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ENVIRONMENTAL INFORMATION DISCLOSURE: A CROSS-COUNTRY ANALYSIS FROM EUROPEAN UNION PUBLIC COMPANIES

UJAWNIANIE INFORMACJI O ŚRODOWISKU. PRZEKROJOWA ANALIZA SPÓŁEK PUBLICZNYCH Z UNII EUROPEJSKIEJ

One of the contemporary challenges related to climate change and effectively managing raw materials is to reduce resource consumption and the negative environmental impact while simultaneously increasing the economy's competitiveness. This requires that business entities change priorities and move to a sustainable relationship focused on ecological, economic and social well-being. Due to the transnational and global nature of the climate and the environment, actions in this area should be carried out at a supranational level. In European Union (EU) countries, successive directives are implemented regarding environmental changes and the taxonomy for non-financial reporting. This forces public companies, as large public interest units, to produce adequate quality data reporting in the ESG (Environmental, Social and Governance) area, including the environmental (E) indicator and its components. The article's purpose is to make a comparative assessment of the current situation and to consider the prospects for environmental data disclosure by public companies listed on the regulated markets of the EU, with particular emphasis on energy consumption, water, waste production, and CO₂ emissions. The Refinitiv database was used to test the quality of the environmental indicators. Public companies listed on the leading stock markets in the 27 EU Member States were included. The research period covers 2012–2021. We focus on checking how many companies report environmental data in any given year, and those that present them for at least one year, or for three, five, or ten years. The findings support the clear advantage of the quality of environmental data disclosure in the 'old' EU Member States (which joined before 2004) compared to the 'new' EU Member States. However, reporting on key environmental issues (water and energy consumption, waste production, and carbon dioxide) is very incomplete.

Keywords: environmental disclosure; environmental policy; environmental reporting; European Union; public companies

Jednym ze współczesnych wyzwań w ramach działań w obszarze zmiany klimatu i efektywnej gospodarki surowcami jest ograniczenie zużycia zasobów i negatywnego wpływu na środowisko przy jednoczesnym zwiększeniu konkurencyjności gospodarki. Wymaga to od podmiotów gospodarczych zmiany priorytetów i przejścia do zrównoważonej relacji między efektywnością

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ekologiczną, ekonomiczną a dobrostanem społecznym. Ze względu na transnarodowy i globalny charakter klimatu i środowiska, działania w tym obszarze powinny być prowadzone na poziomie ponadnarodowym. W krajach Unii Europejskiej następuje implementacja kolejnych dyrektyw odnoszących się do zmian środowiskowych i taksonomii dla potrzeb raportowania danych niefinansowych. Wymusza ona na spółkach publicznych, jako dużych jednostkach interesu publicznego, odpowiednią jakość raportowania danych z obszaru ESG, w tym wskaźnika środowiskowego (E) i jego komponentów. Celem artykułu jest ocena porównawcza obecnego stanu i perspektyw ujawniania danych środowiskowych przez spółki publiczne notowane na rynkach regulowanych Unii Europejskiej, ze szczególnym uwzględnieniem zużycia energii, wody, produkcji odpadów, jak również emisji CO₂. Na potrzeby badania jakości raportowania wskaźników środowiskowych wykorzystano bazę danych Refinitiv. Do próby badawczej włączono spółki publiczne notowane na wiodących rynkach giełdowych w 27 krajach członkowskich UE. Okres badawczy obejmuje lata 2012–2021. W badaniu skupiono się na weryfikacji, jak spółki raportują dane środowiskowe za co najmniej rok, trzy, pięć lub dziesięć lat. Wyniki badań potwierdzają wyraźną przewagę jakości udostępniania danych środowiskowych w tzw. starych państwach członkowskich UE (które przystąpiły przed 2004 r.) nad „nowymi” państwami członkowskimi. Raporty dotyczące kluczowych kwestii środowiskowych (zużycie wody i energii, produkcja odpadów i dwutlenku węgla) są jednak wysoce niekompletne.

Słowa kluczowe: informacje środowiskowe; polityka środowiskowa; raportowanie środowiskowe; Unia Europejska; spółki publiczne

I. INTRODUCTION

Unfavourable climate change, to which global business activity makes a significant contribution, is a fact that is difficult to argue with. Just a few decades ago, the measures of a country's economic development and the well-being of its society were the pace of economic growth and the GDP per capita. As societal awareness of the importance of quality-of-life factors continues to grow, they are increasingly viewed as being just as important as quantitative indicators of economic development. Global warming, which is the most visible manifestation of climate change, leads to increased average temperatures around the world and also directly affects their shape, for example, the desertification of previously cultivated areas, water deficiencies, the disappearance of forests, and the extinction of species.

