

# Sustainable Business and Environmental Indicators

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## Abstract:

This article focuses primarily on the research in Sustainable Business and Environmental Indicators of 120 Slovenian companies, in view of a general environmental management model. The research for this paper is based on the collection and analysis of quantitative and qualitative data. From research results, we can conclude that at a declarative level, environmental care is reflected in leadership and policy, strategy and organizational culture in the area of environmental management, where as the actual care is implemented in the processes related to this area. System thinking and multi view approaches, which are a must for a successful establishment of a sustainable business and environmental indicators, are of great importance. It is essential for the real effectiveness of environmental management to have appropriate leadership and keep well-regulated interpersonal relations in an enterprise. Congenial and stimulating atmosphere, promoting relaxed free and unimpeded activities, work satisfaction and satisfaction with co-operation with others, are all elements distinguishing excellent performance. When implementing changes, employees should be motivated adequately. Environmental indicators are powerful tools that serve many purposes, useful as tools for performance evaluation and public information. The development of indicators is a dynamic process that is constantly subject to updating and improvement.

*Key words:* environment, environmental indicator, management, sustainable business, sustainable development

## 1 Introduction

At the dawn of the twenty-first century, sustainable business development (SBD) is coming of age. Leading global corporation are embracing SBD as a strategic framework for integrating their business enterprises, creating innovative solutions to the complex needs and requirements of the business environment, and thinking strategically about leading change. SBD takes a comprehensive perspective of the corporation and its business environment that includes direct relationships with suppliers, distributors, customers, partners, employees, and shareholders and indirect linkages with stakeholders, competitors, related industries, and the natural environment (the eco-systems) [1].

In a world of constrained natural resources and pollution pressures, the business case for environmental stewardship grows stronger every day. Pressures on companies now come not only from screaming ecoradicals, but also from traditional

"white-shoe" bankers and others asking tough-minded questions about environmental risk and liability [17]. OECD countries are collectively the biggest users of natural resources in the world and the environmental, economic and social consequences of the production and consumption of these resources and of related economic activities extend far beyond their borders. The issue of efficient management of natural resources has become part of sustainable development strategies and/or environmental plans of many OECD countries, and is supported with initiatives to promote waste prevention policies and integrated product policies. Reflecting country concerns, the OECD Environmental Strategy for the First Decade of the 21st Century includes two objectives closely related to the efficiency of resource management:

- Maintaining the integrity of ecosystems through the efficient management of natural resources
- Decoupling environmental pressure from economic growth

In addition, OECD work on material flows supports the implementation of the recommendation on material flows and resource productivity adopted by OECD Environment Ministers and the OECD Council in April 2004 as well as contributing to the organization's horizontal programme on sustainable development [2]. Environmental indicators are powerful tools that serve many purposes, useful as tools for performance evaluation and public information. Together with its member countries, the OECD has established a common approach and framework for developing, measuring and using environmental indicators: the OECD Core Set and its core environmental indicators (CEI); several sets of sectoral environmental indicators (SEI) (e.g. transport, energy); a small set of key environmental indicators (KEI) [2].

High quality environmental information is indispensable for responsive and cost-effective policies. The OECD provides leadership in the development of indicators to measure countries' environmental performance and provides harmonized data on environmental progress in OECD countries. It advises on methodologies for environmental indicators and accounting systems; it issues recommendations that help countries improve their environmental information systems and produce reliable environmental data [2].

## 2 Environmental Management and Environmental Indicators

Managing quality to achieve excellence means managing an organization, business or unit so that every job, every process, is carried out right, first time, every time. To be successful this must be viewed as a holistic approach that affects, and involves, everyone – employees, customers, suppliers, shareholders and society. It must be driven from within the organization, as it cannot be imposed from outside and is not a simply a cost-cutting or productivity improvement exercise [3]. The EFQM Excellence Model was introduced at the beginning of 1992 as the framework for assessing organizations for the European Quality Award. It is now the most widely used organizational framework in Europe and it has become the basis for the majority of national and regional Quality Awards. The EFQM Excellence Model is a practical tool that can be used in a number of different ways:

- As a tool for Self-Assessment
- As a way to Benchmark with other organizations

- As a guide to identify areas for Improvement
- As the basis for a common Vocabulary and a way of thinking
- As a Structure for the organization's management system [4]

The Model, which recognizes there are many approaches to achieving sustainable excellence in all aspects of performance, is based on the premise that:

*Excellent results with respect to Performance, Customers, People and Society are achieved through Leadership driving Policy and Strategy, that is delivered through People, Partnerships and Resources, and Processes [5].*

One of the most widely used voluntary environmental initiatives is the ISO 14001 environmental management standard. ISO 14001 is an international environmental management standard that offers a systematic approach to compliance and continual improvement while being flexible and widely applicable to a variety of organizations, such as manufacturers, service providers, and government agencies [12].

