these reports.

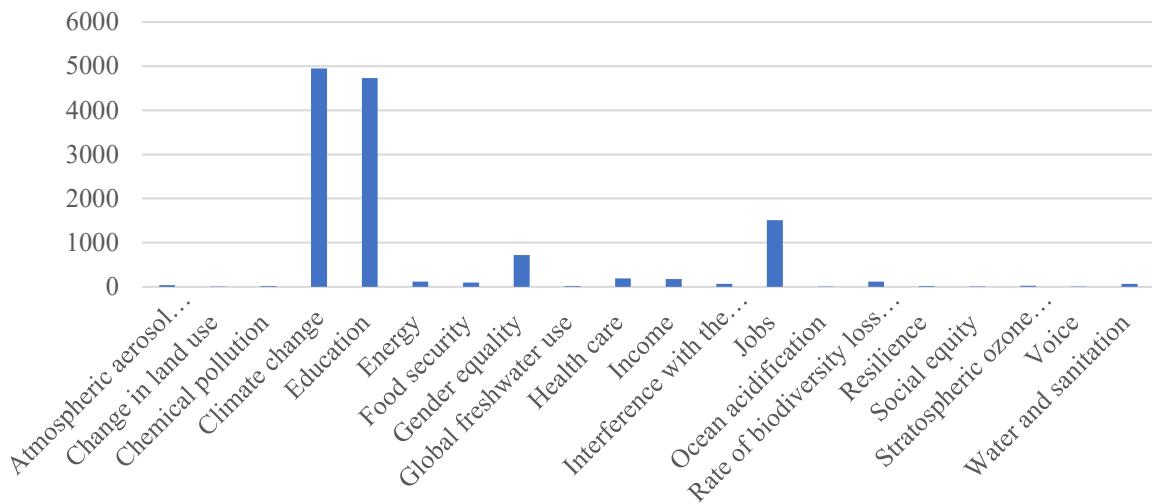
Next, each planetary and social boundaries from Table 1 were added as Codes in the same Project in ATLAS.ti and those codes were labelled based on the Planetary or Social boundaries.

To find out the frequency of the keywords in our sample, a Text Search function analysis was conducted in a fourth analysis step, searching all 134 documents for the defined keywords in Table 1. For each keyword, Exact Match criteria were selected, with the OR function between each keyword. In the fourth step, all the paragraphs where our defined keywords were found were then marked with their respective codes based on the Categories of Table 1 above. Those finding were used as a baseline for the Code-Document Analysis conducted in the fifth step. Using the year of publication, the code-document analysis also allowed a longitudinal retroactive view of the keywords used in the documents from 2017 to 2024.

4. Results and Discussion

The applied methodology described in the Research Methodology chapter allowed multiple sets of results.

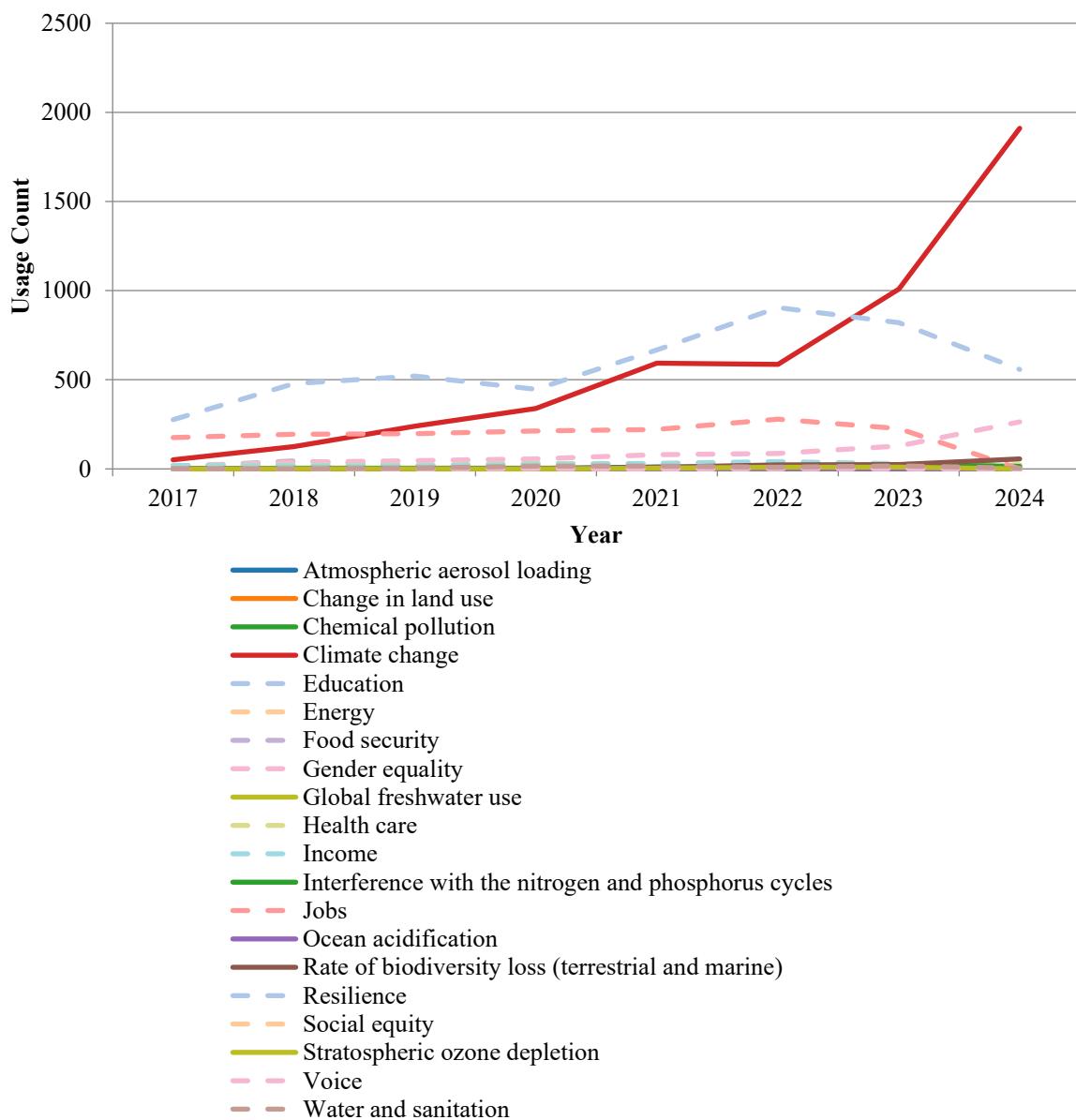
From a general point of view across all 134 registered documents, Climate Change topped the charts, with 4947 mentions, followed by Education, with 4730 mentions, then Jobs, with 1507, Gender equality, with 719, Health Care, with 187 mentions and Income with 179 recordings, Rate of biodiversity loss (terrestrial and marine) registered 118 mentions and Energy 117. The other codes registered less than 100 mentions each, as presented in the Figure 2.