A key factor in the global ecosystem's change is business activity, which is associated with the broad impact of entities on the natural environment, including acquiring resources, waste production, and a lack of understanding of the environment's limited abilities for self-regeneration. A change in this harmful tendency requires a change in approach to management processes, in particular the way enterprises operate. They are primarily responsible for environmental degradation, although their activities are often necessary for social well-being (e.g. a power plant). As indicated in the European Union's (EU) 'Fit for 55' document, energy consumption is responsible for 75% of greenhouse gas emissions in the EU, which is

why energy transformation is crucial from the point of view of achieving climate goals.¹

Social well-being is directly associated with ecological well-being. Therefore, it becomes necessary to change how companies operate. They must begin to consider environmental issues in their operations. To mobilize enterprises to introduce the expected changes at the real, not just declarative level, countries are beginning to demand that companies publish information about their impact on the internal and external environment. On a global scale, standardised regulations on such information have yet to be developed. Countries accept various methods and different ways of providing information for different groups of entities. The most advanced seem to be the EU countries, which developed and accepted in December 2019 the 'European Green Deal' programme to counteract climate change. Previously, in 2014 a directive was issued that obliged selected European enterprises to make non-financial reports, including environmental issues, from 2018. However, the quality of this reporting still leaves much to be desired.

The purpose of the article is to answer the question: What is the current state and prospects for reporting of environmental data by public companies traded on the regulated markets of the European Union, in terms of energy and water consumption, waste production, and carbon dioxide emissions? To test the quality of environmental information reporting, the Refinitiv database was used. Public companies listed in leading stock market markets in 27 EU Member States as of 22 February 2023, were included in the research sample. A review of the environmental data covered a period of ten years: 2012–2021.

The paper is organized as follows. In the second section, we characterize the most important global initiatives and policies in the environmental area. Section III presents an overview of the EU regulations aimed at developing common standards for the disclosure of environmental data by companies. In Section IV, we describe the commonly used frameworks and standards of reporting enterprises' impact on the environment, and the methodology provided by Refinitiv, MSCI, and Bloomberg. The next section presents the results, and the last one delivers conclusions.

II. GLOBAL ACTIVITIES IN THE ENVIRONMENTAL AREA

The idea of sustainable development entered into international circulation at the end of the 1980s in response to the negative effects of extensive economic development, which is one of the causes of environmental degradation. In 1972, the United Nations (UN) conference on the environment and development took place in Stockholm (the Stockholm conference), during which

¹ Fit for 55 (2021). Delivering the EU's 2030 Climate Target on the way to climate neutrality, COM(2021) 550 final, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0550&from=EN> [accessed 22 February 2023].

the concept of sustainable development was used for the first time. This term was included in the Rio Declaration after the Second UN Conference, which took place in 1992 in Rio de Janeiro.² Between these conferences, also under the auspices of the UN, the World Commission for Environment and Development – known as the ‘Brundtland Commission’ (named after its chairman, Gro Harlem Brundtland) – also met. In 1987, the Commission published the report ‘Our common future’, in which sustainable development was defined. According to the definition adopted at that time, ‘this is a development that allows society to meet current needs without limiting this possibility for future generations’.³

The concept of sustainable development originally concerned mainly environmental issues, although, over time, it has evolved and was expanded to include social and management aspects. Sustainable development thus encompassed not only strictly environmental factors but all factors that affect the quality of life of contemporary societies. In September 2000, the members of the United Nations adopted the UN Millennium Declaration,⁴ which included Millennium Development Goals, to be implemented by the end of 2015.⁵ Among its eight goals, only one referred directly to environmental issues: the use of balanced methods of natural resource management.

In September 2015, the United Nations presented the international community with another document: the 2030 Agenda for Sustainable Development,⁶ which can be considered a continuation of previously started activities. Its thematic scope was wider than the previous one and was reflected in its 17 Sustainable Development Goals. They are intended to transform economies and societies in accordance with the guidelines of sustainable development. Environmental aspects are the focus of several of them, for example access to ‘clean’ electricity, promoting responsible production and consumption, preventing climate change and its effects, protecting seas and oceans, the sustainable use of their resources, sustainable land resource management, and protecting biodiversity.

The Paris Agreement is another important document from the point of view of environmental issues.⁷ It is the first legally binding agreement on global climate change and was concluded during the climate conference in Paris in

² Rosicki (2010): 48.

³ Report of the World Commission (1987). Environment and Development: Our Common Future, <https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf> [accessed 22 February 2023].

⁴ United Nations Millennium Declaration (2000). United Nations A/RES/55/2, <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N00/559/51/PDF/N0055951.pdf?OpenElement> [accessed 22 February 2023].

⁵ Millennium Development Goals Report (2015). United Nations, New York, [https://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20rev%20\(July%201\).pdf](https://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20rev%20(July%201).pdf) [accessed 22 February 2023].

