

# Environmental Management Systems in the Context of Sustainable Development – the Identification of Open Problems

## Systemy zarządzania środowiskiem w kontekście zrównoważonego rozwoju - identyfikacja otwartych problemów

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### Abstract

The cognitive objective of this paper was to establish the roles played by standardized environmental management systems in the process of the sustainable development of an organization. At present this process is analysed mainly in the context of the UN Sustainable Development Goals formulated within the scope of the 2030 Agenda for Global Action. The main research method used by the authors was a systematic literature review. The result of the conducted review was the identification of motives and conditions for the implementation of environmental management systems as well as advantages and disadvantages resulting from such implementation. The authors also indicated the major causes of failures in the introduction and improvement of systems consistent with the ISO 14001 standard and presented conditions determining their successful implementation. In the final part of the paper, they included recommendations for further research directions in the examined problem area.

**Key words:** ISO 14001, sustainability, environment, management

### Streszczenie

Celem poznawczym artykułu jest określenie roli znormalizowanych systemów zarządzania środowiskiem w procesie zrównoważonego rozwoju organizacji, który obecnie analizowany jest głównie w kontekście konkretnych Celów Zrównoważonego Rozwoju ONZ, opracowanych w ramach globalnej Agendy 2030. Główną metodą badawczą wykorzystaną w pracy był systematyczny przegląd literatury. Zidentyfikowano motywy i uwarunkowania wdrażania systemów zarządzania środowiskowego oraz określono korzyści i niekorzyści wynikające z ich implementacji. Wskazano również najważniejsze przyczyny niepowodzeń wprowadzania i doskonalenia systemów zgodnych z normą ISO 14001 oraz określono warunki udanych implementacji. W końcowej części artykułu określono postulowane kierunki dalszych badań w rozpatrywanym obszarze problemowym.

**Słowa kluczowe:** ISO 14001, zrównoważoność, środowisko, zarządzanie

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### 1. Introduction

Intensifying environmental problems, social pressure, regulatory frameworks, and considerable attention paid to social responsibility force business enterprises to face the challenges of sustainable development (Borys, 2011; Taherdangkoo et al., 2017).

The global and dramatic scales of the problem have been made manifest by two recent reports prepared by the United Nations Organization's Intergovernmental Panel on Climate Change (IPCC): *The Fifth Assessment Report* (AR5) published in 2014 (UNDP, 2015) and *Climate change and land* (Climate, 2019), a special report released in 2019. The

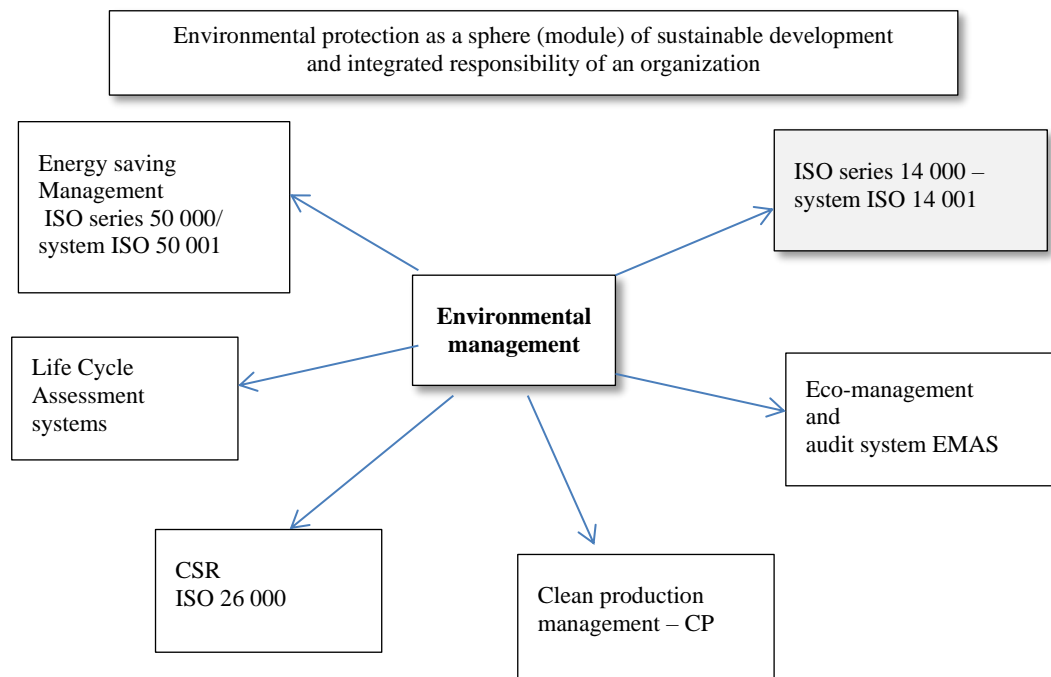


Figure 1. A basic systemic approach to environmental management, source: the authors' own work

conclusion common for both documents is that if the planet and its climate are to be saved, mankind has to replace its current lifestyle by a more pro-environmental one.

