



Accounting Of Environmental Costs

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ABSTRACT

Environmental accounting performs functions such as classifying, recording and reporting the environmental costs that arise in businesses in accordance with the legislation. Enterprises should benefit from the accounting function of accounting in order to document all environmental activities and investments. In this context, it is not possible to talk about recording and reporting transparently and reliably the studies conducted on the environment without environmental accounting.

The aim of the study is to explain how the environmental costs are recorded in the accounting system by referring to the conceptual framework of environmental costs. The study is a theoretical study with this aspect. Firstly, a literature review was carried out to realize the purpose of the study, then, the types of environmental costs were explained and finally, the methods by which environmental activities and costs were recorded in the accounting system were tried to be explained with examples. As a result of the study, it was determined that environmental costs can be recorded and reported in four ways.

Keywords: Cost, Environmental Costs, Environmental Accounting, Accounting of Environmental Costs,

Çevresel Maliyetlerin Muhasebeleştirilmesi

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Öz

Çevre muhasebesi işletmelerde ortaya çıkan çevresel maliyetleri mevzuata uygun şekilde sınıflandırmak, kayıt altına almak ve raporlamak gibi fonksiyonları yerine getirmektedir. İşletmelerin çevre ile ilgili tüm faaliyetlerinin ve yatırımlarının, belgelenmesi için muhasebenin kayıt fonksiyonundan faydalanması gerekir. Bu bağlamda çevre muhasebesi olmadan çevre ile ilgili yapılan çalışmaların şeffaf ve güvenilir şekilde kayıt altına alınıp raporlanmasından bahsedilemez.

Çalışmanın amacı çevre maliyetlerinin kavramsal çerçevesine değinerek çevre maliyetlerinin, muhasebe sisteminde nasıl kaydedildiğini anlatmaktır. Çalışma bu yönü ile teorik bir çalışmadır, Çalışmanın amacını gerçekleştirmek için öncelikle literatür taraması yapılmış ardından, çevre maliyetlerinin çeşitleri anlatılmış ve son olarak çevre faaliyetleri ve maliyetlerinin muhasebe sistemi içerisinde hangi yöntemlerle kayıt altına alındığı örneklerle anlatılmaya çalışılmıştır. Çalışmanın sonucunda çevre maliyetlerinin dört şekilde kayıt altına alınarak raporlanabileceği tespit edilmiştir

Anahtar Kelimeler: Maliyet, Çevresel Maliyetler, Çevre Muhasebesi, Çevresel Maliyetlerin Muhasebesi,

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Introduction

Along with increasing sensitivity to environmental problems, the efforts of international organizations and countries to contribute to the solution of problems have directly affected businesses. One of the sources of environmental problems is the production activities of businesses. The elimination or prevention of environmental pollution during production activities has become binding in terms of laws, regulations and standards and enterprises. In order to manage environmental costs effectively, it is first necessary to identify them. Environmental accounting detects and records environmental financial events and provides information to relevant people when necessary. The concept of environmental accounting became a current issue in the mid-1990s and in 1996, by the releasing of "14001 Environmental Standards", has been added to agenda of the businesses. Businesses faced environmental costs in three ways. The first one is prevention of adverse impact to the environment before it occurs, the second is minimizing the existing damage and the last one is determinate the destruction and compensate the price of this destruction. Environmental accounting is an important tool for businesses to prevent environmental costs by recording them and discharge their responsibility. In Turkey, the accounting system records scheme is carried out by Uniform Chart of Accounts (UCA). There is no separate account belonging to environmental costs in the UCA. Likewise, there is not any article directly related to environmental costs in Turkey Accounting Standards/Turkey Financial Reporting Standards TAS / TFRS set (Ulusan, H., 2010, p:96).

The aim of the study is to explain how environmental costs are recorded in the accounting system by the case study method. To achieve the purpose of the study, a literature review was made, and then the concepts of environmental accounting and costs were explained. After conceptual definitions, it is tried to explain how environmental costs are accounted with examples in accounting system.

