

Green Accounting – a New Revolution of the Environment Management at C.E. Rovinari

Holt Gheorghe
Căruntu Genu Alexandru
Department of Finance and Accounting
University "Constantin Brancusi" of Tg Jiu
Romania
cgenuc@gmail.com

Abstract:

Green accounting has the role of taking, systematically, into consideration, the acts regarding the protection of the environment, by respecting the traditional role of accounting of taking into account the flows and risks of the environment.

We consider that at C.E. Rovinari, the definition of green accounting is not reduced to "the assembly of techniques for the improvement of the environment management, after these have been already produced, but to the management of the actions made by the enterprise to avoid such incidents".

At the level of C.E. Rovinari, which is considered a large producer of specific emissions, the field of action is widen and the green accounting is more than a passive instrument of registration of the immediate and future, safe and potential flows, but a lever to incite the enterprise to activities and strategies that are indicted in the logic of the permanent development.

Key words: *green accounting, environment protection, anti-polluting investments, CO₂ emissionallowances, emissions allowances, intangible assets.*

1. Introduction

"Green accounting"- sometimes referred to as, "environmental accounting" "resourceaccounting" or "integrated economic and environmental accounting" - refers to modification of the System of National Accounts to incorporate the use or depletion of natural resources, green accounting being necessary to place value on environmental resources.

The increased importance, especially in the past decades, of environmental issues is reflected in the increasing financial attention that firms are giving to these managing environmental protection.

2. The influence of the production processes over the environment at C.E. Rovinari

In the condition imposed by the European Community, regarding the environment protection, all the business enterprises are interested in this new "revolution", which will modify, in the near future, the content of their mission, their practices and their responsibility perimeter, approaching the managers and professional accountants.

Becoming more active, this role already offers numerous practical problems, because the relations between the enterprise and its environment are complex and always refer to ecology. More precise, ecology is the science which has as object the relations between living beings and between these and their environment.

To keep green accounting involves gathering information regarding the evaluation of the costs and natural risks, especially the estimated cost of the production cost, but which is incurred by the community. The information related to green accounting are used both by the internal and external users of the business enterprise.

The external green accounting presents information regarding the environment within the financial statements, by introducing some sections in the balance sheet, in the profit and loss account or in the notes of the financial statements.

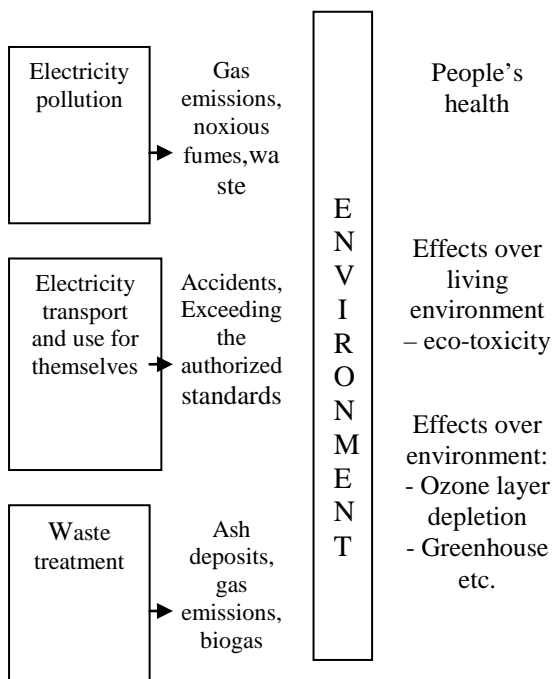
The most important information for external users are those related to the consumption of natural resources through the calculation of the discounted cash flow which results from the intermediate management balances and from a specific report regarding environment.

It is necessary to publish information regarding the environment, being part from the accounting police of the enterprise together with the methods of presenting information with the financial statements.

Internal green accounting offers information to the management in taking the most relevant decisions, by putting the environment of a product and its entire life.

