



Responsible Pro-Environmental Management in an Organization: a Case Study

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1. Introduction

The basic stipulation of environmental management consistent with the requirements of ISO 14001: 2015 standard is to improve the relationship between the effects of human activities and natural environment. Maintaining balance requires uniform management, access to environmental resources, rational use of natural resources and to tackle negative effects of economic activity (Al-Kahlout et al. 2019, Lira et al. 2019, Loste et al. 2019, Maletic et al. 2015).

The aim of this publication is to present, on the example of a selected organization, the adaptation to the implementation of the ISO 14001: 2015 environmental management system and the analysis of the obtained benefits by said organization as a result of the system's implementation (De Camargo et al. 2019, Koukaou et al. 2019, Hernandez-Vivanco et al. 2019, Henrykowski 2008).

Environmental management strategy is based on the following elements: waste reduction at the source, waste management, waste prevention and reduction of pollution that enters the environment (Wolniak 2017, Vries et al. 2012, Vidovic et al. 2019). Environmental management is a response to the EU environmental policy and its states to more effectively and efficiently address environmental issues at the national, regional and local levels (Todaro et al. 2019, Apiworathanakorn et al. 2019, Andrei et al. 2019). The implementation of principles based on sustainable development are an important element of the national environmental and socio-economic policy (Sari & Kamalia 2019). The environmental strategy is a socio-economic policy that is implemented to maintain balance between the economic development and environmental resources. In practice, this means adapting economic development to the resilience of the environmental. The aim of this behaviour is to maintain environmental resources in

healthy condition for the present and future generations (Pacana 2017, Pacana et al. 2017, Paulraj & Jong 2011).

The environmental management system can be understood as a part of the overall organization management system that includes the following: the organizational structure, responsibility, planning, procedures, rules of conduct, processes and resources needed for the development, implementation, review and maintenance of the created environmental policy. Environmental management is, therefore, one of the management techniques that enables an organization to keep the burden on the natural environment as low as possible (Malindžák et al. 2017, Treacy et al. 2019, Bober et al. 2017).

Identification of the environmental aspects is a basic element of the implementation, functioning, design and improvement of the environmental management system. These aspects may have an impact on the environment (Chiarini 2013). Well-defined environmental aspects are the basis for the proper functioning of the environmental management system in an enterprise. They determine the benefits that an organization will obtain from the implemented system. Through a comprehensive examination of the environmental aspects and presentation of sources of threat, it is possible to determine ways to minimize their impact on the environment (Olkiewicz 2018, Olkiewicz & Wolniak 2018). The decision to implement the ISO 14001: 2015 system must be the first step taken by the top management. The second significant step is the involvement of the management. This involvement determines the success of the implementation and the functioning of the environmental management system in an enterprise (Wolniak & Sędek 2009, Woźniak et al. 2010, PN-EN ISO 14004:2016). The implementation of the environmental management system should be planned in detail. It is also necessary to specify next stages of works and their deadlines (Wu et al. 2020, Satror et al. 2019, Searcy et al. 2012).

An effective environmental managements system is the one that brings measurable results of introduced changes in an organization, with the simultaneous increase of the company's value (Chiarini 2019). The benefits resulting from the implementation of ISO 14001: 2015 standard can be divided into external, internal, marketing and administrative (Psomas et al. 2011, Qi et al. 2015, Mijatowic et al. 2019, Olkiewicz 2020). Through the implementation of the environmental management system, the organization's undertaken marketing activities become easier and the perception of the company by clients and contractors improves (Elafi 2019). The company's reputation enhances as so does its credibility in conducting its business under applicable law. This gives the company an opportunity to compete in markets where there are high expectations in the areas of environment. In addition, the organization can effectively use public relations tools (Džubáková 2019, Nemati et al. 2019, Ni 2019). If the administrative

obligations are well documented after the implementation of the system and there are benefits resulting from the access to investments loans in the area of environmental – then an organization will continue to develop (He & Shen 2019). In such situation, the number of external audits on the utilization of the environment is reduced and the costs of insurance premiums drops. This constitutes an elimination of penalties resulting from non-compliance with legal and other requirements related to environmental issues (Pirju 2019, Pacana & Ulewicz 2017).