⁶ Transforming Our World (2015). The 2030 Agenda for Sustainable Development. A/RES/70/1, 21252030 Agenda for Sustainable Development web.pdf (un.org) [accessed 22 February 2023].

⁷ Paris Agreement (2015), https://unfccc.int/sites/default/files/english_paris_agreement.pdf [accessed 22 February 2023].

December 2015 (replaced the Kyoto Protocol from 1997). It requires that global warming be limited in order to avoid dangerous climate change. For it to come into force, it had to be ratified by at least 55 countries, which represent at least 55% of global greenhouse gas emissions. After the European Union formally ratified the agreement in October 2016, in November 2016, the Paris Agreement entered into force. Currently, 192 entities (191 countries and the European Union) belong to it.

According to the proposals put forward in Agenda 2030, businesses must monitor the impact of their activities on internal and external stakeholders in three areas: environmental, social and governance (ESG). This impact is usually measured using the ESG index. However, a big problem is the poor development of the ESG data suppliers' market. It is still under construction,⁸ and crucially, it lacks a coherent, globally accepted taxonomy regarding the reporting by ESG data providers. A lack of standardisation of enterprise evaluation methodology has resulted in different ESG index weights being employed by various agencies, and there are differences between the evaluation systems themselves.⁹ Each data provider prepares its own ranking based on self-established criteria. Therefore, the ESG indexes become incomparable, and rankings are not credible. To sum up, there are significant barriers to the effective use of the ESG indicators provided by agencies, due to insufficient reporting, and lack of comparability, credibility and timeliness.¹⁰

For this article, one of the ESG components – E – which embraces the environmental components, is crucial. It includes information concerning, among other things, water and energy consumption, waste production, and carbon dioxide emissions. Thanks to the detailed data (more on this subject in Section III), the actual dimension of the company's environmental impact can be estimated. This dimension is different due to the company's size and character (e.g., one of the most harmful industries is the coal-based energy industry). Therefore, the obligation of enterprises to publish environmental reports is a condition sine qua non for assessing their environmental impact and for monitoring progress in reducing their negative impact on the environment.

III. THE EUROPEAN UNION REGULATIONS FOR THE DISCLOSURE OF ENVIRONMENTAL DATA BY ENTERPRISES

The European Union, based on the recommendations contained in Agenda 2030 for Sustainable Development, has prepared a programme to make Europe the first climate-neutral continent by 2050. In December 2019, the Eu-

⁸ Avetisyan, Hockerts (2017): 22–23.

⁹ Escrig-Olmedo, Muñoz-Torres, Fernández-Izquierdo (2010): 19–20; Amariei (2019): 4–5.

¹⁰ Amel-Zadeh, Serafeim (2018): 1.

ropean Green Deal¹¹ (EGD) was published. It included an obligation to limit Member States' greenhouse gas emissions by at least 55% by 2030 compared to the 1990 levels. As indicated, 50% of total greenhouse gas emissions, and more than 90% of biodiversity loss, can be attributed to resource extraction and the processing of materials, fuels and food.¹²

Because the EDG is not a legal act, it has been necessary to develop a legal regulation package based on its content, thanks to which implementing the objectives will become possible. In March 2020, the European Commission presented the project 'European Law on the Climate', in which the EU Member States were obliged to achieve zero net emissions of greenhouse gases by 2050, and to reduce the emissions of these gases by at least 55% by 2030 compared to the 1990 level. Regulation (EU) 2021/1119 established the framework for achieving climate neutrality¹³ (i.e. the 'European Climate Law') and entered into force in July 2021. Also in July 2021, as part of the implementation of the EGD principles, the European Commission adopted the 'Fit for 55'¹⁴ package. It comprises 13 legal regulations and is intended to reduce greenhouse gas emissions in the EU.

The EU is determined to take the position of world leader when it comes to developing legal regulations and good practices for counteracting climate change. Taking properly targeted actions requires knowledge of the actual impact of businesses on the environment and whether the changes are going in the desired direction. The requirement of enterprises to publish non-financial reports and information on their environmental impact, among other things, was included in Directive 2014/95/EU on non-financial reporting¹⁵ (NFRD). It amended Accounting Directive 2013/34/EU¹⁶ and defined the principles of disclosing non-financial information by selected companies. The provisions of Directive 2014/95/EU are still in force, although another one has already been adopted. The current non-financial reporting requirements apply only to large public interest companies that employ over 500 employees. This group includes public companies, banks, insurance companies, and

¹¹ European Green Deal (2019). COM(2019) 640 final, https://eur-lex.europa.eu/resource.html?uri=cellar:b828d165-1c22-11ea-8c1f-01aa75ed71a1.0002.02/DOC_1&format=PDF [accessed 20 February 2023].

