

Implementation Opportunities of Green Accounting for Activity-Based Costing (ABC) in Romania

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***Abstract.** This article refers to implementation opportunities of green accounting for the Activity-Based Costing method. It shows why we choose Activity-Based Costing method and what must be done in this way. Green accounting observes the specific principles of the Activity-Based Costing method. It also represents the advantages and disadvantages of the green accounting into an enterprise in case of Activity-Based Costing implementation. The paper describes the stages we must follow in case of implementation of green accounting alongside Activity-Based Costing method into an enterprise.*

Key words: Green accounting; Activity-Based Costing; implementation steps; environmental cost drivers; environmental activities.

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For defining green accounting or environmental accounting, several aspects have been considered, such as insurance, taxes, regulations and external financial information.

Green accounting or environmental accounting is interlinked with two basic functions of management accounting: planning and data collection, reporting. In the case of planning, green accounting uses prevision analysis to measure future impacts on environment, such as target costing or life cycle method. In the second case, environmental data collection and its reporting to management is based on an efficient analysis of data for substantiating decisions.

Starting from the above-mentioned considerations, the object of green accounting consists mainly in the identification and measuring of raw material costs and

environmentally specific activities and the use of this information for drawing up reports and internal analyses necessary to the company management for making environmental decisions.

The aim of green accounting is the acknowledgement and attempt to identify ways of diminishing the negative effects of activities and systems on the environment.

Observing the basic principles of Activity-Based Costing method (ABC), green accounting completes the terminology and dictionary of terms used by the ABC method. Consequently, terms such as: activity cost driver, process cost driver, direct costs, activity cost, cost object, activity-based management, performance management, value chain, etc. are completed by other terms such as: activity-based costing system, environment cost calculation, environment management system, full

environment cost calculation, green (environmental) accounting, investment management, product life cycle analysis, product life cycle calculation, logistics, pollution prevention, private costs, activity added value, etc.

In conceiving the above-mentioned terms, we have searched for a language that is common for users of activity-based costing method, as well as for other user categories. This language helps to facilitate understanding of new terms or notions used by green accounting for purposes of communication and respecting internal policies.

Why has ABC method (Activity-Base Costing) been chosen?

The answer is very simple. Green accounting which observes ABC method principles helps measure saving costs as a result of reducing raw materials cost during the recycling or reusing period. As a consequence, ABC or ABM method provide that understanding approach and those target areas for considering the opportunities of designing costs of the main environmental activities.

The environmental cost design represents the concept that refers to the design of an environmental target cost-oriented product or constraints, such as the design terms of de-assembling a product.

Recycling design refers to the product design concept that emphasizes the facility of de-assembling and recycling, as well as the end of a product's useful life cycle.

The usefulness and advantages of activity-based costing method can be revealed by green accounting. The application of the ABC method principles is recommended for prompting environment improvement results.

What should be done in this direction?

The things are very simple. The ABC method proceeds to allocate costs to processes and further on to activities. At the activity level, environmental elements must be added. The ABM method uses information provided by the ABC method for making decisions and we must add environmental information for making much more accurate and efficient long term decisions.

So, the ABC method becomes a very efficient tool of management accounting that identifies the real production costs and offers an impetus for improving ongoing processes in the enterprise or even re-engineering that is not necessarily based on traditional accounting systems (which don't reveal the environment costs).

Examining full costing and cost drivers, we can try two versions: cost reduction and abstraction of environment cost drivers. Green accounting favors the abstraction of environment cost drivers, thus avoiding the high full costs and losses as rejections, waste product.

The attempt of green accounting to classify the value yielding or non-value yielding environmental activities is very difficult, if it does not take into account the following suggestions:

- the existing need for clarifying the nature of certain environmental activities and establishing their "client" (e.g. training staff in preventing environmental pollution);
- output measuring must be related to the environmental strategic objectives;
- the use of older documentations or special terms must be done with caution, because the new language used by green accounting can be constructed and understood starting from already existing terms.

Before launching the implementation of green accounting, every manager should ask himself:

How can we adapt a traditional management accounting method or even a more advanced method to green accounting?

How do I begin the implementation? How do I reach the object of implementation?

The answers to the above questions can be synthesized in the itinerary which must be followed for implementing green accounting. The itinerary consists of the following stages:

Stage one. Setting up the objectives of green accounting.

Here is a set of questions asked by company management.

Question one. What is the main objective of green accounting?

Answer: There is no single objective. Among the possible objectives, we can list: identifying, collecting, calculating and analyzing material and energy-related costs; internal reporting and using information about environmental costs; providing other cost-related information in the decision process, with a view to adopting efficient decisions and contributing to environment protection.

Question two. Why did we decide on green accounting?

Answer: The advantages offered by green accounting represent the strong points for its selection.

Question three. What are the advantages and disadvantages of green accounting?