An even broader context for this demand is constituted by *Transforming Our World: The 2030 Agenda for Global Action – 2030* (Document, 2015), a document adopted by the UN in 2015. At present it is the leading global strategy, which replaced the Millennium Development Goals established in 2000. The Agenda is the most important point of reference for individual national strategies emphasizing the features of the new development paradigm (a sustainable development strategy) or its subjective sense (an intelligent and/or responsible character of development) (Document 2015).

A considerably positive role in such replacement processes can be played by pro-environmental behaviours at the microeconomic level of particular organizations (business enterprises, public administration units, etc.). Pro-environmental behaviours should complementarily combine the following three approaches:

- the educational approach based on inspiring people to change their awareness towards embracing pro-environmental behaviours;
- the economic approach assuming a complete internalization of external environmental effects (Ahmad, Shoeb, 2015);
- the managerial approach introduced by using various techniques, methods and systems of managing the environment.

It is the third approach that constitutes the subject matter of the analyses conducted in this paper, with

special emphasis placed on the role of the trend towards standardization in the development of environmental management systems. In the past dozen or so years this trend has been spreading dynamically and exerting substantial influence on the majority of management systems. The prevalence of the standardization of human activities in the current civilization is described, among others, in the book entitled *Management Systems in the Standardized World* (Łańcucki, 2019).

It should be noted that systems or strategies making up environmental management constitute an increasingly large group of environmental protection instruments used at the microeconomic level. This is illustrated in Figure 1.

Obviously, the systems and strategies included in Figure 1 do not exhaust the whole set of operational tools or concepts introducing or supporting environmental management. This set also comprises such pro-environmental practices as green supply chain management, green human resources management, green public procurement, or the closed circuit concept. These managerial practices also convey well the gist of the principles of the green economy (Żak, 2015).

Among environmental management systems, four systems present a strategic approach to environmental issues: two systems standardized according to the ISO 14 000 standards, one energy management system based on the ISO 50 000 standards, and a non-standardized system defined in the EMAS Regulation. Experts are of the unanimous opinion that the leading role is played by the environmental management system built in accordance with the interna-

tional ISO 14001 standard (Habakuk et al., 2016; Puciato, Goranczewski, 2011; Sardana et al., 2018), which is a key element in the considerable set of standards marked as ISO 14 000 (cf. Matuszak-Flejszman, 2019). After the quality management system, it is currently the second most popular standardized management system, and the number of acquired ISO 14001 certificates is growing constantly (Neves et al., 2017; Suzana et al., 2017).

Although the popularity of systems based on the ISO 14001 standard is still lower than that of quality management systems, the question arises about the causes of so many entrepreneurs being persuaded to invest in the implementation, maintenance, and potential certification of an environmental management system based on the ISO 14001 standard. This paper is an attempt to answer the aforementioned question.

There is broad consensus that the essence of an environmental management system compliant with the requirements of the ISO 14001 standard is ensuring an organization's continuous development in the field of environmental management, and the objective of such a system is to minimize negative impact on the environment.

Following the phenomena described above, the recent years have witnessed a growing number of publications on environmental management systems. They discuss problems connected with the environmental, social, economic, and organizational aspects of the sustainable development of business enterprises (Adamczyk, 2001; Arena et al., 2012; Zhang et al., 2014). Nevertheless, few of them are critical works indicating, for example, the advantages and disadvantages of implementing such systems, the causes of failures in their implementation, or the potential areas of their improvement towards sustainability. The bridging of these research gaps is the main task of this paper, while its cognitive objective is to establish the roles played by standardized environmental management systems in the process of the sustainable development of an organization.

## 2. Research methodology

The main research method used by the authors was a systematic literature review. The literature on the subject was reviewed in the course of the following stages: (1) selecting key words: ISO 14001, sustainability, environment, management, (2) searching for works containing the identified key words in the following databases: Academic Search Ultimate, including Business Source Ultimate, Education Resources Information Center, AGRICOLA, Open Dissertations, Green FILE, Newspaper Source, and Google Scholar, (3) becoming familiar with the returned publications, (4) reviewing the publications, (5) preparing a map of the available literature, (6)

summarizing the selected publications, and (7) arranging the collected research material. The applied procedure is consistent with the general methodology of conducting research (Creswell, 2013; Easterby-Smith et al., 2015) and the methodology of research in management sciences (Easterby-Smith et al., 2015),

The main goals of the conducted literature review were to identify the following: (1) motives and conditions for the implementation of environmental management systems, (2) advantages and disadvantages resulting from the use of environmental management systems, (3) major causes of failures in their implementation, (4) improvements in environmental management systems towards sustainability, (5) conditions of the successful implementations of environmental management systems, (6) research gaps in the analysed area of knowledge, (7) directions of further research.

## 3. Environmental management systems and sustainable development of business enterprises

On the date of the preliminary survey the queried databases contained 21 articles in which the following two key words dominated: ISO 14001 and sustainability. The extension of the scope of search by the databases ERIC, Green FILE, Open Dissertations, and Newspaper Source resulted in further 23 publications, including 18 peer-reviewed academic papers.

