

ENVIRONMENTAL ASPECTS OF COST MANAGEMENT IN THE CZECH REPUBLIC

Radana Hojná, Růžena Kafková

INTRODUCTION

Today, one of the prerequisites for succeeding in business is an enterprise taking a responsible approach towards the environment. In developed societies, environmental protection has become one of the basic priorities and needs. The effort to take a friendlier approach towards the environment has been brought about both by external factors (legislation, public opinion) and internal factors (these result from the active attitude of enterprises towards environmental issues) (Študent, Hyršlová & Vaněček, 2005). Currently, enterprises have started to implement a number of measures aimed at reducing their negative impact on the environment in order to strengthen their business's good reputation, to improve its position on the market and, subsequently, to increase profits (Bartošová & Vondráčková, 2011). An important role in environmental protection is played by the European Union. The main aim of the European environmental policy is to improve the quality of the environment, to protect the health of the population, to reasonably utilize natural resources and to enforce international measures in order to deal with global and regional environmental issues. The creation of a coordinated environmental strategy within the framework of the European Union makes it possible to secure fair conditions the activities conducted by a number of enterprises that are affected by the legal regulations in this field and to prevent the creation of obstacles that would hinder the development of a single market. The European Union is putting emphasis on taking a systematic approach that aims not only at rectifying the current situation, but also at preventing devastation of the environment (European Commission, 2015).

Environmental protection is based on the legislative measures, which in the Czech Republic is Act No. 17/1992 Coll., on the environment. This Act defines basic concepts, establishes environmental protection principles and sets forth the obligations of all business entities to protect and improve the environment. Voluntary tools can be used beyond the framework of the applicable legislative regulations (Rusová, 2011 and Česko, 1992).

The objective of this article is to emphasize the importance of taking environmental aspects into account in cost management and to assess, on the basis of the performed analysis, their acceptance in any practical activity undertaken by entrepreneurial entities in the Czech Republic.

1 EMA ACCOUNTING SUBSYSTEM

Resolving problems associated with the environment and its protection is increasingly being addressed by the management of many entrepreneurial entities in which the importance of environmental tools based on voluntary activities has increased significantly. A very important voluntary tool implemented in business information systems as one of the accounting subsystems is environmental management accounting (EMA). The EMA subsystem was developed because insufficient attention had been paid to how enterprises' activities impact the environment and to the financial consequences reflected in traditional accounting (Burritt et al., 2011). This tool is generally perceived as a part of the management process that deals with identifying, collecting, estimating, analysing, reporting and transferring information about material and energy flows. It provides information about environmental costs and other characteristics expressed by value that

are the starting point for making decisions within the framework of the enterprise (Remtová, 2006).

The method of processing and using this information is individual and always depends on the decisions made by a particular enterprise. The proportion of environmental costs in the total costs of enterprises is ever-increasing and, at the same time, the importance of the environmental profile of contemporary entrepreneurial entities is growing. These circumstances have led to a situation where the existing management accounting systems are gradually failing to satisfy the needs of management in modern enterprises, which are very well aware of the importance of environmental protection.

Environmental management accounting is a voluntary management tool that allows companies to make decisions in accordance with the environmental policy of the Czech Republic. The main objectives of this activity are to maintain and improve the quality of the environment, the life and health of the population together with maintaining permanently sustainable development. Information provided by EMA can be used both by internal users (management) and external users. This information can be incorporated into reports on an enterprise's environmental impact intended for suppliers, customers, employees or investors. EMA may be used for the needs of the enterprise as a whole or within the framework of a specific plant or one product line (Bartošová & Vondráčková, 2011).

2 ENVIRONMENTAL COSTS OF AN ENTERPRISE AS THE INFORMATION BASIS FOR EMA

Environmental protection costs, which are immediately associated with reducing the amount of pollution, waste disposal and with various fees or insurance policies, have been ever increasing in recent years as a consequence of strict regulations associated with environmental protection. Financial accounting and management accounting in their classic forms do not provide

a comprehensive view of an enterprises' approach towards resolving environmental issues. Financial accounting usually does not deal with such issues too extensively and management accounting often keeps records of environmental costs in an unsatisfactory manner. In common management accounting, costs associated with environmental protection are hidden as a part of total overhead costs (manufacturing or administrative overhead) (Hyršlová & Vaněček, 2003). Environmental costs as a part of total overhead costs are indirectly divided among the individual products within the framework of costing. This can lead to the fact that they are assigned to all products although such costs may be incurred only by only a small percentage of a company's total production. If the enterprise clearly identifies environmental costs and is able to determine which products incurred these costs, these costs will be assigned only to those particular products. Such costs will be identified as a variable component of overhead costs – i.e. of such overhead costs that change with changes in production volume. The resulting costing with respect to the individual products will be more accurate and more informative. Thanks to the correct identification of environmental costs, the enterprise can work with such costs meaningfully and try to reduce them.