ISO 14001 was developed by the International Organization for Standardization to provide a template for environmental management systems. In order for facilities to obtain ISO certification they must:

- Develop a policy statement on the organization's commitment to the environment.
- Identify the environmental impacts of products, activities and services.
- Make a commitment to compliance with applicable laws and regulations.
- Set environmental goals for the organization, and developing the means to achieve them
- Establish roles and environmental responsibilities within the organization.
- Maintain documents about the EMS and related procedures.
- Monitor key activities and track EMS performance to correct problems and prevent reoccurrences.
- Audit the EMS to verify that it is effective and achieving objectives and targets to ensure that it is still suitable and appropriate.
- Make a commitment to continual improvement of the EMS [10].

An EMS is the organizational structure and associated responsibilities and procedures to integrate environmental considerations and objectives into the ongoing management decision-making processes and

operations of an organization. According to an EPA summary, an EMS is a continual cycle of planning, implementing, reviewing and improving the processes and actions that an organization undertakes to meet its business and environmental goals. Most EMSs are built on the "Plan, Do, Check, Act" model. This model leads to continual improvement based upon:

- Planning, including identifying environmental aspects and establishing goals [plan];
- Implementing, including training and operational controls [do];
- Checking, including monitoring and corrective action [check]; and
- Reviewing, including progress reviews and acting to make needed changes to the EMS [act] [13].

Environmental indicators are powerful tools that serve many purposes, useful as tools for performance evaluation and public information. Together with its member countries, the OECD has established a common approach and framework for developing, measuring and using environmental indicators: the OECD Core Set and its core environmental indicators (CEI); several sets of sectoral environmental indicators (SEI) (e.g. transport, energy); a small set of key environmental indicators (KEI) [6].

Environmental indicators are among the most applicable tools used for the purposes of environmental reporting. Based upon numerical data demonstrating the status, specific characteristic or development of a certain phenomenon, they can warn of specific issues. They help us measure and determine the quantity of diverse data constituting a complete data collection. The indicators are, in fact, data that have been collected and presented in an agreed manner, with the purpose of establishing the connection between the existent data and the targets of the environmental policy. Appropriately selected indicators that are based upon an adequately extended time series of data can provide a demonstration of key trends [5]. The basis for the composition of the indicator series is the assessment framework which helps to define the functions of respective indicators. A tripartite assessment framework (Driving forces – State – Responses) relating to indicators of sustainable development was first used by the UN Commission on Sustainable Development. The European Environment Agency further divided it into a five-partite, so-called DPSIR Assessment Framework including the following set of concepts: Driving forces – Pressures – State – Impact – Responses, where each individual set conveys its own meaning:

- **Driving forces** are a social and economic factors and activities that cause either the increase or mitigation of pressures on the environment. They may, for example, include the scope of economic, transport or tourist operations.

- **Pressures** are represented by direct anthropogenic pressures and impacts on the environment, such as pollutant emissions or the consumption of natural resources.

- **State** relates to the current state and trends of the environment that determine the level of air, water body and soil pollution, the biodiversity of species within individual geographical regions, the availability of natural resources, such as timber and fresh water.

- **Impacts** are the effects that the environmental changes have on human and non-human health status.

- **Responses** are society's reactions to environmental issues. They may include specific State measures, such as taxes on the consumption of natural resources.

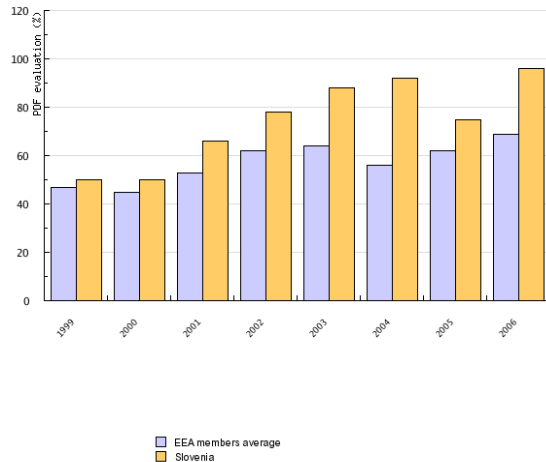
Decisions made by companies and individuals, such as corporate investments into pollution control or purchase of recycled goods by households are also important [7].

Each indicator is determined by a definition providing basic information on the methodology of conducted measurements and the manner of demonstrating the indicator in question. The indicators rely on internationally verified methodologies and are thus, as a rule, internationally comparable. In their preparation we have mostly used methodological sheets for indicators as drafted by the European Environmental Agency. Where so required by a certain phenomenon and the method of its monitoring, the accessibility of the data or any other technical factor, the EEA methodology has been adapted to conditions specific to Slovenia [7].