¹² Fetting (2020): 13.

¹³ Regulation EU 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law'), <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021R1119&from=pl> [accessed 22 February 2023].

¹⁴ Fit for 55 (2021). Delivering the EU's 2030 Climate Target on the way to climate neutrality. COM(2021) 550 final, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0550&from=EN> [accessed 22 February 2023].

¹⁵ Directive EU 2014/95/EU amending Directive 2013/34/EU as regards disclosure of non-financial and diversity information by certain large undertakings and groups, (NFRD), <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0095&from=PL> [accessed 22 February 2023].

¹⁶ In Directive 2013/34/EU, sustainable development issues were limited to the issue of compliance by enterprises of corporate order rules.

other companies appointed by domestic authorities as public interest units. According to Directive 2014/95/EU, from 2018 onwards, large companies have been obliged to publish information on environmental issues, social affairs and the treatment of employees, respect for human rights, counter-acting corruption, and diversity in companies' management.¹⁷

In 2017, the European Commission published a communication that contained guidelines for reporting non-financial information.¹⁸ However, as they were non-binding, they did not constitute non-financial reporting standards. According to the guidelines, the company itself assesses which information can be useful from the point of view of its commitment to sustainable development. In June 2019, the 2017 guidelines were supplemented by the reporting of information related to the climate,¹⁹ which was the direct consequence of the EU's ratification of the Paris Agreement and the action plan for financing sustainable development.²⁰ It contains detailed guidelines for publishing information about energy consumption and greenhouse gas emissions, among other things.

Ensuring that EU enterprises align with the ESG standards of the European Green Deal is a crucial component of the overall strategy. Since the applicable regulations did not introduce standards in non-financial reporting, it became necessary to start work on the next directive. In December 2022, the Directive on reporting sustainable development (Corporate Sustainability Reporting Directive – CSRD²¹) was adopted, and it entered into force in January 2023. The directive covers companies listed on regulated markets (approx. 49,000 companies), except for micro-enterprises. All entities are required to apply the EU reporting standards of sustainable development (European Sustainability Reporting Standards – ESRS).

Although there is already a new directive, non-financial reporting in the European Union is not yet standardised, and enterprises still prepare various reports. The first reports that follow the requirements of the new directive will not appear until 2025. The directive indicates environmental areas where companies should provide information: alleviating climate change, adapting to climate change, managing water and sea resources, use of resources and a closed circulation economy, pollution, biological diversity, and ecosystems. It

¹⁷ The Directive transposition had to take place by December 2016, and its application by enterprises – in 2017.

¹⁸ Communication from the EU Commission – Guidelines on non-financial reporting (methodology for reporting non-financial information) C/2017/4234, [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017XC0705\(01\)&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017XC0705(01)&from=EN) [accessed 22 February 2023].

¹⁹ Communication from the Commission – Guidelines on non-financial reporting: Supplement on reporting climate-related information C/2019/4490, [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52019XC0620\(01\)&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52019XC0620(01)&from=EN) [accessed 22 February 2023].

²⁰ European Commission – Action Plan: Financing Sustainable Growth, Brussels, 8.3.2018, COM(2018) 97, <https://ec.europa.eu/transparency/regdoc/rep/1/2018/EN/COM-2018-97-F1-EN-MAIN-PART-1.PDF> [accessed 22 February 2023].

²¹ Directive EU 2022/2464/EU amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU, as regards corporate sustainability reporting, CSRD, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022L2464&from=EN> [accessed 22 February 2023].

also indicates that enterprises in the same sector are often exposed to similar threats associated with sustainable development, and they also exert a similar influence on society and the environment.

IV. ENVIRONMENTAL DISCLOSURE STANDARDS OF ENTERPRISES

For many years, accounting has been perceived not only in the financial dimension, but increasingly often there is a significant focus on social, ethical and environmental reporting.²² Nowadays, however, there is progress in complementing financial reporting with non-financial components, which is reflected in the increased importance of environmental information disclosure in business.²³ Stakeholders' growing demand for environmental information has even contributed to the development of 'green accounting', 'environmental accounting', and 'ecological accounting'.²⁴

The key challenge related to environmental accounting is the standardization of information on the effects of companies' economic activity, including their relationships with the environment. One of the solutions to this problem is integrated reporting (financial and non-financial), which presents guiding principles for non-financial information.²⁵ However, this approach is still quite general and involves various proposals.²⁶ The International Financial Reporting Standards (IFRS) Foundation's latest initiative on the international standardization of environmental accounting is the formation of the International Sustainability Standards Board (ISSB). At its meeting in Montreal on 16 February 2023, it reached its final decision on the technical content of all initial IFRS Sustainability Disclosure Standards, which will become effective starting in January 2024.²⁷ The European Union has also introduced non-financial reporting standards according to the CSRD (as mentioned in the previous point), but the first reports will not appear until 2025.