Answer:

Advantages: adopting decisions about the financial performance of the organization and green accounting, providing useful information for reaching cost minimization targets (especially environment) and negative impact on environment, presenting data about costs necessary for estimating the financial impact of such initiatives as:

- *pollution preventing;*
- *designing environment and green accounting improvement;*
- *projection, costs, estimating life cycle in the environment;*
- *product circulation administration from environmental prospective;*
- *supply process from environmental perspective;*
- *the product or producer's liability;*
- *environment-centered management systems;*
- *assessing, testing and reporting performances of environmental activities;*
- *reporting of these performances;*
- *information source for other routine managerial activities such as: product and process design, cost distribution and control, capital budgeting, supply process, price policies, performance evaluation.*

Disadvantages: the implementation of green accounting doesn't represent a guaranty for obtaining financial performance or environment-related performances.

Question four. What are the changes brought about by green accounting at company level?

Answer: Considering the fact that the enterprise is already using the Activity-Based Costing method (ABC) and green accounting respects its specific principles, the changes will not be significant. The problem is to correctly identify environmental costs and to use specific cost drivers for calculating correct production costs and obtaining accurate information necessary for company management.

Question five. Are the final users of the information satisfied by the accuracy of the data provided by green accounting?

Answer: Considering the calculation mode by proper allocation of environmental costs (for each activity) on products using specific environment cost drivers, the obtained information reflects a much more realistic cost. This cost can be used in the environment indicators analysis.

After the company management validates the answers to these questions, they will proceed for the elaboration and communication of an action plan (green accounting project) which is lead by the GA project team. This project will involve the entire enterprise, from workers to management.

Stage two. Setting up the GA project team and project running.

The GA project team (GA – Green Accounting) will be appointed by the company management and will be made up of specialists from the management accounting department and environment specialists. The team project will be made up of five members and a project chief.

Initially, the team will analyze the following matters:

1. Identifying the significant influences of the enterprise on the environment

At this point, the following issues will be carefully analyzed:

- The identification of the enterprise location characteristics from the point of view of its interaction with the environment (identifying highly polluting sources with negative impact on the environment, characteristics of environment performances, etc.);
- The identification the possibilities of implementing green accounting within the enterprise, and consequently an environment management with the certification of the areas that must be improved.

2. Determining the forms of impact on the environment

The following elements of environment analysis can be considered: products, services, activities, processes and technologies. The chart below presents both the environment analysis elements and the identified forms of impact, including action taken as a result of the environment analysis:

Environment analysis elements	Forms of impact on the environment - by means of:	Action taken as a result of the environment analysis
Products Services Activities	- discharged rivers; - used underground waters discharged by sewage; - gas emissions in the atmosphere; - vibration noises; - abnormal situations; - other pollution factors.	- controlling impact on the environment; - adapting to legal requirements, according to the legislation in the filed.
Technology	- quantity, product nature, its environmental sensitivity; - created/natural/possible incidents and/or accidents;	- controlling the impact on the environment; - current situation; - product's life cycle; - studying product-related ecological aspects and the corresponding interest rate of the clients; - adapting to legal requirements, according to the legislation in the filed.