The development of indicators is a dynamic process that is constantly subject to updating and improvement. With regard to the experiences to date of other countries and international institutions we may claim that the indicators are sufficiently cost-effective and a useful tool for the monitoring of and reporting on the state and development of environmental policies. In the future, EARS will invest great effort into enhancing the quality of input data and information, as well as into achieving comparability of the selected set of indicators with its international counterparts. Slovenia will strive towards bringing its indicators in line with the national objective of environmental protection and also towards selecting

those indicators which will reflect sustainability in environmental dimensions of Slovenia's development. It is our hope and wish that the "Environmental Indicators" report will successfully contribute to a heightened awareness on the state of the environment in Slovenia, as well as to a more pro-active integration of the public into the decision-making processes concerning environmental issues. It is only in this way that we will be able to join our efforts and make an efficient contribution to an enhanced management of natural and non-renewable sources of environmental protection [7].

Reporting of environmental data is measured by and as the level of completeness of environmental data reported in compliance with the requirements stipulated by the European Environment Agency (EEA). This level is presented in an assessment established by the EEA in its annual Progress Report – Priority Data Flows in EIONET, hereinafter referred to as PDF, addressed to the Management Board of the EEA. Picture 1 presents Reporting of environmental data – level of completeness of environmental data collected in compliance with the requirements stipulated by the European Environment Agency (EEA) [15].



**Figure 1:** Reporting of environmental data [15].

Source: Progress Report – Priority Data Flows in EIONET, European Environment Agency, 2007 [15].

The obligation to report to the European Environment Agency by the Republic of Slovenia arises from Article 8 of the Agreement between the European Community and the Republic of Slovenia concerning the Participation of the Republic of Slovenia in the European Environment Agency and the European Environment Information and Observation Network,

signed and ratified by the Slovenian Parliament (OJ RS – MP No 18/01) which determines that the Republic of Slovenia should provide data according to the obligations and practices established in the Agency's work. So far, we have communicated to the EEA reports on the state of water, air quality and air emissions, protected areas, state of soil, implementation of the CORINE Land Cover project, etc. The preparation and communication of reports is implemented through the EIONET Network in Slovenia. The compliance of Slovenia's reporting with the requirements defined by the EEA has been subject to assessment since 2000. In this period Slovenia has, as the majority of other EEA Member States, in particular new EU member states, shown significant progress. Decline of average evaluation value in 2004 was caused by inclusion of new reports in PDF, stricter criteria and accession (or collaboration) of new countries to EEA. Pursuant to the PDF criteria, Slovenian reports have achieved 96% conformity with the EEA's reporting requirements, placing Slovenia in 3th place among 37 assessed countries [15].

### 3 Methodology

The research topic is a comprehensive business organization process inside an enterprise in a modern, competitive economy, with particular emphasis on environmental management and the implication of ISO 14000 Standards. The research aims at establishing the significance of environmental management in an enterprise's own perception, in the perception of a customer and in the perception of a wider social community. It also aims at establishing the kind of environmental indicators in enterprises which show the state in the area of environmental features or environmental management development, respectively. An example of application was based on a random sample of 120 Slovenian enterprises (<http://www.gzs.si/register>. Enterprise Register (23.12.2006), those that are registered for integrated environmental permit according to IPPC (Integrated Pollution Prevention and Control) directive, as well as the holders of the SIST EN ISO 14001: 2005 Certificate and those operating in line with EMAS (Eco-Management and Audit Scheme) regulations. The results include questionnaire replies from 120 received questionnaires.

### 3.1 Research purpose

The purpose of this paper is to study and define the most important indicators influencing environmental management effectiveness and efficiency in enterprises, focusing on Slovenian enterprises. The focus is on environmental indicators as the result of environmental management, environmental policy and a strategic direction towards achieving environmental goals as well as constant and continuous training and awareness-raising in stakeholders, employees, customers, suppliers and wider social community.

### 3.2 Research objectives

The research objective was to set or determine and prove the role and significance of environmental management indicators in an enterprise's operations. The reflection included interdisciplinary thinking which enables us to understand and manage the process of environmental management in terms of sustainable development. Based on the assumption that an enterprise respects and complies with environmental legislation, it was analytically examined what types of environmental indicators and measures contribute to a constant and continuous improvement in terms of sustainable development.

In the research the following assumptions were tested:

- assessing the environmental care (protection) in enterprises is practiced on a declarative level (rather than being actually practiced);
- enterprises holding a certificate of environmental management are superior in environmental indicators and effectiveness to those that do not hold such a certificate.

### 3.3 Research method

The research was designed as a qualitative case study as defined by Sharan (1998). It was conducted in the period of 2007 and 2008.