An analysis of the content of the indicated literature showed the existence of relations between environmental management systems and sustainable development. Arena et al. (2012) showed that an environmental management system consistent with the ISO 14001 standard was important for sustainable development because it often constitutes the main instrument used to achieve sustainable development of an enterprise (Boroń, Kosiek, 2019; Zhang et al., 2014). Salim et al. (2018) proved on a documentary basis that the ISO 14001 standard contributed to the necessity of organizational commitment to sustainable manufacturing processes. In many business enterprises, persons responsible for the environmental management systems also take care of their sustainable development (Millward, 2009; Whitlock, 2016). Poltronieri et al. (2018) showed furthermore that the use of integrated management systems was of particular importance in the effective implementation of sustainable development principles. The process of creating such systems consists in integrating particular elements of formalized management systems, while integration itself means a combination of at least two systems – ISO 9001 and ISO 14001, or more and more often three systems – ISO

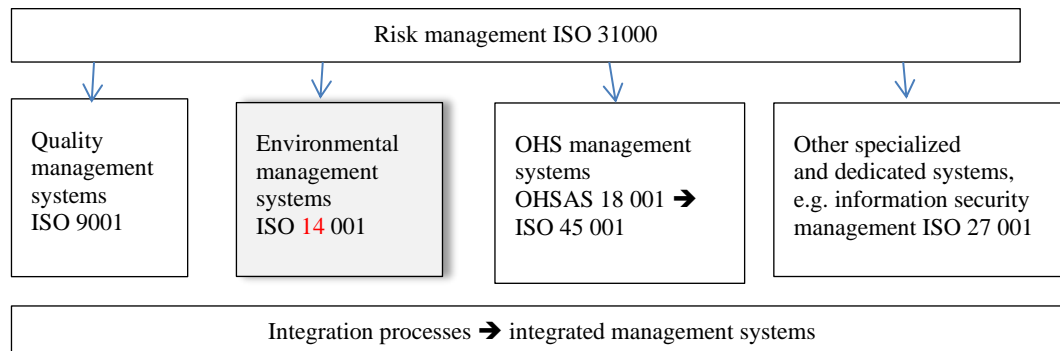


Figure 2. An environmental management system in the process of integrating specialist dedicated management systems, source: the authors' own work

9001, ISO 14001 and OHSAS 18001 (ISO 45001)<sup>1</sup> with an important role in the process of integration played by risk management (cf. Fig. 2) (Kafel, Sikora, 2011, p. 5).

The conducted literature review allowed the authors to identify a few key research areas, including the following:

- 1) motives and conditions for implementing environmental management systems (Arena et al., 2012; Habakuk et al., 2016; Kassolis, 2007; Simpson et al., 2014),
- 2) advantages and disadvantages of implementing environmental management systems (Graafland, 2018; Habakuk et al., 2016; Khor, et al., 2013; Li et al., 2016),
- 3) actions that organizations may take with a view to strengthening environmental management systems (Hojnik et al., 2018; Jabbour et al., 2015; Li et al., 2016),
- 4) attempts at combining an integrated system of managing quality, environment, occupational health and safety with the Responsible Care programme functioning in the chemical industry (Khair et al., 2018).

Continuing the literature review, the authors found that the selected databases returned an impressive number of over 28000 records indicating articles on various environmental aspects and the concept of sustainability in the practice of organizational management, with the decisive majority of them pertaining to natural resources (e.g. water) management or describing activities undertaken by public institutions rather than business enterprises.

The analysed publications included also three other issues important in the context of this paper's objective and tasks. The first of them concerns factors and motives influencing the implementation of environmental management systems, methods and tools in organizations (Huang et al., 2011; Ibrahim et al., 2019; Kothari et al., 2018; Neves et al., 2017; Rola

et al., 2013; Roxas et al., 2012; Sardana et al., 2018; Taherdangkoo et al., 2017). Described analyses comprised concrete internal (e.g. organizational) factors, external factors (e.g. institutional and political solutions), and conditions facilitating the implementation of the concept of sustainable development in value chains (Skowrońska, 2009). The second issue pertains to conditions determining pro-ecological organizational management methods (Craig et al., 2013; Opon et al. 2019; Schuler et al., 2017; Jain et al., 2018; Chen-Lung, Chwen, 2007; Dai et al., 2017; Ahmad, 2015; Sardana et al., 2018; Silvestre et al., 2017; Pinto et al., 2018). The third issue is related to the application of environmental management systems in enterprises representing various business sectors (Hoffrén et al., 2009; Kothari et al., 2018).

#### 4. Motives and conditions for implementing environmental management systems

The literature review made it possible to distinguish key motives and conditions for the implementation of environmental management systems. It should be noted that such motives are in fact expected (potential) benefits from the introduction of such systems. Thus, the preliminary findings indicate that the main motives include the following:

- an image-related motive: an expected improvement and/or a more effective creation of an enterprise's positive public image (Arena et al., 2012; Graafland, Johan, 2018; Jovanovic, Janjic, 2018); publishing information on the effects of efforts aimed at reducing environmental impact helps to create a positive image of an enterprise for the public, thus improving its market position (Arena et al., 2012; Habakuk et al., 2016; Simpson, Sroufe, 2014);
- a motive resulting from the awareness of compliance with environmental protection regula-

<sup>1</sup> ISO 45001 is the first internationally recognized standard applicable to occupational health and safety systems. It is to replace the OHSAS 18001 standard, which will be withdrawn on 12 March 2021. It means that as of this date all

organizations holding currently valid OHSAS 18001 certificates, in order to maintain their continued validity, will be obliged to update their systems to meet the requirements of the ISO 45001 standard.

