

GREEN REPORTING IN THE PERCEPTION OF REPORTS PREPARERS. EVIDENCE FROM POLAND

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Purpose: The main purpose of the paper is to assess the perception of environmental reports preparers related to the obligation towards disclosing environmental information from the perspective of the company interests. The auxiliary aim of the article is to propose integrated green reporting in the context of theoretical foundations, in particular the theory of legitimacy, stakeholders and agencies.

Design/methodology/approach: Surveys were used to assess the perception of preparers of environmental reports. The empirical data was collected in a non-exhaustive survey. In the statistical analysis of the survey data, contingency tables and association measures for categorical variables were used (examination of correlations between pairs of survey questions) as well as logistic regression models and odds ratios (examination of the impact of explanatory variables on the selected survey questions with dichotomous values).

Findings: In the opinion of the respondents, the disclosure of environmental information is useful for stakeholders. They partly agree to extend the mandatory subjective and objective scope of the disclosure of environmental information. However, their opinion depends on some features of the enterprise, capital connections and the type of information shaping the enterprise image. The disclosed environmental information is an important element of influencing the company image, but it is not the most important one.

Research limitations/implications: This research is the first, pilot stage of the overall research. In the next stages, the research sample will be enlarged. The second limitation is the focus on Polish enterprises. As part of the research continuation, we intend to cover other countries.

Practical implications: Appropriate legal arrangements are needed to adequately enforce the scope and quality of reporting focused on environmental information. The author's definition of green reporting refers to a comprehensive, integrated environmental report combining financial and non-financial information arranged according to the substantively separated areas.

Social implications: Our proposed integration of environmental information in one report – green report - that emphasizes the importance of the environmental protection problem, which will increase the transparency and availability of information, and ensure its comprehensiveness for stakeholders, and as a result have a positive impact on environmental awareness in the business operations of enterprises.

Originality/value: The research was conducted from the perspective of preparers and managers that disclose environmental information. Our research is the broadening and deepening of knowledge on environmental information reporting in Poland, as well as participation in the discussion on the desired directions of its development.

Keywords: green accounting, green reporting, environmental disclosures, non-financial statement, CSR.

Category of the paper: research paper.

1. Introduction

The concept of sustainable development affects various aspects of business operations, including the functioning of the respective accounting system (e.g. Schaltegger et al., 2022; Hernádi, 2012; Ignat et al., 2016). One of the most important areas of accounting is green accounting, focused on the registration, processing and reporting of environmental information (e.g. Gonzalez, Peña-Vinces, 2022; Samaraweera et al., 2021; Singh et al., 2019).

Environmental disclosures play an important role in the implementation of sustainable development goals, as many as 5 of which concern environmental protection (un.org.pl). They are intended to provide various stakeholder groups with access to information on the environmental impact of enterprises (Dura, Suharsono, 2022; Schaltegger, Burritt, 2017). Environmental disclosures are mandatory for some companies and voluntary for others (Directive (EU) 2022/2464).

Due to the lack of unified reporting standards, even if such disclosures are mandatory, they are subject to high discretion of the persons preparing the reports or supervising the reporting. Although intensive efforts are being made to extend the obligation of environmental disclosures and their standardization (Directive (EU) 2022/2464), the specificity and diversity of this information undoubtedly prolong and hinder this process (e.g. Turzo et al., 2022; Zou et al., 2019; Wang et al., 2019).

In order to perform the environmental reporting function in sustainable economic development, it is necessary to properly involve the employees preparing these reports and the managers supervising their work. Their positive attitude to environmental disclosures, understanding and acceptance of the need for such reporting is one of the determinants of proper implementation of the environmental reporting function.

Appropriate substantive preparation and ethical attitude of the persons involved in the preparation of environmental reports are also indispensable. Most research on environmental disclosures is focused on the informational content of non-financial statements as well as the method of reporting environmental information and is conducted by analyzing the text of reports (e.g. Vourvachis, Woodward, 2015; Guthrie, Abeysekera, 2006; Mata et al., 2018). Some of the research relates to the assessment of environmental reporting from the perspective

of report users. As part of these studies, methods for analyzing the text of reports and surveys are used.

According to the authors of this article, there is little research on the perception of environmental disclosures by reporters and managers supervising their work. The scarcity of this type of research encouraged us to address this issue.

The purpose of the paper is to assess the attitude presented by the persons preparing environmental reports towards the obligation of environmental disclosure from the perspective of the interests of enterprises. The auxiliary purpose of the article is to expose green reporting as a product of the intensively developing area of accounting - green accounting in relation to accounting theory, in particular the theory of legitimacy, stakeholders and agencies in the context of reporting entities' attitude towards the obligation to disclose environmental information.

In the context of the identified research gap, the following research questions were adopted:

Q1: How do preparers of environmental reports assess their usefulness in the decision-making process?

Q2: How do those preparing environmental reports assess the extension of the subjective and objective obligation of this reporting?

Q3: How do environmental reporters assess the importance of environmental information from the point of view of creating a positive image of the company?

The empirical data used in the article were collected in a non-exhaustive survey based on a survey questionnaire correctly completed by 70 enterprises (employees competent in the field of environmental protection). Due to the purpose of the study, the sample of enterprises was created in a non-probability manner based on the register of the Polish Classification of Activities (PCA).

In the statistical analysis of the survey data, contingency tables and association measures for categorical variables were used (examination of correlations between pairs of survey questions) as well as logistic regression models and odds ratios (examination of the impact of explanatory variables on the selected survey questions with dichotomous values). The calculations were carried out using the R program and selected packages.

The obtained research results broaden the knowledge on the conditions of environmental reporting. The authors' opinions formulated on their basis provide a voice in the discussion on the direction of changes in the regulatory sphere of environmental reporting. The definition of green reporting proposed by the authors refers to the broader context of environmental disclosures, which is the implementation of sustainable development goals. The authors combined the obtained results with accounting theories, in particular the theory of legitimacy and stakeholder theory.

The structure of the paper has been adapted to the defined research goal and research questions. The first part of the paper discusses green reporting against the background of the theory of legitimacy, stakeholders and agencies. The literature was reviewed and research

hypotheses were developed. In the second part, the adopted research methods are described in detail. The presentation of the obtained results in conjunction with references to other studies constitutes the third part of the article. The last part is a summary containing general conclusions from the research and the authors' recommendations regarding the regulatory sphere of environmental reporting and economic practice. This part of the paper also presents limitations in the field of the conducted research.

2. Green reporting as a strategic element of green accounting – literature review

Reporting environmental information plays an important role in the sustainable development strategy (Sustainable Development Goals, Agenda 2030), meeting the stakeholders' information expectations on the state of the environment and the impact of enterprises on the environment, and contributes to the development of green accounting as part of the accounting system focused on environmental issues.