The consequences of introducing IFRS, such as IFRS S1, IFRS S2²⁸ and subsequent ones, should be expected in a few years.²⁹ They respond to the

²² Marrone et al. (2020): 2167–2193.

²³ Murphy, Hogan (2016): 42–49.

²⁴ It was noted that companies began to use the term 'sustainable reporting' rather than 'social reporting', or 'environmental reporting'. See Adams, Larrinaga-González (2007): 333–355.

²⁵ de Villiers, Hsiao, Maroun (2017): 450–460.

²⁶ Romolini, Fissi, Gori (2017): 32–59.

²⁷ ISSB news (2023). ISSB ramps up activities to support global implementation ahead of issuing inaugural standards end Q2 2023, <https://www.ifrs.org/news-and-events/news/2023/02/issb-ramps-up-activities-to-support-global-implementation-ahead-of-issuing-inaugural-standards-end-q2-2023/> [accessed 22 February 2023].

²⁸ General Requirements for Disclosure of Sustainability-related Financial Information.

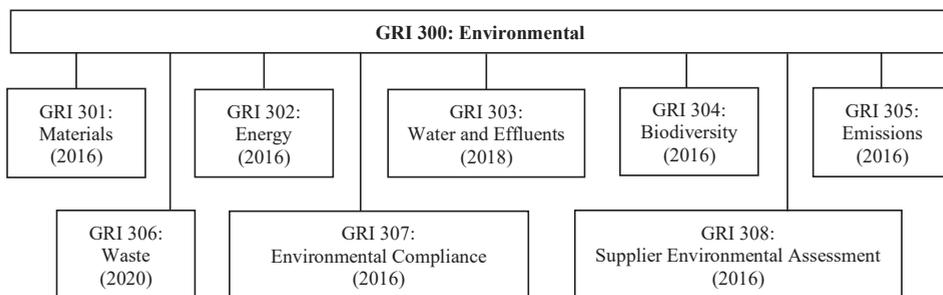
²⁹ On 26 June 2023, the ISSB published the first two IFRS Sustainability Disclosure Standards – IFRS S1 and IFRS S2. The two standards are to be applied for the reporting periods beginning on or after 1 January 2024.

expectations of primary users (investors, lenders and other creditors) for more consistent, complete, comparable and verifiable sustainability-related financial information to help them assess an entity's value.³⁰ However, there is a concern that, despite the ongoing changes in international accounting regulations, they will still be subject to flexible 'standardization' in each Member State of the EU. The flexible transitional nature of this standardization is evidenced by the fact that the recommendation on transition relief was approved in April 2023. This relief allows companies applying the IFRS standards to phase in their approach to sustainability-related disclosure, beginning with climate-related risks and opportunities in the first year of reporting. For companies using the proposed relief, full reporting on sustainability-related risks and opportunities (not limited just to climate) would be provided from the second year.³¹ Implementation of the EU directive requiring the reporting of non-financial data according to IFRS into the law of the Member States will probably mean that only the largest (listed) companies will have more detailed and extensive reporting obligations.

Currently, several companies prepare environmental reports using various guidelines for sustainability reporting in general, for example, the OECD (Organisation for Economic Cooperation and Development), the GRI (Global Reporting Initiative), the UNGC (United Nations Global Compact), the IFAC (International Federation of Accountants), and the EFFAS (European Federation of Financial Analysts Societies). The most popular are the GRI guidelines, in which GRI 300 concerns information related to companies' impact on the environment (see Chart 1).

Chart 1

GRI standards of reporting enterprises' impact on the environment (30 June 2022)



Source: the authors' own study based on the Consolidated Set of the GRI Standards (2023).