Implementation of the theory and practices applied in accordance with the ISO 14001 standard involves a lot of effort from the top management and employees of an organization. The advantage of implementing this system is that the company is improving in the eyes of its current and future customers. The application of the standard certainly builds an advantage over competition and the local community will look favorably to the organization's activities. A company with clear objectives, an organizational policy and instructions helps to improve its self-esteem and makes it aware that it operates in accordance with the principles of environmental protection (Olkiewicz et al. 2015, Olkiewicz et al. 2019, Waxin et al. 2019).

2. Methodology

The research presented in this publication was based on a selected company operating on the local market in the area of a broadly understood scope of waste management and cleanliness maintenance. Currently, the company employs 70 workers, including 20 administrative employees. The company operates under commercial law.

As part of its activities related to the management of the municipal waste management, the company offers comprehensive refuse collection and solid waste management services, i.e. high-volume waste, post renovation waste, debris. The methods of selective waste collection implemented by the organization reduce the amount of waste going to landfills. Clients from the industrial sector are offered a comprehensive service in the area of waste collection and management generated at their enterprises. The company ensures proper management of generated waste in accordance with the applicable law.

This publication analyzed source documents obtained from the company, presents the results of in-depth interviews and uses a questionnaire method. Owing to this, environmental aspects were developed, the environmental policy was defined and an environmental example programme was developed. The organization's effectiveness to date and customer feedback was analysed through a survey. This case study allows to learn more about the possible benefits and expected results, which the company can achieve through the implementation of the environmental management system.

The performed initial environmental review covered the following areas: emissions into the air, dust, gases, noise, heat or smell, solid and liquid waste. Questions also included the company's legal framework, decisions required by law, permits, occupied area, machines, type of service, products, raw materials used in the company and emergency situations.

The initial company review was carried out by using a list of questions. During the review, decisions undertaken by the organization, permits and compliance of activities with applicable law were analyzed. The review also included a physical inspection of the area covered by the system with in-depth interviews with people employed in specific organizational units and knowledge in the case study area.

Fifty-eight clients of the analyzed organization took part in the survey. The duration of the survey lasted for one month. The participants of the survey were customers of the services supplied by the enterprise. Out of the fifty-five participants, thirty-five said that they were satisfied with the provided services. This amounts to 60% of satisfied customers. However, 26% gave a negative response and 14% had no opinion about the provided services.

3. Preparation to implement an environmental management system in the company

The areas verified by the environmental review allowed to conclude that the researched company holds permits, decisions and other documents that are necessary to carry out its activities in accordance with the applicable law in environmental management. The company has not yet been fined for exceeding the emission limits laid down in decisions and permits. Waste is collected in accordance with the applicable law and is collected and transported by specialised vehicles designed for this purpose.

All documents which may be needed at a later time are described and archaized, e.g. waste characterization sheets. The company has an adequate amount of road transport to perform its activities professionally and in accordance with the legal requirements and requirements set by interested parties. The raw materials used are stored in bendable packaging. After their use they are collected by a supplier with a permission to recover them. The company keeps records of waste received, collected and stored. In addition, the organization maintains records of electricity consumption. Emission processes to air are defined, thus the company has to pay environmental fee annually.

In summary, the company analyzed in this publication is well on its way to optimize its activities and to cover the enterprise partly with the environmental management system. The organization's aims are to cover their service provision with environmental management system in the area of collection and transport of

municipal waste, collection and transport of hazardous and non-hazardous waste and road maintenance in the summer and winter time. Therefore, it is necessary to visualize and specify environmental aspects, aims and tasks, which after the decision to implement the ISO 14001: 2015 system, will be approved by the organization's management. After the initial review of the company, it was concluded that activities can be undertaken to implement the environmental management system.

