

## Identification and classification of environmental reporting factors on the example of the Polish energy sector

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### Abstract

Business entities reporting information on the impact of their activities on the environment is still a disordered area in terms of both the legislation and the so-called good business practice. There is a large variation in the scope and manner of disclosing environmental information by business entities of the European Union Member States and other countries. This particular issue concerns countries where the energy sector is primarily based on hard coal and lignite extraction industries. Poland is such a country. The scale of this problem, confirmed in numerous studies, raises the question of the factors that influence environmental reporting.

Keywords: Environmental reporting, environmental accounting, environmental reporting factors, behavioural factors in accounting, energy sector.

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## 1. Introduction

One way of protecting the environment is to provide adequate information flow between the various entities that have or may have an influence on the environmental status. The business entities' reporting of data on the effects of their impact on the environment and the actions taken to improve the environment is one of the main forms and areas of information flow in this regard. Environmental reporting includes both mandatory and optional disclosures, addressed to a wide range of stakeholders (governmental, international, social organisations, financial institutions, etc.). Furthermore, environmental protection measures depend to a large extent on the scope and quality of the information transferred. On the other hand, environmental reporting is the result of political decisions and legislative processes in the form of directives, standards and legal solutions in each country. In the context of this interaction, the question that arises is the factors that influence the quality of environmental reporting.

The aim of the paper is to identify and propose an authorship, multidimensional and multifaceted classification of factors affecting the reporting of environmental data by business entities. The authors refer to the situation in the energy sector in Poland. The energy sector is one of those areas of economic activity that is particularly liable to exert negative impacts on the environment. At the same time, in most countries, it is a strategic sector, often under a protective umbrella of state authorities. In Poland, the energy sector is closely linked to hard coal mining and is heavily burdened by social costs. This situation, according to the authors of the paper, requires a particularly wide spectrum of identification and organisation of factors affecting environmental reporting. The proposed original classification of these factors takes into account the specificity of the Polish energy sector.

## 2. Factors Influencing Environmental Reporting—Review of Research

Negative effects of rapid economic and technological development and changes in the way enterprises are perceived by society have led to the need to evolve the range of information presented by business entities. Information that identifies the problems emerging at the meeting point of the natural environment and the business entity (environmental information) is becoming increasingly important for stakeholders. On the other hand, mandatory and optional environmental reports as well as social, responsible business, sustainable development and integrated reports (Fijalkowska & Sobczyk, 2012; Habek & Wolniak, 2014; Vartiak, 2016) are the basic tools for environmental data communication.

Many studies are underway (Gamerschlag, Moller & Verbeeten 2011; Gray, Javad, Power & Sinclair, 2001), which show that the number of reports presenting environmental data is constantly increasing. The extent and manner of reporting the data varies from country to country, but the authors' analysis of the literature confirms that most of the determinants are the same (theoretical and empirical studies in Canada, Spain, Germany, the United States (Richmond, Washington), Colombia (Missouri), New Zealand, Greece, Holland, the United Kingdom, Australia, Poland and Pakistan).

It is often noted that the disclosure of environmental aspects corresponds to increasing stakeholder expectations (Adams, 2002; Ali & Rizwan, 2013; Fernandez, Junquera & Ordiz, 2006; Kolk, 1999;) and supports the enterprise in dialogue with its environment, demonstrating the specific effects of its engagement (Szadziawska & Paszkiewicz, 2011). Research in this area was conducted, inter alia, in Henriques and Sadorsky (1999). Based on surveys sent to 750 large companies, four key stakeholder groups were identified: regulatory (governments, trade associations, informal networks), organisational (customers, suppliers, employees and shareholders), community (community groups, environmental organisations and other potential lobbies) and media. Similar groups were distinguished in the research carried out in Kolk (1999), Gonzalez-Benito and Gonzalez-Benito (2006), in which they divided the stakeholders into primary and secondary. By disclosing information on

environmentally friendly operations, firms want to minimise the costs of interactions between the enterprise and its environment—defined as social or political costs (Fields, Lys & Vincent, 2001).