#### 3.3.1 Sample

The basic information on the sample unit (the organization studied) and the respondent (the person who completed the questionnaire), was acquired on the basis of the responses from the first (8 questions) and second cluster or set of questions (the first 5 questions). First of all, the answers that describe

the main characteristics of the sample (Figure 2 to 9) are presented.

The research included 120 enterprises performing various activities. Among them, the highest number goes to limited liability companies (36.5 %), joint-stock companies (28.7 %) or and institutes (14.8 %), while the lowest number goes to sole proprietors, unlimited liability companies, or and investment companies, and companies of other legal form (altogether 14.8 %). More than half of enterprises (51.8 %) are involved in servicing activities while 30 % are involved in manufacturing. Other enterprises are either predominantly servicing or predominantly manufacturing.

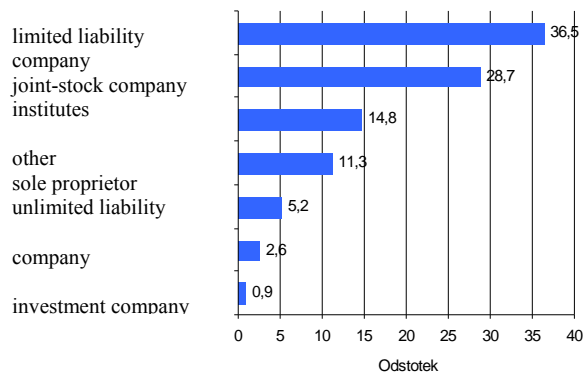
The sample's structure considering the years of operation is as follows: 40.9 % are in operation for more than 30 years, 21.6 % between 16 and 30 years and 37.5 % up to 15 years. The research includes mainly large enterprises. 33 % of the studied enterprises employ above 250 people, 37.2 % from 51 to 250 people, 14.2 % from 11 to 50, and 15% up to 10 people. In our research all the listed enterprises are included.

25 % of the enterprises created the added value of up to 25,000 € per employee, 50 % from 25,001 to 50,000 €, and 25 % above 50,000 €. 40 % of the enterprises created above 1,000,000 € of net profit in 2006, 28.2 % from 100,001 to 1,000,000, and 31 % up to 100,000 €.

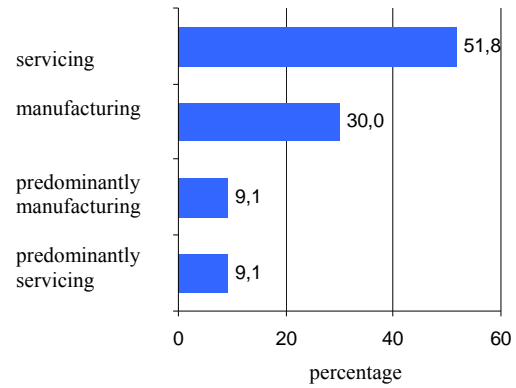
41.3 % of the enterprises have established an environmental management system in compliance with ISO 14001:2004 Standard, 34.9 % of the enterprises have established such a system in compliance with the legislation in force in the Republic of Slovenia, 3.7 % of the enterprises have established other systems. One fifth of the enterprises stated that they had no environmental management system established. Among the enterprises holding an environmental certificate, 65.2 % held the ISO 14001:2004 Certificate, 6.1 % held an environmental sign, 4.5 % held an environmental permit and 24.2 % held other certificates (data for the year 2007).

#### 3.3.2 Research limitations

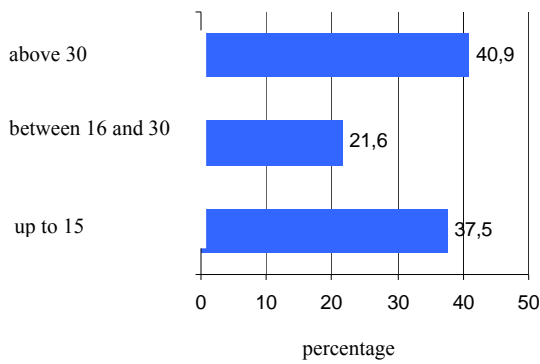
A qualitative case study was conducted to acquire information and consequently research results from the completed questionnaires. However, only part of the research results is presented in this paper. The findings that emerge from the research results cannot be generalized to all forms or types of environmental management.