Literature

Ergin and Okutmus (2007), explained the environmental costs and environmental accounting theoretically in their study, then explained how environmental costs will be recorded in the accounting system and how they will be included in the reports.

Altınbay (2007) described the reporting of environmental costs with sample tables and reports after classifying environmental costs.

Haftacı and Soylu (2008), after explaining the theoretical structure of environmental costs in their study, they classified environmental costs and then exemplified the accounting and reporting of environmental costs in the registry order.

Coskun and Karaca (2008), approached the environmental costs in SMEs under three headings and made

suggestions after examining environmental costs of SMEs in their study.

Ulusan (2010), examined items related to environmental costs and borrowing in TAS / TFRS set and interpreted the explanations in the relevant standards in terms of the registration order.

Beller, Deran and Hatipoglu (2012), explained the theoretical structure of environmental costs in their study, they explained the accounting of environmental costs of a cement factory with a case study.

Yildirim, Ercan and Calis (2013), explained the environmental costs theoretically in their study and explained the accounting of environmental costs with case studies after classifying the environmental costs.

Ayan (2014), pointed out the connection between the environmental management system and quality costs, and noted the similarity in the sub-titles of quality costs and the sub- titles of environmental costs.

Gönen and Guven (2014), exemplified the accounting records of environmental costs of the ceramics factory in the application section after making an assessment of environmental accounting in terms of financial accounting and cost accounting.

Icoz and Kilinc (2016), they referred to the studies related to the environment in Turkey and in the world in their study, then explained the classification, reporting, environmental accounting standards and auditing of environmental costs in a theoretical framework.

Environmental Accounting Concept

Accounting is a scientific discipline that records, classifies, summarizes, interprets by analyzing the events expressed in money that cause changes in the assets and resources of the business and informs third parties when necessary (Conkar, Ulusan & Ozturk,, 2006, p: 22). Environmental accounting, also called green accounting, came to the agenda in the sustainable development model and begin to take more part in the literature after 1990. Environmental accounting is the expertise accounting that reports, analyzes, summarizes and classifies the events that can be expressed with the money related to environmental issues, in order to fulfill the obligations stipulated in the environmental legislation, and informs the internal and external branches when necessary (Ozbirecikli, M., 2000, p:17).

Environmental accounting can also be interpreted in terms of interacting national income, financial accounting, and cost accounting.

Environmental Accounting in Terms of National Income; GNP, which is one of the macroeconomic indicators, is an indicator of the welfare level of the society. Environmental accounting contributes to the process by using physical or monetary units to indicate the consumption of renewable and non-renewable natural resources of countries. The economic values of damages are tried to be calculated by measuring the damages that businesses cause to natural resources during their production activities. When evaluated from this point of view, environmental accounting also closely concerns all-natural resources belonging to the

society, which is the subject of national income. The term "natural resource accounting" has become a frequently used term with the increase of environmental awareness (Cetin, Ozcan & Yuçel, 2004, p:65).

Environmental Accounting in Terms of Financial Accounting; Environmental accounting and financial accounting intersect on many issues. The first one is, which activity will be recorded in which account or sub-account when an environmental subject will be recorded. In addition, if there are situations that are not shown in the records, how they will be included in footnotes and reports are covered by the subjects of financial accounting. Because all activities are not shown on the balance sheet. Therefore, how to record expenses, costs and environmental processes in which accounts is also a common subject of environmental accounting and financial accounting. In terms of financial accounting, environmental accounting refers to the preparation of information on environmental sourcing of businesses and their environmental obligations and their communication to third parties with related reports (Celik, M., 2007, p: 156).

Environmental Accounting in Terms of Management Accounting; Unlike the financial accounting, management accounting differs according to the needs of each business. In management accounting, managers make decisions based on both actual and predicted data (Cetin, Ozcan & Yuçel, 2004, p:65). Managers decide according to environmental costs data and determine their future strategies. With this aspect, management accounting and environmental accounting are in interaction.