By producing products or providing services, enterprises impact the surrounding environment. During production they consume materials, energies, water and services and, at the same time, generate waste (solid, liquid or gaseous). All these factors lead to the incurrance of company costs that are paid directly by the enterprise. If such costs are high and significantly impact the enterprise's economic results and financial situation, it is useful and important to pay attention to these costs. Enterprises have an information obligation with regard to environment protection that is based on amendment to Act No. 563/1991 Coll., on accounting, in force as of 1 January 2004. On the basis of this amendment, enterprises are obliged to publish, as a part of their annual reports, information related to the

enterprise's environmental protection activities (Česko, 1991).

Environmental management accounting can be used to manage the above mentioned cost items. The EMA system is focused on costs expended in connection with the consumption of material, energy and water, as well as with the generation of waste and its disposal. These costs are designated as the environmental costs and are part of an enterprise's operating costs. EMA makes it possible to identify, analyse, manage and reduce environmental costs using measures that bring economic effects for the enterprise and that are, at the same time, associated with making a positive impact on the environment (Hyršlová & Vaněček, 2003 and Král, 2010).

Company environmental costs consist, in the concept of environmental management accounting, of two basic components:

- 1 costs expended on environmental protection – i.e. costs associated with the enterprise's activities whose purpose is to reduce or to prevent (within the framework of prevention) or compensate for an already-existing negative impact of the enterprise's activity on the environment (elimination of created impacts – sewage water, harmful emissions, remediation or prevention of pollution),
- 2 costs associated with the enterprise's activities that have a negative impact on the environment and costs incurred as a consequence of the enterprise damaging the environment (penalty costs). This cost group includes also costs that a company incurs based on the principle of "those who caused pollution (damage) have to pay", e.g. fines and penalties for air pollution (Študent, Hyršlová & Vaněček, 2005).

The total environmental costs of an enterprise are costs that directly affect the enterprise and that are identifiable and quantifiable within the framework of the enterprise. In practice, all significant environmental cost items have to be identified. These can include for example:

- costs associated with the disposal of solid waste, sewage water and air emissions,
- costs for environmental care and for prevention of pollution,
- costs of wasted material contained in a non-product output
- costs expended on processing a non-product output (costs of labour, depreciation of machinery and equipment and other costs spent on non-product outputs),
- fines for air pollution or contamination of sewage water.

3 THE UTILIZATION OF ENVIRONMENTAL MANAGEMENT ACCOUNTING BY ENTREPRENEURIAL ENTITIES IN THE CZECH REPUBLIC

The following part of the article features an analysis of the current state of the practical utilization of EMA in selected types of entrepreneurial entities. A simple questionnaire was prepared and distributed to the students who are enrolled in a combined form of study at the Faculty of Economics of the Technical University of Liberec in order to verify whether enterprises in the Czech Republic apply environmental management accounting while conducting their activities. The questionnaires were distributed by the distance students to 88 companies, where those students were employed. Altogether, 88 completed questionnaires were received. The response rate of questionnaires was 100 %. Questionnaires were filled out either by students themselves, in case they work on an economic position, or by other qualified staff from an economic department of the particular company. Although definite conclusions cannot be drawn from this number of answered questionnaires, the obtained data provides basic information about to what degree environmental management accounting is used in enterprises and which types of enterprises use it.

The basic question in the questionnaire concerned the use of internal accounting (regardless of its environmental focus).

Altogether, 21 enterprises (i.e. 23.86% of the total number of enterprises) do not use internal accounting; therefore, these enterprises were not taken into account for other analyses and only those enterprises that apply internal

accounting were subject to further examination. One positive finding is that more than three-quarters of all examined enterprises apply internal accounting in cost management. The established results are shown in Table 1.

