GREEN COSTS IN CONTEXT OF SUSTAINABLE DEVELOPMENT TRENDS

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Abstract
The paper aims an analysis of the role of the information provided by the accounting of environmental resources in the context of sustainable development. The impact of economic organizations on the natural environment and society tends to become increasingly important to managers, generating a number of risks which a company must face, the necessary information in substantiation of managerial decisions which must be included in the financial reporting. In the present circumstances consumers show a higher interest in products and services which take into account the consequences of company activities on the natural environment accounting, as well as management actions taken by the company to avoid such incidents. Green accounting involves the aggregation of information in order to assess the costs and risks of natural disasters. Thus, criteria which allow to establish costs belonging to the natural environment must be found. Anti-pollution investments involve the restructuring of the entire production process, in order to avoid antipolluate emissions during the production process. Accounting takes into account resource consumption which has a price. Consumption of natural resources is considered to be free and is not included in the production cost. The policy pursued by some enterprises to reduce consumption of natural resources considered free is noticed. The existence of a conceptual framework for accounting for the environmental accounting becomes necessary in the current economic context. Thus, the accountants will have support for developing an environmental accounting. The UN has developed a conceptual framework and methods of assessing and accounting consequences of the activities of companies upon the natural environment. The indicators refer to the quantity of water consumed, its use, the quantity and nature of the energy consumption, emissions of greenhouse gases, the ozone layer, the nature and quantity of waste products, the nature of the treatments used to reduce or suppress them. The indicators recommended by the United Nations to be presented in the financial statements should allow offering information on the enterprise performance toward the natural environment, facilitating the calculation of forecast financial performance and decision-making regarding the protection of the natural environment.

Keywords: green costs, environment, accounting, sustainable development

JEL Classification: M41, Q01, Q56

1. Introduction

Accounting represents the main source of information that facilitates the estimation of an entity’s value and, therefore, it is necessary that it should reflect the environmental issues that may have significant financial consequences.

How can an entity determine the cost of manufactured products while also taking into consideration their environmental impact? How can it determine investment project priority while integrating economic, environmental and technical characteristics equitably? How can it take into account environmental performance? These are some questions to which the entities in question must have the right answers in order to ensure the sustainable exploitation of the environment.

As far as traditional accounting is concerned, environmental costs are generally recorded alongside other expenses and therefore require separate identification and coverage. There are several views on the definition and classification of environmental costs.

The UNCTAD defines environmental costs as the “expenses that an entity has covered or has had to support in order to address the effects that its activities have on the environment. Environmental costs usually include the costs of integrating prevention, treatment, and repair operations, as a result of the damage done to the environment.” [14]

The UNDSD (2001) identifies the following environmental costs [16]:
- waste and emission treatment, including equipment depreciation, maintenance material consumption, wage costs, fees, taxes, fines and penalties, environmental insurance, provisions for site restoration;
The IFAC [8] conveys clear distinctions between waste and emission control costs, costs related to prevention and other management costs, such as research and development that helps to reduce material costs (non-product) and to increase eco-efficiency gains. According to the following IFAC classification, the following are considered environmental costs:

- the material costs for the obtained products – purchase costs of natural resources such as water and other resources used for product, sub-product, and packaging manufacturing;
- costs of materials unused in the production process – acquisition cost (and sometimes processing cost) of energy, water and other materials that are lost in processing (waste and emissions);
- waste and emission control costs – the cost of waste handling, treatment and disposal, remediation costs, compensation for caused damage and all other compliance costs;
- prevention costs and environmental management – including prevention activity costs such as cleaner production projects, costs for other environmental activities, such as: the planning and maintenance of environmental systems, means of communicating environmental information and any other relevant activities; research and development – research and development costs and other projects related to this activity;
- less tangible costs – internal and external costs related to elements that are harder to identify, such as future liabilities arising from certain regulations, productivity, corporate image, and relations with internal and external users.