tions: more and more attention paid to good reputation and compliance with environmental protection regulations, including the necessity of reducing the emissions of carbon dioxide and the consumption of fossil fuels (Habakuk et al. 2016; Neves et al., 2017); this motive results from the necessity of ensuring the achievement of the required legal status with respect to environmental protection; one of the important recommendations of the ISO 14001 standards is to identify legal requirements binding for an organization; therefore, it is difficult to overestimate the motivational significance of legal and administrative regulations whose cognitive, regulatory and normative elements of an institutional environment are strongly connected with positive attitudes of managers towards environmental sustainability, which, in turn, exerts a positive influence on the environmental sustainability orientation (ESO): the knowledge of environmental issues, sustainable practices, and commitment to sustainable development (Roxas, Coetzer, 2012);

- a motive related to ecological awareness: this motive focuses on responsibility for the environment and increased ecological awareness is more and more emphasized in the literature on the subject (Arena et al., 2018; Tocan, 2016); it also appears in the contexts of both the importance of employees' ecological education and CSR;
- a motive concerning better adjustment to market requirements, including increasing awareness of the necessity of implementing a strategy of ecological marketing (Zaremba-Warnke, 2009), ensuring effective reactions to questions and pressure from customers, and improving an organization's ability to compete with businesses holding ISO14001 certificates (Arena et al., 2012; Simpson, Sroufe, 2014); the implementation of a system is regarded as a response to pressure from business partners connected (Ibrahim et al., 2019; Rola et al., 2013),
- an information (identification) motive from the knowledge management area: what is emphasized is a plan to introduce a system of knowledge, convictions, and interests of owners (Simpson, Sroufe, 2014; Habakuk et al., 2016),
- an economic motive: it results from the awareness of conducting economic calculations and a certain economic compulsion to curb increasing environmental fees, improved opportunities for obtaining funds from external sources, cost reduction (Arena et al., 2012; Huang et al., 2011; Jovanovic, Janjic, 2018; Tocan, 2014).

The most important conditions determining the successful implementation of environmental systems are the following:

- the type and size of an organization – research shows that larger, multinational, mainly indus-

trial enterprises active in export markets are to a larger extent obliged to follow environmental management practices (Urban et al., 2012),

- the level of revenues – businesses with high revenues are the most interested in acquiring environmental certificates (Hoffrén et al., 2009; Singh et al., 2014),
- the necessity to adjust to prevailing conditions, including institutional ones – business enterprises usually declare that ecology and sustainable development constitute no problems for them, but in practice few of them carry out activities aimed at improving ecological efficiency (Huang et al., 2011; Neves et al., Hoffrén, Apajalahti, 2009; Roxas et al., 2012; Taherdangko et al., 2017).

## 5. Advantages and disadvantages of using environmental management systems

The identified group of expected advantages generating motivation for the implementation of a system based on the ISO 14001 standard can be referred to as *ex ante* advantages (usually formulated before system implementation). This part of the paper focuses on identifying *ex post* advantages, that is ones that appear within the functioning processes of an ISO 14001 standardized system. The literature review revealed a few groups of advantages resulting from the implementation of an environmental management system for employees, suppliers, customers, and other stakeholder groups. They are as follows:

- managerial advantages: it is the largest group of the identified advantages. Thanks to the implementation of the requirements provided for in the ISO 14001 standards, it is also possible to pursue successfully strategic economic objectives of an organization, maintaining simultaneously compliance with the principles of environmental protection (Dai et al., 2017),
- environmental advantages (for the environment / its protection) and advantages in the area of environmental risk management; the literature on the subject stresses that organizations holding ISO 14001 certificates cope with environmental problems better than those that have not implemented and certified an environmental management system (Li, Hamblin, 2016),
- advantages related to efficiency: system implementation is followed by improvement in economic and environmental (sozoeconomic) efficiency consisting in lower environmental fees, reduced negative impact on the environment, etc. (Jovanovic, Janjic, 2018).

Among the identified disadvantages, the following should be indicated:

- the necessity of incurring additional costs and encumbering employees with additional tasks at

- the stage of system implementation (Habakuk, Gurvits, 2016),
- the risk of failure to implement an environmental management system – despite implementing a system based on the ISO 14001 standard, some organizations fail to lower the volume of wastes, to reduce ecological costs (Dejkovski, 2016; Graafland, 2018; Khor, Udin, 2013; Rino et al., 2017; Sumiani et al., 2015).