Tab. 1: The utilization of internal accounting by enterprises

	Number of enterprises	%
Yes	67	76.14
No	21	23.86
Total	88	100.00

Source: own

For further examination, it was necessary to find out what percentage of enterprises utilizing internal accounting are enterprises that accept environmental aspects and how many enterprises do not take these aspects into consideration. The obtained values confirmed the assumption that most enterprises (36 out of 67 enterprises, i.e. 53.73%) have not implemented EMA. At the same time, it is obvious from the shown results that environmental aspects are accepted in cost management by less than half of the enterprises utilizing an internal accounting subsystem. If all accepted and analysed

enterprises are taken into consideration, only 35.23% of enterprises accept environmental aspects (31 enterprises out of the total number of 88 enterprises). This is probably influenced by the fact that the implementation and utilization of EMA is often connected with the necessity to expend relatively significant financial resources and with costly training by expert specialists focused on environmental protection, which is unfeasible for many entrepreneurial entities due to financial reasons. The obtained data is shown in Table 2.

Tab. 2: The application of environmental aspects in cost management

	Number of enterprises	%
Yes	31	46.27
No	36	53.73
Total	67	100.00

Source: own

Other analyses examined the question of the utilization of environmental aspects in cost management from the point of view of *ownership of the enterprise* (see Table 3 and Chart 1), from the point of view of the *number of employees* (see Table 4 and Chart 2) and from the point of view of the *enterprise's field of business* (see Table 5 and Chart 3). When performing these analyses, only enterprises applying an internal accounting subsystem were taken into consideration (67 out of the

total number of 88 enterprises questioned), however, both enterprises that accept environmental aspects and enterprises that do not take these aspects into consideration in cost management were examined. This makes it possible to determine, at least partially, the reasons that cause enterprises to not monitor environmental aspects.

The first point of view examined enterprises based on their ownership. Virtually only enterprises owned solely by a Czech owner

(56.72%) and enterprises with a foreign majority owner (41.79%) were represented in the examined sample. Altogether, 27 out of 38 enterprises that were owned solely by a Czech owner did not take environmental aspects into consideration. The situation was quite the opposite for enterprises with a foreign majority owner – 20 out of 28 enterprises took environmental aspects into consideration in

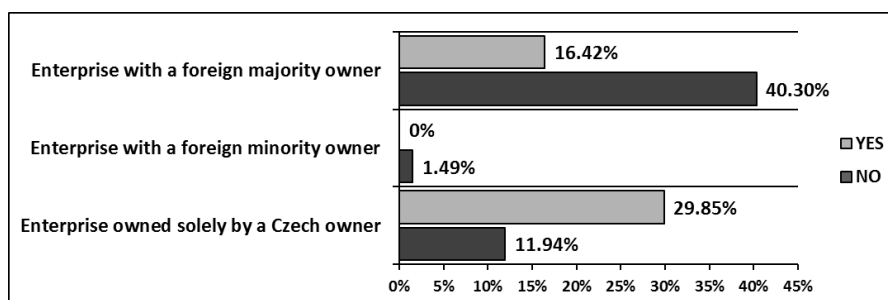
cost management. This result is rather unflattering for Czech-owned enterprises. At the same time, it testifies to different attitudes towards the environment and to taking responsibility for its protection on the part of foreign enterprises and Czech enterprises. The data is shown in Table 3 and graphically captured in Chart 1.

Tab. 3: The acceptance of environmental aspects in cost management depending on the ownership of the enterprise

	YES		NO		Total	
	Count	Percentage	Count	Percentage	Count	Percentage
Enterprise owned solely by a Czech owner	11	16.42%	27	40.30%	38	56.72%
Enterprise with a foreign minority owner	0	0%	1	1.49%	1	1.49%
Enterprise with a foreign majority owner	20	29.85%	8	11.94%	28	41.79%
Total	31	46.27%	36	53.73%	67	100.00%

Source: own

Fig. 1: The acceptance of environmental aspects in cost management depending on the ownership



Source: own

Another point of view examines the enterprises based on the number of employees using the following criteria: microenterprise (1 to 9 employees), small enterprise (10 to 49 employees), middle-sized enterprise (50 to 249 employees) and large enterprise (250+ employees). Large enterprises were best represented in the questionnaire research (53.73%), while the other types of enterprises were represented nearly evenly (approximately 9 to 12 businesses for each type). More large enterprises accepted environmental aspects in cost management more than did not. With regard to the other enterprises (microenterprises, small and medium-sized enterprises) this proportion is the other way

round – the number of enterprises that do not monitor environmental aspects prevailed over the enterprises that do monitor them. Although 11 out of 36 large enterprises also did not accept environmental aspects, it can be assumed, taking into consideration the previous division of the enterprises based on their ownership, that these were probably solely Czech enterprises which, yet again, gives a negative impression on Czech enterprises. On the other hand, 25 out of 36 large enterprises (i.e. 69.4% of large enterprises) accept environmental aspects in cost management, which testifies to the fact that a considerable number of large enterprises apply a responsible approach towards the environment and monitor

the costs incurred as a consequence of the enterprise's impact on the environment within the framework of internal cost management. It is also interesting and pleasing that some microenterprises (i.e. very small enterprises as far as the number of employees are concerned)