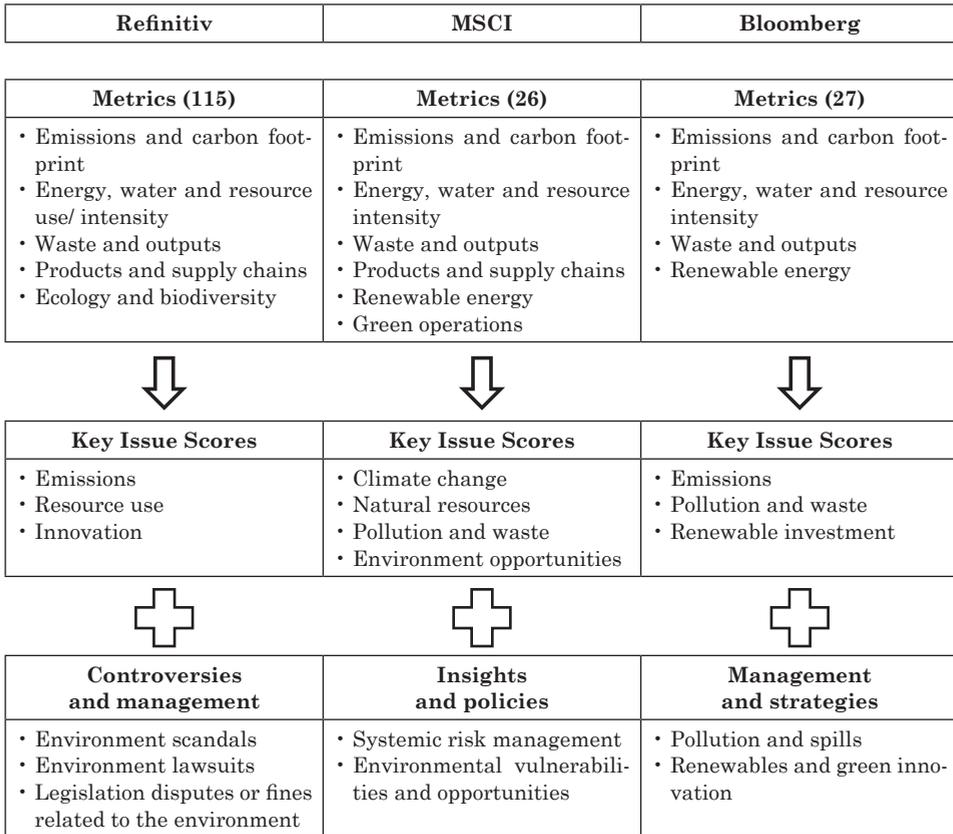
³⁰ IFRS S1 (2022). General Requirements for Disclosure of Sustainability-related Financial Information. Exposure Draft, <https://www.ifrs.org/content/dam/ifrs/project/general-sustainability-related-disclosures/exposure-draft-ifrs-s1-general-requirements-for-disclosure-of-sustainability-related-financial-information.pdf> [accessed 15 May 2023].

³¹ ISSB meeting (2023). IFRS S1 transition relief – Staff paper, <https://www.ifrs.org/content/dam/ifrs/meetings/2023/april/issb-supplementary/ap-3-ifrs-s1-transition-relief.pdf> [accessed 15 May 2023].

Regarding the diversity of the environmental reporting initiatives and standards provided by companies, one challenge is selecting an independent and reliable provider of this type of data. Comparing the three main data providers, Refinitiv, MSCI, and Bloomberg,³² each one independently defines the scope of environmental data and takes various components into account (see Chart 2).

Chart 2

Environmental pillar approaches by Refinitiv, MSCI and Bloomberg



Source: Boffo, Marshall, Patalano (2020): 29.

On the basis of the three providers, one can distinguish enterprises' key metrics that negatively affect the environment, that is, related to acquiring the resources they need (such as energy and water) and producing environmental pollution (carbon dioxide and waste). However, there are differences

³² Boffo, Marshall, Patalano (2020): 28.

in the scope of the metrics (namely, those outside of the core), the measurement (i.e. absolute vs relative measures, or in some cases binary measures, which represents a score on disclosure), input indicators to measure metrics, and differences in weight. The number of environmental metrics also varies significantly.

We used data from the Refinitiv database because, unlike other data providers, it uses the largest number of environmental indicators (115). It also offers one of the most comprehensive ESG databases, covering over 80% of the global market cap across different ESG metrics, dating back to 2002. Refinitiv calculates ESG scores for more than 9,000 companies worldwide, with more than 500 individual measures evaluated for each company. To ensure comparability across industries, Refinitiv focuses on a subset of the 186 most relevant companies, which impacts the overall assessment and scoring of each entity.³³

V. RESULTS

Our research sample includes companies listed in 27 regulated markets in the EU, and the analysis covered 10 years (between 2012 and 2021). This particular period was chosen for two reasons. First, it is long enough to capture the long-term importance of enterprises' environmental disclosures. Second, including previous years of E data ran the risk of incomplete information.³⁴ We believe that, in particular, the 'new' EU Member States (i.e. those that joined after 2004) may not have been able to adopt all EU standards applicable to E reporting procedures.

To make our methodology more rigorous, we examine E disclosures from three points of view. Our assessment relates to the number of years in which companies have presented environmental performance relative to financial performance. We examine how many companies report E indices each year for at least three, five, or ten years. However, the main research problem is to evaluate the dissemination of enterprises' environmental information related to sources (energy and water use) and environmental pollution (CO₂ and waste). To correctly reflect this reporting, our study includes companies that reported E data for at least five years.