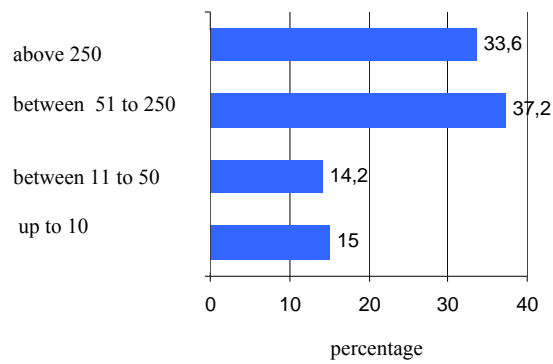
**Figure 2:** Enterprise's format



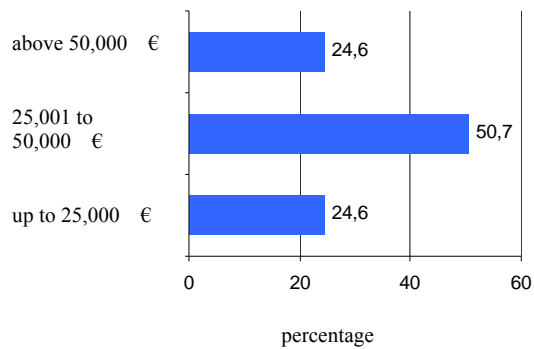
**Figure 3:** Enterprise's activity



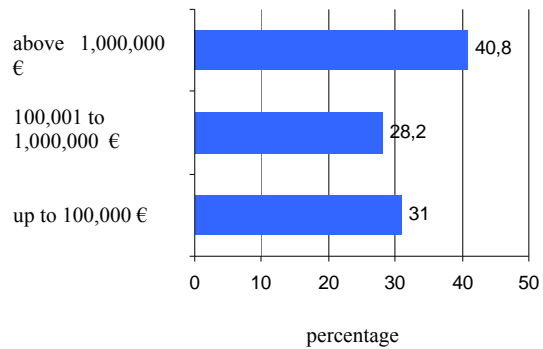
**Figure 4:** Years of operation



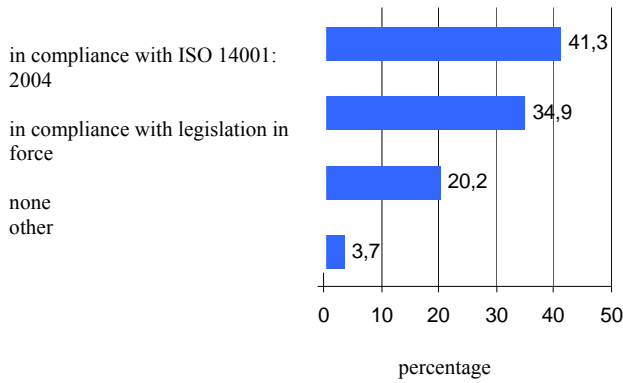
**Figure 5:** Number of employees



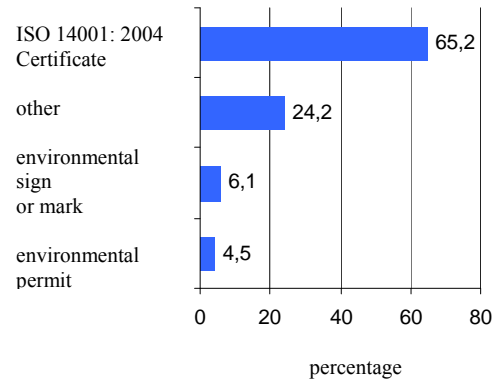
**Figure 6:** Value added per employee



**Figure 7:** Net profit



**Figure 8:** Environmental management system



**Figure 9:** Type of environmental certificate

## 4 Research results

### 4.1 General information

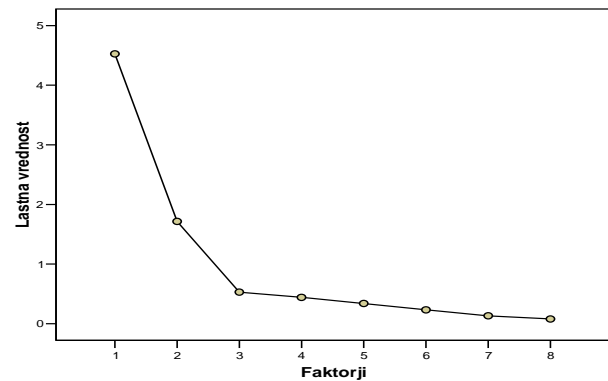
Only part of analyses' results are presented here. The analyses were conducted with the aim of finding the most suitable environmental indicators and indicating devices in different areas in an organization. The focus of this paper are two areas:

- leadership and
- processes.

By way of factor analysis, the most suitable indicators were selected. Based on the indicators, the indicating devices were set. They represent the average values on the selected indicators.