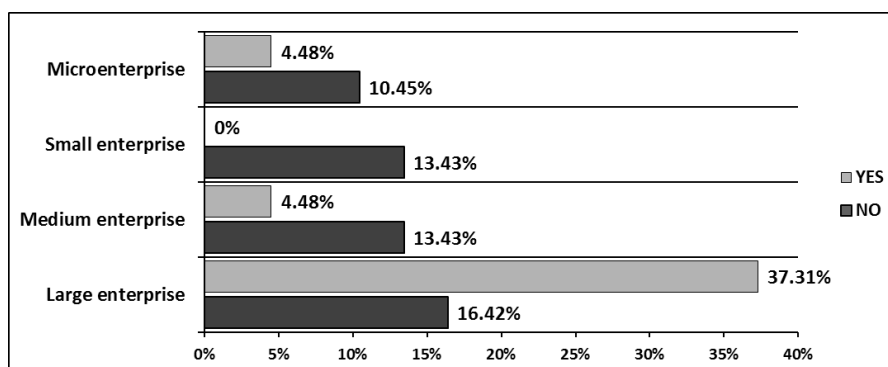
took environmental costs into consideration within the framework of their internal management. The results of examination are shown in Table 4 and graphically captured in Chart 2.

Tab. 4: The acceptance of environmental aspects in cost management depending on the number of employees

	YES		NO		Total	
Microenterprise	3	4.48%	7	10.45%	10	14.93%
Small enterprise	0	0%	9	13.43%	9	13.43%
Medium enterprise	3	4.48%	9	13.43%	12	17.91%
Large enterprise	25	37.31%	11	16.42%	36	53.73%
Total	31	46.27%	36	53.73%	67	100.00%

Source: own

Fig. 2: The acceptance of environmental aspects in cost management depending on the number of employees



Source: own

The last point of view examines enterprises based on the field of business. Enterprises from the field of industry (49.26%) and from the field of services (35.82%) were best represented in

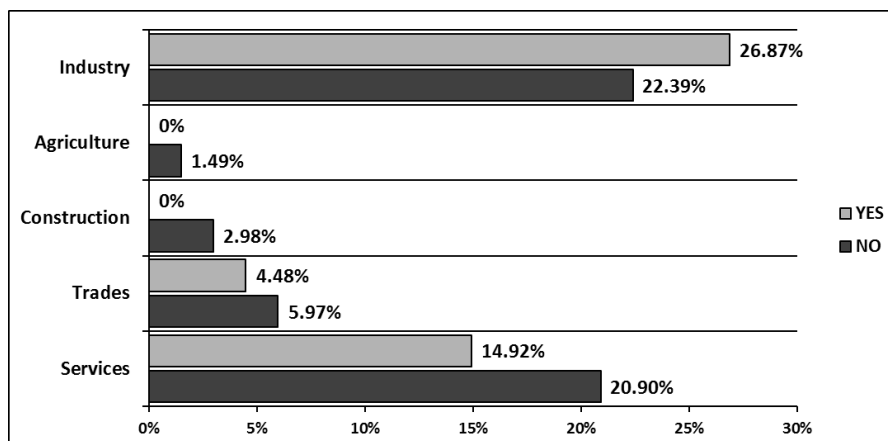
the research results. Other fields of business were represented negligibly. The resulting values are shown in Table 5 and documented in Chart 3.

Tab. 5: The acceptance of environmental aspects in cost management depending on the field of business

	YES		NO		Total	
Industry	18	26.87%	15	22.39%	33	49.26%
Agriculture	0	0%	1	1.49%	1	1.49%
Construction	0	0%	2	2.98%	2	2.98%
Trades	3	4.48%	4	5.97%	7	10.45%
Services	10	14.92%	14	20.90%	24	35.82%
Total	31	46.27%	36	53.73%	67	100.00%

Source: own

Fig. 3: The acceptance of environmental aspects in cost management depending on the field of business



Source: own

One would expect that industrial enterprises, where the use of an environmental approach in cost management is highly desirable, would have implemented EMA. The questionnaire research did not examine the specific focus of the industrial production of the examined enterprises. Still, it can be stated that it is very alarming that 15 out of 33 industrial enterprises were not interested in environmental aspects in their cost management at all, especially because it is the activity of industrial enterprises that has, in most cases, the greatest negative impact on the environment. This is why industrial enterprises should monitor environmental costs and possible revenues.

