



## **Accounting Measurement and Disclosure of Environmental Costs: A Theoretical Approach in Light of Accounting Literature**

**Ibrahim DOUADI**

Renewable Energy Economics Laboratory  
and its Role in Achieving Sustainable Development  
University of El Oued  
[douadi-ibrahim@univ-eloued.dz](mailto:douadi-ibrahim@univ-eloued.dz)

**Henka YOUSEF**

Renewable Energy Economics Laboratory  
and its Role in Achieving Sustainable Development  
University of El Oued  
[henka-youcef@univ-eloued.dz](mailto:henka-youcef@univ-eloued.dz)

**Salah HAMIDATOU**

Algeria's Economic Growth and Development Laboratory  
University of El Oued  
[hamidatou-salah@univ-eloued.dz](mailto:hamidatou-salah@univ-eloued.dz)

### **Abstract :**

*This study aims to identify the methods of measurement and accounting disclosure for environmental cost accounting, as well as the findings from accounting literature in this area. It explores the concept of environmental accounting, including its reasons for emergence, definitions, and objectives. The study also defines environmental costs and their types, discusses the methods and mechanisms for measuring and disclosing these costs, and identifies the key challenges facing the accounting measurement of environmental costs, along with the requirements for accounting disclosure of these costs.*

**Keywords:** *environmental accounting, environmental costs, accounting measurement, accounting disclosure.*

# Évaluation comptable et divulgation des coûts environnementaux :

## Une approche théorique à la lumière de la littérature comptable

### **Résumé :**

*Cette étude vise à identifier les méthodes de mesure et de divulgation comptable pour la comptabilité des coûts environnementaux, ainsi que les conclusions de la littérature comptable dans ce domaine. Elle explore le concept de comptabilité environnementale, y compris les raisons de son émergence, ses définitions et ses objectifs. L'étude définit également les coûts environnementaux et leurs types, examine les méthodes et les mécanismes de mesure et de divulgation de ces coûts, et identifie les principaux défis auxquels est confrontée la mesure comptable des coûts environnementaux, ainsi que les exigences en matière de divulgation comptable de ces coûts.*

**Mots clés :** *comptabilité environnementale, coûts environnementaux, mesure comptable, divulgation comptable.*



## **Introduction:**

In the light of the orientation of contemporary economic systems towards the integration of the environment as a factor from the factors of production, and considering that the protection of the environment and preservation of it is from the main pillars for achieving the objectives of sustainable economic and social development, the issues of environmental pollution and the protection of the environment have become a center of significant attention in the various countries of the world, especially in the industrial countries. This is because of the significant rise in the rates of environmental pollution resulting from industrial activities and the excessive exploitation of natural resources. The industry is considered one of the biggest sources of pollution that contribute to environmental degradation. Therefore, providing modern data and information regarding this sector, which is in line with international standards and classifications, has become an urgent necessity to help decision makers in taking appropriate actions to develop the industry sector while maintaining a clean environment. And because of the inability of traditional accounting to provide data about the environmental impacts of economic activities, it has become necessary for organizations to develop accounting information systems that are in line with the nature of environmental costs and environmental disclosure, which has led to the emergence of what is known as environmental accounting. This accounting includes the process of measuring the costs arising from activities of

environmental nature and disclosing it in the reports and financial statements.

### *The Problematic:*

Through what has preceded, the problematic of the research can be focused in the following question:

**What are the accounting methods for measuring environmental costs and the ways of disclosure about them?**

And to answer this question, the following points will be addressed:

- **First:** The concept of environmental accounting.
- **Second:** The concept of environmental costs.
- **Third:** The accounting measurement and disclosure of environmental costs.

## **1. The Concept of Environmental Accounting**

In the context of the economic institutions seeking to improve their environmental behavior and to show the extent of their commitment to environmental systems and laws as a result of the pressures practiced by the professional organizations and the governmental bodies related to the environment, and in order for the institution to be able to do that, it is necessary to integrate the environmental issues into accounting with its branches, which led to the appearance of the accounting for the environment.