#### 6. The most important causes of system implementation failures

As a result of the conducted literature review, the authors distinguished a few groups of reasons for the unsuccessful implementation of environmental management systems. The most significant of them are as follows:

- limited ecological knowledge and awareness: some groups of managers are still interested more in satisfying the expectations of stakeholders rather than acquiring environmental benefits (Rino et al., 2017; Santos et al., 2016; Simpson, Sroufe, 2014; Zhang et al., 2014);
- financial costs: a system implementation process tends to be difficult because of not only high certification costs but also the necessity of incurring high and unplanned capital expenditures and modernization costs (Kothari et al., 2018; Rino et al., 2017; Santos et al., 2016);
- organizational problems: limited and gradually decreasing motivation as well as a process of changes in an organizational culture that is too slow or misdirected (Santos et al., 2016), difficulties with managing key processes connected with the environmental aspects of carried out tasks (Lee et al., 2017), failure to emphasize the necessity of preventing wastage (Sumiani et al., 2015), or difficulties with fulfilling the criteria of the ISO 14001 standard itself (Kothari et al., 2018),
- disturbances in the pursuit of environmental objectives: although difficult to achieve within a short time, an increase in the level of eco-efficiency resulting mainly from reduced consumption of natural resources is an important indication of the correct functioning of an implemented system (Hoffrén, Apajalahti, 2009).

#### 7. Improvements in environmental management systems towards sustainability

Researchers propose various actions aimed at improving the effectiveness and efficiency of environmental management systems. The most important of them include the following:

- environmental training programmes organized to increase employees' awareness of environmental issues (Jabbour et al., 2015; Rino et al., 2017),

- accurate identification of environmental factors, encouragement to develop advanced technologies facilitating pollution monitoring (Zhang, et al., 2014),
- establishment of procedures concerning: environmental objectives and their operationalization, pollution reduction, periodic internal audits, commitment of all employees, assessment of environmental results, and managerial reviews (Fura, 2012).

The conducted research indicates that some organizations also undertake system improvement actions exceeding the requirements specified in the ISO 14001 standard. The most common of such actions are as follows:

- integrating all management systems functioning in a given organization, e.g. pollution prevention, life cycle assessment, environment management information system, green supply chain, environment performance evaluation and other management tools (Khor, Udin, 2013; Kumar et al., 2008);
- implementing eco-innovations with particular emphasis placed on process-related innovations (Hojnik et al., 2018; Li, Hamblin, 2016; Zhang, et al., 2014);
- carrying out pro-ecological investment projects – both *hard* ones aimed at infrastructure development and *soft* ones focused on human resources (Rino et al., 2017),
- improving an organizational culture towards environmental friendliness (Li, Hamblin, 2016).

#### 8. Conditions for successful implementations of environmental management systems

The performed literature review shows a rather clear picture of conditions determining pro-ecological methods of managing organizations. Organizations need reliable data and high quality information to be able to decide which direction to choose, to be familiar with major environmental threats and opportunities resulting from the application of pro-environmental concepts and tools. The awareness of initiatives related to sustainable development goes hand in hand with the conviction that such development is important for an organization's success. Important internal sources include management, business meetings, and sustainable development reports. The popularizing function is fulfilled by professional and sectoral associations as well as partners in supply chains. What is necessary in this case is the integration of two global sustainable development perspectives, i.e. the pillars of sustainable development (environment, economy, society) and the objectives of sustainable development (Craig, Allen, 2013; Opon, Henry, 2019) (cf. Fig. 3).

It is not insignificant in the context of shaping the awareness of ecology, and the awareness itself may cause organizations not to act instrumentally, but to

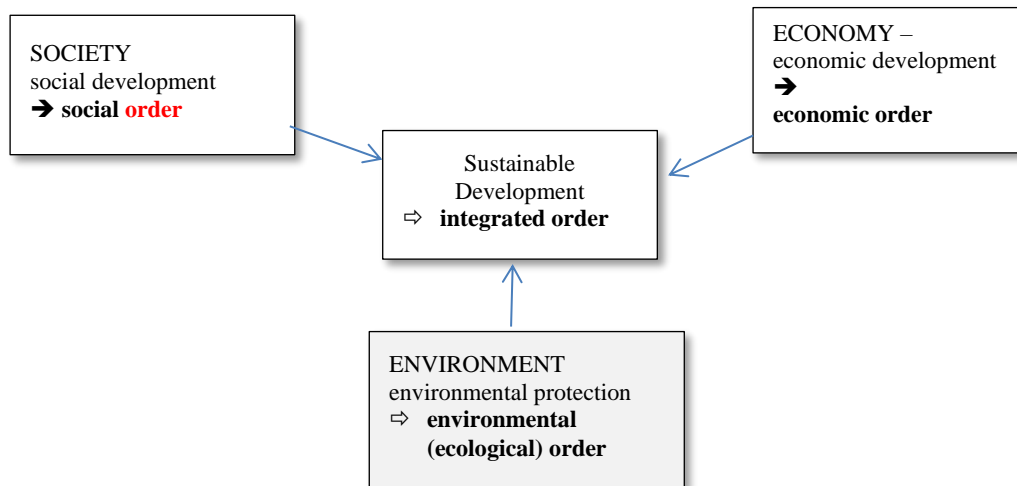


Figure 3. The pillars of sustainable development and the types of governance as target systems, source: the authors' own work based on (Borys, 2011)

pursue environmental management with a deep conviction about its rightness, effectiveness and efficiency, and also taking into consideration ethical principles (Schuler et al., 2017).

Describing actions undertaken by business enterprises, researchers should clearly distinguish between an instrumental understanding of sustainable development and an understanding recognizing the importance of sustainable behaviours, for example sustainable consumption of natural resources, the protection of the environment and its preservation for future generations, from the perspective based on the law and deep ecology, the latter appearing to be highly disputable. As Schuler et al. (2017) are correct to note, the current scientific discourse on sustainable development management, which is reflected in environmental management, in principle favours an instrumental approach towards sustainable development.

