

Bartosz FORTUŃSKI
Opole University

**THE INFLUENCE OF ENVIRONMENTAL MANAGEMENT
SYSTEM ACCORDING TO ISO 14001
ON PRO-ENVIRONMENTAL COSTS IN THE ORGANIZATION
(A CASE STUDY OF A SERVICES PROVIDING COMPANY
DEALING IN THE BRANCH
OF ELECTRICAL POWER ENGINEERING)**

1. Introduction

It is for years now that we have come to deal with incessant degradation of natural environment. This process is accompanied by strong interest in the problem of environment protection both among consumers and producers. Therefore leaders in business activity and new technology more and more commonly think pro-ecologically, with reference to the whole production process, including acquisition of resources, as well as utilization and processing of articles used by the consumer [Zalewski, 2000]. The present article is an attempt at determining the influence of Environmental Management System (EMS) in compliance with ISO 14001 on pro-environmental costs in the organization. The problem will be discussed on the basis of a case study of a services company dealing in the electrical power engineering branch.

2. Environmental Management System according to ISO 14001

Organizations want to show to consumers how much concerned about the environment they are, which – in consequence – makes it indispensable for them to apply norms of the ISO 14000 series. Without that many of them would disappear from the market [Zarządzanie środowiskowe, 2003, 4]. The EMS can be defined as “part of the management system of the organization, which is

organizations have introduced ISO 14001, half of which obtaining the EMS certified on the basis of the newer version of the norm, *i.e.* ISO 14001: 2004. The first organizations in Poland implemented PN-EN ISO 14001: 1998 in 1997, and in 2005 there were as many as 948 of them; 375 of the latter implemented PN-EN ISO 14001: 2005. The development of the interest in implementing the norms is illustrated in Table 1.

Table 1. Development of EMS according to ISO 14001 in the world and in Poland

Specification	Year					
	1995	1996	1997	1998	1999	2000
Poland	-	-	8	15	72	66
World	257	1491	4433	7887	14106	22897
Increase	-	1234	2942	3454	6219	8791
Number of countries	19	45	55	72	84	98
	2001	2002	2003	2004	2005	05 - ISO: 04
Poland	294	434	555	709	948	375
World	36765	49449	66070	90569	111162	56593
Number of countries	112	117	113	127	138	107

Source: authors' own elaboration on the basis of: The ISO Survey of ISO 9001: 2000 and ISO 14001 Certificates 2003; The ISO Survey of ISO 9001: 2000 and ISO 14001 Certificates Twelfth Cycle; The ISO Survey of Certification 2005; The ISO Survey of ISO 9001: 2000 and ISO 14001 Certificates Tenth Cycle; The ISO Survey - 2004

3. Pro-environmental costs in an organization applying the EMS according to ISO 14001

The organization under examination represents the electro-power branch, dealing mainly in transfer, distribution and turnover of electric energy. The company is based in Opole Province and acts on the basis of the regulations contained in the Act on the electrical power industry [*Laws Gazette*, 2006]. In 2004, the organization implemented an integrated management system, including the EMS according to ISO 14001. It must be noted that since 1999 the company has had the Certificate of Clean Production Company.

A long time prior to the implementation of the EMS, the examined organization had been carrying out pro-environmental activity, which testifies to a high level of ecological awareness of its employees (especially among the management). All the costs related to the pro-environmental activity include such elements as:

- 1) fees for the economic usage of environment (A),
- 2) fines for not obeying conditions determined in relevant decisions (B),
- 3) modernizations and repairs to installations that have a negative influence on natural environment (C),
- 4) investments improving the condition of the environment (D),
- 5) purchase of means and installations for neutralizing eventual poisoning of the environment (E),
- 6) utilization of waste hazardous to natural environment (F),
- 7) other, such as: documentation, laboratory measurements, courses, literature, etc. (G).

A specification of the individual costs in the years 1995–2005, which are connected with the above-listed elements is shown in Table 2.