Adams (2002), based on his research conducted among British and German companies, believes that factors influencing environmental reporting are a combination of corporate characteristics, general contextual factors and internal context. Research conducted in Germany (Gamerschlag et al., 2011), based on the content of the information provided by the 130 largest listed companies, shows that firm's characteristics, such as company visibility, shareholder structure, profitability and industry membership are major contributors to the environmental data disclosure (Adams, 2002). He also lists other features such as size, age of the company, stock turnover and the decision-making horizon.

*The company visibility* makes business entities, being the core of stakeholders' interest, more vulnerable to the impact of social pressures than firms from the service sector (insurance and technology industry). In consequence, they have stronger incentives to reduce their political costs by informing about their corporate social responsibility. This is particularly true for consumer companies (consumer industry) and power companies. Greater interest in the presentation of environmental data by power companies results from Germany's ongoing debate on nuclear energy.

*Shareholder structure*—companies with a large, dispersed group of small shareholders give more environmental information, because direct communication is difficult. Companies with a few large shareholders (family businesses) have little incentive to disclose environmental data and, as the studies show, usually confine themselves to mandatory requirements.

Another factor is profitability (Ali & Rizwan, 2013; Roberts, 1992). Companies that present high profitability must show in their reports that they operate within the framework of the accepted social standards. In addition, profits provide managers with resources from which the costs of disclosures are financed.

Research has shown that the company's relationship with its American stakeholders has a positive impact on the environmental aspects disclosed. This is due to the fact that there are more incentives in the USA for companies to disclose their corporate social responsibility (Matten & Moon, 2008). Industry membership is also a factor mentioned in Darrell and Schwartz (1997), Hackston and Milne (1996), Roberts (1992).

The analysis of annual reports of the top 50 companies listed on the New Zealand Stock Exchange has shown that *the size of a business entity* is another feature affecting environmental disclosure (Hackston & Milne, 1996). This feature is also cited in Cowen, Ferreri and Parker (1987), Giannarakis (2013), Gonzalez-Benito and Gonzalez-Benito (2006), Ali and Rizwan (2013), Adams (2002), Roberts (1992). Both the agency theory and the legitimacy theory argue for this relationship (Hackston & Milne, 1996). As large companies have greater influence on the society, they may have more employees involved in social programmes, and therefore more environmental data (Jupe, 2005). However, not all studies support these relationships (Roberts, 1992). The internal characteristics of the company supporting the presentation of environmental data include internationalisation, position in the value chain, managerial attitude and incentives, and strategic attitude (Gonzalez-Benito & Gonzalez-Benito, 2006).

Another group of factors include general contextual factors (Adams, 2002)—the country of origin, political, social, cultural, economic context, pressure groups and media. It is believed that different types of external pressures are particularly consequential in presenting environmental data—of NGOs, academics and other standards-setting bodies, industry associations, the media, governments, international competitors operating in the same territory and community expectations (Ali & Rizwan, 2013; Islam & Deegan, 2008; Roberts, 1992). The internal pressure includes the ability to attract ambitious and highly qualified employees, the need to support internal processes of accountability management (Szadziwska, 2013), motivation and attitude of executives and position in the value chain. According to Adams (2002), the internal factors comprise, among others, the following: characteristics of the company's leader, qualifications of the supervisory board and social reporting

committee, corporate structure as well as management procedures, extension and nature of stakeholder involvement and enlargement of accountants' engagement.

The literature (Serra, Albernaz & Ferreira, 2007) calls for special attention to be paid to senior executives, especially environmental managers, whose role in the presentation of environmental data is crucial (Fernandez et al., 2006). The management takes a certain position in terms of external and internal pressures. The sense of responsibility for these pressures is related to specific actions that, in turn, contribute to the economic effects (profit and market share) and the environment (e.g., lower level of waste). Fernandez, Junquera and Ordiz (2006) point to the specific characteristics of the manager that influences actions taken concerning the environment and these include, among others, internal environmental motivation from which it is clear that external and internal economic benefits will be received as a consequence of their behaviour.