### 4.2 Leadership

In the continuation, an example of leadership and a set of questions concerning the leadership characteristics in an organization - measured on a scale from 1 (I do not agree at all) to 5 (I agree entirely) - are presented. The focus is on two aspects of leadership: a general view on management of an enterprise and leadership in terms of environmental management, presuming that these two aspects are interrelated. By way of factor analysis using the Principal Axis Factoring method, followed by Varimax Rotation, the most suitable indicators to assess the above mentioned dimensions aspects of leadership (3 for a general view on management of an enterprise and 5 for environmental management) were selected among 23 indicators:



**Figure 10:** Graph presenting proper values – leadership

The graph proves that 8 variables can be combined into 2 factors. Using these 2 factors, 72.1 % (after Varimax rotation 53.0 % with the first factor and 19.1 % with the second factor) of the whole variable variance can be explained.

In Table 1 factor loadings after an orthogonal VARIMAX rotation are presented. The factor structure is clear as each indicator has high factor loadings only with one factor. The highest indicators of *leadership quality indicating device in terms of environmental management* are:

- clear vision, strategy and goals;
- careful planning, executing and enhancing measures;
- efficiency and effectiveness assessment;
- promoting initiative and searching new opportunities and solutions for tackling environmental problems

- providing information about environmental issues.

The dimension is most prominently marked by the indicator *Environmental management measures are planned, executed, controlled and enhanced incessantly*, in which the highest factor loading is obtained. The Cronbach reliability coefficient (alpha) value, which measures the reliability of a measuring instrument, is 0.9, suggesting the appropriateness of the choice of indicators.

The indicator *Leadership quality in general* was determined by the following indicating devices:

- encouraging and promoting autonomy at work;
- encouraging and promoting employee co-operation in decision making and
- identifying the needs for organizational changes.

	Leadership in the area of environmental management	Leadership in general
Environmental management measures are planned, executed, controlled and enhanced incessantly.	<b>0.86</b>	0.14
Leaders assess the efficiency and effectiveness of environmental management business processes.	<b>0.85</b>	0.16
Leaders encourage launching initiatives, searching new opportunities and solutions for tackling environmental problems.	<b>0.80</b>	0.21
Leaders efficiently inform their employees about environmental issues.	<b>0.78</b>	0.25
The management has a clear vision, strategy and objectives concerning environmental management.	<b>0.70</b>	0.20
Leaders encourage and promote autonomy at work.	0.19	<b>0.95</b>
Leaders identify the needs for organizational changes and are first to opt for changes.	0.13	<b>0.94</b>
Leaders encourage and enable their employees to co-operate in decision making.	0.33	<b>0.67</b>

**Table 1:** Leadership – factor loadings after an orthogonal rotation

The indicator *Leaders encourage and enable their employees to co-operate in decision making* has a lower factor loading and thus a lower contribution to this dimension. The Cronbach coefficient value is 0.9, therefore, the indicators serve as a reliable measuring instrument for assessing leadership in general.

On the basis of the reliability coefficients, the selected indicators can be used for computing indicators,

namely the average value of each indicator, pertaining to a certain dimension as shown in Table 2.

	N	Min	Max	Arithmetic mean	Standard deviation
Environmental management measures are planned, executed, controlled and enhanced incessantly.	110	1	5	3.35	1.21
Leaders assess the efficiency and effectiveness of environmental management business processes.	110	1	5	3.16	1.12
Leaders encourage launching initiatives, searching new opportunities and solutions for tackling environmental problems.	110	1	5	3.22	1.14
Leaders efficiently inform their employees about environmental issues.	110	1	5	3.18	1.11
The management has a clear vision, strategy and objectives concerning environmental management.	112	1	5	3.71	1.13
Leadership in the area of environmental management	113	1	5	3.33	0.98
Leaders encourage and promote autonomy at work.	101	1	5	3.89	0.88
Leaders identify the needs for organizational changes and are first to opt for changes.	110	1	5	3.91	0.86
Leaders encourage and enable their employees to co-operate in decision making.	111	1	7	3.65	1.01
Leadership in general	111	1	5	3.81	0.83

**Table 2:** Descriptive statistics of leadership indicators and dimensions

The enterprises statistically significantly assessed *leadership in general* with a higher average grade (3.8) in comparison to *Leadership in terms of environmental management* (3.3). The value of t-test (Paired Sample t-test) is 5.28 not exceeding a 99 % confidence level. The value of the Pearson correlation coefficient is 0.4 (p<0.01), which shows a moderately strong positive correlation between the dimensions. The enterprises that positively or favourably assessed *Leadership in general*, normally positively assessed *Leadership in terms of environmental management*.



### 4.3 Processes

Organizations plan, implement and control processes with a view of meeting their customers' and other participants' expectations and requirements as well as generating greater value for them. Managing functioning of an environmental management system is part of business processes in an organization which is concerned with sustainable development. We were interested in the processes related to environmental management, which were tested by way of the following indicators:

	Percentage
There is no Environmental Management Department.	75.4
Environmental Management Department is inside another department/function.	14.0
There is an independent Environmental Management Department .	10.5
Total	100

**Table 3:** Is there a special department dealing with environmental management in your enterprise?

Three quarters of enterprises do not have a special Environmental Management Department, 14 % of them have such a department inside another department/function, 10.5 % of them have an independent Environmental Management Department, as shown in Table 3. The obtained data show the leadership's attitude towards the organization of Environmental Management Department. In some enterprises, environmental management is an outsourced service.