### **1.1. Reasons of the Emergence of Environmental Accounting:**

The reasons of the emergence of environmental accounting goes back to the pressures imposed by the



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international organizations on institutions to pay attention to issues of protecting the environment and developing it by adopting the concept of sustainable development, and these pressures are represented in the following (Hassan Ahmed Shehata, 2007, p. 38-39):

**a- Value chain pressures:** These are the procedures practiced by large international organizations on their clients and suppliers to urge them to comply with the environmental management systems issued by the Organization of Product Standardization known as the ISO;

**b- Disclosure pressures:** This kind of pressure is practiced by the stakeholders in the institution, in order to urge it to disclose the environmental performance in the annual financial reports, or to follow the optional disclosure in the environmental performance reports of the institution which is known as Global Disclosure Initiatives;

**c- Financial pressures:** These are the total pressures resulting from the increased global awareness of the importance of social responsibility of investments and their classification systems;

**d- Legal pressures:** These are the pressures practiced by the control and legal authorities in the countries in order to reduce the rates of hazardous and polluting substances for industrial institutions, as well as the reduction of the rates of emission of poisonous gases;

**e- Tax pressures:** These are the value of taxes imposed by states and governments due to the use of harmful materials for the environment, and other taxes that aim to limit pollution and affect the environment;

#### **f- Commercial pressures and international agreements:**

These are the different agreements and pressures practiced by global organizations to reduce environmental pollution. And the orientation towards disclosure about environmental performance have increased, and the inclusion of environmental accounting within the general framework of accounting system has resulted from governmental and international, professional and academic interests about environment and sustainable development through preparing theoretical and practical studies on environment and accounting, which justified the existence of environmental accounting according to international and local laws.

#### **1.2- Definition of Environmental Accounting:**

It is a term of different meanings but usually environmental accounting is defined as the disclosure of environmentally specified costs like commitment costs or waste disposal costs (Mazna Abdullatif Al-Rifai, 2017, p. 31).

It is also defined as the umbrella that covers all accounting fields that may be affected by the organizations' response to the surrounding environmental issues, so accounting can be described as a mirror that reflects the changes made by organizations on the surrounding environment (Abdeljalil Lakhdari et al., 2020, p.140).

And the Canadian Institute of Management Accountants defined environmental accounting as the identification, measuring and allocating of environmental costs to take them into account when making management decisions, then communicating the information of these costs for the benefiting parties (Awad Labib Fathallah Eldib, 1996, p.40).



### **1.3- Importance of Environmental Accounting:**

Environmental accounting is based on a set of objectives (Ahcine Othmani & Ezzine Imran, 2017, p.200):

- ✓ Contributing to the sustainability of economic development to improve knowing and understanding the increasing interactions between environment and economy.
- ✓ Seeking to reduce the negative effects of traditional accounting on the environment.
- ✓ Determining environmental costs and revenues outside the traditional accounting system as separate.
- ✓ Developing new methods for evaluating performance and environmental communications internally and externally.
- ✓ Preparing financial statements and reports about environmental activities and practices that are clearer and more transparent.

## **2. The Concept of Environmental Costs**

### **2.1- The Environmental Accounting Elements :**

*2.1.1- The elements of environmental accounting are as follows:* (Boujemaa & Djoudi, 2020, p. 209, 211)

#### **A- Environmental Costs:**

Most of the studies which were depended on, it was noticed that most of them are focusing on the environmental costs only without the focusing on the other accounting elements, and the reason in that is that the institutions work on spending considered financial amounts in order to achieve its environmental dimension, within this the environmental costs are defined that it is the costs which

relate to the actual or the possible deterioration of the natural and environmental resources that comes from the economic activities.

### **B- Environmental Revenues:**

Environmental revenues are defined that it is everything that returns to the institution itself through doing the activities which have positive effects on the environment, and these revenues are represented in:

- ✓ The value of the increasing in the quantity of sales evaluated by the market price which back to the increasing in the demand on the institution products and which resulted from the commitment with producing environmental-friendly products;
- ✓ The value of the decreasing in the costs of the raw materials resulting from using materials less harmful for the environment, and also the decreasing in the energy costs because of using energy resources less polluting environmentally;
- ✓ The value of the decreasing in the treatment of workers because of the commitment with the environmental compliance activities;
- ✓ The value of the decreasing in the costs of compensations which the institution bear because of minimizing the emission.