Figure 2. Frequency of codes used in the document

Source: Author's own work based on the codes analysed in ATLAS.ti software.

Further, analysing the usage of codes (keywords) in relation with the yearly evolution between 2017 and 2024, we could observe that Climate Change was the category with the highest increase of mentions. The trajectory can be observed in Figure 3. The increase was more in line with the other categories between 2017 and 2018, but from 2019 to 2022, it witnessed a first exponential growth of mentions. One possible explanation of the increase of climate change mentions could be that the most ambitious sustainability act of the European Union was launched in 2019 – the Green Deal. It consisted of a package of policy initiatives from various fields: climate, environment, energy, transport, industry, agriculture and sustainable finance (European Commission, 2024). A second exponential growth for climate change mentions can be observed from 2022 to 2024. Beyond the direct influence of the European Green Deal, the exponential rise in climate change mentions after 2022 can be attributed to several reinforcing trends. Notably, the introduction of the EU "Fit for 55" legislative package and the Corporate Sustainability Reporting Directive (CSRD) dramatically increased the regulatory obligations for financial institutions. They needed to disclose and act on climate-related risks (European Commission, 2024). At the same time, 2022–2024 saw record-breaking climate disasters in Europe (heatwaves, droughts, floods), prompting increased urgency for climate action across industries. The climate change category is the only one from the nine planetary boundaries which benefited from an exponential increase. A second planetary boundary which started to emerge in mentions later, from 2023, is the Rate of biodiversity loss (terrestrial and marine), with 56 mentions in the past year. The other ones had a low and constant count of mentions throughout the analysed period. At the same time, it is worth mentioning that chemical pollution, global freshwater use and change in land use are primarily industry-specific (agriculture, heavy industry) categories and thus expected to be less frequently featured in banking sector disclosures, unless directly related to lending portfolios.

Figure 3. Usage of analysed codes (keywords) in the selected documents between 2017-2024

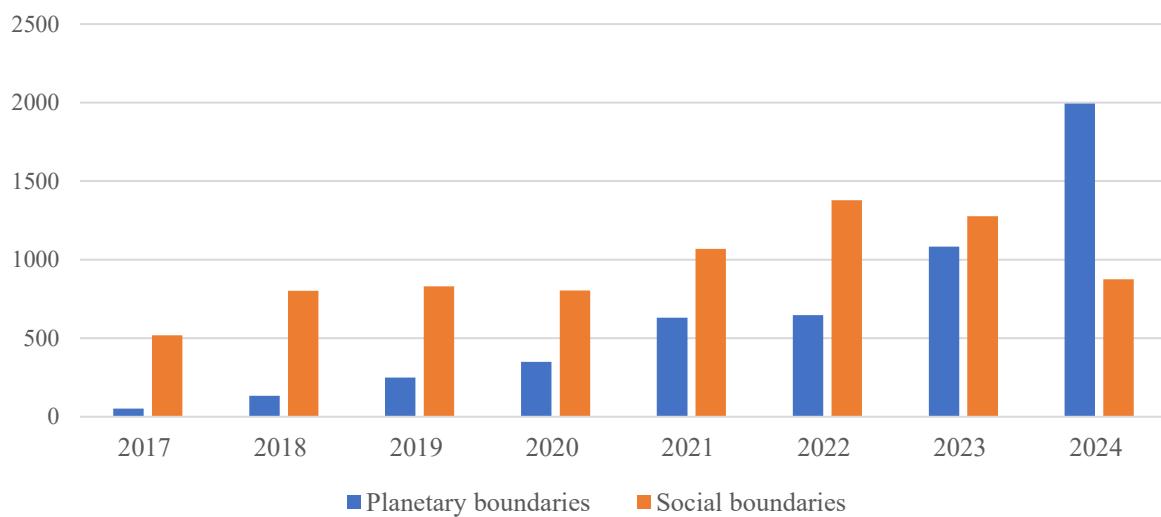


Source: Author's own work based on the codes analysed in ATLAS.ti software.

At the same time, the social boundaries defined by Raworth (2012) and coded in our analysis using the mentioned keywords in Table 1, had a more prominent presence in the results. For Education and Jobs, we could determine some increases over the chosen timeframe. For these, the peak was registered in 2022. As for education, there was one drop followed by a re-acceleration, in 2020, while for Jobs category the number of mentions was constantly on a slightly positive trajectory until 2022. The Education mentions decreased in 2020 because of the COVID19 pandemic, which forced schools to close, required rapid digital transformation and changed institutional focus (UNESCO, 2021). The economic impact of the pandemic on mass layoffs, together with subsequent employment support policies through stimulus packages, job retention schemes and active labour market policies can explain the steady Jobs trend from 2020 to 2022. The 2022 re-acceleration matches the recovery phase and the increased focus on remote learning, digital literacy and educational equity. The social boundary

categories Gender Equality, Health Care and Income show a similar positive trend after the two main categories. The steady increase in Gender Equality mentions can be attributed to multiple regulatory, society and market pressures. At the global level, Sustainable Development Goal 5 has required organizations to intensify their focus on gender equality (United Nations, 2025). European Commission (2020) Gender Equality Strategy, together with binding measures such as the Women on Boards Directive (European Commission, 2022), has compelled financial institutions to report more transparently on gender representation and equal opportunity. Parallel to this, rising investor attention to the social dimension of ESG, along with inclusion in gender diversity indices, has made Gender Equality a key theme in annual and sustainability reports in the mentioned period. Thus, the upward trend in Gender Equality discourse reflects the embedding of this issue into the core strategies of leading European banks. At the same time, for Income and Health Care, there was a slight positive detachment from the other categories. For Health Care particularly, the increase can be seen during the COVID 19 pandemic and immediately after (2020-2022), then dropping in line with the other searched categories until present.