In the following scheme, we present the influence of the production processes over the environment at C.E. Rovinari:

Fig. 1. The influence of the production processes over the environment at C.E. Rovinari



In the field of electricity, analysing its life cycle, it has been created a real management accounting of the elements which pollute the environment:

- air pollution;
- water pollution;
- waste;
- energy consumption.

One of the necessary conditions for the functioning of the coal condensing power units is to place them within the conditions imposed by the Directive 2001/80/EC, related to the limitation of the emissions in air of certain pollutants.

Taking into account the complexity of the pollutants from C.E. Rovinari, it is necessary to

apply a budgetary procedure to allow the forecasting and monitoring of the green costs. Significant indicators regarding environment are presented synthetically by preparing a green dashboard.

As far as C.E. Rovinari is concerned, in green accounting it is necessary to prepare and publish a separate report over the environment in which there are:

- policies over the environment;
- its objectives in numerical terms;
- means implemented;
- results obtained in the field;
- its environmental commitments.

In the implementation plan of Directive 2001/80/EC adopted by the Romanian Government, it is provided for the energetic units from C.E. Rovinari, as deadline for compliance to the limit values of SO₂ emission in flue gas, 31.12.2013. The limit values of emission, depending on the fuel used, are the following:

- 100% lignite 400 mg/Nm³
- 92% lignite + 8% oil 400 mg/Nm³
- 92% lignite + 8% natural gases 385 mg/Nm³

The estimation of sulphur dioxide emission from flue gases for steam boilers was realized according with PE 1001/1994 "The Operative methodology of evaluation of SO₂, NO_x emissions, dust (fly ash) and CO₂ from thermal power stations".

The assumptions behind the evaluation of sulphur dioxide emissions are:

- the fuel used
- the fuel consumption of the boil steam load
- the sulphur content of the fuels used from the large combustion plants and Directive 96/61/EC on integrated pollution prevention and control.

The green accounting applies the following techniques in order to accomplish its tasks:

Table 1. Green accounting techniques

Environment techniques	Information		
	Financial	Physical	Qualitative
Established accounting techniques	- Green accounts - Notes to the financial statements containing green fields - Green costing - Preparing		

	green budgets - Green information in annual reports		
Specific accounting techniques for informing over environment	- Net value added - Environment balance sheet and green dashboard - Report over environment	Eco-balance	- Limit value for SO ₂ and CO ₂ emission

3. Green accounting – instrument for implementing Environment Management at C.E. Rovinari

A series of unclear problems appear for determining the expenses with environment. Developing new indicators of national capital implies a large amount of specific data, including the extension of national accounting system regarding natural capital.

Commissioning a national information system allows social evaluations, which adds a considerable value to the elaboration of the policies in this field.

In this respect it is necessary the development of an accounts system regarding natural capital, which includes:

- asset accounts of natural capital
- flows of materials and emissions accounts
- environmental accounts

At C.E. Rovinari it may be used the last two accounts, which register in the standard value, the quantity of used resources or waste made for the activity of electricity production. The third group of accounts registers expenses occasioned by the equipping with pollution reduction and control equipments and for repairing their effects. Taking into account the data from actual accounts, it is not possible an exact estimation of environmental expenses and their evolution, culminating with the poor clarity of a large part of actual environment information, at national scale. We consider that these activities may be financed through environment budgets. A series of difficulties appear by determining the expenses with the environment, because the quality and quantity of accounting information regarding natural capital, considerably, varies. The first problem in this respect refers to the definition of the environment perimeter.

The notion of perimeter is used in financial accounting only with consolidation. Because green accounting does not have global coherence, it must be found the criteria to allow the establishment expenses, which belong to the environment accounting. The absence of some objective criteria for determining if an operation is linked or not to green accounting, complicates the realization of comparisons between polluters. These criteria depend on the objectives followed by these, but are subjective. A big impact over green accounting has the use of some traditional evaluating instruments misfit to environment accounting. This misfit may be influenced by more factors; the most important are:

- individualization of investment projects for environment protection;
- uncertainties aroused in the elements evaluation which characterize environment;
- individualization of expenses for environment protection.