Environmental accounting and environmental problems make a positive contribution to each other. These contributions can be summarized as follows (Gonen & Guven, 2014, p:67);

- Businesses who want to contribute to environmental problems include environmental costs in their financial structures by adding environmental costs and try to manage these costs.
- All activities carried out become auditable by including environmental problems and activities in the audit reports.
- The presentation of business information and reports contributes to the development of theoretical and practical fields of environmental accounting.
- It contributes to the examination and inspection of environmental activities.
- Waste of natural resources will be minimized in the future when companies determine that they can control and manage environmental costs.
- Environmental costs that companies can manage are made possible by environmental accounting. When companies use this situation as an element of advertisement, they set an example for other companies.

Historical Stages In Environmental Accounting

In recent history, the first studies on environmental accounting were made in the 1960s. Since the studies carried

out in 1960 are handled at the macroeconomic level, the social accounting aspect of environmental accounting has gained importance. In 1968, the fact that environmental damage should not be handled only at the macro level but also in the micro level was brought to the agenda by 100 members. Environmental problems have been brought to the agenda after the 1960s, and have been evaluated from an economic perspective, socially and culturally, and have become an international issue (Korukoglu, 2011, p: 87). By the taking international dimension of environmental problems, Norwegian Government led the works under the name of "Natural Resource Accounting" in 1974. The Environmental Protection Agency (EPA) started to prepare environmental reports in 1980 and contributed to the process. The reporting of environmental costs within the accounting registry system took place towards the 1990s. In the second half of the 1990s, the concept of green accounting started to be used in addition to the concept of environmental accounting. In many European countries, environmental costs have begun to appear in reports and records in addition to financial statements (Icoz & Kilinc, 2016, p:38).

The concept of environmental accounting entered the literature towards the end of the 1990s. Environmental accounting has been evaluated primarily in terms of classification of environmental costs and their ability to be loaded in the product cost in accordance with the principle of social responsibility and materiality. With the "ISO 14001 Environmental Management System", which was held in 1996 and revised in 2015, compliance of businesses with environmental issues has become a required topic (Alagoz & Irdiren, 2013). IASC (International Accounting Standards Committee) took its rightful place in practice after defining environmental costs in 1993.

Environmental Costs

Environmental costs include the cost of the steps which are taken to manage the costs caused by environmental objectives and needs in a responsible manner towards the environment (Ulusan, H., 2010, p:91). In accordance with the concept of materiality, which is one of the basic concepts of accounting, the costs incurred in the operational process of the enterprise should be separately included in the accounting records (Altinbay, A., 2007, p: 8). The increasing importance of environmental costs has made it necessary to define costs first. Environmental costs are classified under two main categories as social costs and private costs. Social costs are the negative effects of businesses on society and the environment. Social costs are divided into three as prevention costs, usage costs and destruction costs. Private costs are the costs that the enterprise is legally responsible and affecting profit and loss at the end of the period. They consists of four headings: Potential Hidden Costs, Conditional Costs, Traditional Costs, Conditional Costs, and Image & Relationship Costs (Ulusan, H., 2010, p: 91). Prevention costs are the name given to the costs incurred by businesses to prevent or reduce environmental costs before they occur.

Environmental costs that can be included in the scope of prevention costs are as follows:

- Planning expenditures for environmental investments,
- Design expenses to produce harmless products to the nature,
- Environmental development expenditures,
- Training expenses for staff,
- Investments in emission measurement devices,
- High storage costs incurred for the storage of chemical wastes harmful to the environment,
- Facility costs which are constructed to control wastes by treating them,
- Expenditures made to add environmental costs to the information system,

The second of environmental costs is usage costs. Usage costs are the costs that arise from the consumption of public environmental resources of the enterprises. It covers costs such as air cost, land cost, oil, water, noise costs.

In order to calculate the damage costs caused by the business due to environmental pollution, the economic dimension of the damage must be determined by taking measurements. Destruction costs consist of costs such as penalties, compensations, warranty expenses, complaint investigations, surety, environmental cleaning costs as well as environmental, air, water, land, and noise costs (Beller, Deran & Hatipoglu, 2012, p: 101). Destruction costs are the costs imposed by the environmental damages and pollution caused by the production activities of the enterprise (Kirioglu & Can, 2006, p:119).