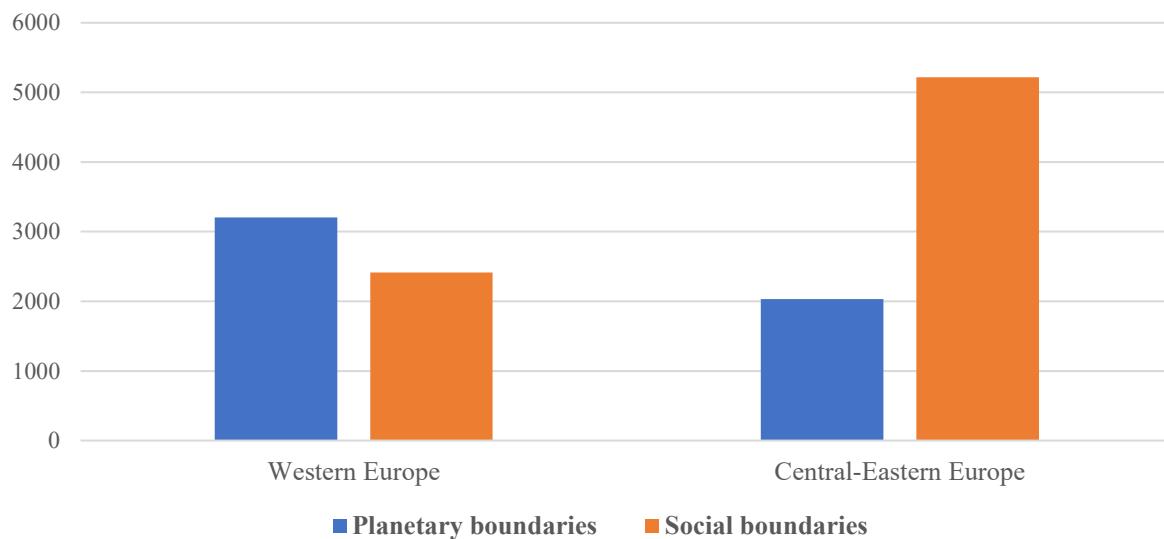
Figure 4. Planetary vs Social boundaries mention between 2017-2024



Source: Author's own work based on the codes analysed in ATLAS.ti software.

Most of the planetary and social boundaries were not extensively mentioned in the official publications of the selected companies. Our results are lined with the ones of Kassier (2024) who concluded that corporate social reporting often neglects crucial planetary boundaries. The social boundaries were present to a larger extent in our analysed documents until 2023, as shown in the Figure 4. In 2024, based on the similar chart, we could notice that planetary boundaries surpassed the social boundaries, continuing the steady growth trajectory from past years. As we know from Figure 3. above, that was mainly generated by one category: Climate Change.

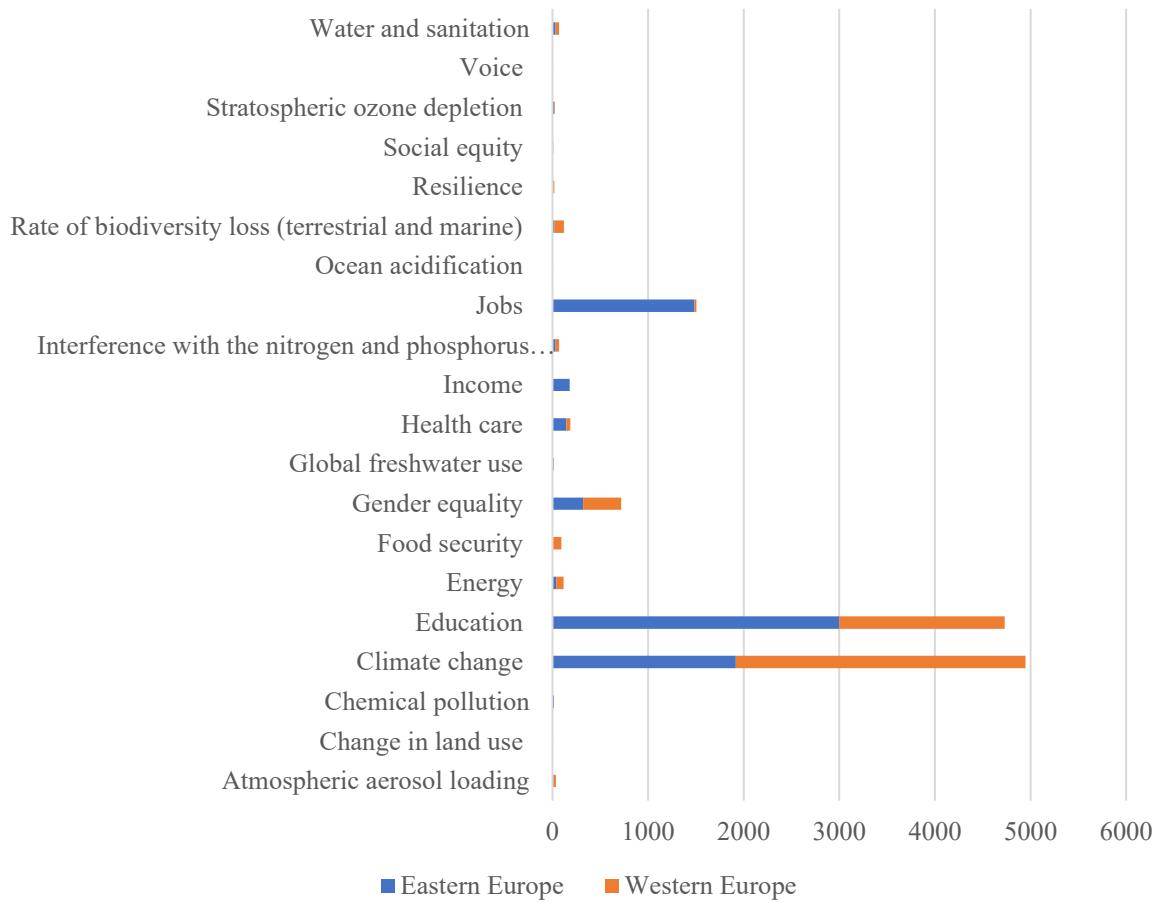
Figure 5. Comparison of Planetary vs Social boundaries' mentions between Western and Central-Eastern Europe regions (2017-2024)



Source: Author's own work based on the codes analysed in ATLAS.ti software.

The analysis reveals a difference between Western and Central-Eastern European banks on the emphasis placed on planetary versus social boundaries in their reporting documents. Western European banks show a stronger focus on planetary boundaries. This suggests that environmental sustainability issues are more prominently integrated into the sustainability discourse of Western European banks, possibly reflecting stronger regulatory pressures, mature sustainability cultures and a greater alignment with EU Green Deal. On the other hand, Central-Eastern European banks prioritize social boundaries, likely reflecting ongoing transition, social development and local stakeholder needs. The contrast suggests that sustainability reporting in Western Europe is more environmentally focused, while in Central-Eastern Europe reporting is more socially oriented. This regional divergence may reflect different stages of ESG (Environmental, Social, and Governance) integration or national priorities. These findings highlight the importance of considering regional context in sustainability strategy development across Europe.

Figure 6. Comparison of individual Planetary and Social boundaries mentions between Western and Central-Eastern Europe regions (2017-2024)



Source: Author's own work based on the codes analysed in ATLAS.ti software.