This is so because sustainable business practices are usually perceived as egocentric, i.e. based on a hard variety of anthropocentrism, and are conceptualized as a manner of achieving a competitive advantage. However, there is great demand for the ethical management of sustainable development of an organization, including for the appreciation of the autotelic value of nature (Rogall, 2010). Thus, people managing organizations have to be aware of benefits brought about by a closed circle economy (Jain et al., 2018) and well-functioning supply chains (Chen-Lung, Chwen, 2007; Dai et al., 2017).

If pro-environmental awareness is to increase, ordinary training events or allocation of responsibilities as recommended by the ISO 14001 standard no longer suffice. What should be followed is the principles of green human resources management (Ahmad, Shoeb, 2015; Sardana et al., 2018).

The public sector, including its institutions in both the subjective and objective meanings, also has an

instrumental role to play. Legal regulations need to be coherent, and entities responsible for their enforcement – effective (Liu et al., 2012; Silvestre et al., 2017). The concept of sustainable development requires holistic solutions comprising not only environmental practices, including an environmental management system, but also government policies, including a public procurement system. Various institutions often introduce their own regulations whose goal is to prevent events hazardous for the environment such as environmental breakdowns. They are to protect the environment, people and infrastructure. Enterprises use such recommended practices as a foundation for their management systems. However, various research and business practices show that these regulations lack uniformity. Another major problem is the ineffective enforcement of existing legal and normative requirements. For example, the subject matter of a certain analysis was environmental management practices followed by various organizations in Brazil, Russia, India, China and the RSA (BRICS) in the years 2011-2015. It turned out that China, India, the Republic of South Africa, and Brazil examine solutions in the area of CO<sub>2</sub> emission, while China, India and Brazil focus on water supply and water quality issues, regulatory standards for environmental management, and management practices related to green chain management (Pinto et al., 2018). An analysis of the results of the research conducted by the cited authors resulted in the following conclusion: the greater the importance of sustainable development in a given country, the greater the tendency towards presenting and publishing data on environmental management practices. This thesis explains why China, India, and Brazil tend to present papers on the subject of environmental management, while Russia and the Republic of South Africa are not able to follow this trend because of their weaker commitment to environmental protection.

## 9. Identified research gaps and recommended directions of further research

Looking into the motives and conditions for the implementation of environmental management systems, the authors noticed that two important aspects had not been addressed in previous research, namely relations with the environment and a dynamic approach to an organization. In fact, some research projects concerned relations between business enterprises and consumers in the context of examining their needs and expectations (e.g. Huang et al., 2011), but what was completely disregarded was the important topic of more and more businesses shaping their customers' consumption needs.

All published research results were of a cross-section character, thus they did not take into consideration change occurring in enterprises over time. Such a static approach to organizations is not sufficient in the context of examining the significance of environmental management systems for the implementation of sustainable development, which, by its nature, is a long lasting process. Furthermore, as Deming (1982) claimed, prospects for the continued existence of enterprises influence the ways in which employees are treated and the environment is protected. In general, businesses with short term perspectives are usually not interested in taking care of the environment or, with respect to management systems, exceeding the requirements of the 14001 standard, focusing exclusively on actions that are provided for in legal regulations.

The analysis of the conditions for the implementation of environmental management systems also showed that such systems were objects of interests of the following three types of entities: large industrial enterprises, small businesses with large revenues, and firms functioning as links within complex supply chains that are usually obliged to use such systems. At present, however, experts discuss to what extent formal management tools such as environmental reporting or ISO 14001 certification are appropriate for small and middle-sized enterprises. Some publications imply that such systems are not appropriate for this group of business entities, which seems to be a disputable argument. Research carried out by Graafland and Smid (2016) showed that only one in four small and middle-sized enterprises established goals oriented towards improving the condition of the environment.

Research on the advantages of implementing an environmental management system indicates mainly economic, particularly financial, and environmental advantages. Obviously, the introduction of process monitoring, environmental aspect identification, internal audits or environmental reviews favour the better protection of the environment. However, the dominant influence on the acquisition of advantages by an enterprise is its practice of establishing environmental objectives. Criterion 6.2.1 of the ISO

14001 standard points out the necessity of establishing such objectives. They are to be measurable, consistent with a strategy, communicated, and, if necessary, updated. In practice, however, there are many attempts to spread obvious environmental objectives over time. In fact, managers often do not want to achieve them, being exclusively interested in *satisfying auditors*.

Another problem requiring further attention and research is networking. Graafland (2018) wrote that previous research had disregarded possible mediators thanks to which environmental management systems based on the ISO 14001 standard could have a positive indirect influence on ecological results. ISO 14001 certification stimulates participation in external environmental networks, and such networks generate a positive impact on the ecological results of their participants.

The third noticeable issue in the area of advantages is that of an external context. Some previous research indicates the necessity of strategic environmental management (Taherdangkoo et al., 2017; Dai et al., 2017). The standard introduced in 2015 provides for the necessity of identifying the external context of an organization in the processes of system implementation and improvement. This requirement was not included in the previous standard adopted in 2008. Thus, the following questions arise: To what extent is an identification of an external context correct? Are the results of examining an external context taken into consideration in the formulation of environmental objectives?