Table 2. Costs borne by the organization in connection with pro-environmental activities in the years 1995–2005

Cost symbol	Costs in PLN thousand in individual years*										
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
A	52.1	29.5	30.2	46.0	74.8	57.3	30.7	396	25.2	24.9	11.1
B	–	–	–	–	–	–	–	–	–	–	–
C	–	10.4	121.0	405.8	554.7	194.7	195.4	569.9	100.4	618.9	68.9
D	35.4	–	83.2	473.5	388.4	137.5	–	1994	–	–	–
E	135.4	203.7	75.6	81.2	32.3	22.9	32.6	9.6	94.2	108.3	15.1
F	27.5	121.6	110.4	78.5	205.9	103.1	250.7	79.9	191.2	129.1	125.6
G	21.5	113.0	136.1	182.6	138.7	80.2	45.6	92.7	64.5	68.4	75.8
Costs total	271.9	478.2	556.6	1267.6	1394.8	595.6	555.0	991.1	475.3	949.6	296.0

* The values are expressed in quantities that are index-linked to the level of costs in the year 2005

Source: authors' own elaboration on the basis of internal documents of the organization in the years 1995–2005

Each organization making use of the wealth of nature is obliged to pay fees for their economic exploitation of the environment. As regards the examined company, the fees paid by it with reference to that activity reached the highest values in 1999, amounting to over PLN 74,000. In the next two years they decreased only to grow in 2002 to reach the level of PLN 39,600. In the successive years there followed a drop in the amount of the fees. The year in which the ESM was introduced saw a fall in the total amount, reaching the level of PLN 24,900, to drop even further to that of PLN 11,100. Implementing the ESM in the organization under examination did not entail a drop in the

amount of environmental fees. The decrease, especially in the year 2005, was an effect of the change in the regulations which determine the height of such fees [*Laws Gazette*, 2005; *Laws Gazette*, 2004].

Organizations which do not satisfy requirements of the Polish law with reference to environment protection have to pay penalties accordingly. The examined company has never paid fines for not fulfilling the conditions determined in relevant decisions, which means that the set norms of polluting the natural environment have not been exceeded. This testifies to the fact that the organization has always paid attention to the issue of the natural environment and proves that it has been effective in the field of protection of it – its direct activity area.

The fact that the company has always been governed by the wish to care for the natural environment is revealed when one analyses the costs borne by it on modernization and repairs of installations having a negative effect on the environment. The amounts allocated to this type of activities grew year after year until 1999, when they reached PLN 554,700. In the following two years they remained on the level of PLN 195,000 to reach that of PLN 569,900 in 2002. In the next year again they dropped to PLN 100,400. In the first year of the functioning of the EMS in the organization, the expenditure on modernization and repairs shot up rapidly to the level of PLN 618,900. Such a high rise in the outlays was not caused by the introduction of the EMS, but resulted, among other things, from the fact the above-mentioned modernization and repairs had already been planned before. This could also be influenced by weather conditions and damage – independent of the company. In the year 2005 the modernization and repairs-related expenditure dropped to the level of PLN 68,900.

Among the investments that the organization undertook to make one can distinguish those that add to the improvement of the natural environment. Investments of this type had occurred in the years before the introduction of the EMS. In the peak year 1998, the investments reached the level of PLN 473,500. The introduction of the EMS based on ISO 14001 did not have an impact on the level of new investments in the area of improvement of the environment. Since 2002 the organization has not undertaken a single investment to improve the state of the natural environment, one of the main causes of which being a small amount of damage. It is the damage, as a factor independent of the organization, rather than implementation of EMS, that enforces the need of making new investments. In this case the latter did not exert any influence on the investments under examination.

In order to prevent threats and ecological disasters it is indispensable for organizations to possess suitable means designed for their neutralization. Purchasing means and installations for neutralization of possible pollutions of the environment is independent of organizations – this depends only on

random incidents, modernizations, damage, etc. In 2004, when the EMS was introduced, the organization spent PLN 108,300 on means designed for neutralization, which denotes a rise in comparison with the previous year by PLN 12,100. In the following year, a total of merely PLN 15,100 was spent on the above-mentioned means. There was no influence of the EMS on the above at all.

The examined organization, in compliance with the law in force in Poland, carries out procedures related to utilization of waste hazardous for the natural environment, the costs of which changed in individual years. On introducing the EMS the costs stabilized at the level of about PLN 125,000. Again, EMS has no influence on the above-mentioned costs as the latter result mainly from the change of objects that are subject to utilization (wooden posts, damage, exchange of batteries, ground poisoned in consequence of theft). It must be assumed that the amount of waste is constant.