Accounting Of Environmental Costs

In today's world, where the speed of circulation of capital markets instruments of economic investments has increased, investors have begun to question whether the information in the financial statements is comparable and transparent (Deniz & Cukaci, 2018, p:22). The standards enacted to eliminate this difference between countries and to provide unity of practice are the most important tool for establishing a common language. Turkey also has not been unconcerned to developments in the international arena by introducing the TAS/IFRS set as the Turkish translation of IAS / IFRS set which has international qualification. The basis of the registration scheme constitutes a uniform chart of accounts in Turkey. Enterprises account their activities within the framework of accounts in UCA. However, there is no separate account group in UCA where environmental costs will be recorded. Similarly, there is no section in the TAS / TFRS set that directly describes the accounting and reporting of environmental costs. However, the principles set out in TAS / TFRS are considered sufficient for the accounting and reporting of environmental costs and debts.

The activities and costs of businesses which are subject to environmental accounting and must be accounted, can be examined under 4 main headings (Uluslan, H., 2010p: 91):

- Recording activities and costs related to stocks
- Recording the investments made to prevent environmental pollution
- Recording operating expenses

- Costs incurred
- The provisions of the regulations implemented in Turkey; environmental costs take place in enterprises' recording system as in the following manner.
- Environmental costs can be recorded in the main account in the relevant account group.
- Environmental costs can be recorded in the subaccount of the relevant account.
- Environmental costs can be recorded in off-balance sheet accounts.
- Environmental costs can be recorded in footnotes.
- Environmental costs can be shown in the environmental report.

Recording environmental costs in the main account in the relevant account group;

Example 1: When purchasing the ABC product, the Entity X incurred 20% of the cost of the goods in order to comply with environmental standards (VAT is not considered) With this registration method, the account left blank after the account no. 153 in the inventory group no. 15 was used as the "154 Environmental Goods" account and the environmental costs were recorded.

Recording environmental costs in the subaccount of the relevant accounts;

If the same registration were wanted to be made in sub-accounts, the registration view would be as follows.

_____ / _____	
153 Trade Goods Account	xxx
153.03 Environmental Costs	xxx
Related Payee Accounts	xxx

_____ / _____
The part of fixed asset investments related to environmental costs can be shown in the subaccount of the related fixed asset account.

Example 2: Entity X wanted to have a flue filter installed in order to comply with environmental standards.

_____ / _____	
253 Plant Machine and Device Account	xxx
253.02 Environmental Costs Account	xxx
Related Payee Account	xxx

_____ / _____
There are also taxes that businesses must pay due to their environmental activities. In UCA, environmentally paid taxes can be accounted in 730 General Production expenses account through auxiliary accounts.

Example 3: The environmental tax expense paid by Entity X at the end of the period is 1% of the total tax amount.

_____ / _____	
730 General Production Expenses	xxx
730.3.10 Expenditures on Environmental Act.	
730.3.10.09 Environmental Taxes Ex.	xxx
Related Receiver Account	xxx

_____ / _____
The fact that businesses produce products in accordance with environmental standards will incur additional financial costs. Since the additional costs incurred to protect the

environment will increase the cost of the companies, the competitiveness will be affected negatively. Businesses, obviously, do not want to incur these costs. Businesses can stand the costs that they have to stand to produce environmentally friendly products in two situations; first, they can take advantage of the government's incentives, the other fact is informing consumers about environmental activities is highlighting a distinctive feature. In this way, by creating an awareness in the market, conscious consumers can be attracted to the product and their market share can be protected or increased. However, the second possibility is an option that extends over the long term and depends on consumers' reactions. As first, the opportunity for companies to benefit from incentives can position them to produce environmental products.

The costs incurred in the example above could be covered by the "Environmental Incentive Fund", in this case, the accounting could be recorded in the "Claims from 125 Environmental Incentive Funds" account instead of the "154 Environmental Goods" account.