Through the identification and evaluation, the following significant environmental aspect of the organization were identified:

I. The identified direct aspects include:

- pollution of natural environment with dust and gases through the emission of gases from the boiler on the premises of the administration facility and the transport and storage base,
- pollution of natural environment with waste caused by the production and storage of hazardous and non-hazardous waste at the transport and storage base connected with the operation of vehicle repair facility,
- water and soil pollution caused by the production of industrial sewage connected with the operation of a car washer,
- emissions of air pollutants in connection with the combustion of fuels in specialized vehicle engines,
- water and soil pollution due to the removal of rainwater and snowmelt sewage from the transport and storage base,
- water, soil and air pollution caused by non-hazardous waste storage at the transport and storage base connected with waste collection activities,
- water and soil pollution due to fuel and oil leakage from vehicle tanks,
- water and soil pollution caused by storage of mixtures in connection with winter road maintenance,
- air, soil and water pollution with a threat to human health in connection with the risk of fire on the company's premises.

II. The identified indirect aspects include:

- reduction of the amount of hazardous waste stored on a landfill site in connection with the collection of batteries and accumulators,
- reduction of the amount of hazardous waste stored on a landfill site in connection with the collection of electrical and electronic equipment,
- ensuring compliance with the requirements of waste management,
- reduction of the amount of hazardous waste stored on a landfill site (including ensuring appropriate waste recovery rates) in connection with the collection of municipal and selectively collected waste,
- raising public and customer awareness about waste management.

The designated environmental aspects allow to identify easily the company's environmental policy, i.e. a document that underpins the implementation and improvement of the environmental management system.

The current direction indicates the progressiveness against the adverse impact on the environment. This document serves as an important commitment of top management towards the environment.

The researched company has the required decisions and permits under applicable law. These decision and permits are:

- water-legal permit,
- decision to collect waste,
- decision to generate waste on the premises of transport and storage base,
- decision to transport waste.

The organization also has entries into the register of regulated activity for the collection of municipal waste in communes in which it conducts business activity. This entry is required under the Act to maintain cleanliness and order in communes. The company is also listed in the register of the Chief Inspector for Environmental Protection in relation to the provisions of the Act on waste management of electrical and electronic equipment. In addition, the organization is entered in the register of gas emissions to air kept by the National Centre for Emissions Balancing and Management.

Environmental effects will be monitored in accordance with the frequency, scope and methods precisely specified in the held decisions or permits. The water-law permits specify the deadlines for testing, the quality of rainwater, snowmelt and industrial sewage that is discharged to surface waters. The company conducts research on specified dates. The organization is committed to the principle of rational waste management and meets all legal requirements in the area of records and waste management. The company performs the reporting obligations for gas emissions into the air, waste management and transport-related reports. Environmental fees are paid annually under the applicable regulation in a given year. At present, the company did not incur any sanctions in the form of penalties for failing to meet legal requirements in the area of environmental protection.

To implement an environmental management system, its aims and tasks should be based on the company's specific environmental policy. Objectives and tasks must relate to the previously identified environmental aspects of significant nature. The environmental programmes of the analyzed organization were developed based on the objectives identified in the environmental policy approved by the company's management. The company's credo was defined as: We work well to ensure that the natural environment is clean.

Environmental programmes were established by the organization in accordance with the previously identified environmental aspects of significant nature with applicable technical requirements and company’s technical capabilities in mind. Table 1 presents key environmental programmes for enterprise X, planned (hypothetically) to be implemented for the year 2018 and beyond.