Many definitions of green accounting have been proposed in the literature (e.g. Maunders, Burritt, 1991; Gallhofer, Haslam, 1997; Greenham, 2010; Deegan, 2013; Yang, Zhao, 2018; González, Mendoza, 2020). It is defined as a socio-economic tool that helps companies to adjust the operating rules and business decisions that are necessary to mitigate their impact on the environment by accounting for various environmental activities. Gonzalez and Peña-Vinces (2022) believe that green accounting provides value management and a combination of accounting and environmental aspects owing to which a balance is possible between the development of both the environment and the economy. It is part of one of the most important areas of responsibility towards society (and future generations), which concerns the responsibility for environmental protection. Singh et al. (2019) argue that green accounting reflects the environmental impact of a company's manufacturing and corporate activities. The implementation of environmental concepts translates into the environmentally friendly production, and the achieved financial results affect the long-term success and development of the company (Dura, Suharsono, 2022).

Green accounting is to serve sustainable development, in particular to prevent pollution and deforestation (Schaltegger, Burritt, 2017). According to Islam and Managi (2019) and Russell et al. (2017) green accounting supports economic efficiency and promotes an individual's ability to innovate and eco-efficiency. Gonzalez and Peña-Vinces (2022) distinguish, within the framework of green accounting, as follows: the principles of prevention and integration as well as good practices, disclosure of environmental costs, eco-efficiency, environmental aspects in accounting and preparation of environmental reports.

Samaraweera et al. (2021) consider it reasonable to use the term "green" in relation to defining environmental threads in accounting, because this color means loyalty and harmony, it is associated with nature and minimizing the negative effects of the company on the environment by measuring and assessing processes aimed at improving their eco-efficiency. In turn, Nakasone (2015) claims that green accounting applies only to mining, oil and gas companies, it omits other sectors, e.g., industrial, commercial and service sectors, which also have a negative impact on the quality of the environment.

Green accounting is included both in the sustainable development of enterprises and in the coordination of environmental and social processes, which affects the formation of responsible and long-term business activities (Hernádi, 2012; Ignat et al., 2016). Cairns (2009) and Mason and Simmons (2014) indicate the elements that will enable the integration of green accounting with the company system by: implementing environmental policy, developing environmental strategies, creating environmental financial reports, introducing environmental accounts and disclosing environmental reports documenting processes that reduce the company's environmental impact. Man and Gadau (2011) perceive green accounting as a new dimension of reporting the company results and achievements, which is currently undergoing constant evolution.

In the interests of standardizing the methods of reporting disclosures regarding sustainable development and emphasizing the coherence of the financial statements and the ESG (Environmental, Social, Corporate Governance) report, the European Commission published, on December 16, 2022, a new Corporate Sustainability Reporting Directive (CSRD), which is to replace the existing directive on non-financial reporting, which extends the group of entities (e.g. small and medium listed companies) subject to the non-financial reporting obligation and extends the material scope of disclosures (Directive (EU) 2022/2464).

Reporting will be carried out according to the uniform ESRS (European Sustainability Reporting Standards) standards which, in the environment module, distinguish 5 standards covering: climate change, pollution, water and marine resources, biodiversity and ecosystems, resource use and circular economy (Projekt, 2023). In some entities, the phenomenon of voluntary disclosure of non-financial information, including environmental information, can be observed even before the new CSRD and ESRS standards become legally binding.

The preparation of ESG reports is subordinated to the EU taxonomy, defined as compliance with the EU classification of sustainable activities. In June 2020, the European Union proposed regulations to support individuals in sustainable actions for the environment and climate through a taxonomy that facilitates data disclosure (Rozporządzenie, 2020). The idea of the EU taxonomy is to unify the understanding of what can be considered sustainable economic activity, supporting the achievement of climate neutrality. An important aspect is also reducing the risk of greenwashing (feigning environmentally friendly activities) due to clear criteria qualifying a given type of activity, and support for the development of sustainable investments.

In order for an economic activity to be qualified as sustainable according to the EU Taxonomy, it has to, i.a., (UT, 2023) make a significant contribution to at least one of the six environmental goals: climate change mitigation, climate change adaptation, sustainable use and protection of water and marine resources, transition to a circular economy, pollution prevention and control, protection and restoration of biodiversity and ecosystems.

Currently, the standardization of disclosure of environmental and climate aspects are particularly important. Unfortunately, companies do not always show the appropriate maturity and awareness in this area, which is confirmed by the research of Jastrzębska (2023), who measured the scope of reporting climate-related information by the companies recognized as CSR leaders in Poland using the index of climate-related disclosures. Finally, the researcher concluded that the companies with the title of CSR leaders in Poland do not show high awareness of climate change.

In the accounting theory the following theories are used to explain the extension of the scope of disclosed information, including environmental information: legitimacy, stakeholders, agency and information asymmetry. Each of these theories can justify the disclosure of environmental information in reporting (O'Dwyer, 2021). Legitimation means social acceptance for the actions taken by the company (Ogden, Clarke, 2005; Deegan, 2019).

It is particularly important for the entities whose activities have a negative impact on the environment. Through non-financial reports, they try to gain social approval for their activities, i.e. to create, e.g., a positive image of a pro-ecological company, although in fact they have a negative impact on the environment (Deegan, 2002; Brennan, Merkl-Davis, 2013; Cho, Patten, 2013; Wang, 2016). The research on legitimacy in accounting concerns, i.a., reporting and disclosure of information on environmental protection and pro-social activities (Ogden, Clarke, 2005; Cho, Patten, 2007) as well as social and environmental accounting (Archel et al., 2009; Beuren, Boff, 2011).

The relations between an enterprise and its external and internal stakeholders are analyzed in the context of the stakeholder theory, which is based on the sustainable maintenance of positive relations with stakeholders (Donaldson, Preston, 1995; Freeman, 2010). Stakeholder expectations include a multifaceted presentation of information in economic, social and environmental areas through non-financial reporting. Mutual relations affect, e.g., the development of environmental awareness and strategy, therefore it is important to meet the information needs of stakeholders, which include, i.a., the quality of information (IASB, 2018) and the scope of information disclosed, including environmental issues (Rodrigue, Magnan, Boulianne, 2013; Liesen et al., 2015; Kaur, Lodhia, 2018).

The agency theory is based on the relationship between the parties to the contract, representing specific attitudes, preferring their own benefits and attitude to risk. The agency theory assumes that in certain situations managers may prefer to take manipulative actions being in opposition to the expectations of shareholders and other stakeholders who expect reliable information (Abrahamson, Park, 1994), e.g., on environmental issues. One of the basic

differences between the parties to the contract is information asymmetry, i.e. unequal access to information (Eisenhardt, 1989; Greenwald, Stiglitz, 1990).

Information asymmetry also applies to issues in the area of environmental information disclosure, when external stakeholders have access to fragmentary information only (some of it is kept secret) and created by impression management strategies. Green reporting (GR), also known as environmental reporting (ER), has long been used in the context of financial and non-financial reporting, although with different meanings. In the broadest sense, GR is treated interchangeably with GA and thus evolves within the scope of GA as a basic concept is expanded.