	Is there an Environmental Management Department in your enterprise?		Total	
	yes	no		
Who is in charge of the analysis of business processes and environmental management in your enterprise?	No answer.	7.1%	31.4%	25.4%
	Nobody.		12.8%	9.6%
	Executives.	25.0%	33.7%	31.6%
	Other departments	25.0%	12.8%	15.8%
	Environmental Management Department.	35.7%	2.3%	10.5%
	Other.	7.1%	7.0%	7.0%
Total %	100.0%	100.0%	100.0%	
Total N		28	86	114

**Table 4:** Person in charge of the analysis of business processes and environmental management according to

whether the enterprise has a special Environmental Management Department or not

A clearer picture of the situation and entity in charge of the analysis of business processes and environmental management (whether an enterprise has an Environmental Management Department or not) is shown in Table 4. One fourth of the enterprises were not willing to/did not know how to answer the question - who is in charge of such an analysis; most of them belong to the group which does not have a special Environmental Management Department. Interestingly, among the enterprises that have a special department dealing with environmental management, the analysis of business processes and environmental management is undertaken by the same department only in 35.7 % of the enterprises. In one third of the enterprises that do not have such a department the analysis is undertaken by the executives. It is a fact that the familiarity with the processes from the environmental management perspective does not depend only on the Environmental Management Department but also on the accountability and competence as well as working methods in a particular enterprise. The analyses of processes are undertaken by those in charge of particular processes; an ecologist may be a member of such a team.

	Percentage
Not at all.	20.9
Annually.	27.0
Semi-annually.	16.5
Every three months.	9.6
Monthly.	19.1
At least weekly.	7.0
Total	100

**Table 5:** How frequently do you monitor the efficiency of environmental management?

Table 5 shows the frequency of the efficiency of environmental management monitoring. One fifth of the enterprises do not monitor it at all, 27. % of the enterprises monitor it annually, 16.5 % semi-annually, 9.6 % every three months, 19.1 % monthly, and only 7 % weekly or even more often.

	Odstotek %
Waste and sewage sludge.	60.0
Wastewater.	50.4
Noise.	40.9
Energy and traffic.	40.9
Waste air.	40.0
Soil.	27.8
None.	27.0
Natural resources.	24.3
Nature.	15.7
Electromagnetic radiation.	9.6
Other.	3.5

**Table 6:** How many environmental management indicators do you identify?

Concerning the shares in terms of types of environmental management indicators' monitoring, Table 6 shows that most enterprises identify the indicator of waste and sewage sludge (60 %), half of them waste water, four tenths of them noise, waste energy and traffic as well as waste air, and 27.8 % of them soil. Natural resources are monitored by 24.3 % of the enterprises, the nature is monitored by 15.7 % of them, electromagnetic radiation by 9.6 % of them and other indicators by 3.5 % of the enterprises. 27 % of the enterprises monitor none of the environmental management indicators. The scales of all the above presented indicators were transformed to the values from 1 to 5, except in cases when an organization identifies none of the indicators (in such a case, the lowest value equals 0). Next we designed an indicator called »processes«, which represents the average of all the indicators. Due to rather low correlations between the indicators, the measuring instrument is less reliable, the value of Cronbach coefficient namely equals only 0.56.

	N	Min	Max	Arithmetic mean	Standard deviation
Is there an EM Department in your enterprise?	114	1	5	1.7	1.3
How frequently do you monitor the efficiency of environmental management?	115	1	5	2.5	1.2
How many environmental management indicators do you identify?	115	0	4.5	1.6	1.4
Processes	115	0.5	4.8	1.9	1.0

**Table 7:** Processes – descriptive statistics of indicators and dimensions

Table 7 shows the descriptive statistics of the indicators and dimensions for processes. The value of the indicator 'processes' is below the average value, which shows that environmental management processes have mainly not been introduced or yet put in place in the enterprises studied.

The frequency of environmental management monitoring depends on the type of activity and consequently the type of environmental impacts, geographical location of an enterprise, requirements of the relevant environmental legislation and the size of an enterprise. Time schedule alone, without identifying the previously listed facts, does not yield a realistic result. The type and consequently the number of indicators both depend on the type of activity, therefore, the indicators for production activities, as a rule, substantially differ from those for service activities. A simplified implementation of the number of indicators distorts the actual management of environmental impacts functioning of processes. Therefore, a further study of environmental management is indispensable.