The more granular analysis in Figure 6 highlights not only the overall difference in emphasis between planetary and social boundaries across European regions, but also which specific issues drive these differences. In Western Europe, Climate change was the most frequently mentioned category, reflecting advanced regulatory requirements, strong policy emphasis (like EU Green Deal and Fit for 55) and investor expectations in these countries. Education is also highly mentioned, reflecting both internal workforce matters, such as skills for a green transition or digitalization and banks social investment narratives.

In Central-Eastern Europe, however, Education was the leading theme, suggesting that issues of human capital, skills development and access to quality education remain a central pillar of social responsibility in this area. Jobs is also a top priority, further showing employment and social stability as key topics. These are possibly tied to post-transition economic specifics.

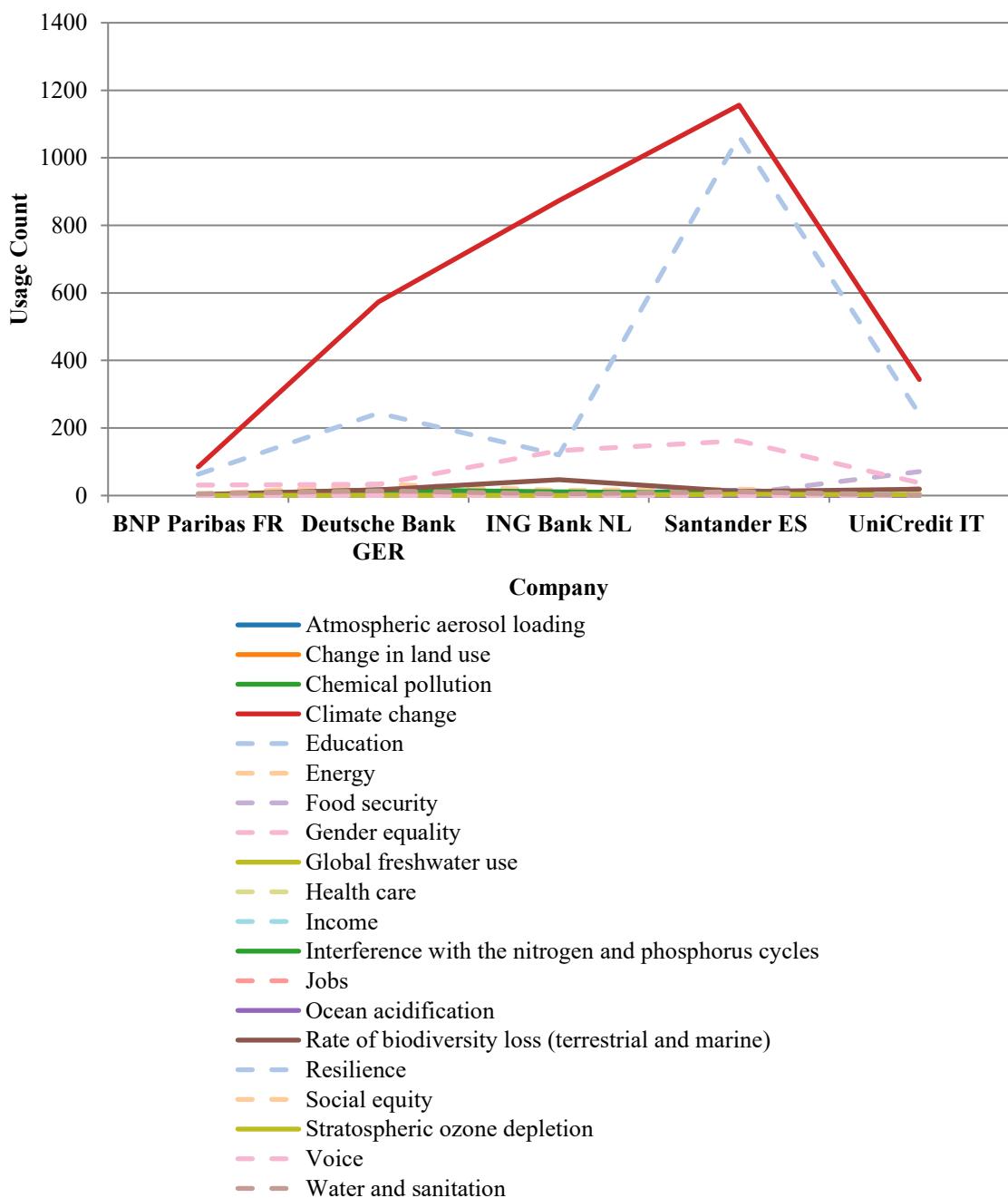
Categories such as chemical pollution, ocean acidification, stratospheric ozone depletion, global freshwater use and biodiversity loss receive very little attention in both regions' reports. This suggests that, for the banking sector, environmental discourse remains largely focused on climate change, with other planetary boundaries still underrepresented - possibly due to the lack of clear regulatory incentives or direct business relevance.

On the social boundaries side, Gender equality is the only other social category with substantial mentions, and more so in Western Europe. This is likely due to EU wide directives and high-

profile diversity initiatives. Health care, Income, and Social Equity are mentioned at low levels in both regions, reflecting either their less direct connection to banking activities or lower stakeholder pressure.

Further in our research we could analyse the quantity of each of the codes used by each of the companies in the sample. The analysis conducted with ATLAS.ti software allowed extensive data for each of the regions (Western and Central-Eastern Europe), allowing for comparative analysis based on the Figure 6., Figure 7 and Figure 8.

Figure 7. Usage of analysed codes (keywords) by each company from Western Europe between 2017-2024



Source: Author's own work based on the codes analysed in ATLAS.ti software.

The data in Figure 7 show how major Western European banks handle planetary and social boundaries through their sustainability reports from 2017 to 2024. Banco Santander, from Spain, leads the group with the most frequent mentions of both "Climate change" and "Education", yet other banks in the sample demonstrate different patterns. ING (Netherlands) for example has, strong interest in "Climate change" through a rising trend, which approaches the level of Banco Santander. This could be a sign that the bank maintains its dedication to sustainable finance and green banking leadership throughout its regional operations. The category "Education" stands out in the data, although to a lesser degree which suggests the bank invests in workforce education and client sustainability education programs. On the other hand, Deutsche Bank, from Germany, maintains a moderate level of mentions for both "Climate change" and "Education" which indicates a balanced reporting approach. The bank's sustainability reporting matches Germany's environmental goals, yet its communication approach seems strategic, or its sustainability content appears within general disclosure materials, rather than repeated thematic statements. BNP Paribas in France reports lower mention frequencies across all categories compared to its industry peers. The reporting approach seems to be either brief or focused. UniCredit from Italy demonstrates the lowest number of mentions regarding planetary and social boundaries among all the group members. The reporting style at UniCredit might be traditional or conservative and the company may not emphasize keyword-based disclosures. Among Western European companies, UniCredit presented the smallest number of analyzed documents, with only 8, while other companies had between 12 to 18 documents in their data.