In a narrower sense, GR is part of the company's reporting focused thematically on the natural environment and in this sense it is a product of GA, i.e. this part of the accounting system that is oriented towards identifying, recording and processing all information regarding the company's environmental impact (Rahman, Rahman, 2020). The literature also presents the opinion that GR is one of the voluntary social reporting included in the financial statements (Parker, 1995; Ahmad et al., 2003).

A different approach refers to GR as a statement (account) of the outlays incurred by the company on pro-environmental activities with the effects obtained in quantitative terms (e.g. Oxford Reference, 2023). The WG's information scope is expanding along with the growing social interest in the problem of environmental protection, which results in extending the subjective and objective mandatory nature of these reports by means of the new Corporate Sustainability Reporting Directive (Directive (EU) 2022/2464) effective from January 2023.

In recent years, GR has often been associated with sustainability development (SD) - Sustainable Development Goals (SDG). It is worth noting that out of 17 main objectives, as many as 5 directly relate to environmental problems: SDG 6 "Clean water and sanitation", SDG 7 "Clean and accessible energy", SDG 13 "Climate action", SDG 14 "Life under water" and SDG 15 "Life on land" (CZR, 2023). The document "Transforming Our World: The 2030 Agenda for Global Action", adopted on September 25, 2015 during the UN Summit in New York, became the basis for intensive activities at the global level, which is to be appropriately translated into national and regional activities (Sustainable Development Goals, Agenda 2030).

The effectiveness of actions taken to improve the condition of the natural environment depends, i.a., on the access to environmental information at the level of activity of various entities, in particular those conducting business activity, using their reporting system. M.M. Rahman and M.S. Rahman (2020) refer directly to GR as a tool of environmental sustainability. It is worth noting that environmental issues are indicated as one of the main topics in the concept of social responsibility and the concept of sustainable development in non-financial reports.

In this context, Ahmad et al. (2003) defines environmental information in an annual report as a subset of the corporate social responsibility, which includes information regarding waste management, recycling programs and environment control.

Entities are under an increasing social pressure to disclose the environmental impact of their activities (e.g. Deegan, Gordon, 1996; Camilleri, 2015). For this reason, the environmental aspect has become one of the most important components in corporate reporting. This state of affairs encouraged the authors to define the green accounting as a set of all disclosed financial and non-financial environmental information regarding the effects of the entity's activities on the natural environment, both mandatory and voluntary, regardless of the report type and form they prepare. Environmental reporting is generally associated with environmental non-financial information presented primarily in the activity report, social responsibility report, sustainable development report and integrated report.

Most of the information contained in non-financial reports is used to explain the processes of creating the company's value and its relations with stakeholders, while the role of these reports is to create the company image, establish a reputation and legitimize the activity (Spear, Roper, 2013; Cormier et al., 2004; O'Donovan, 2002; Yuthas et al., 2002). Research by Cormier et al. (2004) confirms that managers disclosing environmental information are guided, i.a., by the importance of a given stakeholder for the company. The studies did not take into account the environmental information contained in the financial statements. The studies conducted so far have not focused on the attitude of persons preparing reports and managers supervising this process towards the obligation to report environmental information, including the extension of the subjective and objective reporting obligation.

Within the identified research gap, the authors adopted the following hypotheses:

H1: Preparers of environmental reports positively evaluate the decision-making usefulness of the disclosed environmental information.

H2: Preparers of environmental reports positively assess the process of extending the subjective and objective obligation of environmental reporting.

H3: Preparers of environmental reporting recognize environmental disclosures as important from the viewpoint of creating a positive image by the company.

3. Data and methods

The empirical data used in the article were collected in a non-exhaustive survey based on a questionnaire survey conducted among 70 enterprises. In non-exhaustive (partial) studies, the subject of analysis is a statistical sample composed of population units (it is a subset of the surveyed population units). Following the purpose of the study, the sample of enterprises was created in a non-probability manner based on the PCA register. The sample was created using the technique of accidental sampling, also known as convenience sampling (Szreder, 2004). The sample is a non-representative one, therefore, it is not possible to generalize the obtained results referring them to the entire population of enterprises.

Contingency tables and association measures for categorical variables as well as a logistic regression model and odds ratio were used in the statistical analysis of the survey data. Calculations were performed using the R program and the *vcd*, *epade*, *DescTools*, *lmtest*, *caret*, *questionr*, *finalfit*, *sjPlot* packages (R Development Core Team, 2023; Aitkin et al., 2009; Fox, 2002).

Contingency tables (Agresti, 2002; Ott, 1984) enable the study of interdependencies between nominal variables. They show the distribution of answers to two selected questions from the survey questionnaire. Contingency coefficients (association measures) provide more information on the studied phenomenon, which assesses the association degree of the analyzed features. Association measures are constructed based on the χ^2 (chi-square) statistic, which shows the deviation of the numbers observed in the cross-section of both features from the theoretical numbers that would be expected if the features were independent. The χ^2 statistics are calculated based on the data presented in the contingency table: $\chi^2 = \sum_i \sum_j \frac{(n_{ij} - \hat{n}_{ij})^2}{\hat{n}_{ij}} =$

$\sum_i \sum_j \frac{\hat{n}_{ij}^2}{\hat{n}_{ij}} - n$, where: n_{ij} – observed values; \hat{n}_{ij} – expected values; n – sample size.

The χ^2 statistic takes values from the range $[0; n \times \sqrt{(r-1) \times (c-1)}]$, where: r – number of rows; c – number of columns in the contingency table. The χ^2 statistic is zero (lower bound) when the theoretical (observed) values are the same as the empirical (expected) values. The upper limit depends on the surveyed population size and the contingency table number of rows and columns. Based on the value of the χ^2 statistic, measures of the interdependence (correlation) of nominal variables (contingency coefficients) can be calculated. These contingency coefficients are the numbers in the range $[0;1]$, they take into account the size of the array and the number of observations. Cramer's V contingency coefficient was used in the analysis of the survey results: $V = \sqrt{\frac{\chi^2}{n \times \min(r-1; c-1)}}$, whose values can be interpreted as follows: $V = 0.00$ – independence of features, $V \in (0.00-0.33]$ – weak dependence, $V \in (0.33-0.66]$ – clear dependence, $V \in (0.66-1.00)$ – strong dependence, $V = 1.00$ – functional dependence.

Logistic regression is used in the analysis of binomial data (Long, 1997; Agresti, 2002; Cameron and Trivedi, 2005). These are often binary data, when the dependent variable takes one of two values (e.g. the respondent's answer *yes/no* to a question formulated in a survey questionnaire). The logistic regression model takes the form of the function $f(x) = \frac{e^x}{1+e^x}$. This model makes it possible to estimate the probability of choosing p_i one of the two options (yes/no) depending on the value of the explanatory variable x (or explanatory variables) based on the formula $p_i = \frac{\exp(\beta_0 + \beta_1 x_i)}{1 + \exp(\beta_0 + \beta_1 x_i)}$, where $0 < p_i < 1$.

To estimate the parameters of the logistic regression model (β) the concept of Generalized Linear Models (GLM) is used, proposed in the article (Nelder, Wedderburn, 1972) and developed in the monograph (McCullagh, Nelder, 1983). Generalized linear models in which the dependent variable has a non-normal distribution (e.g. binomial) are estimated using the maximum likelihood method using iterative optimization algorithms (suitable functions are available in R packages).