In order to be catalogued as environmental costs, expenditures must be made principally to prevent, reduce or repair the damage caused to the environment.

Lately, entities are becoming progressively interested in environmental accounting, since pollution poses serious problems and calls for the implementation of both national and global environmental protection measures in order to prevent, reduce and mitigate the effects of pollution; hence, environmental accounting is a tool that can provide the information necessary to support such decisions.

Economic development is dependent on the rational use of resources and requires that the environmental impact should be as contained as possible.

2. Approaches on green costs in context of sustainable development

The purpose of environmental indicators and “green” accounting is to find the way to sustainable development.

Environmental costs are associated with the costs resulting from the actual or potential damaging of natural resources. There are two perspectives as regards the addressing of these costs:

1) Caused costs, related to environmental costs generated by general economic unit activities likely to damage the environment;
2) Incurred costs, related to environmental costs incurred by economic units as a consequence of damaging the environment whether directly, via their work, or indirectly, because of external causes.

The three pillars of sustainable development are: economic, social, and environmental development, structures that are interconnected and also tied to the concept of sustainability. [3]

The System of Integrated Environmental and Economic Accounting (SEEA) was developed by the UN in 1993 and was revised in 2000 and 2003. The SEEA puts forward a normalized presentation of the interaction between economy and environment, which revolves around the notions of flow accounts (environmental pressures) and heritage (the status of the environment in physical and monetary terms). [15]

Cash flows include total production resources and uses, final demand, capital formation and accumulation; stockpiles include renewables and nonrenewable resources. [1]

For the development and application of this model the London Group on Environmental Accounting was established in 1994. The objective of this group is to provide states and key international bodies the possibility of practical and technical exchanges on achieving a form of environmental accounting that is integrated into national accounts and to provide those interested with the research results. The group held several debates in which were analyzed issues such as: GDP corrected so as to take the environment into account; implementation of a system that provides physical and monetary data on natural resources: underground resources, water resources, forests, etc.; the use of the input-output panel in environmental accounting, particularly for material flows; the assessment of the depletion of natural resources, in physical and monetary terms, and the finding of means to take them into account in the SNA; the comparing of different methods of assessing environmental degradation; the estimation of expenditures as a result of environmental protection, etc. [2] SEEA 2003 provides physical and monetary information on natural assets, addressing different methods of evaluating the natural heritage and the damages. Hence, there are physical, monetary,
and combined accounts for mineral and energetic resources, fishery resources, land, forest resources, ecosystems, taxes and environmental taxes, etc. More so, information on the experiences of various states regarding air and water emissions, waste, etc. is also provided.

SEEA also determines summary indicators, providing information on pressure levels and the environmental status. According to the SEEA, the depletion and degradation of natural assets are costs that are taken into account in the production accounts. [2]

3. Case study: assessment of tangible assets

    IAS 16 **Tangible assets** addresses specific issues related to the environment that are connected to assessment upon heritage inclusion and subsequent expenditures. [7]

    IAS 16.11 places particular emphasis on accounting related to tangible asset acquisitions as a result of environmental or security issues. [7] The rule specifies that, despite the fact that fixed assets do not directly increase upcoming economic benefits, the may still be necessary when an entity is to obtain future economic benefits from other assets. These elements are recorded as assets since they enable an entity to obtain higher economic benefits from related assets than they would get if they did not make the purchase.

    The following example is given: a chemical manufacturer may introduce a new chemical handling process to comply with the environmental regulations on the production and storage of dangerous chemicals in force; the facility improvements in question will be recorded as assets since, without them, the entity is unable to manufacture and sell the aforementioned products.

    Environmental costs are not by themselves sources of special benefit. For example, purchasing a machine that is used for water or air remediation may be the origin of a particular or distinct benefit and, consequently, can be counted separately. When an environmental fixed asset cost is incorporated into another asset, the possible value diminishing of the combined assets must be determined, hence reducing the total sum in order to determine the exact production value.