And also added to it the value of the financial advantages that the institution receives from the associations or from the state because of its commitment with the environmental dimension.



### **C- Environmental Assets:**

And it is called the green assets, it is represented in the properties that the institution owns in order to keep the environment inside its optional environmental programs, and it is represented in the devices and the equipments that the human exists them inside the environmental protection programs and they can be fixed or circulated. Also the environmental assets express the environmental expenditures which the benefiting from them is achieved for more than one accounting period, and as examples on that: the environmental machines and equipments, and the treatment systems of the environmental pollution elements and the units of treating and recycling the solid wastes. We point that there is another concept for the environmental assets which it is those natural assets and not the economic assets, and it cannot be used in the production process directly except after qualifying it artificially.

### **D- Environmental Liabilities:**

Environmental liabilities are defined that it is the value of what the institution undertakes and commits to pay in the future to fix and treat the environmental damages that it caused in its happening and which resulted from its industrial and production operations because of the pollution of the rivers and seas water and the not commitment of those institutions with preventing and minimizing the levels of environmental pollution resulting from its activities.

## **2- Definition of Environmental Costs:**

The publications of the United Nations Group of Experts have indicated that environmental costs are represented in all cost elements dedicated to reducing waste in raw materials, energy and available economic resources, in addition to the cost of recycling waste such as solid, liquid, and gaseous waste, and also the cost of environmentally friendly products (Belhiani Khadidja, 2018, p. 132).

And it was also defined as the direct and indirect costs borne by the institution like the costs of waste management, environmental management costs and can be estimated using the standard models available for the company (Ben Aouali El-Jilali & Hawalf Rahima, 2020, p. 227).

Also, it was defined as: the amount that the economic institution pays in expenses in order to preserve the environment where the institution is located (Reda Zahwani, 2012, p. 41).]

## **3. The Accounting Measurement and Disclosure of Environmental Costs**

### **3.1. The Accounting Measurement of Environmental Costs:**

#### ***3.1.1. The Definition of Accounting Measurement for Environmental Costs:***

Accounting measurement of environmental costs can be defined as follows: it is the analysis of the values of all cost elements generated by the institution's commitment to certain social and environmental responsibilities, whether that commitment was voluntary or imposed by law (Abdelrazak Qassem Al-Shahada, 2010, p. 283).

"It is the analysis of events related to the institution's environmental activities, their registration at the time of their occurrence, then tracing the movement of these events



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to determine their effects on the stakeholders' interests in the form of monetary units, according to the monetary unit assumption" (Mohammed Abbas Badawi, 2007, p.28).

### ***3.1.2. The Importance of Environmental Accounting Measurement:***

Environmental accounting measurement is very important and it is represented in the following (Tahar Jelit, 2018, p.103):

- ✓ It contributes to decision-making through the information related to the institution's activities and stakeholders of the institution.
- ✓ Disclosure about environmental expenditures separately in the financial statements will allow measurement of their benefit such as helping investors to see clearly the policies applied by the organization to protect the environment, and thus to rationalize their decisions regarding the organization.
- ✓ The existence of environmental measurement in the institution helps for procedures of comparison between institutions and between the public and private sector.
- ✓ It allows for supporting the trust and respect of society and individuals in the organizations, and thus increases the demand for its products and expansion in its investments, which reflects finally on the result of its activity and its financial position.
- ✓ Achieving a better understanding of environmental costs and the performance of operations and products and their pricing accurately.

- ✓ Reducing production cost due to financial support or low-cost funding or preferential tax treatment which leads to an increase in the organization's activity size, so the organization's use of its resources at the greatest efficiency possible and at the same time protecting the environment from the harmful effects of pollution helps it to increase its profits.