In the interpretation of the estimated logistic regression model, the sign of the parameter ($+\beta$ or $-\beta$) is taken into account in terms of probability, which informs about the direction of influence of the explanatory variable on the explanatory variable. The impact of the explanatory variables on the dependent variable is also assessed in terms of the odds ratio ($OR = \frac{p}{1-p}$). Values of odds ratios are calculated from the exponential expression e^β , where the exponent is the estimated value of β . If the value of the explanatory variable increases by one unit, the chance of the explanatory variable taking the value 1 will change (increase, decrease) by e^β times. The interpretation of the numerical values of the odds ratios is as follows:

- if $e^\beta > 1$, then the influence of the variable value on the choice of the *yes* option is positive (increase in the odds ratio),
- if $e^\beta < 1$, then the impact of the variable value on the choice of the *yes* option is negative (decrease in the odds ratio),
- if $e^\beta = 1$, then the influence of the variable value on the choice of the *yes* option is neutral (odds ratio unchanged).

The collection of empirical data was carried out on the basis of the author's questionnaire. The data collection was commissioned to the research agency Biostat Polska. The study covered 70 enterprises (medium and large). Biostat selected a non-random sample of respondents on the basis of PCA codes, specifying the type of business activity. 721 enterprises were contacted. Ultimately, 70 enterprises representing 14 industries (sectors) agreed to participate in the survey. The CATI technique was used to collect the data. The research was carried out between May 18 and June 5, 2023.

The research is of a pilot nature and concerns the reporting of environmental information (financial and non-financial) as a specific area of narrative in accounting from the perspective of those preparing non-financial reports. Due to the thematic scope of the article, the data from the part of the survey devoted to environmental narratives in non-financial reporting were not included in it.

All respondents (employees of the surveyed enterprises) replied that they participated directly or indirectly in the preparation of the non-financial report. The breakdown of respondents by gender is as follows: 56% women and 44% men. In terms of the age structure, the largest group is represented by generation X (born in 1965-1980) – 49% and generation Y Millennials (born in 1981-1994) – 44%. Less numerous generational groups are the BB (Baby

Boomers) generation born before 1964, constituting 4% of the respondents, and the Z generation born since 1995 – 3%.

The survey involved:

- 41% of enterprises employing over 500 employees (one of the criteria met, which is the basis for the mandatory disclosure of non-financial information in accordance with the Accounting Act and Directive 2014/95/EU and the CSRD Directive from 2024),
- 33% of enterprises employing less than 500 to 250 employees (one of the criteria for mandatory ESG reporting in accordance with the new CSRD from 2025 is met),
- 26% of companies with fewer than 250 to 50 employees (ESG reporting obligation for medium-sized companies listed on the stock exchange since 2026).

When specifying the size of the surveyed enterprises, the authors signal new non-financial reporting obligations for them in accordance with the new CSRD Directive.

The survey also includes questions about total assets and net income (these are the other criteria used to determine mandatory non-financial disclosures), but the respondents most often answered "I don't know", which accounted for over 70% of answers to each question. Therefore, it is difficult to unequivocally determine the size of the surveyed enterprises based only on the criterion of employment. Assuming that, in addition to the employment criterion, the enterprises met one of the other two (total assets or net revenues), then it can be stated that, in total, 74% of the surveyed enterprises are large enterprises employing more than 250 employees, while 26% are medium-sized enterprises. Both distinguished features characterizing the company were excluded when building the logistic regression model due to unreliable answers resulting from the lack of knowledge of the respondents.

Among the respondents, 57% are enterprises with foreign capital, the remaining 43% operate without it. The respondents did not show much knowledge about what regulates the preparation of financial statements in their company: 42% of the respondents answered "I don't know", 21% the Accounting Act and 7% IAS/IFRS. 47% of the financial statements issued by the surveyed enterprises are individual statements, and 23% are consolidated statements.

4. Results and discussion

The majority of respondents (94%) said that the disclosure of environmental information is useful to stakeholders when making business decisions. Disclosure is important for the company because it contributes to building a positive image and relations with stakeholders, and legitimizes the activity, especially when it has a negative impact on the environment. The usefulness of environmental information includes: their availability to stakeholders in financial and non-financial reports.

The answers provided by the respondents directly and/or indirectly involved in the preparation of non-financial reports confirm H1, i.e. a positive assessment of the usefulness of the disclosed environmental information.

The surveyed enterprises disclose environmental information in non-financial reporting (50%) and in both financial and non-financial reporting (49%). Only 1% of the surveyed enterprises declared disclosing environmental information in their financial statements. This may indicate that enterprises do not associate financial reporting with the disclosure of environmental information, e.g., they treat disclosed information on fees for landfilling, environmental investments or outlays on environmental R&D as items of the balance sheet and profit and loss account.

A non-financial report is prepared by 81% of the surveyed enterprises and only 19% voluntarily. Among the mandatory disclosures of non-financial information, the most frequently used form of disclosure is the activity report containing a separate section on non-financial information (56%) and the non-financial report (24%).

Mandatory disclosure of environmental information (e.g. by enterprises employing more than 500 employees) was assessed positively by 89% of the respondents, only 11% of the respondents expressed a negative opinion. Such a significant predominance of positive answers may be evidenced, i.a., by: environmental awareness and the need for the company to participate in the global process of saving the environment.

More than half of the respondents preparing mandatory reports (56%) spoke positively about the extension of the mandatory scope of subjective and objective disclosure of environmental information. Such an attitude should be considered satisfactory, considering that the new CSRD will soon introduce such extensions. In turn, the respondents' answers were more varied regarding the question whether the company's managers intend to voluntarily expand the existing scope of environmental information disclosed in the non-financial report.

The majority of respondents (54%) answered "I don't know", 26% said they did not intend to and 20% answered "yes". The provided answers may be the result of the fact that the majority of respondents are not the decision-makers in this regard and do not know what course of action the management board will take. The answers may also result from many reporting obligations and ever-increasing requirements in this matter, which may cause reluctance to make such a decision or adopt a passive attitude towards the upcoming changes.

Contingency tables were used to examine the interdependence between the variables (two selected questions from the survey): B2: Does the company prepare a non-financial report/integrated report? (voluntarily, obligatory), B5: In your opinion, should the mandatory subjective and objective scope of disclosing environmental information be extended? (Yes/No). In the case of mandatory reporting, there were 28 positive responses to the mandatory extension of disclosure and 29 negative responses. In the case of voluntary reporting, however, the responses were not so evenly distributed. There was a clear advantage of 11 positive responses and only 2 responses against the mandatory extension of disclosure. The results

obtained in the first group of enterprises, i.e. in practice the largest ones, often exerting a strong environmental impact, are not so optimistic. This may translate into the reluctance of more than half of the respondents to extend the mandatory disclosures. In the second group, which does not have reporting obligations, there is greater acceptance for the obligatory extension of disclosures, because they do not directly concern these enterprises, so they can be used fragmentarily or selectively for specific purposes, e.g., image-related.