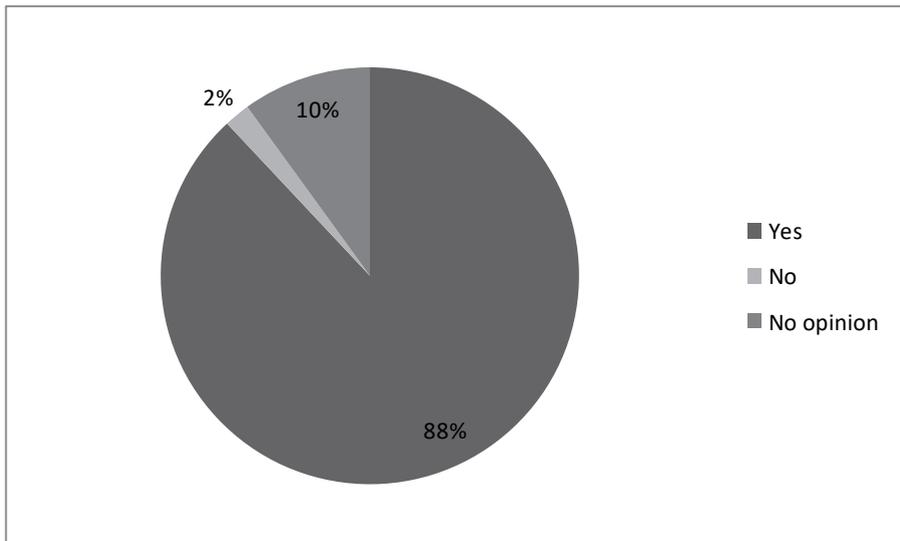
Table 1. Environmental programs implemented by the organization

No	Environmental objective	Task	Environmental aspect or/and effect on the environment	Deadline
1	No losses in stored waste	Implementation of waste inventory control. Purchase and installation of monitoring cameras	Environmental aspect	2018
2	To raise awareness of the local community in the field of environmental protection	Conducting lessons in primary school on the subject of: pro-ecological behaviour regarding waste management	Collecting hazardous and non-hazardous waste at the premises of the transport and storage base	2018
3	Improvement of the company’s image, improvement of aesthetic features of the company.	Planting 60 trees/shrubs and flowers over the length of 50 meters on the company’s premises	Environmental aspect: improved control over waste collected at the base premises.	2018
4	Reduction of water pollution. Protection of soil by eliminating the produced sewage spill	Sealing the washer area by pouring a concrete floor	Environmental aspect: improved control over waste collected at the base premises.	2018
5	Protection of groundwater, surface waters and soil by securing the salt dump	Construction of retaining wall that prevents leaching of salt into the storm water drainage system	Impact on the environment: raising awareness of future customers/society in the field of proper waste management	2018-2020

Table 1. cont.

No	Environmental objective	Task	Environmental aspect or/and effect on the environment	Deadline
6	Protection of ground-water, surface waters, soil through prevention of possible leaks (fuel, oil) from means of transport	Elimination of defects in the paved road on the transport and storage base premises	Improvement of waste segregation at the source – improved recovery of raw materials	2018-2020

The pie chart in Figure 1 illustrates the opinions of respondents about pro-environmental actions undertaken by the company, e.g. promoting waste segregation at source. Vast majority of the respondents (88%) considered these activities to be significant. This means that the activities undertaken by the organization in the area of waste segregation at source are a right direction in the promotion of pro-ecological activities. Only 2% of the respondents said that there is no need for the company to promote pro-ecological activities. It may be presumed that these people do not segregate waste and consider doing it unnecessary. In addition, 10% of the respondents had no opinion in this matter.

**Fig. 1.** The importance of promoting co-friendly activities

The bar chart presented in Figure 2 illustrates the percentage of people who have a positive attitude towards promoting pro-ecological activities undertaken by the company. The research shows that 86% of respondents have a positive attitude towards the promotion of pro-ecological activities of the organization aimed at gaining trust of the company's stakeholders. In the opinion of the rest of the surveyed group, pro-ecological activities will not increase their confidence in the company and its activities.

