The National Environmental Accounting – Different Experiences

Florian Marcel Nuță[1]

Abstract: The article aim is to review some of the main approaches in national environmental accounting in Europe. We try to assess the most important experiences in the field of national environmental accounting and introduce the main concepts in this matter. Future research should address to identify and model correlations between the economic aspects and environmental quality ones as well as those related to human development and welfare.

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1. Introduction

In the age of natural resources scarcity and multiple and structural crisis the welfare and economic growth are the centre of attention for all decision makers and scientists. Sustainability risks to be ignored and the national economies dysfunctions affect the sustainable development discussions. What it may save it is the connections identified by some researchers between economic growth indicators and the environmental ones (Bartz & Kelly, 2007).

There are assumptions that include the sustainable development in a very economical way. The consumption is the key concept for the modern economies. Lindhal (1933) and Hicks (1946) shown that an income indicator should be the measure the value of goods consumed today without affecting the consumption possibilities for tomorrow. Not very long time ago any revenues from activities involving environmental depreciation or some natural asset loss were accounted as incomes without being discounted with the assessed environmental loss (UN, 1968).

The environmental accounts have appeared in Norway (Weber & Hemmelskamp, 2005), after the discovery of oil in 1974. Norwegian accounting system resources allowed for resource accounting data on land use.

[1] Senior Lecturer, PhD, Danubius University of Galati, Faculty of Economic Sciences, Romania, Address: 3 Galati, Blvd, Galati, Romania, tel.: +40372 361 102, fax: +40372 361 290, Corresponding author: floriann@univ-danubius.ro.

In the Netherlands (Peskin, 1981), has developed the idea that these accounts of natural resources should be considered in economic analysis. An environmental accounting system: NAME (National Environment Accounting Matrix) was initiated in 1989 to 1991.

However, despite the international consensus on an environmental accounting, the UN Statistics Division put into operation in 1993, a system of integrated environmental and economic accounting (SEEA) or "green accounting" that integrates physical and monetary accounts correlation to natural heritage costs and benefits of its use in the SCN.

Almost all European countries have launched projects in 1994 aimed to create national systems of environmental accounting in order to integrate sustainable development principles.

2. National Environmental Accounting in Europe

Environmental accounting methods developed are spread rapidly. Most important is SERIEE system (European System of Economic Information on the Assembly Environment) developed by Eurostat in 1994 presented in matrix form. The proposed methods for assessing environmental damage link environmental quality of national accounting aggregates. SERIEE was developed based on the United Nations SEEA, and is a model designed to be applied nationally, even though he was ongoing event that various attempts were based environmental accounting frameworks smaller territorial (common regions).

Private organizations are inspired by this model, especially for environmental classification of items and were tested through pilot projects in 17 countries.

SERIEE Furthermore, Eurostat has developed a system of physical indicators ESEPI (European System of Environmental Pressure Indices) called DPSIR model (Driving forces, Pressures STATE, Impact, Responses). This model develops phenomena which are of environmental concern organic and structured system of indicators. DPSIR indicator system applies an approach that goes from the analysis of processes determining the environmental impacts (drivers and pressures), the current strategy of the environment (state and impact) the actions you take to solve system problems highlighted (answers). No standard model application form, to the extent that it establishes a logical approach, which leaves the definition of the indicators best suited to the specific realities including choice of form of presentation of resources (Hueting, 1991).

Another environmental accounting method was developed in Europe NAME matrix proposed in 1994 by the Institute of Statistics Netherlands CBS. This matrix is an accounting system designed to represent the interactions between economy and environment together in a same picture environmental and economic accounts

of physical type. Both economic and environmental modules are directly attached to allow a parallel reading of the main units (production, consumption, etc..) And institutional sectors (households, businesses, public administrations) of national accounting and environmental pressures that causing them.

Name a system was put into operation to be applied nationally, and while he was experienced in several European countries (Denmark, Sweden, Holland, Italy, etc.). In some cases experiments were conducted in smaller local authorities (communes).

This system is characterized in particular by the possibility of achieving a budget of money and physical environment existing data. After all, that system is a form of re-aggregate data from various sources (official statistics, environmental agencies, etc.) in a form of a matrix that allows the association to economic data for the corresponding environmental pressures.

In the various models Eurostat proposes a program of harmonization of the various experiments to obtain a unique method that might generalize to all EU countries in the near future.

Eurostat for the Commission, a guide entitled "Towards environmental pressure indicators" identified sixty indicators may remain in module - pressures and responses - divided into 10 thematic areas (air pollution, climate change, etc.).

Development of new indicators of the national capital requires a significant amount of specific data including the expansion of national accounting in the natural, social and human capital.

SCN provides important information for economic analysis and development decisions.

The system continues to focus primarily on activities related to market economy. It excludes data on natural resources unspoken currency that enters the economic system and pollutants unexpressed value. SCN does not envisage any measurable aspects of social and human capital.

Expanding national accounts will deliver an information system complete, consistent and uniform tying the environmental, social and economic aspects, which allows measuring the totality of the capital in Romania. This may provide a more complete picture of the total wealth of the country needed policy and economic decisions. Such information may help clarify the default value assigned to elements such as air quality. State devotes large sums to prevent, reduce or eliminate air pollution and other resources. This is given a default value of the environment. Commissioning of a national information system, allows implicit social assessment, which add considerable value to policy in this area.