CONCLUSION

Environmental management accounting is a very important, although only voluntary, tool that an enterprise can use when determining their environmental policies. Its application brings environmental and economic benefits resulting from the reduction of the negative impacts of the enterprise's activities on the environment, from increasing the efficiency of the utilization of materials and energy, and from improving the enterprise's economic management, particularly by increasing profitability. It leads to the more efficient monitoring, assessing and managing of the enterprise's environmental costs, thus helping the enterprise to comply with the legal regulations related to environmental protection

more easily. Ultimately, EMA can lead to improved economic management efficiency and to mitigating the negative impact of the enterprise's activity on the environment.

Enterprises that try to behave responsibly within the framework of environmental protection and that want to have a positive environmental profile should use EMA as an internal management tool while performing their activities. The main benefits of implementing this internal accounting subsystem include, in particular, improving environmental protection work and raising environmental awareness in all employees. Other benefits of implementing EMA include e.g. better utilizing materials and energies at the input into the entrepreneurial process (thus reducing operating costs and improving the enterprise's economic results), developing products that are friendlier to the environment, more accurately identifying the costs associated with environmental issues, harmonizing the activity of the entrepreneurial entity with environmental rules, regulations and acts on the environmental protection, etc.

Implementing an environmental management system also assists an enterprise with its information obligation with regard to environment protection that is based on amendment to Act No. 563/1991 Coll., on accounting, in force as of 1 January 2004. Enterprises are obliged to incorporate information concerning their environmental protection activities into their annual reports.

However, larger enterprises are publishing separate reports dealing with environmental issues.

Environmental management accounting is a very important and valuable source of information for decision-making processes undertaken by an enterprise. It contributes to reducing operating costs and, therefore, to achieving better economic results. It also allows for more efficient management and monitoring of environmental costs of entrepreneurial entities. Implementing EMA helps to improve the image of the enterprise and its competitiveness. At the same time, it makes it possible for the enterprise to comply more easily with the legal regulations related to environmental protection, thus mitigating the environmental impacts of its business activities. An analysis of the questionnaire responses

showed that the use of EMA by entrepreneurial entities in the Czech Republic is not yet very widespread.

The implementation of EMA can be regarded as the right path towards a relatively quick rehabilitation of the environment. For this reason, it should be supported more effectively by the state, whether through financial subsidies or tax advantages.

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Authors:

Ing. Radana Hojná, Ph.D.

Technical University of Liberec

Faculty of Economics

Department of Finance and Accounting

E-mail: radana.hojna@tul.cz

Ing. Růžena Kafková

Technical University of Liberec

Faculty of Economics

Department of Finance and Accounting

E-mail: ruzena.kafkova@tul.cz

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Radana Hojná, Růžena Kafková

Abstract:

Industry is continuously developing and so environmental protection is becoming more and more important. An important role in environmental protection is played by the European Union, which is placing particularly emphasis on systematic approaches so as to prevent devastation of the environment. Within the framework of environmental protection, entrepreneurial entities (not only) in the Czech Republic utilize statutory and voluntary environmental tools. Implementation of one of the voluntary environmental tools – environmental management accounting (EMA) – has become an important part of internal cost management. EMA is a very important environmental policy tool. Its application leads to reducing the negative impacts of an enterprise's activities on the environment, to increasing the efficiency in the utilization of production inputs and to improving the enterprise's economic management. A great advantage of EMA lies in its versatility; it can be, therefore, used in large, medium-sized and small enterprises, in various industries as well as in the service sector. EMA makes it possible to accurately establish what part of the total costs is related to environmental issues. In management accounting, environmental costs are hidden as a part of overhead costs. Their correct identification is important for the purpose of costing with respect to individual products. Questionnaire responses were used to examine whether enterprises utilize internal accounting and whether they monitor environmental costs within the framework of their internal accounting. Acceptance environmental costs was analysed on the basis of a division of the enterprises from the following points of view: ownership of the enterprise, the number of employees and the field of business.

Keywords: environmental protection; environmental costs; environmental management accounting; environmental policy of the enterprise

JEL Classification: Q56