At C.E. Rovinari, the individualization of the investments is a problem for environment protection. The investment from C.E. Rovinari may be grouped into two categories:

- decontamination investments
- anti-pollution investments

The decontamination investments consider the pollution elimination and may be concretely evaluated.

The anti-polluting investments imply those works aimed to the restructuring of the production process or installation of anti-pollution devices in order to avoid emissions. In this respect, C.E. Rovinari has prepared the documentation in order to obtain European funds for the project "Installation of flue gas desulphurisation in power unit no. 4" of 275346,2 lei, equivalent to 66927,5 mil.euro. This laborious project includes actions that will have an impact over the environment regarding:

- water quality protection (drinking water, process water, domestic wastewater, rainwater);
- air quality protection. The project aims to the improvement of the air quality in the area by reducing the SO₂ emissions evacuated with flue gases;
- protection against noise and vibrations. The noise and vibrations sources of the desulphurisation installations are represented by oxidation air blowers, flue gas fan, air compressors and various pumps (recycling, limestone suspension etc.).

A problem partly solved at C.E. Rovinari, regarding the determination of environment expenses, is linked to the individualization of expenses, if you want to determine a total cost regarding C.E. Rovinari effort for environment protection.

According to Integrated Environmental Authorization no. 12/19.07.2006, C.E. Rovinari has two large combustion plants, IMA – 1 and IMA – 2, each consisting of two steam boilers of 1035 t/h, related to a chimney. After realizing the desulphurisation installations, IMA – 1 will be divided in two big combustion plants, each energetic boiler with an individual chimney. The expenses for building – fitting at no. 4 power unit may be seen, for the rehabilitation use of its own desulphurisation installation with an own chimney.

Taking into account, excessive costs to build coal-fired power plants, regarding the determination of environment expenses, uncertainties appear in the elements evaluation which characterise the environment.

On the first place it is distant economic horizon, which must be taken into consideration when C.E. Rovinari realizes adjustments, which characterize the economic environment and develop over at least 50 years. In this case, the uncertainties appear in implementing modern technologies of prices and even of legislation, which sometimes complicate or simplify the presence of a business enterprise. Consequently, green accounting takes into consideration only the resources consumption, which can express in the standard value specific only to accounting.

It is necessary that C.E. Rovinari establish the costs for environment protection, so that the natural resources consumptions may be influenced in a small extent on the value added of the main product at C.E. Rovinari. We are without horizon in establishing the principles, object, method and techniques of green accounting at international level. The European Community will introduce new accounting methods of the specific elements of the environment. We suggest that in the future at C.E. Rovinari, a big consumer of energetic resources and a big producer of emissions against environment, the SO₂ and CO₂ emission costs to be considered as intangible assets, together with research and development costs, patents and other similar values, which have a depreciable character for any business enterprise. The emission allowances are evaluated to their entry in the enterprise, to the purchase price which was traded.

In the notes of the financial statements, C.E. Rovinari must present the allowance which may receive till the end of the period.

According to the European Parliament Directive and amending Council Directive 2003/87/CE regarding trading scheme emissions of greenhouse gases, starting with 2013, it will not be provided free allocation of CO₂ emissions allowances, for any existing or new producer of electricity.