Internal and individual values, individual emotional commitment and personal managerial potential are additional features that influence environmental decision-making and reporting of data related to them. However, the need for co-operation with employees results in the need for managers to have interpersonal and communication skills. It is important for the Director for Environment to be a 'main leader', to have organisational skills and decision-making skills (Fernandez et al., 2006), especially the ability to influence an environmental business strategy. Behavioural factors moulding environmental behaviour are also highlighted in Stern (2010), Ali and Rizwan (2013), Thoradeniya, Lee, Tan and Ferreira (2012), Campbell (2000), Fernandez et al. (2006). Behaviour influencing environmental policy affects the environment indirectly, but it may be more important than the factors that directly affect the environment (Stern, 2010). In turn, specific types of behaviour are shaped by stable, central personal values, ecological worldview, belief that environmental conditions threaten individual values and the ability to reduce risk. According to research conducted by this author, personal moral norms are the cornerstone of pro-environmental activities and consequently affect the presentation of environmental data. Additionally, this author recognises the following as significant causal variables: attitudes (perceived costs and benefits, general environmental predispositions, specific behavioural norms and beliefs), personal opportunities (social status, financial resources and specific skills), external or contextual forces (interpersonal influences, social expectations, awards, law and regulations, available technologies and advertising), habits and routines. Similar factors affecting the presentation of environmental data have been distinguished in (Thoradeniya, Lee, Tan & Ferreira, 2012). In her research, she emphasises, inter alia, managers' psychological variables that include attitude, subjective norm and perceived behavioural control, level of education and religious diversity, and the intention to engage in environmental activities. Differences in the perception of reality by different managers of the entity are reflected in the disclosure of CSR data, as discussed in Campbell (2000).

As illustrated by the above analysis, the discussed authors, while investigating the factors affecting the presentation of environmental data, have sought to create a comprehensive, coherent system of them, as well as analysed the individual factors.

### **3. Classification of Environmental Reporting Factors on the Example of the Energy Sector in Poland**

The review of the research results in the first part of the paper points to the wide variety and dispersion of the issues affecting environmental reporting. Their ordering requires the adoption of specific classification perspectives. The authors of the proposed classification have paid particular attention to the situation of power companies in Poland.

According to the authors of the paper, one of the main drivers of the classification of factors is the overall social situation of the country. Prosperous, well-educated societies generally have high environmental awareness, or the sense of need to care for the environment via different instruments. One of such instruments is the analysis and control of environmental data reported by various institutions and business entities. Social pressure in this area is felt by government bodies and

institutions, as well as financial institutions and business entities in many countries. It is worth noting here that less developed countries, which have a full-fledged tourism industry based on the state of the environment, also have high environmental awareness.

In the group of social factors, the following can be indicated: the level of education of the citizens, the tradition of the country and cultural and religious factors. Social activity within NGOs and various types of associations is also important. This is based on good social communication at the national and international levels. In the authors' opinion, traditional media, the Internet and social platforms are of fundamental importance in this respect (Davidaviciene, Pabedinskaite & Davidavicius, 2017). Facilitated access to the media activates the public and raises the awareness in ecological terms. Social lobbying can influence the adoption of legislative solutions for environmental disclosure. Factors classified as social factors generally indirectly influence the quality of environmental reporting.

The second group of factors include macroeconomic factors. In this group, a scientific factor is of particular importance. National and international environmental reporting solutions are crucial for the direction and results of scientific research, particularly as regards the effects of the exploitation of natural resources and the production of energy. In the case of the energy sector, such directions can be sources of renewable energy, biofuels, etc. The results of research should form the basis of the detailed legal solutions adopted by business entities, inter alia, CO<sub>2</sub> emissions, ways and costs of land reclamation of excavation sites, etc.