Another important research gap seems to be related to the fact that the causes of failures in the implementation of environmental systems analysed so far are mainly of a secondary character. Proposals for new research directions within the context of the causes of failures in the implementation of environmental management systems are presented in Table 1.

In the authors' opinion, the knowledge of improvements made in environmental management systems should be supplemented with a few additional aspects. One of them is the role of an organizational culture in a system improvement process. Some research indicates a considerable importance of this role in the processes of not only the implementation but also maintenance and continuous improvement of environmental systems (Neves et al., 2017).

In the authors' opinion more attention should be placed on the effectiveness of integrated audits and environmental reviews, e.g. with respect to the criterion of employee participation. This is so because one of the current discussions aims to determine to what extent integrated (quality, environment, OHS) systems are more effective than non-integrated ones, but there is not enough knowledge of the effectiveness of audits themselves. The current state of knowledge allows the supposition that too many criteria taken into account in an audit hinder the process



Table 1. The primary and secondary causes of failures in the implementation of environmental management systems

Organizational systems	Primary causes	Comments
An organization's social system: the lack of ecological knowledge and awareness as well as motivation (Santos et al., 2016; Rino et al., 2017)	<ol style="list-style-type: none"> <li>1. Causes having their roots in improper people management processes (e.g. the lack of knowledge may entail wrong competence assessments, inadequate training methods, or the lack of any training activities).</li> <li>2. Causes rooted in the quality of interactions (e.g. a sense of fear hinders knowledge sharing processes).</li> <li>3. Structural causes (e.g. excessively complex functional structures hinder knowledge sharing processes).</li> <li>4. Systemic causes (in particular the lack of solutions concerning the shaping of ecological awareness).</li> </ol>	<ol style="list-style-type: none"> <li>1. Various modifying training programmes tend to be ineffective.</li> <li>2. The problem is the quality of knowledge rather than knowledge sharing.</li> <li>3. Awareness is also a criterion in the ISO 14001 standard itself, item 7.3.</li> </ol>
An organization's economic system: high costs of certification, costs related to possible modernization or investment projects (Kothari et al., 2018; Rino et al., 2017; Santos et al., 2016).	<ol style="list-style-type: none"> <li>1. Causes rooted in technology (e.g. impossibility of technology replacement; obsolete machinery).</li> <li>2. Causes rooted in the external context (e.g. a market situation that makes it impossible to generate necessary profits; the lack of knowledge of technological development; the lack of forecasts concerning customer needs and expectations).</li> <li>3. Causes rooted in value systems (e.g. a low level of business trust hindering investment processes).</li> </ol>	The mentioned secondary causes are less significant because: <ol style="list-style-type: none"> <li>1. Certification costs are falling because of the increasing number of entities offering certification.</li> <li>2. A certificate confirms only that an enterprise has undertaken to improve its system continuously and complies with all legal requirements. The duration of the process is not limited.</li> </ol>
An organizational system: the lack of a systemic approach, the failure to emphasize the prevention of wastage, problems with achieving eco-efficiency (Hoffrén et al., 2009; Kothari et al., 2018; Lee et al., 2017; Sumiani et al., 2015)	<ol style="list-style-type: none"> <li>1. Causes connected with the lack of knowledge leading to the incorrect identification of key processes as well as errors in operational control and the identification of environmental aspects.</li> <li>2. Causes rooted in process measurement errors, ineffective monitoring, or failure to carry out necessary analyses and measurements.</li> </ol>	Secondary causes can be eliminated by aligning environmental management systems with lean management principles.
Technological systems: the lack of adequate computer support tools (Zhang et al., 2014)	<ol style="list-style-type: none"> <li>1. The lack of the integration of distributed databases.</li> <li>2. The improper integration of existing management systems.</li> <li>3. The wrong identification of key measuring points.</li> </ol>	The lack of the integration of distributed databases causes also the appearance of the aforementioned problems in the social system.

of looking for evidence. Another pertinent question is whether reviews characterized by a high level of employee participation are more effective than those of a closed nature in which only top managers participate.

The role of supervisory bodies in controlling improvement processes, for example an assessment of an objectives achievement level or environmental indexes by a supervisory board, is another open research problem. The research conducted by Roxas and Coetzer (2012) has shown that an institutional

environment influences managers' behaviours. Nevertheless, the exercise of corporate governance exerts a profound impact on the improvement of environmental management systems.