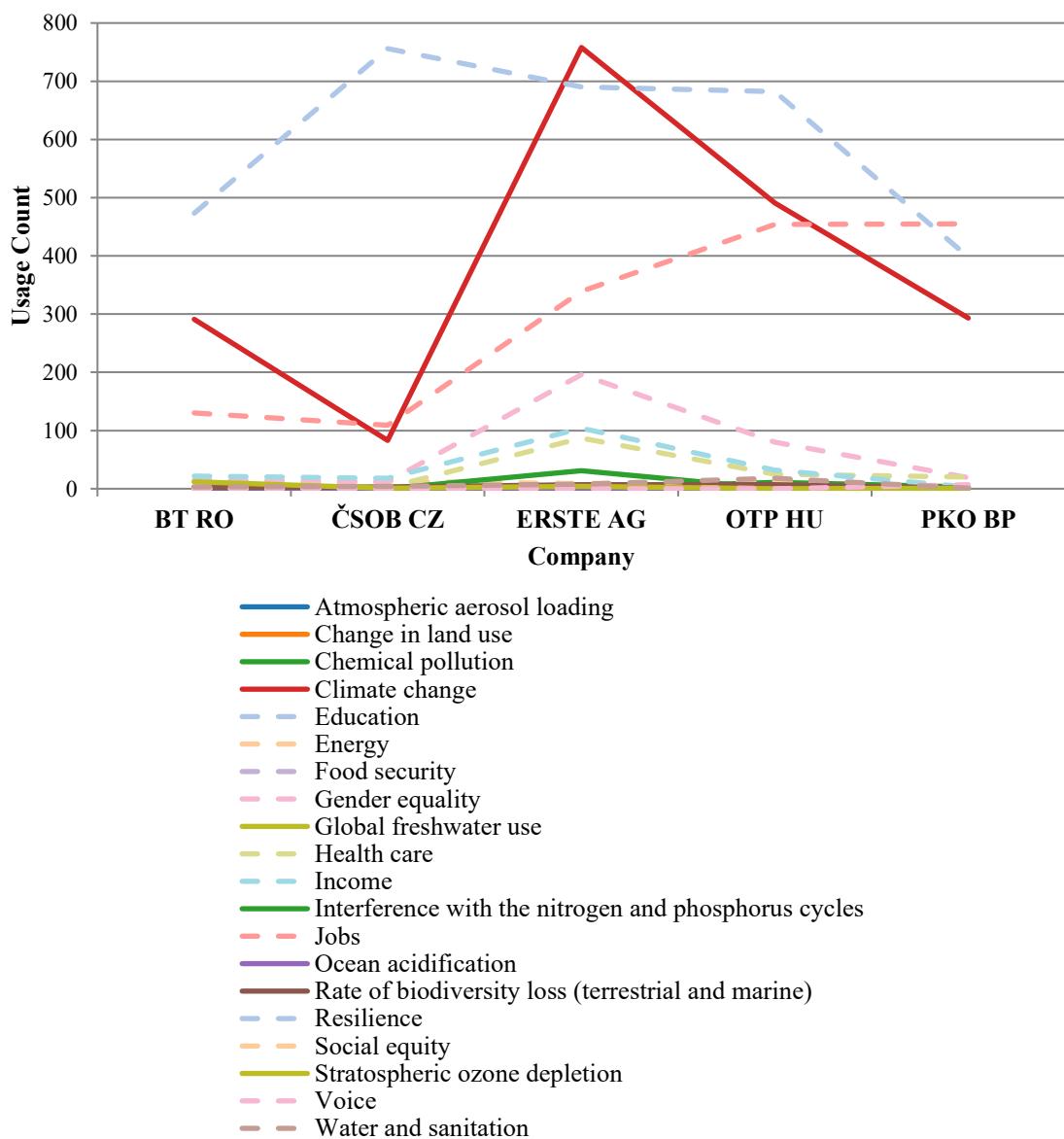
Across all banks from Western European sample, other categories such as "Jobs," "Gender equality," and "Food security" appear with lower but still notable frequency, indicating a shared but less prominent attention to a broader set of social and planetary challenges. However, other planetary boundaries, such as "Chemical pollution", "Ocean acidification" and "Interference with the nitrogen and phosphorus cycles" are scarcely referenced by any institution, highlighting a clear concentration of attention on climate change above other environmental themes.

In Figure 8, Education is the most frequently mentioned boundary for nearly all banks in the Central-Eastern Europe sample, especially prominent at ČSOB in Czech Republic and Erste Group from Austria. This suggests to a strong regional focus on human capital, skills development, and access to education as critical components of the banks' sustainability and social responsibility strategies. Jobs category also features prominently, especially for Erste Group and OTP Bank from Hungary, indicating that employment, job creation, and social stability are high priorities in the sustainability discourse of Central-Eastern European banks. Climate change (red solid line) is highly visible at Erste Group, but with less consistent emphasis among other banks, such as Banca Transilvania from Romania and ČSOB. This might indicate that, while climate change is increasingly recognized as a key issue, it does not dominate the agenda as uniformly as it does in Western Europe. The highest number of mentions at Erste Group could be attributed to its strong cross-regional sustainability commitments or reporting requirements, linked closer with the Western European sample, while other banks may have different priorities or regulatory influences.

At the same time, Gender equality has a steadily growing presence, especially at Erste Group and OTP Bank. This reflects the impact of EU and national gender directives reaching the CEE region, as well as growing investor and societal pressure for diversity and inclusion. On the other side, other boundaries remain marginal. Planetary boundaries beyond climate change (e.g. chemical pollution, biodiversity loss, atmospheric aerosol loading) and social boundaries like health care and income show low mention counts across all banks in the region. Erste Group

from Austria stands out as a leader, with high mention counts across all major categories—likely reflecting its size, cross-border presence, and advanced reporting standards, similarly with the Western European peers. Banca Transilvania and PKO BP (Poland) report fewer mentions, which may result from differences in sustainability reporting maturity, national regulatory requirements, or strategic priorities. ČSOB and OTP Bank occupy an intermediate position, with notable attention to education, jobs, and to a lesser extent to climate change and gender equality.