The results of this part of the study allow concluding that H2 was only partially positively verified. Initially, the respondents positively assessed the process of extending the mandatory disclosure of environmental information, however, extending the study to include the determinant of the obligation or voluntary nature of reporting preparation introduces a differentiated approach to this process. In the further part of the study, the authors will additionally explore the problem of extending disclosure by selected factors influencing this process – company characteristics and types of information creating the image.

The environmental information highlighted by the authors of the survey was subjected to an in-depth analysis, which was classified into two groups: disclosed in financial reporting (Table 1) and disclosed in non-financial reporting (Table 2).

Table 1.

Answers to question B6

Option designation in question B6	Environmental information disclosed in financial statement	Yes	No
B6_1	Environmental costs, e.g., waste disposal services	32	38
B6_2	Administrative penalties for exceeding the standards	17	53
B6_3	Environmental expenses, e.g., fees for the use of the environment, fees for landfilling, fees for water abstraction	49	21
B6_4	Environmental investments	45	25
B6_5	Expenditures incurred on environmental R&D	34	36
B6_6	Environmental provisions, e.g., provisions for the liquidation of mining damage	12	58
B6_7	Environmental liabilities, e.g., loans for environmental purposes	15	55
B6_8	Intangible assets, e.g., emission allowances granted and purchased, concessions for the exploitation of natural resources	23	47
B6_9	Fixed assets for environmental protection	35	35
B6_10	Other	11	59

Regarding question B6: What environmental information does the company disclose in its financial reporting? the largest number of positive answers provided by the respondents confirming the disclosures included: environmental expenses, e.g., fees for the use of the environment, fees for landfilling waste, fees for water intake (49), environmental investments (45), fixed assets for environmental protection (35), outlays incurred on Environmental R&D (34). The most negative answers stating the lack of disclosure concerned: environmental provisions, e.g., provisions for the liquidation of mining damage (58), environmental liabilities, e.g., loans for the purposes related to environmental protection (55), administrative penalties for exceeding standards (53).

Table 2.*Answers to question B11*

Option designation in question B11	Environmental information disclosed in non-financial statement	Yes	No
B11_1	CO ₂ and gas emissions	63	7
B11_2	Dust emissions, lead and copper emissions	47	23
B11_3	Climate and environmental risk	29	41
B11_4	Water intake and consumption	59	11
B11_5	Energy consumption	62	8
B11_6	Pro-ecological investments	44	26
B11_7	Sewage (water) discharge	48	22
B11_8	Financial penalties for non-compliance with environmental laws and regulations	21	49
B11_9	Non-financial, administrative and judicial sanctions imposed on the organization for non-compliance with environmental regulations	16	54
B11_10	Waste	62	8
B11_11	Financial support for environmental organizations (e.g. donations)	23	47
B11_12	Support for educational activities in the field of environmental protection	44	26
B11_13	Other	6	64

In turn, regarding question B11: What environmental information is disclosed in the company's non-financial reporting? the largest number of respondents' answers confirming the disclosure concerned: CO₂ and gas emissions (63), energy consumption (62), waste (62), water intake and consumption (59). Most answers about non-disclosure concerned: non-financial, administrative and court sanctions imposed on an organization for non-compliance with environmental protection regulations (54), fines for non-compliance with environmental laws and regulations (49), financial support for pro-ecological organizations, e.g., donations (47), climate and environmental risks (41).

In both cases, the respondents provided a lot of negative answers regarding the item "Other", which may mean that the proposed scope of information disclosed by the authors of the survey was sufficient and there was no need to supplement it with other information. Examples B6_10 include costs related to installations (e.g. photovoltaics), and B11_13 include financing of educational campaigns related to recycling and recovery.

Summarizing the answers of the respondents answering questions B6 and B11 regarding the scope of environmental information disclosed in the financial and non-financial statements, it can be stated that:

- in the case of the first question, only two options were dominated by positive answers about making disclosures (environmental expenses, e.g., fees for the use of the environment, fees for waste storage, fees for water abstraction, environmental investments),
- in the case of the second question, such a relationship was observed for as many as eight options (CO₂ and gas emissions; energy consumption; waste; water intake and consumption; sewage (water) discharge; dust, lead and copper emissions; pro-environmental investments; support for educational activities in the field of environment).

It can therefore be concluded that non-financial reporting is used primarily to disclose environmental information rather than for financial reporting purposes. The dispersion and diversity of environmental information in two different financial and non-financial reports, which are not integrated with each other, is an indication for the authors to propose green reporting.

Another analyzed interdependence concerns two questions: A7: Who prepares the report? – A7_1: unrelated entity, A7_2: corporate group and B6: What environmental information does the company disclose in its financial reporting? – B6_1-B6_10 (see Table 1). The results are presented in Table 3.

Table 3.

Contingency table for questions A7 and B6

Option designation in question B6	A7_1. Entities not related by capital		A7_2. Group	
	No	Yes	No	Yes
B6_1	13	10	25	22
B6_2	18	5	35	12
B6_3	5	18	16	31
B6_4	8	15	17	30
B6_5	9	14	27	20
B6_6	18	5	40	7
B6_7	16	7	39	8
B6_8	16	7	31	16
B6_9	12	11	23	24
B6_10	21	2	38	9

Based on the analysis, it can be concluded that the largest number of negative responses regarding the disclosure of environmental information concerns: environmental reserves (58, including 39 groups and 18 entities not related by capital), environmental liabilities (55, including 39 groups and 16 entities not related by capital), administrative penalties for exceeding standards (53, including 35 in group and 18 in the entities not related by capital), intangible assets (47, including 31 in group and 16 in the entities not related by capital). The most positive responses about the disclosure referred to: environmental expenditures (49, including 31 groups and 18 in the entities not related by capital), environmental investments (45, including 30 groups and 15 entities not related by capital). To sum up, the predominance of all negative answers over positive ones regarding environmental information in financial reporting proves that these reports are not treated by the preparers as an appropriate instrument for disclosing this type of information. They are not well suited to standardizing types of environmental information and their combination with financial information.

The next interdependence to be examined includes the following questions: A7: Who is reporting? – A7_1: unrelated entity, A7_2: corporate group and B11: What environmental information is disclosed in the company's non-financial reporting? – B11_1-B11_13 (see Table 2). The results are presented in Table 4.