### ***3.1.3- Methods and Ways of Accounting Measurement for Environmental Costs:***

Accounting often faces a problem of measurement, as not all costs borne by the institution can be measured, whether environmental or other costs, and the most important methods that can be relied on to measure environmental costs are as follows (Moulay Naseeba & Draaoussi Massoud, 2021, p. 70-71):

**a- Monetary measurement method:** Monetary measurement is the basic method which is relied on for the estimation of environmental performance fields if possible, but when it is difficult to obtain monetary estimates, the quantitative or descriptive measurement method is used instead. And we conclude that measuring environmental costs is preferable to be monetary, meaning it is financially and monetarily valued, but due to the difficulty of this estimation because of measurement problems, monetary measurement can be replaced by other methods, and both the descriptive and quantitative measurement methods are among the most important and best alternative methods that compensate the monetary basis.

**b- Descriptive measurement method:** This method is among the simplest and most widespread and least costly methods in the field of measuring environmental impacts, as



it depends on the description of the activities performed by the institution, so it does not rely on specific measurement rules, but uses a description for the phenomenon or activity to be measured in a constructive and descriptive way, and this method is used in cases when monetary or quantitative measurement is difficult, and thus provides information that may benefit the institution in decision-making in some necessary cases in which it is difficult to provide this information by other measurement methods.

**c- Quantitative measurement method:** Quantitative measurement means assigning numbers to events, activities or phenomena to be measured according to specified rules and procedures, this method is used to provide quantitative information about the impact of environmental activities that cannot only be measured monetarily, and as the nature of these activities differs depending on the type of activity that the institution performs, the measurement unit used also varies according to the nature of the activity, which requires determining the appropriate system and measurement units for these activities leading to a connection between the nature of these activities and the purpose of measuring them in a way that reflects the important characteristics of the measurement process, and there is nothing preventing the accountant from relying on the available measures in the field of other sciences and using them in the field of measuring the impacts resulting from the institution's activities which leads to a comprehensiveness of accounting measurement more than would be achieved by just relying on monetary measurement.

### *3.1.4- Difficulties of Accounting Measurement for Environmental Costs:*

The accounting measurement of environmental costs faces difficulties and obstacles that prevent the institution from achieving a true measurement of the environmental costs it bears, and the difficulties are as follows (Tahar Jelit, 2018, p. 104):

**a- Difficulty in limiting the elements of environmental costs:** the problem arises from the fact that the environmental commitment of the institution is the activity generating the spending event and causing the environmental cost elements to occur, which is in itself an undefined concept, and its dimensions are not decisively agreed upon from the practical point of view, and it is no doubt that the inability to reach a specific agreement about the nature of the environmental commitment and its real elements automatically means the inability to specify the elements of environmental costs generated from them and measure and report them accurately.

**b- Difficulty in separating environmental, economic and social costs:** the overlap between economic, social and environmental activities leads to one of the main problems related to the process of measuring the environmental performance of institutions objectively, for example, the costs of research and development to increase the safety of the product can be considered as social costs necessary to create a kind of prosperity and satisfaction from the institution's products, and can also be considered as environmental costs aiming for the safety of the client when using the products and enabling him to recycle the waste of these products, and also at the same time can be considered as economic costs necessary to give a competitive push to



the product and to increase its market share in order to maximize the profitability of the institution.

**c- Difficulty in relating costs to environmental returns:**

Usually it is difficult to judge the effectiveness and efficiency of environmental costs due to the difficulty of relating these costs to environmental returns, or in other words, the difficulty of matching environmental performance costs during a certain period with the environmental returns generated from the performance in the same period.

Environmental returns are characterized by two properties:

- Usually they cannot be expressed in monetary measurement units but rather in a descriptive measurement.
- The long time period between the date of the cost occurrence and the achieved return.

### **3.2- The Accounting Disclosure of Environmental Costs:**

#### **3.2.1- *Definition of Accounting Disclosure for Environmental Costs:***

It is defined as the process in which the environmental costs resulting from the daily activities of the institution are presented, and it is noticed that the definition of accounting disclosure of environmental costs has one definition whether from the accounting or environmental side, and it was also defined as the presentation and provision of information related to environmental activities of business facilities in the financial statements, which explains the action of information users and leads to rationalizing the decision in evaluating the environmental performance of the institution (Ben Aouali El-Jilali & Hawalf Rahima, 2020, p. 228).