Figure 8. Usage of analysed codes (keywords) by each company from Central-Eastern Europe between 2017-2024



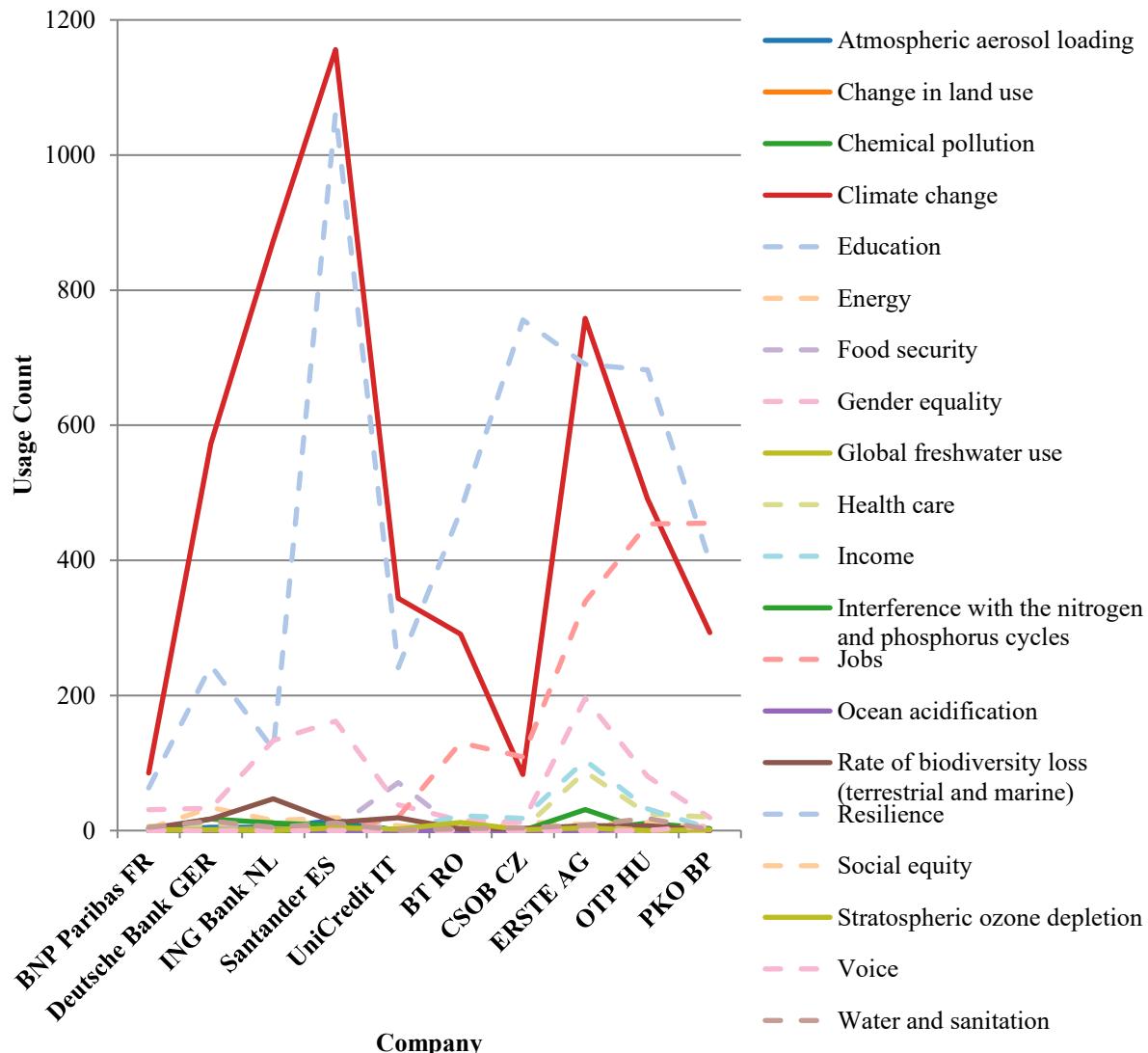
Source: Author's own work based on the codes analysed in ATLAS.ti software.

The combined analysis of planetary and social boundary mentions across leading European banks from Figure 9 reveals both universal and region-specific sustainability priorities. Climate Change and Education are general priorities across all banks, but regional and company-specific variations are present. As mentioned in the previous regional analysis from Figure 7 and Figure 8, Climate change is the most prominent category overall, with its highest peaks at Western European banks such as Santander and ING Bank. Those are showing an intense focus on environmental sustainability, likely reflecting mature regulatory environments and advanced stakeholder expectations in the West. On the opposite, Education exhibits high mention counts across both regions but particularly stands out at ČSOB (Czech Republic) and Erste Group (Austria) in Central-Eastern Europe and at Santander (Spain) in the Western side. This again underlines the persistent importance of human capital, workforce development, and social investment as sustainability pillars.

Similarly, there are marked regional patterns in social boundaries. Central-Eastern European banks (the right side of the graph: BT RO, ČSOB CZ, ERSTE AG, OTP HU, PKO BP) show much higher counts for Education and Jobs compared to most Western banks, reinforcing the region's focus on social stability, employment, and education as core sustainability themes. Western European banks tend to mention Climate change and, to a lesser extent, Gender equality, indicating stronger engagement with planetary boundaries and progressive social topics within the ESG framework.

In terms of intercompany differences, there are also significant remarks: Santander (Spain) is a clear leader in Climate change and Education, suggesting an ambitious sustainability communications strategy. Erste Group shows balanced, high-level engagement with both social and environmental themes, highlighting its cross-regional scope and advanced sustainability practices, while ČSOB and OTP Bank emphasize Education and Jobs, reflecting local socio-economic priorities. Again, some banks, such as UniCredit (Italy) and PKO BP (Poland), have lower overall mention counts across boundaries, possibly reflecting more conservative or targeted reporting approaches.

In regards of other boundaries, those remain marginal. Categories such as Chemical pollution, Biodiversity loss, Ocean acidification and others remain at low levels across all banks, indicating that the sustainability reporting discourse, regardless of region, remains concentrated on a few main themes (climate, education, jobs, and to a lesser extent, gender equality). In general, the graph highlights the need for a more balanced integration of both planetary and social boundaries in banking sector sustainability reporting across Europe's leading banks. While climate and education topics are at the forefront, other critical sustainability issues are not yet mainstreamed in the banking sector reporting.

Figure 9. Usage of analysed codes (keywords) combined between 2017-2024

Source: Author's own work based on the codes analysed in ATLAS.ti software.

5. Conclusion

This article looked to find to what extent leading businesses in Europe incorporated the planetary and social boundaries in their Sustainability, Non-financial and Annual reports published over time. The study employed a comparative analysis between the Western European banks and the Central-Eastern European banks. For this, the biggest banks by assets under management were chosen as follows: From Western European side - Deutsche Bank from Germany, BNP Paribas from France, ING Bank from Netherlands, Banco Santander from Spain and UniCredit Bank from Italy, while from the Central-Eastern European side, the sample consisted of Erste Group Bank AG from Austria, OTP Bank from Hungary, PKO BP from Poland, Banca Transilvania from Romania and ČSOB from Czech Republic. Based on the 134 documents analysed, we were able to answer the three research questions.