Recording environmental costs in off-balance sheet accounts;

Off-balance sheet accounts are accounts that do not cause any changes in the asset and resource accounts owned by the business, but that record the matters to be followed. Off-balance sheet accounts can be used according to the needs of the business. The additional cost of the flue filter which enterprise has built to reduce or prevent harmful gases while building the flue can be recorded in off-balance accounts due to its environmental feature.

_____ / _____
 910 Environmental Tangible Fixed Assets Account. xx
 911 Environmental Tangible Fixed Asset Reserve Account xx
 _____ / _____

Recording environmental costs in footnotes;

If environmental costs related to stocks cannot be followed in the accounts, they can be included in the footnote of the balance sheet (Haftaci & Soylu, 2008). Footnotes are

information that ensures that the items of the balance sheet and income statement are descriptive, complementary, and understandable. This information has two functions, the first is to clarify the issues mentioned in the various articles of the directive. The second function is to clarify the issues that are required to be clearly explained in the directive (Akdogan & Tenker, 1992, p: 98). In accordance with the "Full Disclosure Principle", information on environmental costs can also be shown in the footnote of the balance sheet for better understanding.

Information contained in the balance sheet footnote regarding the stocks can be summarized as follows;

- Elements included in the inventory cost
- Except inventory costs, costs incurred by the company within the scope of environmental costs, but not included in the balance sheet accounts, eg fixed asset movements (Footnote 18).
- Legal disputes that the business will experience as a result of non-compliance with environmental legislation and laws are also included in the footnote of the balance sheet (Footnote 22).

Environmental costs can be shown in the environmental report;

- Activities related to the environment, but which are not meaningful to be shown in the footnotes of the balance sheet and income statement can be published in the annual reports. Information to be included in the reports are as follows.
- Manuals prepared for in-house use in order to prevent environmental pollution.
- Training documents and brochures for informing staff.
- Activities to prevent environmental pollution and measurement, test, environmental pollution control reports of these activities.
- Environmental documents and certificates owned by the business.

Documents describing the way of information obtained which subject to environmental accounting and how the system works.

Footnote View of Entity X

<p>1. 2. . . . 16. Information on subsidiaries and affiliates and subsidiaries owned by 10% or more of its capital. 17. Inventory Valuation Methods a) The method applied in the current period b) The method applied in the previous period c) The increase (+) or decrease (-) amount of the change in method in the current period caused by the inventories d) Environmental inventory costs * 18. Movement of tangible assets in the current period ** 22. Entering the debt obligation of the enterprise related to stocks ***</p>

Kaynak: Haftaci& Soylu, 2008, Prepared Using Studies.

2016 Sustainability Report of Enterprise X

Environmentally Sensitive Product

Among the products that use energy and water efficiently, XYZ has added a washing machine that works by consuming at least 50% less water than the products in the current market and consumes 70% less energy than A+++ class.

Conclusion

In developing economic conditions, increased trade between countries and regional diversity of investment encouraged investors to question the financial statements of companies. Due to this need, standards have been implemented to ensure international comparability and countries have chosen the way of integration with the world by following the standards in the accounting registry system. One of the legislative provisions and standards put into practice is environmental regulations. With the enforcement of environmental management standards to be applied by businesses, companies have started to record all their activities against the environment in accordance with the social responsibility principle of accounting. The fact that businesses record all their activities against the environment brought the concept of "Environmental Accounting" to the agenda. In Turkey, there is not any specific account group determined for environmental costs in "Uniform Chart of Accounts" which is forming the basis of the registration scheme. In the articles of TAS / TFRS standards, there is no specific standard directly related to environmental costs as well. According to the regulations in Turkey, environmental costs shall be recorded in the accounting records under the relevant accounts, auxiliary accounts, footnotes, or annual reports and can be offered to third parties. One of the most important functions of environmental accounting is providing the business management about the costs of their activities. Determining environmental costs also enables management. Businesses can determine future strategies based on their costs they will make to prevent or reduce environmental costs.

Recording and measuring all costs through environmental accounting will eliminate companies' bias towards environmental costs. Even though all the efforts for the environment are tried to be managed by the legislation, it will be in the benefit of the whole society if the businesses make this a business philosophy rather than just seeing it as a legal obligation.

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