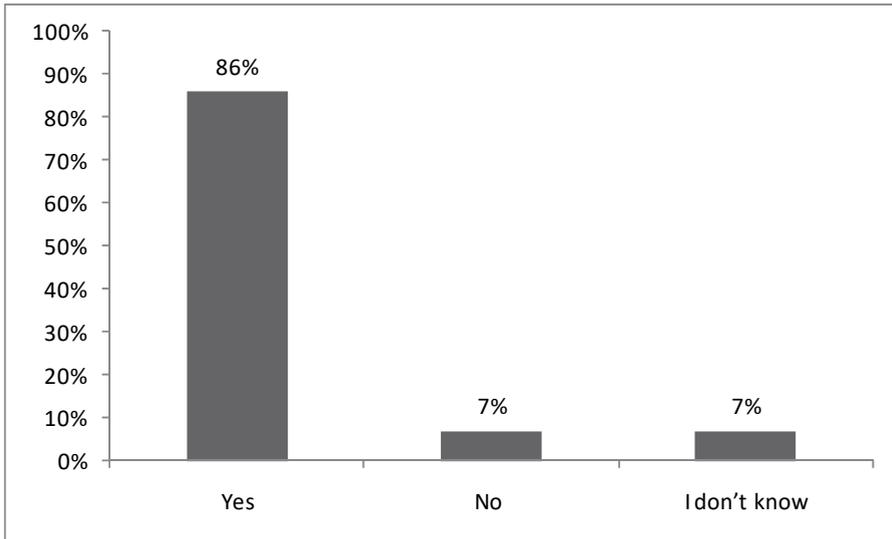


Fig. 2. Increasing customer trust through ecological activities

Figure 3 shows the opinion about the company's image concerning its environmental policy. Over 83% of the respondents said that the organization's environmental policy has an impact on the external image of the company. Only 10% of the surveyed people were of different opinion and the rest of the respondents stated that they do not know whether this type of influence exists.

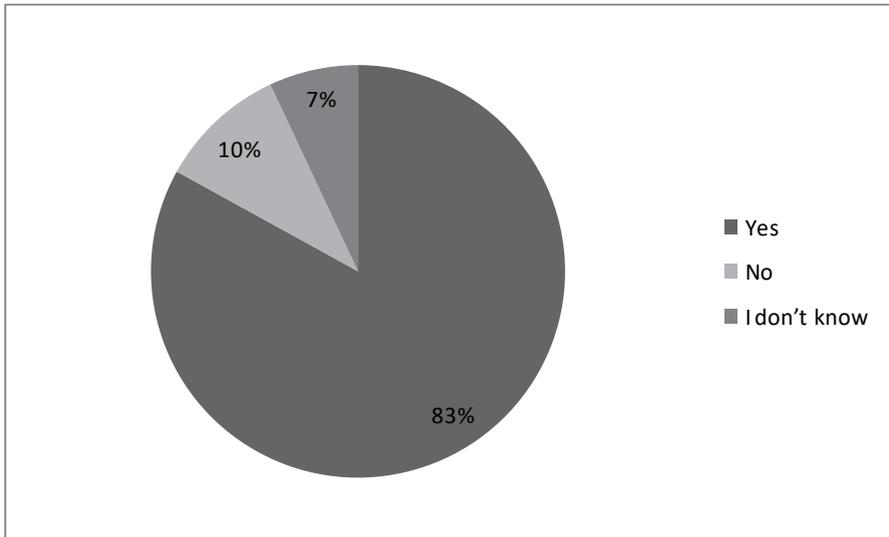


Fig. 3. Environmental Policy and the image of the organization

4. Benefits from the implementation of an environmental management system in the surveyed organization

The data presented in Figure 4 illustrate the potential benefits the company can achieve after the implementation of an integrated environmental system in the opinion of the respondents and stakeholders. The largest percentage (28%) was observed in the number of services provided by the company. An increase in customer confidence in the company (22%) was placed second. Subsequently, the respondents provided the following answers: improved functioning of the organization (16%), improved environment status around the company's premises (14%) and increased attractiveness of the organization (12%). Only 9% of respondent ticked the answer about the reduction of operating costs.

An efficiently functioning organization, confirmed by the presented survey results, and an effective environmental management system will generate measurable benefits, which will also be reflected in the financial, managerial and marketing sphere.