Table 4.
Contingency table for questions A7 and B11

Option designation in question B11	A7_1. Entities not related by capital		A7_2. Group	
	No	Yes	No	Yes
B11_1	3	20	4	43
B11_2	6	17	17	30
B11_3	18	5	23	24
B11_4	1	22	10	37
B11_5	1	22	7	40
B11_6	12	11	14	33
B11_7	6	17	16	31
B11_8	17	6	32	15
B11_9	17	6	37	10
B11_10	1	22	7	40
B11_11	17	6	30	17
B11_12	10	13	16	31
B11_13	22	1	42	5

The analysis of the results shows that the largest number of positive answers about the disclosure concerns: CO2 and gas emissions (63, including 43 groups and 20 entities not related by capital), energy consumption (62, including 40 groups and 22 entities not related by capital), waste (62, including 40 groups and 22 entities not related by capital), water intake and consumption (59, including 37 groups and 22 entities not related by capital). The largest number of negative responses regarding the disclosure of environmental information concerns: fines for non-compliance with environmental laws and regulations (49, including 32 groups and 17 entities not related by capital), financial support for pro-ecological organizations (47, including 30 groups and 17 entities not related by capital), climate risk and environmental (41, including 23 groups and 18 entities not related by capital). A significant predominance of all positive answers over negative ones regarding environmental information disclosed in non-financial reporting was observed, which proves the professionalism of those preparing the reports, the need to disclose this information in order to meet the needs of stakeholders and legitimize the company operations.

Based on the findings, it can be concluded that the capital group is superior to the entity not related by capital in disclosing environmental information both in financial and non-financial reporting. This is probably due to the fact that it has reporting obligations regarding non-financial disclosures, including environmental ones. It also has greater obligations towards its stakeholders in terms of informing about its activities in the light of sustainable development.

In non-financial reports issued by enterprises, a variety of information is disclosed, which affects, i.a. building an image. In order to analyze which types of information, in the opinion of the respondents, have the greatest impact on building the image, and which have the least impact, question B9 was formulated: Which information disclosed in a non-financial report/integrated report, in your opinion, is the most important in building a positive message about the company? A five-point Likert scale was used, based on which the respondents could express their opinions regarding eight types of information (Table 5).

Table 5.

Answers to question B9

Option designation in question B9	Types of information	No				Yes
		1	2	3	4	5
B9_1	Environmental information	1	1	16	24	28
B9_2	Human resources information	3	5	21	17	24
B9_3	Human rights information	3	3	11	15	38
B9_4	Social information	3	5	18	19	25
B9_5	Economic information	4	3	22	25	16
B9_6	Corporate governance information	8	5	20	25	12
B9_7	Diversity policy information	8	2	17	25	18
B9_8	Information on compliance with the rules of ethics	3	2	10	22	33

According to the respondents, information on human rights (38), information on compliance with ethical principles (33) and environmental information (28) have the greatest impact. Among the disclosures that obtained the most positive responses together, referring to the 4th and 5th Likert scale, the following should be distinguished: information on compliance with the principles of ethics (55), information on human rights (53) and environmental information (52). It is also possible to indicate the greatest number of answers concerning information of a neutral nature (3rd degree on the Likert scale): economic information (22), information on human resources (21), information on corporate governance (20). The lowest number of significant answers with negligible impact on building the image (1st and 2nd degree on the Likert scale) referred to environmental information (2), information on compliance with ethical principles (5).

In order to deepen the research on the types of disclosed information referring to building the company image, the interdependence between questions: A7 and B9 was examined. The results are illustrated in Figures 1-8. Each figure relates to a specific type of information. The analysis of Figures 1-8 shows that the largest number of disclosures (5th degree on the Likert scale) concerns: information on human rights (38, including 26 groups and 12 entities not related by capital), information on compliance with the principles of ethics (33, including 24 groups and 9 entities not related by capital) and environmental information (28, including 22 groups and 6 entities not related by capital). The dominant disclosures (Likert grades 5 and 4 together) include ethics information, human rights information, and environmental

information. They account for the share ranging in total disclosures from 53% to 79%. The disclosures provided in consolidated statements predominate. Groups dominate on the Likert scale of 3 to 5.