### 3.2.2- *Foundations of Accounting Disclosure for Environmental Costs:*

Knowing the foundations of disclosure about environmental costs makes the disclosure process easier, and these foundations are as follows (Ben Aouali El-Jilali & Hawalf Rahima, 2020, p. 228):

- It should be disclosed about the types of items defined by the institution as environmental costs.
- Environmental costs arise in several ways, and the environmental costs borne by the institution may improve its operational efficiency, in addition to improvement of its operational efficiency what is included as environmental cost requires judgement, and some institutions may choose to include only the costs attributed to environmental measures, therefore it should be disclosed about what has been included as environmental cost;
- The amount of environmental costs charged to revenues should be analyzed in a way compatible with the nature and size of the business and/or the types of environmental issues relevant to the institution, and the amount of environmental costs that have been capitalized during this period should be disclosed in the notes to the financial statements;
- The environmental costs borne by institutions like fines and penalties imposed for non-compliance with laws and environmental systems and compensating the affected parties should be separately disclosed from other information as to make it in an appendix;
- Fines, penalties and compensations differ from other types of environmental costs in that they do not



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provide any benefit to the institution, so separate disclosure is appropriate;

- Environmental costs recorded as extraordinary items must be separately disclosed.

### ***3.2.3- Methods of Accounting Disclosure for Environmental Costs:***

After the accountant is able to measure the environmental costs, those costs are presented to concerned parties for usage according to what the law allows, where those are presented either in independent environmental reports or within the familiar financial statements, or they are disclosed in management reports (Moulay Naseeba & Draaoussi Massoud, 2021, p. 71-72).

**a- Disclosure in the form of independent environmental reports:** This is when disclosure is made in separate reports from the financial statements and their attachments regardless of the form of the report, whether descriptive or quantitative or financial, and whether it is comprehensive or partial, and supporters of this approach prefer disclosing environmental information in special statements directed only to the parties demanding it, considering that disclosure of environmental information in the financial statements may create big pressure on the institution making it pay attention to environmental aspects instead of other economic aspects, but this approach is criticized as maximizing profit was not the highest goal pursued by the institution at the expense of its responsibilities towards society and the damages it leaves on the environment and on society as a whole.

### ***3.2.4- Disclosure Requirements for Environmental Costs:***

To be able to disclose environmental costs, it is necessary to (Amina Hafassa & Farhat Abbas, 2017, p. 904):

- Work on increasing environmental awareness among different institutions through various means of awareness, whether visual, audio or written;
- Work on increasing an international accounting standard about how to measure and identify environmental costs and also deals with how to disclose these costs in the financial statements;
- The intervention of organizations and bodies interested in environmental affairs to make studies and research about the expected harmful environmental effects from each type of industrial activities polluting environment, then resorting to an expert in this field to evaluate the size and value of these damages for each field so it will be easier to disclose them in the financial statements;
- If all institutions are obligated to measure the environmental cost and charge it to the product cost, this will lead to equality of this cost among different institutions with a supervising body for that;
- The problem of objectivity can be alleviated by relying on the entity that will provide information about environmental pollution on scientific research and studies based on scientific grounds, then testing them on more than one entity, thereby reducing the personal estimation of the human element.



## Conclusion:

From what proceeded we suggest the following:

- ✓ The necessity to separate environmental costs from economic costs and to classify them in special accounts, which leads to facilitating the process of measurement and disclosure about environmental costs and benefitting from them in decision-making related to environment.
- ✓ Integrating environmental costs into production costs contributes to developing financial statements and disclosure about environmental impacts. Also, it is necessary for national and international bodies to issue guidance standards for accounting measurement and disclosure for environmental accounting, which will help develop this field and make it more accepted by accountants, organizations and countries.
- ✓ Countries and governments must enact laws and regulations to protect the environment and ensure commitment to them, alongside disclosure about environmental impacts.
- ✓ Encouraging institutions to publish financial and non-financial information about their environmental performance comes through a system of material and moral incentives.
- ✓ Obligating institutions to prepare reports that include environmental purposes which highlight their most important contributions in the environmental field.

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**Soumission : 12/01/2025    Acceptation : 22/04/2025    Publication : 25/08/2025**

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