The internal benefits of the surveyed company include a reduction in charges incurred for utilizing the environment, thus a reduction in the amount of generated waste. Reduction of the consumption of water, energy or raw materials can also contribute to the increase of economic effects of the company. Another internal benefit is an increase in employees' ecological awareness and their

increased involvement in the organization’s activities. Specific procedures allow the company to limit the risk of malfunction in the company.

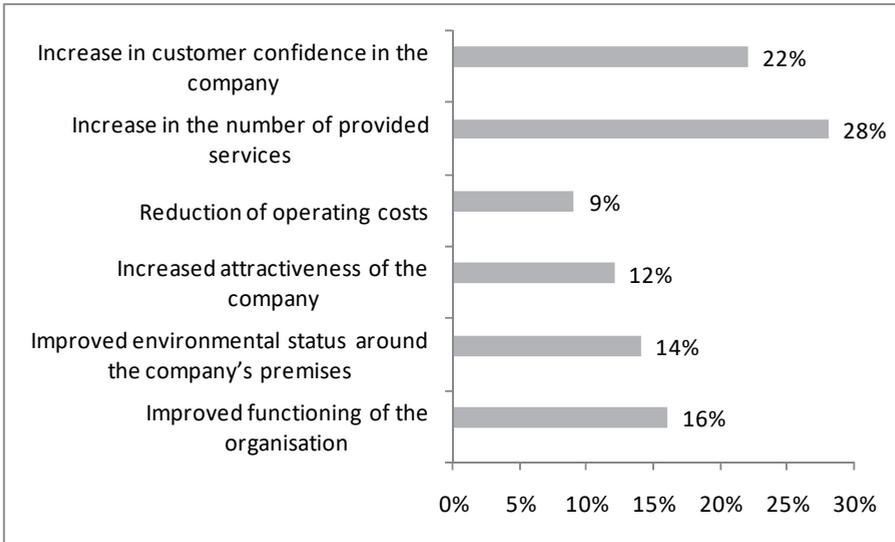


Fig. 4. Expected benefits after the implementation of the ISO 14001 system

A measurable external benefit of the company is the improvement of the state of natural environment around the company’s premises, which will contribute to the improvement of relations and to enable direct dialogue with the local community. This will increase the company’s competitiveness and customer confidence in the organization. The enterprise has an opportunity to identify and enter new markets.

An environmental performance indicator can be used to determine measurable effects of the company’s environmental performance expressed with the following formula: $R = A/B$.

The letter A indicates the overall annual input/impact in the given area, whereas letter B indicates the overall annual output of the organization. The indicator for the company’s overall annual output is the same for all the fields.

Table 2 shows selected environmental output indicators, which the company can use to measure its environmental effects.

The results presented in Table 2 illustrate measurements and results prior to the implementation of the system.

Table 2. Environmental performance indicators

Indicator	A			B		C			
	Unit	2014	2015	2014	2015	2014	2015		
Energetic efficiency	Total direct electricity consumption	MWh	153.6	147.3	197	201	0.733	0.780	MWh per person working for the company
	Annual mass flow of various materials used in the company (office paper)	Mg	1.974	2.260	197	201	0.011	0.010	Mg per person working for the company
Effective use of materials	Annual mass flow of various materials used in the company (mixtures for winter road maintenance)	Mg	7072	3820	197	201	19.005	35.899	Mg per person working for the company
	Annual mass flow of various materials used in the company (chemical agents – for cleaning and disinfecting containers)	Mg	0.675	0.33	197	201	0.002	0.003	Mg per person working for the company
	Annual mass flow of various materials used in the company (paints, solvents)	Mg	0.323	0.583	197	201	0.003	0.002	Mg per person working for the company
Water	Total annual water consumption	m ³	3058	3339	197	201	16.61	15.52	m ³ per person working for the company

The company's environmental objectives that were previously designated, environmental tasks (environmental programme), identified environmental aspects and specified environmental policies allowed for the definition of measurable indicators for environmental performance presented in Table 2. These indicators determine the effectiveness of environmental activities undertaken by the organization.