The first research question looked to find out to what extent is planetary and social boundaries framework applied in the sustainability publications of the banking companies from Europe.

According to the Figure 2 and Figure 3, the analysis of 134 sustainability documents published by the banks in the sample from 2017 to 2024 indicates a varied, yet selective integration of the planetary and social boundaries framework. Climate Change emerged as the most frequently mentioned planetary boundary, showing exponential growth particularly after 2019. This was driven mostly by major EU initiatives such as the Green Deal (European Commission, 2024), the "Fit for 55" legislative package and the introduction of the Corporate Sustainability Reporting Directive (European Commission, 2024). At the same time, increased Climate urgency linked to extreme weather events amplified the context. On the other hand, Education and Jobs topped the social boundaries mentions, reflecting significant socio-economic disruptions and recovery strategies following the COVID-19 pandemic (UNESCO, 2021). Gender Equality also rose in mentions, driven by global commitments such as Sustainable Development Goal 5 (United Nations, 2025), EU regulatory frameworks and investor focus on social governance. However, other planetary boundaries like biodiversity loss, chemical pollution, water use and land use, these received limited attention, indicating that sustainability reporting in European banking remains predominantly concentrated on selected environmental and social issues directly connected to sectoral impacts and regulatory expectations. The results are in line with the ones of Kassier (2024, pp. 18-21) who concluded that corporate social reporting often neglects crucial planetary boundaries.

Analysing the framework by the individual companies, on the Central-Eastern European side, all companies from CECE BNK EUR index had high counts of Climate Change code usage, while ČSOB from Czech Republic registered a lower amount. Figure 8 and Figure 9 shows a second planetary boundary code, namely Interference with the nitrogen and phosphorus cycles, with mentions registered in the Erste AG documents. For the other codes linked to social boundaries that had higher count in general usage, Income, Health care and Gender Equality, the current results show that those come mostly from Erste AG, followed by OTP Bank and PKO BP. On the Western European side, Banco Santander from Spain and ING Bank from Netherlands demonstrated notably high counts of Climate Change mentions, reflecting their leadership roles in sustainable finance and strong alignment with regional regulatory environments. Education was similarly emphasized, particularly by Santander, underscoring a dual focus on environmental sustainability and human capital development. Deutsche Bank (Germany), BNP Paribas (France), and UniCredit (Italy) displayed more moderate and targeted approaches in their sustainability reporting, with fewer mentions across all boundary categories.

Comparatively looking, with the help of Figure 9, Western European banks placed greater emphasis on planetary boundaries, particularly Climate Change, while Central-Eastern European banks prioritized social boundaries like Education and Jobs. These regional differences indicate varied strategic priorities and maturity levels of sustainability reporting, most likely influenced by local regulatory contexts and stakeholder expectations. This might mean that broader integration of less prominent boundaries would enhance the sector's overall contribution to sustainability goals, suggesting a need for expanded regulatory frameworks or increased stakeholder engagement to drive more balanced and comprehensive reporting.

The second research question looked to find out if there was a shift in usage, at any moment in time, in regards of planetary and social boundaries from the companies in European region. The analysis reveals Climate Change as the code that experienced the most significant rise in mentions from 2017 to 2024 across European banks. In Central-Eastern European banks, this category exhibited typical growth from 2017 to 2018, followed by rapid growth in 2019 and continuing until 2024. This increase can be attributed to the launch of the European Union's ambitious sustainability initiative, the Green Deal in 2019, whose initiatives likely began to influence sustainability reporting in the European Union shortly after. Climate Change was

notably the only planetary boundary category that saw significant growth, while other planetary boundaries maintained low mentions across the board.

Similarly, in Western Europe banks, as mentioned, Climate Change witnessed important growth, mainly driven by Banco Santander and ING Bank. The trajectory in the West was also characterized by significant increases around key regulatory milestones like the Green Deal in 2019, the other regulatory developments such as the "Fit for 55" legislative package and the Corporate Sustainability Reporting Directive from 2022 onwards.

For social boundaries, Education and Jobs registered significant increases in both regions, with peaks around 2022. Education mentions had a notable fluctuation, initially dropping, then sharply rising again around 2020. This was likely influenced by pandemic disruptions. At the same time, Jobs mentions showed a consistent upward trajectory until their peak in 2022, driven by pandemic induced economic instability and related employment supportive policy responses. After 2022, both categories slightly decreased across both regions. Income, Gender Equality and Health Care categories saw moderate yet consistent growth in both European regions. Gender Equality specifically showed sustained increases due to regulatory pressures and societal expectations. Health Care mentions were distinctly influenced by the COVID-19 pandemic period from 2020 to 2022, experiencing notable growth before aligning back with broader post-pandemic trends. Both regions shared similar growth trajectories for major categories like Climate Change and Education. However, Western European banks exhibited a more pronounced emphasis on planetary boundaries, aligning with stronger regulatory frameworks and society pressure, whereas Central-Eastern European banks displayed a stronger ongoing focus on social boundaries, emphasizing education, employment stability and socio-economic development.

Responding to the third research question, which aimed to explore how Western European banks compared to Central-Eastern European banks in applying the planetary and social boundaries from 2017 to 2024, the analysis revealed notable differences between the two regions. The sustainability reporting priorities between banks vary in relation to their geographic regions Banco Santander and ING Bank as Western European banks focused their sustainability reports mainly on Climate Change, within the planetary boundaries' framework. The Central-Eastern European banking sector chose Education and Jobs as their top social priorities because they needed to address regional economic development and local stakeholder requirements. Erste Group established itself as a cross-regional leader because it achieved high engagement across planetary and social boundaries even though ČSOB, OTP Bank and PKO BP focused their efforts on social categories. The differences between regions show various levels of ESG integration maturity which stem from regulatory frameworks, economic systems and stakeholder requirements.

The research findings of this study confirm Kassier's (2024) observation that companies maintain sustainability reporting practices focusing on compliance rather than transformation within the planetary boundaries' framework. On top, the longitudinal analysis supports Carroll's (1979) CSR paradigm development by showing that European banks use their reporting to follow changing regulatory priorities (such as post-2019 climate focus) instead of making internal ethical decisions. The focus on compliance stands in opposition to Raworth's (2012) concept of businesses as guardians of social and planetary systems.

The research provides original findings about the connection between planetary boundaries and corporate sustainability reporting within the leading European banking sector in two of its main regions. This research applied Rockström et al. 's (2009) and Raworth's (2012) frameworks to

analyze how banks in transitioning economies handle the conflict between regulatory compliance and systemic sustainability, through longitudinal data.