The evolution of the emission allowances number necessary to be bought by C.E. Rovinari for no. 4 power unit is presented in the following graphic:

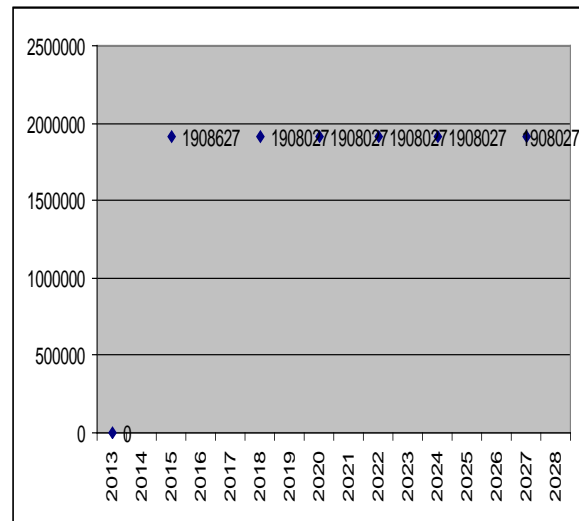


Fig. 2. The evolution of the number of CO₂ emission allowances that will be purchased

Taking into account the above information, the prices protection for the electricity delivered by no. 4 power unit from C.E. Rovinari, starting with 2013 it will be taken into consideration the costs determined by the purchasing of CO₂ emission allowances. The price evolution of CO₂ emission allowances, according to “Team energy for Europe” elaborated by the specialists of European Bank of Investments is presented in the following graphic:

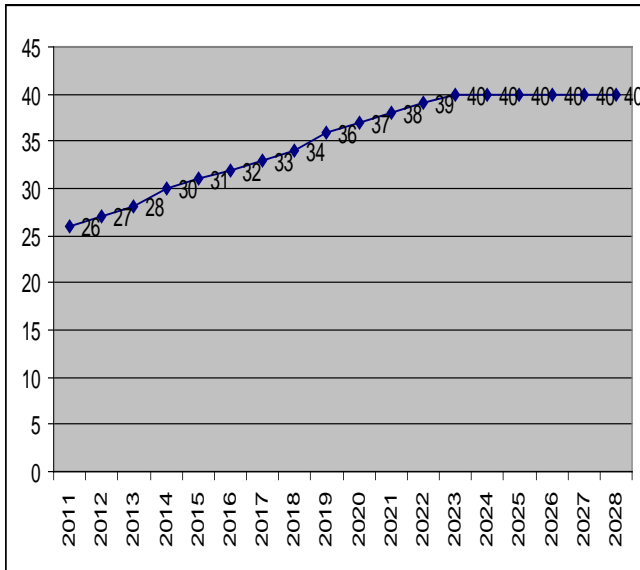


Fig. 3. The price evolution of CO₂ emission allowances for 2013-2028.

The medium prices for CO₂ emission allowances purchase that will be taken into consideration in the costs evaluation for the analyzed options will be the ones forecasted by European Bank of Investments for 2013-2025:

- 26- 40 Euro/allowance (E/CO₂);
- constant price after 2025.

In C.E. Rovinari accounting will be registered the following economic operations:

1. Allocations received from the state for 2013, 1908027 items x 38 Euro/item
 1908027 x 25 Euro = 47700672 Euro
 Euro in 2013 – 4,5 lei/Euro
 (Intangible assets)

Allowances = emissions allowances 214653037
 (Intangibleassets)received from the state

2. Emissions allowances purchase from the market:
 - 30000 emission allowances x 28 E/item.
 X 4,5 lei/E = 3780000 lei

3. Emission allowances use (the output evaluation may be achieved by CMP or FIFO method, because input emission allowances are evaluated to the purchase price and not to its fair value).

Expenses for =emissionallowances 218433037
 emission allowances to be returned to the state

4. Incomes are registered:
 Emission allowances=Incomes from 214653037
 received from the state emission allowances
 At the end of the period the following accounts must be squared:

- Allowances (Intangible assets)

- Emission allowances received from the state
 Emission allowances = Allowances
 to be returned to the state (Intangibleassets)
 218433037

4. Conclusion

Green accounting is an important part of organizations responsibility and, by using this method, the decision maker at microeconomic level will be able to identify and analyze, in terms of costs, projects and activities that are consistent with the principles of environmental protection.

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