The average value of the indicator *Leadership in terms of environmental management* is statistically significant, at a confidence level not exceeding 99 %, which is higher than the average value of the indicator *Processes in the area of environmental management*.

From the research results, we can conclude that:

At a declarative level, environmental care is reflected in leadership and policy, strategy and organizational culture in the area of environmental management, whereas the actual care is implemented in the processes related to this area. By using pair t-test we can check if the average value of the indicator *Processes in the area of environmental management* is statistically significantly lower than the average value of indicator *Leadership in terms of environmental management*, as shown in Table 8.

		Arithmetic mean	N	Standard deviation	t	p
Pair 1	Leadership in the area of environmental management	3.33	113	0.98	15.498	0
	Processes	1.92	113	0.96		

**Table 8:** Descriptive statistics of the indicators

In the area of environmental management we suggest the following short-term and long-term measures with

a view of improving operations in the studied enterprises:

- Management should incorporate environmental management in an enterprise's operations as part of current practices.
- It is necessary to establish or determine the most suitable and optimal size of particular environmental indicators and indicating devices (environmental management indicating devices) in terms of an enterprise's activity and size.
- Time schedule for monitoring environmental indicators and indicating devices (environmental management indicating devices) needs to be adapted to an enterprise's operations and size as well as to its environmental impacts, considering environmental legislation.
- It is necessary to incessantly develop suitable environmental values, knowledge and skills with all employees concerning their functions.

## 5 Discussion

It is essential for the real effectiveness of environmental management to have appropriate leadership and keep well-regulated interpersonal relations in an enterprise. Congenial and stimulating atmosphere, promoting relaxed free and unimpeded activities, work satisfaction and satisfaction with co-operation with others, are all elements distinguishing excellent performance. When implementing changes, employees should be motivated adequately. There was quite a strong resistance from employees to implementing working groups at the very beginning of this process, which also resulted from the fact that we were unable to present them the sense and benefits of this process, moreover, we were unable to motivate them by the positive aspects of teamwork.

There were some problems due to quite a low education level, which was related to the activities in question. Therefore, more time and attention were required for their complementary education and training. Moreover, considerable efforts were required to convert the resistance into something that could be beneficial to both, an enterprise and employees. In our case, knowledge management is identified as a solid foundation for the continuation of this process.

In such an organization, a high level of trust and honesty in the communication between the management and other employees, within the management, between teams and even between the organization and its customers and other companies is achieved. Employees can ask questions and get honest and helpful answers. Information exchange is effective

when the system and communication network make it possible to the management and to all the employees to get the right information when they need it, to exchange their points of view, personal goals when discussing the goals of the company as well as to check their ideas, and learn from each other. Good managers help people find out what is important about their work and in what way the work of each employee contributes to achieving the vision of the company. Employees are interested in learning whether their work, and in what way, influences common goals. Employees ask themselves why changes are required for themselves and why for the company. Managers, who speak in favour of changes, have to act in compliance with their words, spoken in public, formally or non-formally. Their actions have to support the "story of the company", they also have to be good communicators, they have to know how to present their "story of the company" in a convincing way [14]. In the early stages of introducing a learning organization in the company, such credibility is of great significance.

Learning organizations are, thus, (and have to be) infused with communication directed to goals; in organizations where the level of communication is not adequate, the problem is evident, management and other employees alike are aware of it. A step forward will only be possible when the management will, in view of their power and influence, assume responsibility for establishing the environment encouraging open two-way communication directed to the goals of the organization. This will result in the awareness of their own directions into the future and into better market positions. Another step toward improvement is connected with the awareness of the management as well as of other employees that even if people communicate all the time, this does not mean that they know how to communicate. If that were the case, there were not so many misunderstandings, mistakes and conflicts [14].

Development of Environmental Management System is constantly improving. New environment issues dictate the redefining of The interest of customers, users, developers and others in the environmental aspects and impacts of products is increasing [11]. Because of this, EMS needs Environmental Indicators. The development of indicators is a dynamic process that is constantly subject to updating and improvement [7]. Long-term orientation of the organization depends on:

- the organization culture,
- management philosophy,

- long-term and enduring choice of resources (capital, work, knowledge).

It is paramount importance for the company to make its sustainability decisions after it has thoroughly studied and analyzed possible course and outcomes, risks and benefits brought about by such a decision. Management should not focus on short-term benefits, but on long-term consequences of sustainability aimed at long-term efficiency and effectiveness of the company's business and environmental activities.

Our initial research has proved that sustainable business can bring about increased short-term, especially financial, gains. Sustainable business can be a fatal strategic decision for the companies. The more are company we are involved in the environment, the more it is connected with it's participants, with whom it shares it's faith. The research findings can represent a useful starting point for critical study of benefits of temporally sustainable business.

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