A thorough analysis of environmental disclosures indicates that adequate practice in this area is not observed in European markets, which is to say that financial reporting does not go hand in hand with environmental reporting. Of the more than 21,000 companies analysed, only about 49% reported E indices in any year (see Table 1).

³³ Refinitiv (2022).

³⁴ We initially set a 20-year research period (2002–2021), but, between 2002 and 2011, only 1,322 of the 21,440 companies reported ESG measures (6%).

Table 1

Environmental reporting by companies in EU Member States, 2012–2021

EU Countries	Financial statements		E data in any year		E data for 3 years and more		E data for 5 years and more		E data for 10 years and more	
	Number of companies	Share (%)	Number of companies	Share (%)	Number of companies	Share (%)	Number of companies	Share (%)	Number of companies	Share (%)
Austria	1,641	95.0	1,521	92.7	1,337	81.5	1,099	67.0		
Belgium	344	44.8	148	43.0	108	31.4	98	28.5		
Bulgaria	212	0.5	0	0.0	0	0.0	0	0.0		
Croatia	74	0.0	0	0.0	0	0.0	0	0.0		
Cyprus	96	1.0	1	1.0	1	1.0	1	1.0		
Czech Republic	56	60.7	33	58.9	29	51.8	27	48.2		
Denmark	354	42.9	114	32.2	78	22.0	64	18.1		
Estonia	50	0.0	0	0.0	0	0.0	0	0.0		
Finland	390	45.1	102	26.2	70	17.9	62	15.9		
France	1,320	33.3	336	25.5	244	18.5	192	14.5		
Germany	11,724	51.6	5,077	43.3	3,983	34.0	2,326	19.8		
Greece	158	18.4	28	17.7	20	12.7	16	10.1		
Hungary	123	47.2	56	45.5	54	43.9	52	42.3		
Ireland	76	60.5	40	52.6	28	36.8	24	31.6		
Italy	609	53.2	275	45.2	225	36.9	199	32.7		
Latvia	23	0.0	0	0.0	0	0.0	0	0.0		
Lithuania	56	0.0	0	0.0	0	0.0	0	0.0		
Luxembourg	26	38.5	9	34.6	7	26.9	7	26.9		

Malta	33	0	0.0	0	0.0	0	0.0	0	0.0
Netherlands	282	130	46.1	120	42.6	84	29.8	66	23.4
Poland	606	53	8.7	50	8.3	40	6.6	33	5.4
Portugal	83	36	43.4	34	41.0	22	26.5	16	19.3
Romania	411	50	12.2	34	8.3	34	8.3	30	7.3
Slovakia	14	3	21.4	0	0.0	0	0.0	0	0.0
Slovenia	104	4	3.8	2	1.9	1	1.0	0	0.0
Spain	589	227	38.5	220	37.4	150	25.5	126	21.4
Sweden	1,986	954	48.0	568	28.6	256	12.9	192	9.7
Total	21,440	10,488	48.9	8,768	40.9	6,771	31.6	4,630	21.6

Source: the authors' own study/calculations based on Refinitiv data.

Between countries, there is a diverse approach to non-financial reporting. The largest number of companies that have reliably submitted E indices are in Austria (95%), the Czech Republic (61%), Ireland (61%), Italy (53%), and Germany (52%). However, the largest share of E measures in three, five, and ten years was observed in the following countries:

- for three years and more: Austria, the Czech Republic, and Ireland (more than 50%),
- for five years and more: Austria, the Czech Republic, and Hungary (more than 40%),
- for all ten analysed years: Austria, the Czech Republic, Hungary, Italy, and Ireland (more than 30%).

In five countries: Croatia, Estonia, Lithuania, Latvia, and Malta, E indices were not provided in any of the years analysed. Poor quality environmental reporting was also observed in Bulgaria, Cyprus, Slovakia, and Slovenia, where data were available only for a few companies.

In general, the analysis of resource consumption and pollutant emissions in at least five years indicates that reporting quality is very low or even negligible in many countries. The total number of companies that reported energy use amounted to only 3,820, which represents approximately 18% of the entities that published financial data (see Table 2). Even fewer reported data on water use (approx. 17%) and waste production (15%). It is somewhat surprising, however, that most companies provided data on CO₂ emissions (more than 21%), although this may be related to the problem of their carbon footprint.

As with E reporting, cross-country variation can also be observed here. The most restrictive reporting policies on resource consumption and pollutant emissions were observed in Austria, the Czech Republic, and Hungary. Excluding the three leaders indicated above, on average, the total number of companies that reported non-financial data on resource consumption and pollutant emissions was approximately 10% of the entities that disclosed financial data. For example, in the category of energy use, it was reported by 10.9% of companies, water use – 9.7%, CO₂ emissions – 11.7%, and waste production – 9.2%. The low quality of environmental information disclosure is indisputably evident in less developed countries in Central and Eastern Europe, as well as the ‘new’ EU Member States. They may be slightly slower in adapting to all the procedures and environmental reporting standards.