Environmental performance indicators allow to illustrate the degree of a harmful impact an organization can have on the environment and present products manufactured by the company (waste, by-products) that have adverse effects on natural environment.

The indicators defined in Table 2 provide the necessary information for the external stakeholders and the management of the company. The correct interpretation of the results allows the top management to make the right decisions in the organization. The company is obliged to prepare environmental reporting after the implementation of the system. In such a situation, it is essential to analyse and modify the environmental indicators specified in this publication. These obligations impose costs that have to be borne by the organization. In the future, however, this will generate additional benefits for the company.

5. Conclusions

This publication presents a case study of responsible environmental management on the example of a Polish organization having the objective of municipal waste management. The results of conducted analyses allow to conclude that the organization is well prepared for the implementation of the environmental management system under the requirements of ISO 14001: 2015 standard. A number of activities were carried out during the initial preparation of the organization for the implementation of the system, i.e. review of the functioning documentation, review of the organization and an analysis of significant environmental aspects. The designated environmental aspects made it possible to develop environmental policy.

The carried-out survey indicates that the pro-ecological activities undertaken by the organization will bring numerous benefits. The benefits can include, inter alia, increased customer confidence, improved image of the organization and thus an increase in the number of services provided by the company. Environmental performance indicators will be carried out for the assessment of the functioning of the implemented environmental management system. This will allow an effective identification of the areas that require improvement

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Abstract

This publication presents a case study of responsible environmental management on the example of a Polish organization having the objective of municipal waste management. The results of the conducted analyses allow to conclude that the organization is well prepared to implement an environmental management system compliant with the requirements of ISO 14001:2015 standard. This publication presents and characterises environmental programmes which are implemented by the organization.

The purpose of this publication is to present, on the example of a selected organization, the adaptation to the implementation of the environmental management system compliant with ISO 14001:2015 standard and to analyse the benefits obtained by the organization as a result of implementing the environmental management system. The carried-out surveys suggest that pro-environmental activities undertaken by the organization will bring numerous benefits. The benefits can include, inter alia, increased customer confidence, improved image of the organization and thus an increase in the number of services provided by the company. Environmental performance indicators will be carried out for the assessment of the functioning of the implemented environmental management system. This will allow an effective identification of the areas that require improvement.

Keywords:

environmental management, ISO 14001, certification, environmental aspects, management, benefits of certification

Odpowiedzialne zarządzanie pro-środowiskowe w organizacji: studium przypadku

Streszczenie

W publikacji przedstawiono analizę przypadku odpowiedzialnego zarządzania środowiskowego na przykładzie polskiej organizacji zajmującej się gospodarką odpadami komunalnymi. Wyniki przeprowadzonych analiz pozwalają na stwierdzenie, że organizacja jest dobrze przygotowana do implementacji systemu zarządzania środowiskowego zgodnego z wymaganiami ISO 14001:2015. W publikacji przedstawiono i scharakteryzowano programy środowiskowe jakie są realizowane przez organizację.

Celem niniejszej publikacji jest przedstawienie na przykładzie wybranej organizacji dostosowania do wdrożenia systemu zarządzania środowiskowego ISO 14001:2015 oraz analiza korzyści uzyskiwanych przez organizację w wyniku wdrożenia systemu zarządzania środowiskowego. Przeprowadzone badania ankietowe sugerują, że działania proekologiczne realizowane przez organizację pozwolą na uzyskanie licznych korzyści.

Między innymi mogą one przyczynić się do zwiększenia zaufania klientów, poprawić wizerunek organizacji jak również w efekcie spowodować wzrost ilości usług wykonywanych przez przedsiębiorstwo. W celu analizy funkcjonowania wdrożonego systemu zarządzania środowiskowego będzie się prowadzić analizę wskaźników efektywności środowiskowej, które pozwolą na efektywne wskazywanie obszarów możliwej poprawy i ich udoskonalanie.

Słowa kluczowe:

zarządzanie środowiskowe, ISO 14001, certyfikat, aspekty środowiskowe, zarządzanie, korzyści certyfikacji