Financial factors are related to the use of certain technologies in a given industry and the degree of readiness of state bodies and institutions to disclose their financial and non-financial implications. Reporting of environmental data has implications for a given industry for generating national income, developing revenues and expenditure for current and future state budgets. The energy sector is a strategic industry from the point of view of the functioning of the country and one of the most important in terms of its economic situation (Stjepcevic & Siksnelyte, 2017). The social costs of changes in a state's energy policy, such as employment issues and the share of international capital, are also important in this case. It is worth emphasising that the Polish energy sector is predominantly based on hard coal, which has specific environmental consequences. In recent years, power companies have become the owners of coal mines, which leads to the fact that the situation in the mining sector influences the results reported by power companies (Government Information Centre for the Energy Market [www.cire.pl](http://www.cire.pl)).

In the group of macroeconomic factors, geopolitical factors are of paramount importance. These include transnational connections, alliances, political and economic unions, as well as the decisions of their bodies on environmental protection. Natural resources are also an important factor in this group (e.g., whether a country has coal deposits).

At the macroeconomic level, the legislative dimension is very crucial, in which the results of research, policy, financial opportunities and goals are centred in practice. Legal solutions for environmental reporting may be international (e.g., in the form of adopted directives, standards) or refer to the national level. Within the framework of national solutions, legal solutions can be developed for all entities or for entities in specific industries.

The third dimension of distinguishing environmental reporting factors is the microeconomic level. Various factors related to the functioning of a particular economic entity can be distinguished here, including the adopted management model of the entity. It is important, among others, to what extent—in the adopted management model—the emphasis is placed on environmental issues, such as actions aimed at removing the adverse effects on the environment, interest in implementing new technologies, and striving to create an image of the environmentally responsible entity in relation with the local community. These factors can turn out to be crucial when deciding on the scope and nature of disclosures in areas where the law does not impose solutions and leaves the ways of how to disclose information at the discretion of business entities.

The size of the entity and its organisational as well as legal form are also crucial as they may determine the application of specific legal solutions. Another pivotal factor is the fact of being active in a specific industry, and it is especially true for industries at risk of contributing to environmental damage. It is worth emphasising also the visibility of a given entity, related, among others, to its size, specificity of activities, etc. The entities that are in the focus of the stakeholders of environmental reports are subjected to additional pressure and social control.

The financial position of an enterprise can be consequential for the proper reporting of environmental data, especially the structure and degree of capital concentration, including the presence of foreign capital and financial results. Within this group of factors, it is particularly important whether an entity has the financial means to change the technology used to be more environmentally friendly and whether it is encumbered with social costs such as workers' employment. In Poland, power companies have become the owners of coal mines, which results in a significant impact on the performance of mining companies. In this way, the energy sector also took over the social costs of the hard coal mines in Poland owned by the state treasury.

The interest of the management and supervisory bodies is a separate factor. A manager may not be interested in disclosing environmental data that is unfavourable to the entity, as it may be perceived by owners and supervisory bodies as a manifestation of inefficiencies and unprofessionalism in the management. Frequent changes in the composition of the board and supervisory bodies may also affect the scope and nature of disclosures with highlighted errors or negligence of predecessors. Too much freedom in the disclosure of environmental data allowed large dispersion of information (in various reports), encouraging the intentional actions of managers. They may adopt the principle that they will disclose only beneficial data and omit the others. And if there is a legal obligation to disclose unfavourable information, they may do so in such a way that the stakeholder has difficulty in combining and interpreting intentionally dispersed data.

Other typical behavioural factors such as competence, knowledge, experience and incentive systems within the remuneration of managers are also included in this group of factors.

One of the factors of this nature can also be the culture of management of business entities and the sense of responsibility of managers towards environmental problems. This factor may be particularly important in countries that have undergone systemic and economic transition (Vveihardt, Andriukaitiene & Grancay, 2015, pp. 494–514). Poland is one such country.