    Many environmental costs do not entail further benefits or do not present sufficiently attractive possible upcoming benefits to warrant their settling as fixed assets. For example, this is the case of waste treatment costs or the cost of repairing previously caused damage. Fines and penalties paid for non-compliance with environmental regulations, as well as compensations paid to third parties as a consequence of damage caused to the environment are considered environmental costs and fall into the category of expenditure that are not likely to generate future benefits and will be outlined in the profit/loss account.

    A particular case of tangible assets is related to the handling of land. Thus, according to IAS 16.58 – land, with some exceptions, such as quarries, sites used for sterile, etc., have unlimited life-cycles and are not amortized. Apart from the exceptions, land is considered to have limited life-cycles and will be amortized depending on the benefits that are to be derived from its use (IAS 16.59). Furthermore, when the cost of a land also includes expenditures, such as site dismantling, remediation, and restoration, that portion of land value is amortized for as long as it provides economic benefits. [2]

    For example, an entity acquires land worth 700,000 mu.

    It is estimated that, at the end of the work, additional operations will be necessary in order to restore the site, the cost being approximately 20,000 um; estimated life-cycle is 25 years. If the criteria for debt recognition are fulfilled, the amount will be included in the value of the land and will be amortized over the period of use, as follows:

    1. Acquisition and registration of debt recovery:

       | Land = % | 720,000 |
       | Fixed asset suppliers | 700,000 |
       | Environmental provisions | 20,000 |

    2. Annual amortization, exclusively for debt, of 800 mu (20,000 mu / 25 years):

       | Amortization expenses = Amortization of land of fixed assets improvements | 800 |

    It should be noted that sometimes land is polluted by the previous owner, and, if upon acquisition, a clause of liability for previous pollution is not specified in the contract, then the new owner is responsible and must bear the costs of remediation. There are also cases when the entity that has polluted the land goes bankrupt. In this situation a court of law is responsible for the setting of priorities: eliminating the effects of pollution or paying debts to creditors.

    Assessment of expenditure for the removal of land degradation is difficult to make because, for example, the effects of soil erosion are very complex. Some types of degradation are reversible, provided that adequate soil
conservation programs are implemented, but many types of degradation are irreversible. Soil degradation can be caused by natural phenomena (climatic factors, such as: strong winds, tornadoes, heavy rainfall, droughts, etc.) or by misuse (overexploitation of land, deforestation, overgrazing, overexploitation of groundwater, etc.). To prevent or reverse the effects of land degradation, various actions or projects are undertaken.

4. Economic and fiscal instruments for environmental protection

Given the complexity of the issue and the impact of environmental policies on social and economic activities, specific environmental problems are usually addressed via different tools [6]:
- command, control or regulation instruments including the quality standards of environmental factors: concentration levels, source specific standard emissions, technology standards, product standards, total pollution per unit of input or output standards (“dilution” of pollution);
- economic or market instruments, such as: taxes on emissions, user fees, taxes/duties on the product, guarantee refunding systems, pollution licenses, subsidies and tax cuts, etc.;
- voluntary agreements: this group includes public and stakeholder participation, information access strategies, and environmental education.

The economic and fiscal instruments for environmental protection are applied in order to improve environmental quality and to reduce harmful emissions related to the production or consumption process. They constitute a means of public administration intervention via rate control and market intervention in order to encourage those that affect the environment less.