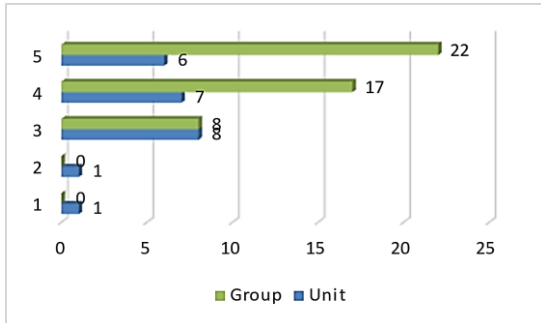


Figure 1. Environmental information B9_1

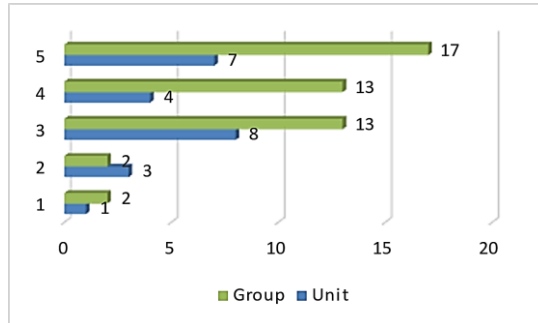


Figure 2. Human resources information B9_2

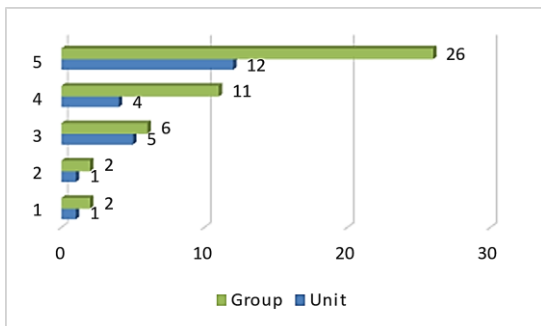


Figure 3. Human rights information B9_3

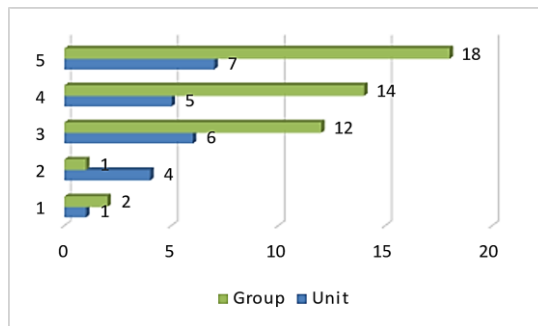


Figure 4. Social information B9_4

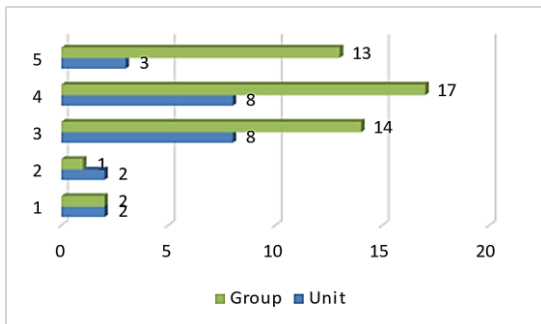


Figure 5. Economic information B9_5

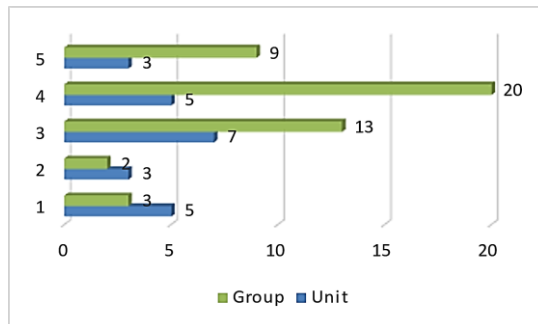


Figure 6. Corporate governance information B9_6

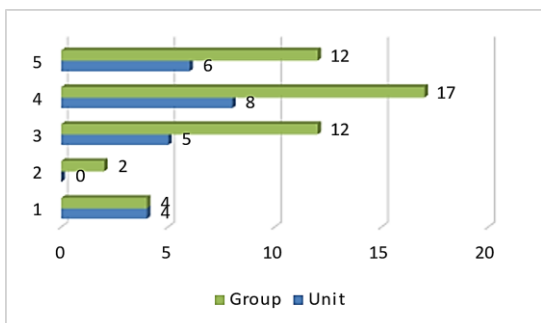


Figure 7. Diversity policy information B9_7

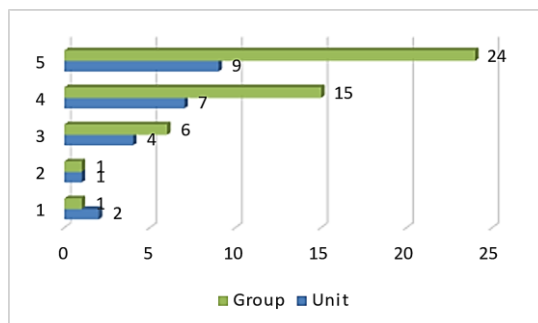


Figure 8. Information on compliance with the rules of ethics B9_8

The results of this part of the study allow concluding that H3 was only partly positively verified. The respondents consider environmental disclosures important from the viewpoint of creating a positive image by the company, but not as the most important factor. The information on human rights and on compliance with ethical principles is more important.

In the context of the evolution of corporate reporting, the authors decided to extend the study by the mandatory subjective and objective scope of environmental information disclosure (see correlation B2 and B5). For this purpose, two logistic (binary) regression models were estimated, based on which the odds ratios used to interpret the obtained results were calculated (Figures 9-10).

The first logistic regression model (Figure 9) examines the influence of explanatory variables (A1, A2, A5, A6, A7), which are the characteristics of the enterprise:

- A1: industry (energy, raw materials, chemical, metallurgy, food, construction, electromechanical, metallurgical, automotive, transport and logistics, wood, paper and furniture, trade, services, pharmaceutical),
- A2: number of employees (more than 500 people, less than 500 to 250, less than 250 to 50, less than 50),
- A5: share of foreign capital in the enterprise (yes, no),
- A6: financial reporting regulations (The Accounting Act, IAS/IFRS),
- A7: type of report (unit, consolidated)

regarding the answer (yes/no) to the question (depended variable): B5: In your opinion, should the mandatory subjective and objective scope of disclosing environmental information be extended? Explanatory variables A3: total assets of the balance sheet and A4: net revenues from the sale of goods and products were excluded as the majority of respondents were unable to specify the value ranges of these components in the company. The lack of reliable information discriminates against these features to be included in the model estimation.

The odds ratio marked in blue in Figure 9 (with values greater than 1) means the positive impact of explanatory variables, i.e. the action stimulating the answer "yes". All variables have a positive impact on extending the mandatory subjective and objective scope of environmental information disclosure. The strongest influence on the answer "yes" was shown by the following characteristics: financial reporting regulations (1.89), share of foreign capital in the enterprise (1.34) and the type of prepared report (stand-alone, consolidated) (1.22). The obtained results show that the mandatory extension of disclosures should be perceived from the perspective of legal regulations (additional and extended), the preparation of individual and consolidated statements that are subject to these legal regulations (The Accounting Act, IAS/IFRS) and the share of foreign capital in an enterprise whose presence also forces some additional actions within the framework of legal regulations.

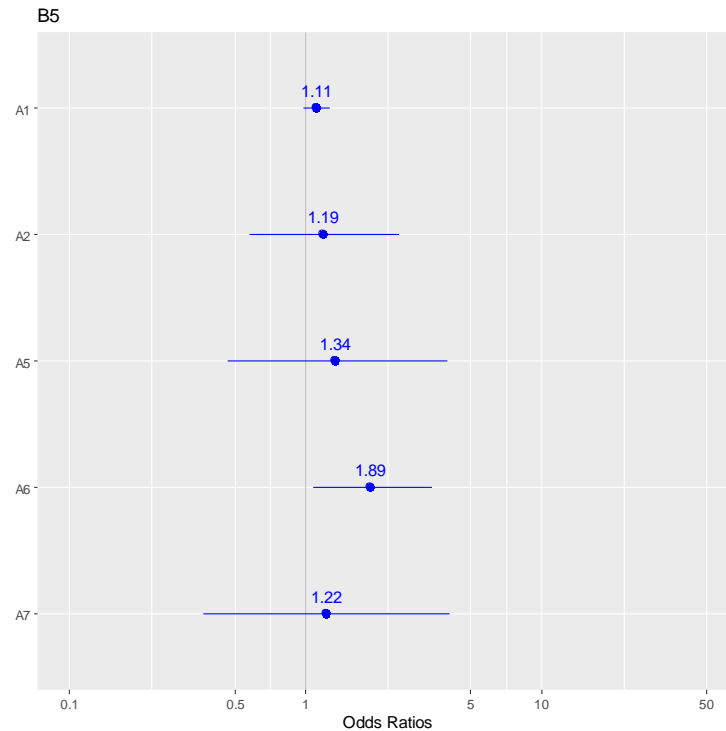


Figure 9. Odds ratios for explanatory variables A1, A2, A5, A6, A7.

The second regression model (Figure 10) examines the impact of the types of information disclosed in non-financial reporting (explanatory variables B9_1-B9_8) on the extension of mandatory disclosures B5 (explanatory variable unchanged). Only in the case of two characteristics, the odds ratio turns red, which means a negative (destimulating) impact on the dependent variable – these are: information on human resources (0.76), economic information (0.56). This information does not have a positive impact on extending the mandatory subjective and objective scope of the environmental information disclosure. The following characteristics have the greatest positive impact on the expansion of these disclosures: human rights information (2.03), social information (1.76) and environmental information (1.53). The logistic regression model confirmed the third place of environmental information among other disclosed information in the "highest impact" category (5 Likert degree), both in building the company image and in extending the mandatory subjective and objective scope of disclosing environmental information. Environmental information plays an important role in extending the mandatory disclosure of such particulars, but it is not essential.

In the opinion of the respondents, the surveyed enterprises, when preparing non-financial statements, use different guidelines, which results in their lack of comparability and makes it difficult to verify the disclosed information. The used guidelines include, i.a.: sustainable development goals (15), ESG (Environmental, Social, Corporate Governance) reporting factors (11), GRI (Global Reporting Initiative) (9), own rules inspired by GRI (6), international integrated reporting guidelines (International Integrated Reporting Council IIRC) (5) and others (e.g. GUS, KOBIZE, ISO 2200).