The classification of factors influencing environmental reporting is presented in Table 1.

Table 1. Classification of factors influencing environmental reporting

Group of factors	Sub-group of factors	Factors
<b>Social</b>	Standard of living	Education; national income per capita and other macroeconomic indicators of the level of wealth of the society; social status; media; lobbying; social communication; social activity—ecological movements.
	National characteristics	Traditions; cultural factors; religious factors.
<b>Macroeconomic</b>	Scientific achievements	Fields of research; results of research; ways of disseminating research results; outlays on research into natural environment protection.

	Geopolitics	Alliances; international political and economic unions (strategies, decisions on the natural environment); natural resources of a given country, region.
	Finance	Importance of a given industry in generating national income; share of the industry in the state budget (revenues, expenses); social costs of technology change in strategic industries (e.g., mining, energy, chemicals) related to the level of employment; investment attractiveness in specific industries; level of penalties as well as financial and operational monitoring in respect of entities destroying the environment; level and quality of reporting in a given country.
	Legislature	Legal solutions at national and international level regarding the scope and manner of environmental disclosures; international standards for financial and non-financial reporting; adopted directives.
<b>Microeconomic</b>	Ways of managing business entity	Adopted management model; organisational and legal form of business entity; business entity or capital group, holding structures; earnings management strategies; ownership structure/state treasury companies; internal control.
	Financial standing of business entity	Level and structure of equity; financial result; share of foreign capital; necessity to acquire an investor; reducing operating costs to increase profits.
	Characteristics of business entity	Size of the entity measured by the number of employees, total assets, revenues; situation of competition entities; membership in a particular industry; visibility of business entity.
	Advantages for managers	Structure of the board and supervisory body; changes in the board and the supervisory body; incentive system within remuneration of managerial staff; use of environmental reporting as marketing.
	Individual qualities of managers	Education; qualifications; work experience; willingness to take risks; age; culture of management.

Source: Own elaboration

#### 4. Conclusion

The reliability, manner and extent of reporting of environmental data by business entities can significantly influence further action by state authorities, financial institutions and various social organisations. The decisions made by them may depend on the quality and scope of this reporting. At the same time, the current legal status of reporting requirements in which environmental data is contained affects the quality. This feedback certainly makes it difficult to come up with solutions that

take into account the varied needs for environmental information. According to the authors, legal solutions adopted at the international and national levels are important for proper reporting of environmental information. These in turn depend on the correct and up-to-date identification of the factors that must be taken into account while making this law. The authors of the paper have proposed an original, novel classification of environmental reporting factors so far not found in the literature that accounts for different environmental dimensions and issues. One of the groups of factors rarely tackled in the literature that have a growing importance for the quality of environmental reports are behavioural factors. They are often associated with the management of business entities. Their effects are difficult to recognise and can also be very difficult to interpret. This group of factors may be of particular importance in countries that have undergone economic transformation.

According to the authors, the classification of factors influencing environmental reporting should be a mandatory stage while adopting certain models of environmental reports developed for industries selected as particularly liable to exert adverse effects on the environment. The theoretical basis for this classification provides an opportunity to analyse the factors affecting the shape and scope of the CSR activities carried out by business entities.

It is considered that the proposed classification enhances the descriptive power of future models presenting CSR activities, especially in the energy sector. In the case when the energy sector is based on coal deposits, which takes place in Poland, the sector is closely linked to mining. These sectors, in such countries as Poland that have large deposits of hard coal, are additionally burdened with high social costs, which translate into decisions at the government level in this respect. The scope and manner of reporting by entities that belong to these sectors should be defined in the legal regulations. Leaving business entities with too much discretion in this area can lead to an instrumental approach to this issue on the part of senior management, which may include the avoidance of disclosing unfavourable information and the exposure of non-material information from a content point of view, treated as a marketing component.

The presented analysis of factors influencing environmental reporting is the first step in the author's research aimed at developing a model for acquiring environmental information by business entities.

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