Managers of organizations considered that, overall, environmental costs are not that relevant for their business. Oftentimes, these managers do not realize that some production costs also have an environmental component. For example, the purchase price of unused raw materials that are found in waste is usually considered as a cost related to the environment. These costs tend to be much higher than initial estimates (when existing) and must be controlled and minimized via effective initiatives for cleaner production, whenever possible. By identifying and controlling environmental costs, accounting systems of environmental management can help environmental managers to justify projects for cleaner production and to identify new ways of saving money and, at the same time, improving environmental performance. [4]

From the very beginning of the product design stage, the organization must have the protection of the environment in mind, taking into account all of its life cycle stages. For example, a glass packaging will not have the same pollution cost if the user puts it in a recycle bin, as compared to drop it in a forest. [5]

The correct determination of production cost is a precondition for making decisions. EMA (Environmental Management Accounting) turns many indirect environmental costs into direct costs and connects them to the generating products, thus facilitating: the correct determination of product costs after the cost recalculation; the reevaluation of product profit margins; the progressive relinquishment of certain products, if the differences are noteworthy; the changing of processes or products in order to reduce environmental costs; the monitoring of environmental performance. [4]

The amount of damage caused by pollution is very difficult to determine because it occurs over long periods of time and because it is almost impossible to determine all the consequences of pollution. As dictated by the concept of sustainable development, the amount of pollutants dispersed into the environment during productive activity must be below the assimilative capacity of the ecosystem. Oftentimes, the determination of these elements can be quite a difficult task.

The damage caused to the environment by businesses but represents the community’s responsibility is considered a type of externality. Most environmental protection specialists support the concept of internalizing externalities, i.e., pollution reduction costs. [13] An environmental cost occurs each time the organization “internalizes externalities,” thus taking responsibility for the caused destruction and paying preventive or remedial costs. Environmental expenditures relate to either the production process (becomes progressively cleaner) or to the product itself (becomes a progressively cleaner product). [2] These elements are usually quite difficult to establish.

The economic approach is connected to the selection of economic instruments that can be applied financially, causing polluters to choose one of two alternatives [12]:
- to pollute and pay for the penalties;
- or to invest in pollution control and, consequently, avoid penalties.

The International Federation of Accounting published in August 2005 a guide on management accounting related to the natural environment, summarizing the best practices observed in the world. This organism is responsible for the accurate collection of reliable data on raw material, water, energy, etc. consumption and waste generated by companies as well as monetary data on the costs of protecting and restoring the natural environment and reducing the consumption of natural resources. [10]

A system of environmental management accounting can separate the costs of removing the effects of pollution (end-of-pipe) from the costs of pollution prevention and can help determine the savings made by using smaller amounts of raw
materials and energy. Without the data provided by these types of environmental programs, organizations will continue to consider environmental management as an activity that does not generate profit and contributes to expenses. A cleaner production can thus save money and increase profits. Currently, businesses that publish reports on the social and natural environment have the opportunity to choose the indicators they consider most relevant. The lack of standardization regarding result disclosure makes it difficult to compare companies, and, sometimes, even one financial application from the other within the same company. Certain categories of reports required under International Financial Reporting Standards should incorporate sustainable and qualitative information. Reducing wasteful tendencies that lead to reductions may be presented as an expense in financial statements, while the benefits of the productive use of wasteful consumption reductions may be recognized as revenue.

5. Conclusions

Business strategies are adopted by organizations for maintaining the quality of the environment. In the context of sustainable development, they provide specific information in environmental and social reports. Management accounting applied to the natural environment must collect data on consumption of raw materials, energy, water, waste generated by business activities. Also the protection and restoration of the natural environment costs and the results of these policies must be highlighted. Economic, social and environmental trends can be presented in the notes attached to the financial statements detailing and analyzing future risks enabling management decisions.

In Romania, since no national law or generally accepted accounting principles force companies to disclose information related to the environment, publication of these data in annual reports does not appear at all, in general, with the exception of certain multinationals.

Information provided voluntarily usually takes the form of an environmental report or a sustainable development report which regards the environment as one of the three pillars of development, alongside the economic and social ones. Sustainable reporting has the capacity to provide information that is essential in business analysis and usually missing from financial reports, such as: human capital formation, corporate management, risk management, and environmental responsibility, innovativeness, etc.

5. References