Table 2

Reporting of energy and water use, CO₂ emissions, and waste production by companies in EU Member States, 2012–2021

EU Countries	Financial statements		Energy use for 5 years and more		Water use for 5 years and more		CO ₂ emissions for 5 years and more		Waste production for 5 years and more	
	Number of companies	Share (%)	Number of companies	Share (%)	Number of companies	Share (%)	Number of companies	Share (%)	Number of companies	Share (%)
Austria	1,641	42.4	696	52.5	861	63.4	1,041	777	47.3	
Belgium	344	22.7	78	19.8	68	24.4	84	74	21.5	
Bulgaria	212	0.0	0	0.0	0	0.0	0	0	0.0	
Croatia	74	0.0	0	0.0	0	0.0	0	0	0.0	
Cyprus	96	1.0	1	0.0	0	0.0	0	0	0.0	
Czech Republic	56	46.4	26	35.7	20	41.1	23	26	46.4	
Denmark	354	15.3	54	15.8	56	18.1	64	44	12.4	
Estonia	50	0.0	0	0.0	0	0.0	0	0	0.0	
Finland	390	15.9	62	14.4	56	17.4	68	58	14.9	
France	1,320	16.2	214	14.8	196	17.0	224	176	13.3	
Germany	11,724	16.4	1,922	14.8	1,737	18.9	2,221	1,454	12.4	
Greece	158	7.6	12	7.6	12	8.2	13	6	3.8	
Hungary	123	40.7	50	34.1	42	42.3	52	43	35.0	
Ireland	76	18.4	14	15.8	12	26.3	20	12	15.8	
Italy	609	33.5	204	29.9	182	33.7	205	177	29.1	
Latvia	23	0.0	0	0.0	0	0.0	0	0	0.0	
Lithuania	56	0.0	0	0.0	0	0.0	0	0	0.0	
Luxembourg	26	19.2	5	19.2	5	23.1	6	5	19.2	

Malta	33	0	0.0	0	0.0	0	0.0	0	0.0
Netherlands	282	74	26.2	54	19.1	70	24.8	54	19.1
Poland	606	30	5.0	21	3.5	23	3.8	21	3.5
Portugal	83	18	21.7	18	21.7	18	21.7	18	21.7
Romania	411	32	7.8	26	6.3	32	7.8	26	6.3
Slovakia	14	0	0.0	0	0.0	0	0.0	0	0.0
Slovenia	104	1	1.0	1	1.0	1	1.0	1	1.0
Spain	589	141	23.9	129	21.9	135	22.9	117	19.9
Sweden	1,986	186	9.4	132	6.6	214	10.8	146	7.4
Total	21,440	3,820	17.8	3,628	16.9	4,514	21.1	3,235	15.1

Source: the authors' own study/calculations based on Refinitiv data.

VI. CONCLUSIONS

When analysing the quality of environmental information reporting, the lack of uniform, universally applicable, and accepted standards on a global scale is still an unresolved problem. Despite the efforts made by the ISSB and the EU, they are still not universal. Therefore, there is a need to develop relevant and comparable measures for companies that report environmental data voluntarily or on a mandatory basis. It is particularly important for corporate responsibility towards stakeholders, but also from the perspective of long-term environmental consequences, as environmental disclosures could help investors and other stakeholders better assess future financial performance and longevity.³⁵ The provision of reliable and comparable environmental metrics by data providers is also a problem. Although these indicators should refer to the same aspects of the environment, their size may differ due to the different ways they are calculated and the different components they consider.

According to the research conducted on environmental reporting, public companies from the EU have a lax approach to this problem. The time that has elapsed has not changed the continuing clear advantage of the quality of environmental information disclosures in the ‘old’ EU Member States (which joined before 2004) over the ‘new’ EU Member States. In the second group, except for the Czech Republic and Hungary, relatively few companies have presented E indices for at least five years (less than 10%). In seven countries (Bulgaria, Croatia, Estonia, Lithuania, Latvia, Malta, and Slovakia), the quality of this reporting was null. The same was true of the reporting of resource consumption and pollutant emissions. The only exceptions were, again, the Czech Republic and Hungary, which might be a benchmark for other developing EU countries. This ‘reporting quality gap’ probably results from the fact that, due to the lack of sanctions in this area, less developed countries are probably slower to adapt to procedures and standards. Furthermore, gathering and reporting additional environmental data requires time and financial resources. Some companies simply cannot afford it.

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³⁵ Chung, Cho (2018): 213.

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