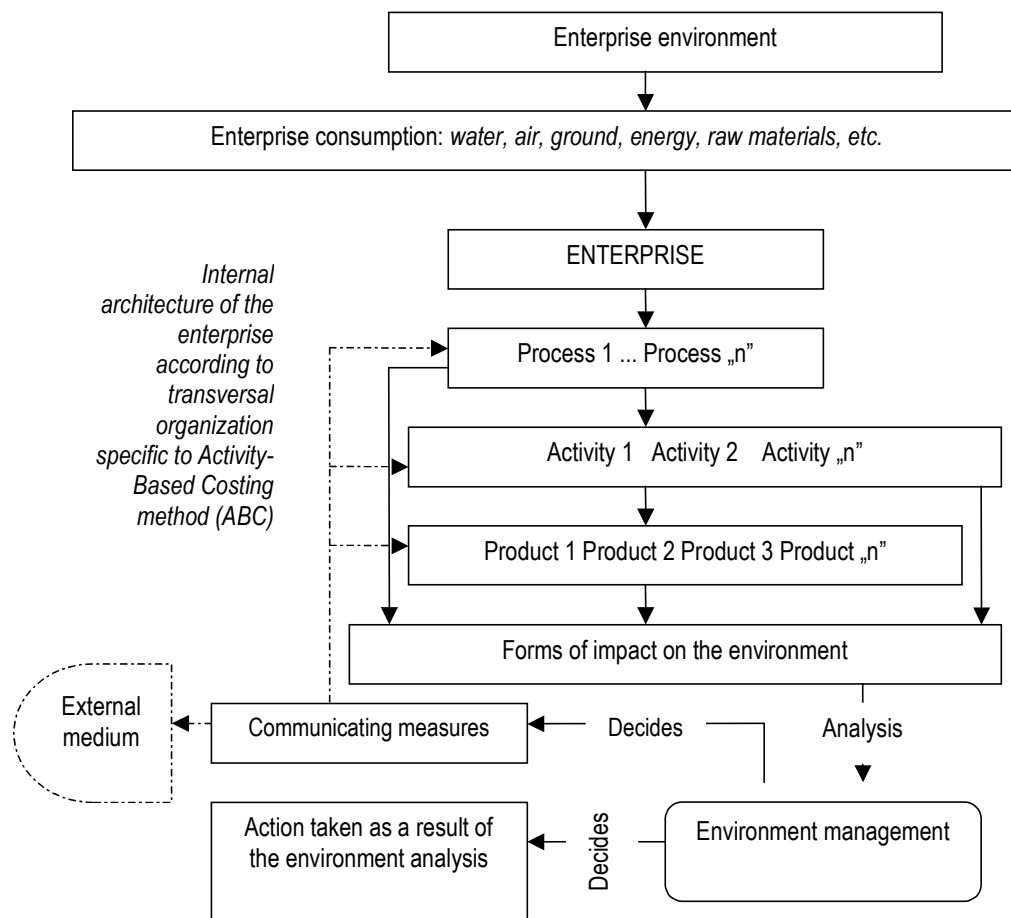


Figure 1. The environmental analysis according to ABC method

3. Definition of the environmental costs

International literature emphasizes several approaches of defining environmental costs. The United States Environmental Protection Agency argues that the definition of environmental costs depends on the degree

in which the enterprise intends to use the respective information.

The United Nations Division for Sustainable Development describes environmental costs as environmental protection costs (emission treatment and

pollution prevention), including waste material costs or investment cost and wasted labor. In this context, waste refers to production inefficiency (added value or non material output).

The next step will consist of questioning the departments or functional services grouped according to processes, and within the processes, the specific environmental activities. A selection technique will be used, meant to reduce the excessive number of specific environmental activities, even a regrouping of these activities into processes. The particularization level of the operations into specific environmental activities must be neither too strengthened, nor too spaced out. Based on questionnaires collected from the enterprise workers, the centralized information will be analyzed by the GA team project. Based on this data, a preliminary dictionary of the most important environment-specific activities will be prepared.

Also information will be collected about allocation units of environment-specific costs (environmental cost drivers). In 1998, Schaltegger and Muller proposed four allocations keys of environmental costs: emission or wastage volume, emission toxicity or wastage treatment (waste products), the impact on environment of treated emissions' volume, the relatively different emissions costs.

At this stage, a list of specific environmental activities could be prepared, as well as other types of documents which the ABC method can provide.

Stage three. Identification of possible difficulties encountered after covering the two stages and seeking future opportunities

In connection with the two aspects, a parallel report will be prepared, focusing on the following matters:

Aspect no. 1. If the two stages proceeded according to plan and no problems occurred.

The action-response: the remaining stages will be covered until the successful implementation of green accounting. Next, the prioritized objectives for the changes necessary to green accounting implementation will be selected. All established objectives will be put

into actions meant to achieve the desired changes into the internal environmental of the enterprise: the determination of lower manufacturing costs for products, services provided, etc.

Aspect no 2. If problems occurred after the two stages.

The action-response: the deviations causes are searched. Every stage is carefully analyzed and the causes which lead to the problems are tracked down, using different specific diagnosis methods.

This stage is very important, because it represents the point which can lead us to an either successful or failed implementation of the green accounting. We must decide if we continue the green accounting implementation, quit or re-orient to another method. Proposals can be put forth for changing the existent accounting system, especially if the enterprise uses a traditional cost calculation system, less flexible to current changes.

Stage four. Testing the accurate implementation mode of the green accounting

This is done using the information provided by the implementation process. With this occasion, the impact of every initiative, action or project will be tested, by means of cost accounting saved as a result of applying or not applying green accounting, earnings gained by means of a correct application of activity administration principles specific to activity-based costing method (ABC).

Depending on this stage, certain changes will be made. These changes can be different in nature, such as: ecological design of products, environmental cost planning, changing the employees' attitude on environmental issues, team co-operation by changing outlooks and ideas on the efficient running of ecological activities, etc.

Continuous communication and training of both employees and employers represent key factors in ensuring the successful implementation of the green accounting project. The company management must understand the importance and advantages of an increased focus on the environment.

Notes

⁽¹⁾ Vezi USEPA (United States Environmental Protection Agency) – Agenția de Protecția Mediului Înconjurător a Statelor Unite ale Americii.

⁽²⁾ Vezi UNDS (United Nations Division for Sustainable Development) – Departamentul Națiunilor Unite pentru Susținerea Dezvoltării.

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