The last proposed research theme in this area is the competence level of external auditors and the influence of identified irregularities and provided recommendations on system improvement. In practice, there are different qualification criteria for auditors and different accreditation levels of certification bodies. Thus, relations between an auditor and an or-

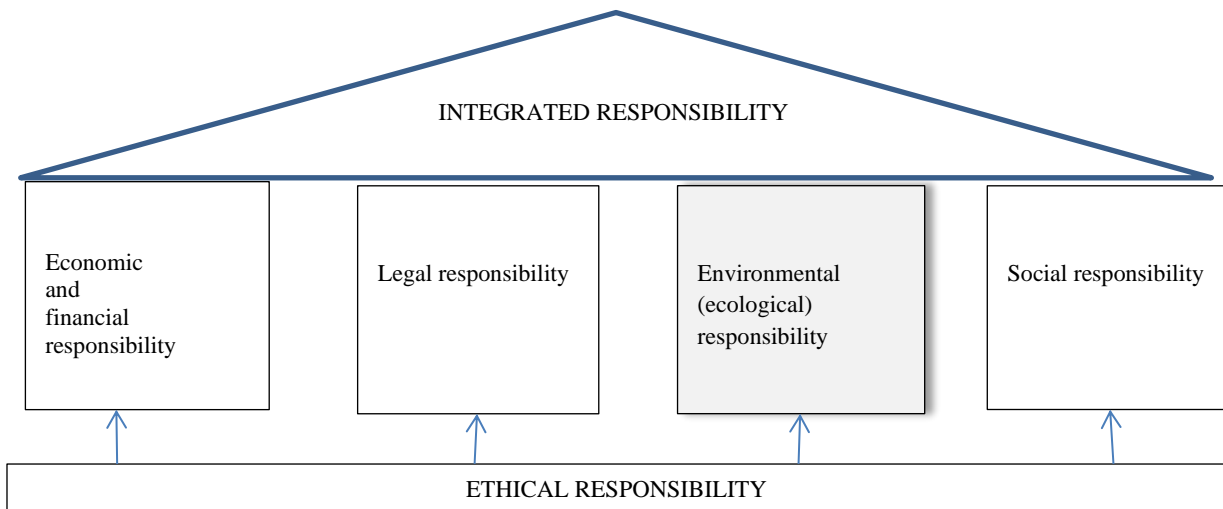


Figure 4. The place of environmental issues and ethics in the structure of integrated responsibility, source: the authors' own work based on (Borys, 2011)

ganization in the context of auditors' various interests and competencies also deserve in-depth empirical research.

With respect to conditions for a successful implementation of an environmental management system, attention should be paid to a few, often ignored, issues. One of them is a specific informational dilemma. On the one hand, the improvement of ecological awareness is facilitated environmental reporting (Craig, Allen, 2013), but on the other hand, it is usually accompanied by increasing concerns about possible leaks of precious knowledge, mainly that of a technological character. Analyses of environmental policies followed by business enterprises often indicate that the higher the level of technological advancement, the stronger the tendency to treat environmental objectives as classified.

Ethical environmental management should also be considered as an important research problem. This problem is closely connected with the scope of an organization's perceived responsibility and the function of ethical responsibility. One of the proposals concerning its integration with the other types of responsibility, including environmental responsibility, is *Integrated Corporate Responsibility* (Borys, 2011) (cf. Fig. 4).

The results of the authors' previous research (Bugdol et al., 2019) show that environmental behaviours are strongly influenced by appropriate leadership based on ethical values. Employees often follow and imitate their leaders, whose ethical attitudes sometimes have a greater influence on stakeholders than formal environmental management systems.

What also deserves special attention is the (intentional and non-intentional) causes of the growing interest in a closed circle economy. Observations conducted by the authors indicate that this interest results also from a sense of job insecurity or a threat of bad financial results. Looking for various ways of process optimization, insecure management boards

sometimes conclude that the only means of cost reduction is to introduce the principles of a closed circle economy.

Organizational games played among the participants of green supply chains may also constitute an interesting topic of potential future research. It is true that green supply chains are an increasingly popular research area (Ibrahim et al., 2019), but what tends to be disregarded in this process is inter-organizational relations connected, for example, with different interests and goals.

The last recommended research direction is the practices of green human resources management. The ISO 14001 standard contains relatively many criteria applicable to human management practices, e.g. responsibility, awareness, communication, or competencies. But there is a lack of research focusing on the influence of systems on the practice of green human resources.

## 10. Conclusions

Changes occurring in the natural environment are so serious and their dynamics is so great that what should be expected is the further intensification of actions aimed at building a sustainable society that harmonizes its behaviours in the economic, environmental, and social spheres. A considerable part of such actions has to be performed at the microeconomic level – in organizations responsible for the majority of the current environmental problems.

It seems that among all tools used currently in organizations to introduce the principles of sustainable development, environmental management systems are the most comprehensive and hence effective. Such systems can contribute to the shaping of pro-environmental behaviours in various groups of stakeholders such as employees, customers, or business partners.

Nevertheless, it should be remembered that besides many indisputable advantages resulting from the implementation of environmental management systems in organizations, there also occur some threats, including one of a failed implementation. This is first of all the result of limited ecological knowledge and awareness, unplanned and often high costs of system implementation and maintenance, various organizational problems, and disturbances in the pursuit of environmental objectives. Therefore, great importance should be attached to actions aimed at improving the effectiveness and efficiency of systems, both those provided for in the ISO 14001 standard and those exceeding its requirements.

It is also necessary to conduct further in-depth, particularly empirical, research of not only a cross-section (a static approach) but also continuous (a dynamic approach) character. It is problems resulting from limited ecological knowledge and awareness that seem to be the key barrier to both improving management systems and implementing the concept of sustainable development in contemporary organizations. In pursuing the goals of this concept, a vital, but still underestimated, role is to be played by environmental management systems.

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