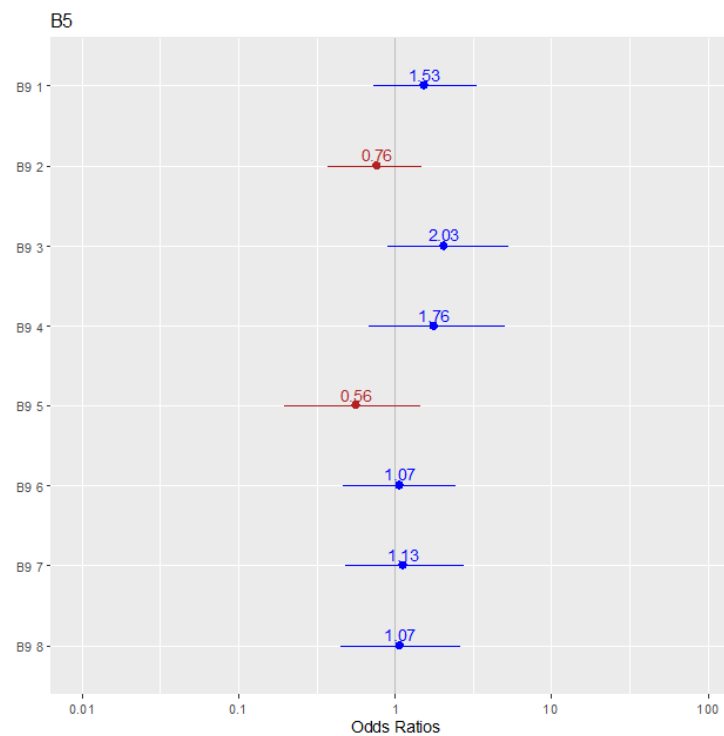


Figure 10. Odds ratios for explanatory variables B9_1-B9_8.

Diverse types of non-financial statements prompted the authors to pose the following survey question – in which non-financial report does the company disclose environmental information? The respondents indicated, i.a.: environmental report (32), sustainable development report (10), ESG report (7), social responsibility report (4), integrated report (2). Most responses concerned the environmental report understood as a report containing non-financial information.

The above two conclusions allow concluding that there is a need to develop unified rules and forms for disclosing environmental information as part of green accounting in the form of green reporting.

In the conducted surveys, the vast majority of respondents expressed the opinion that the reported environmental information is useful in the decision-making process. They also indicated environmental disclosures as important in creating a positive image of the company, although it was not the most important information for them in this context.

The findings are similar to the results of research conducted by Cormier et al. (2004). In these studies, the authors focused on the relationship between managers and stakeholders in the context of environmental information. A survey carried out among managers showed that they grouped stakeholders according to their importance for the functioning of the company and selected environmental disclosures according to this key. The selection made by managers concerned both the type and scope of information. The research results clearly showed that managers subordinate environmental disclosures to legitimize their actions. This, in turn, confirms the theory of legitimacy and the theory of stakeholders in relation to environmental reporting. In our study, the majority of respondents expressed a positive opinion on the subjective and objective extension of environmental reporting. However, an in-depth study of

this problem, divided into groups currently reporting obligatory and voluntary information, showed a fundamental difference. Among the respondents whose companies already report on a mandatory basis, more than half do not want to extend this obligation. A strong approval was expressed by the second group, which now reports voluntarily. Taking into account the fact that currently mandatory currently applies to the largest entities, most often capital groups, the obtained result proves the reluctance of at least half of them to further extend the mandatory reporting.

The results of our research can be compared with the research conducted by Jaggi and Zhao (1996) among the accountants and managers preparing environmental reports. The respondents indicated specific information or groups of information as important for stakeholders, but the analysis of the reports prepared by them showed that a large part of this information was omitted. According to the authors of this research, it may indicate the reluctance of preparers (accountants and managers) to disclose environmental information, which confirms our research. The research conducted by O'Donovan (2002) indicates that the reporting party, especially managers, use the tactic of presenting general information in order to build a positive image, and avoid specific information that could be confronted with results and actions. The author refers to the theory of legitimacy, but also points to the connection with the theory of stakeholders. The results of the cited studies are consistent with our findings.

In our research, the respondents indicated environmental disclosures as the third, after the information on human rights and information on compliance with the rules of ethics, the group of information important in building a positive image of the company. Placing environmental information in the third place may prove that the companies which exert a negative impact on the environment have more difficulties using them to create a positive image.

In our research, the respondents associated environmental reporting primarily with non-financial information. They attributed less importance to financial information, although this financial statement takes into account the overall positive and negative effects of environmental activities in assessing both the financial and property situation of the company. In addition, the respondents indicated many guidelines contained in different regulations of various entities and institutions as the reporting standards. For example, they pointed to the Statistics Poland and KOBIZE (The National Centre for Emissions Management), ISO 2200 as the reporting guidelines, which in practice means the lack of environmental information comparability as well as different materiality criteria.

5. Summary

The introduction of legislative solutions regarding environmental reporting should be preceded by detailed, in-depth research allowing the diagnosis of the current state from the viewpoint of the activities undertaken by enterprises as part of this reporting. The diagnosis of business practice requires, among other things, examining the attitudes and motivation of the party preparing such reports, as well as identifying and analyzing the factors influencing these attitudes. Achieving the Sustainable Development Goals requires proper communication through green reporting.

It is in the public interest to consciously and pro-environmentally engage people preparing reports and supervising their preparation, fully understanding and accepting the need for such disclosures. Our study constitutes a part of the research area addressing the perception of environmental information reporting by the preparing party and is of a pilot nature. The research results indicate the complexity of preparers' attitude towards the obligation of environmental disclosures.

The respondents are aware of the importance of environmental information to the stakeholders. However, reporting such information may be subordinated to various interests of managers and the enterprise as a whole. As a result, the declared pro-environmental attitude presented by the preparers of the reports does not necessarily translate into the quality of environmental disclosures. In our opinion, appropriate legal solutions are needed that will properly enforce the scope and quality of this reporting. One such tool may be to extract a report dedicated exclusively to environmental problems.

The definition of green reporting we propose refers to a comprehensive, integrated environmental report combining financial and non-financial information arranged according to the substantively separated areas. Such a report will highlight the importance of the problem, and at the same time serve to obtain the relevance and comparability of the presented environmental information, as well as provide a multi-faceted assessment referring to the effects of the actions taken by the company.

In this context, the added value of our research is broadening and deepening the knowledge on environmental information reporting in Poland, as well as participating in the discussion on the desired directions for the development of this reporting. Based on the obtained results, we recommend the identified solutions in this area.

Our research has its limitations. One of them is a relatively small research sample. The research is the first, pilot stage of the research. In the next stages, this sample will be enlarged. The second limitation is the difficulty in comparing our results with other studies because, to our knowledge, there are very few studies of this type. The third limitation is the focus on Polish enterprises only. As part of the research continuation, we intend to include other countries in the research.

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