2.1. National Environmental Assets Accounts

Quantity and quality of information on natural capital varies considerably. Natural capital can be measured in several ways. Basic accounts are incomplete, for certain stocks of natural resources: wood working, underground resources and land, including some land areas. There is little information on other natural resources (water and marine) and virtually zero information on environmental assets that provide flows ecological functions.

Some indicators of natural capital depletion or degradation trends approach the capital. There are some data on consumption of natural resources, but no information on their degradation. Success depends on creating SNA expansion of partnerships with organizations that collect such data on environmental degradation. Information is usually scattered, incomplete and not integrated nationwide. Data at this level on pollution are limited and they lack uniformity, because there are many factors that influence the situation of natural capital such as urbanization and tourism whose influence is not measured properly (Pramanik, 2002).

Accounts expanded system will measure the amount of natural capital (natural resources, land and ecosystems) and annual evolution of these reserves occasioned by natural processes and human activities. Reserves that will serve as a basis for evaluating natural resource wealth may thus be integrated into the overall assessment of the national wealth in the SCN, in addition to the traditional measure of wealth produced. This will allow evaluation of natural resources on the balance sheet show how capital is used as a substitute product of natural capital. In conclusion, these data are of particular interest for monitoring the presence and exploitation of these resources (Lange, 2003).

Natural capital accounts are closely linked material flows accounts. Annual or annual harvest depletion of natural resources reserves stated in physical capital asset account is part of natural resource flows recorded in an account of material flows. The integration of these two accounts could serve to measure the implications of using resource materials on reserve "virgin" environment.

Over time, natural capital accounts are to:

- Underground asset accounts: physical measurement of the active reserves underground sources (fossil fuels, minerals and metals) and estimate the monetary value of reserves;
- Biological asset accounts: quantity and quality of renewable biological resources (wood working, marine resources, wildlife, hunting and traps) and estimate the monetary value of reserves;
- Land asset accounts and terrestrial ecosystems, physical expansion, ranked according to the dominant use, land coverage and capacity. Accounts include

an array of changing land damage that allows representation of a conversion to another use (and development of soil quality), the predetermined periods (five years). Whenever possible, these accounts will also include an estimate of land value;

- Water asset accounts and hydric ecosystems: they include the amount of renewable water per basin slope, precipitation, surface water flow and groundwater flow, extent and quality of large river systems (lakes, rivers, etc.) and a monetary estimate value of water resources exploited commercially. A national estimate of the value of water resources and developing a cash account of these resources could be integrated into all the accounts of the national capital;
- Atmospheric asset accounts: information on these aspects of climate change and extreme variations would include urban air quality

2.2. Materials and Energy Flows Accounts

Material flow accounts in physical terms will treat that flows between the Romanian economy and the world economy and environment. Feeds must include natural resources, recycled materials, waste and toxic chemicals. Linking these accounts directly with SCN information will provide significant information to measure environmental demand in the economy as a source of raw materials and waste prices. By correlating physical measurements accounts data inputs and outputs are possible industrial detailed estimates on the intensity of resource use and waste production in different types of economic activities (Schaltegger & Burritt, 2000). Based on these activities will determine the amount of resources used and waste generated for each economic activity (measuring Eco efficiency).

2.3. Environmental Protection Accounts

Depletion and degradation of natural capital are recognized as serious by the company engaged to counter them. Businesses commit expenditure to equip itself with pollution control equipment and remediation effects. Governments invest in waste water to reduce the devastation caused by streams. Households are involved in recycling programs and environmental contributions to non-profit organizations.

Most of these activities are included in national accounts but not explicitly. Given the current accounts data is not possible to accurately estimate environmental costs and their evolution (Tabără, 2008).

2.4. Social Capital Accounts

More and more measurements are recorded, official or not, the collective action plays an important role in the ability of companies to operate efficiently and in a spirit of individual welfare within it.
Despite its obvious importance, current understanding of capital is lower than other forms of capital. Documents recently published by the World Bank and OECD research trials presented the topic in the U.S. and Europe. An example is the survey conducted to collect data on social capital. You can examine the links between human capital and social capital and established a framework that contains a provision relative data and indicators of social capital. However, to ensure development of a set of indicators that provide information on all aspects of heritage must be sustained long-term research aimed at measuring the incorporation of social capital in extended SNA.

3. Conclusion

The environmental assets are often mismatched as natural resources (oil, timber, gold, etc.). The confusion is mainly related to the poor understanding of the national intangible assets and even less assessment possibilities. The main approach is to identify those components that generate incomes or involve expenses. That is why in the last decades many scientists tried to identify new evaluation methods for extending the system of assessment for more elements not described before.

The national welfare measure was not far time ago just an expression of direct monetary variables and less quality aspects. The limitations of monetary assessment of national growth and welfare were especially visible when economists tried to introduce new non-monetary variables. An exotic example was the try to extend the Bhutanese Gross National Happiness model for other national economies by economic means.

Maybe indeed in the field of environmental national performance and assets evaluation the strictly economic tools and methods are not enough and a more comprehensive procedure should address the issue.

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