As regards the examined period of time, the other environmental costs connected with such an area of the organization's activity as: documentations, laboratory measurements, courses, literature, reached the highest vales at the end of the 1990s. Since 2000 they have decreased significantly; still, from 2004 on they have been growing slightly. The rise in the costs of the discussed activity was not an effect of the introduction of EMS – it resulted from administrative decisions.

4. Summing up

Conclusions following from the conducted analysis should be referred to organizations which satisfy the criteria listed below:

1. The main activity run by the organization is one of providing services.
2. The organization belongs to the electro-power branch.
3. The organization runs pro-environmental activity for years before EMS based on ISO 14001 is introduced.
4. The organization fulfills the legal requirements with reference to issues connected with environmental protection (it does not pay fines).

Conclusions that result from the conducted research can provide the basis of carrying out more detailed and profound research founded on a greater number of examined organizations. Nevertheless, the present results do offer certain general notion of the impact that the EMS based on ISO 14001 has on the pro-environmental expenditure borne by organizations. The characterized organization introduced certified EMS based of ISO 14001, which does not influence – in any visible manner – the rise in costs of pro-environmental activities. This follows directly from the activities carried out by the organization in the earlier period, when the suitable level of care about the

environment was secured. This means that such organizations focus mainly on activity related to fulfilling legal requirements. It is only to a little extent that they carry out activities referring to constant self-perfection in the understanding of new innovation pro-environment investments (there is a lack of those in the examined organization after the EMS was introduced). Such organizations concentrate mainly on modernizations and repairs to installations, which affects the improvement of the environment to a lesser degree than new investments, and which is cheaper, as well. The pro-environmental costs in organizations of this type, to a much greater extent are dependent on damage, weather conditions, and the like than on EMS.

The only costs for organizations possessing EMS certified on the basis of ISO 14001 are those of certification and periodical audits. However, in the majority of cases, they are relatively low with reference to marketing benefits which an organization possessing certified EMS can gain.

On the basis of the above, one can say that organizations should not be afraid of introducing EMS based on ISO 14001. This should not bring about a rise in the pro-environmental costs, which means that by introducing EMS, organizations can obtain more profits than the value of the expenditure on the activity related to it could be.

However, organizations in which the pro-environmental activity is run on a high level may not be interested in EMS based on ISO 14001. This refers, in particular, to organizations in which it is hard to point to effective economic benefits resulting from application of EMS., which can stem from the following belief: why should we spend additional money on something we have already been doing? Apart from this, EMS based on ISO 14001 increases bureaucracy in the organization. All this may lead to a situation in which part of the organizations will resign from implementing of certified environmental management systems for the benefit of other ones dealing with protection of environment – very often being their own, internal ones.

Still, it can be stated that the impact of EMS based on ISO 14001 on pro-environmental costs is very limited, which means that beside those connected with certification, organizations do not have to bear any other costs at all.

Literature

ISO 14000 Family of International Standards, Environmental Management 2002.

PN-EN ISO 14001: 1998.

PN-EN ISO 14001: 2005.

The ISO Survey of ISO 9001: 2000 and ISO 14001 Certificates 2003.

The ISO Survey of ISO 9001: 2000 and ISO 14001 Certificates Twelfth Cycle.

The ISO Survey of Certification 2005.

The ISO Survey of ISO 9001: 2000 and ISO 14001 Certificates Tenth Cycle.

The ISO Survey – 2004.

Journal of Laws of 2006, No. 86, Entry 625; No. 104, Entry 708; NO. 158, Entry 1123; No. 170, Entry 1217 (Act of 10 April, 1997 – Prawo energetyczne).

Journal of Laws of 2004, No. 279, Entry 2758 (Order issued by the Board of Ministers concerning fees for using environment of 14 December, 2004),

Journal of Laws of 2005, No. 260, Entry 2176 (Order issued by the Board of Ministers concerning fees for usage of environment of 20 December, 2005).

Zalewski R.I., „Aktualne trendy w nauce o jakości” (“The current trends in the science of quality”). In: *Problemy Jakości* 04/2000.

Zarządzanie środowiskowe, komentarz do norm serii ISO 14000 (Environmental Management, a Commentary to the Norms of ISO 14000 Series). Warszawa: Wyd. PKN, 2003.