The research delivers important information to policymakers and researchers who endorse integrated sustainability frameworks that merge ecological and social requirements. The research identifies systemic gaps through its analysis of planetary boundaries in an evolving economic region, which creates a foundation for studying financial institutions' evolution from compliance actors to regenerative system catalysts in Europe.

Limiting factors like the document threshold are worth to be mentioned. The analysis presents a framework which can serve as a starting point for future research to conduct extended analyses.

Acknowledgement:

This paper was co-financed by The Bucharest University of Economic Studies during the PhD program.

Disclosures:

The present article is a substantially extended version of a conference paper presented at the 19th International Conference on Business Excellence - Leading Change in Disruptive Times, on 20-22 March 2025, Bucharest, Romania, organized by The Bucharest University of Economic Studies.

ChatGPT 4.0 and 4.5 preview AI modules from OpenAI. was used for language editing and phrasing suggestion during manuscript preparation. All suggestions were independently reviewed, verified and edited by the author. No such generative AI tools were used in the empirical analysis or in producing the research results. The author takes full responsibility for the final content.

References:

Adelowotan, M. (2021). Software, method, and analysis: Reflections on the use of ATLAS.ti in a doctoral research study. *Eurasian Journal of Economics and Finance*, 9(3), 189–204.

Baldissera, A. (2023). Sustainability reporting in banks: History of studies and a conceptual framework for thinking about the future by learning from the past. *Corporate Social Responsibility and Environmental Management*, 30(5), 2385–2405.

Carroll, A. B. (1979). A three-dimensional conceptual model of corporate performance. *Academy of Management Review*, 4(4), 497–505.

Carroll, A. B., & Shabana, K. M. (2010). The business case for corporate social responsibility: A review of concepts, research and practice. *International Journal of Management Reviews*, 12(1), 85–105. <https://doi.org/10.1111/j.1468-2370.2009.00275.x>

Dolan, C., & Zalles, D. B. (2022). Transparency in ESG and the circular economy. In *Capturing opportunities through data*. New York, NY: Business Expert Press, LLC.

dos Santos, A. C. M., Sena, A. L. M., & de Freitas, V. T. S. (2020). Advances in sustainability reporting: What is missing? In A. Negi, J. A. Pérez-Pineda, & J. Blankenbach (Eds.), *Sustainability standards and global governance: Experiences of emerging economies* (pp. 99–111). Springer. https://doi.org/10.1007/978-981-15-3473-7_6

European Commission. (2020). *A Union of Equality: Gender Equality Strategy 2020-2025*. Retrieved July 13, 2025, from https://ec.europa.eu/info/policies/justice-and-fundamental-rights/gender-equality/gender-equality-strategy_en

European Commission. (2022). Directive (EU) 2022/2381 of the European Parliament and of the Council of 23 November 2022 on improving the gender balance among directors of listed companies.

European Commission. (2024). *The European Green Deal*. Retrieved February 12, 2025, from https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en

Global Reporting Initiative. (2025). *Mission & history*. Retrieved March 9, 2025, from <https://www.globalreporting.org/about-gri/mission-history/>

Guthrie, J., & Abeysekera, I. (2006). Content analysis of social, environmental reporting: What is new? *Journal of Human Resource Costing & Accounting*, 10(2), 114–126.

Kassier, L. (2024). Identifying transitions in corporate sustainability reporting: A content analysis of JSE/FTSE multinational sustainability reports from 2016 to 2021. *International Journal of Corporate Social Responsibility*, 9(1), 12, pp. 2-21.

Landrum, N. E., & Ohsowski, B. (2018). Identifying worldviews on corporate sustainability: A content analysis of corporate sustainability reports. *Business Strategy and the Environment*, 27(2), 128–151. <https://doi.org/10.1002/bse.1989>

O'Neill, D. W., Fanning, A. L., Lamb, W. F., & Steinberger, J. K. (2018). A good life for all within planetary boundaries. *Nature Sustainability*, 1, 88–95.

Paulus, T. M., Woods, M., Atkins, D. P., & Macklin, R. (2015). The discourse of QDAS: Reporting practices of ATLAS.ti and NVivo users with implications for best practices. *International Journal of Social Research Methodology*.

Piquero, A. R., & Carmichael, S. (2005). Attrition, mortality, and exposure time. In K. Kempf-Leonard (Ed.), *Encyclopedia of social measurement* (pp. 97–101). Elsevier.

Raworth, K. (2012). *A safe and just space for humanity: can we live within the doughnut?*. Oxfam, p 4-10.

Richardson, K., Steffen, W., Lucht, W., Bendtsen, J., Cornell, S. E., Donges, J. F., Drücke, M., Fetzer, I., Bala, G., von Bloh, W., Feulner, G., Fiedler, S., Gerten, D., Gleeson, T., Hofmann, M., Huiskamp, W., Kummu, M., Mohan, C., Nogués-Bravo, D., Petri, S., Porkka, M., Rahmstorf, S., Schaphoff, S., Thonicke, K., Tobian, A., Virkki, V., Wang-Erlandsson, L., Weber, L., & Rockström, J. (2023). Earth beyond six of nine planetary boundaries. *Science Advances*, 9(37), eadh2458, p.10.

Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin, F. S., Lambin, E., Lenton, T. M., Scheffer, M., Folke, C., Schellnhuber, H. J., Nykvist, B., de Wit, C. A., Hughes, T., van der Leeuw, S., Rodhe, H., Sörlin, S., Snyder, P. K., Costanza, R., Svedin, U., ... Foley, J. (2009). Planetary Boundaries: Exploring the Safe Operating Space for Humanity. *Ecology and Society*, 14(2). <http://www.jstor.org/stable/26268316>

Sebastião, A. M., Tavares, M. C., & Azevedo, G. (2024). Evolution and challenges of sustainability reporting in the banking sector: A systematic literature review. *Administrative Sciences*, 14(12), Article 333. <https://doi.org/10.3390/admsci14120333>

UNESCO. (2021). *Education: From disruption to recovery*. Retrieved from <https://www.unesco.org/en/covid-19/education-response>

United Nations. (2025). *Transforming our world: The 2030 Agenda for Sustainable Development* (SDG 5). <https://sdgs.un.org/goals/goal5>

Werther, W. B., Jr., & Chandler, D. (2006). *Strategic corporate social responsibility: Stakeholders in a global environment* (2nd ed.). SAGE Publications.

Witkowska, J. (2016). Corporate social responsibility: Selected theoretical and empirical aspects. *Comparative Economic Research. Central and Eastern Europe*, 19(1), 25–41. <https://doi.org/10.1515/cer-2016-0002>