ADDRESSING THE MANAGERIAL CHALLENGE OF SUSTAINABLE DEVELOPMENT IN ROMANIA: AVAILABILITY AND SIGNIFICANCE OF SUSTAINABILITY INDICATORS

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ABSTRACT
Sustainable development reframed decision making at all levels by widening the scope of criteria that should be considered for substantiation. Environmental and social aspects enriched the information support of decisions triggering complexity frameworks especially at governmental level. For Romania, a recent member of the EU and signatory of important multilateral agreements, complying with the requirements of sustainable development became an important managerial challenge. In addressing this challenge a key aspect is the proper information support which will be assessed by analyzing the availability and significance of sustainability indicators in Romania. Intensive use of resources with potential to generate irreversible environmental losses and an important gap against the EU level are observable by taking in account the level and evolution of key sustainability indicators.

KEYWORDS: *environmental policy, indicator, Romania, sustainable development.*

JEL CLASSIFICATION: *Q01, Q56, Q58*

1. INTRODUCTION

The size and scope of environmental degradation was acknowledged and generated a widespread movement that increased in intensity and scope along the last decades. The main outcome of this process is the formulation of the sustainable development concept that outlines the directions and shapes the destinations of humankind if the restrains of the natural environment are respected. Altogether with the environmental challenge, the concept also addresses the social issues too. Sustainable development is the current framework for governmental policy making in most developed countries and its world leader could be considered the European Union (EU). In 2001, EU engaged in the mission of sustainability by issuing the Goteborg Strategy of Sustainable Development. Further, the current Europe 2020 strategy is a strategy for smart, sustainable and inclusive growth.
Romania, as one of the most recent member of the EU, is facing the challenge to comply with the high sustainability standards of this world leader. This includes on the one hand the need to adopt a system of indicators used in EU and on the other hand to reach the compliance levels established by negotiations with the European Commission (Bran et al., 2011).
The availability and significance of sustainability indicators is of key importance for adopting decisions that allow Romania to cover the important gaps within the established timeframe. These indicators are also needed to improve the access to European funding, since all projects should report their progress by using adequate indicators. The availability of these indicators and how

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valuable are they to reflect the state of sustainability in Romania are assessed in order to indicate possibilities to improve the information support of environmental policy.

2. MEASUREMENT ISSUES: ECONOMC GROWTH AND SUSTAINABLE DEVELOPMENT

Economic growth was for decades the ultimate goals of governmental policies since it further generated the resources needed for development and increased income of population, translated in elevated quality of life (Bran, 2009). The widespread acknowledgement of this positive correlation between economic growth and development could be inferred from the use of several indicators, the most important being the gross domestic product. Unlike development in its economic interpretation, sustainable development is not so well correlated with economic growth. Thus, the indicators of economic growth could provide information on a very positive situation, while the quality of life and environment are depreciating (Gore, 1994). Therefore the need of novel indicator system became obvious and fueled an animated and prolonged process of sustainability indicator establishment. This process is still ongoing since an important body of the literature continues to report on the appropriateness of various indicators and indexes (Cretu et al., 2009).
The measurement of sustainability is different in many aspects from the measurement of economic growth. Its core principle is to provide information on at least three dimensions instead of one. Thus, sustainability means to assess how a state or a process reports against the triple bottom line consisting in economic, social, and environmental performance (Bran and Hincu, 2009). Both the United Nations (UN) and the Organization for Economic Cooperation and Development (OECD) concluded on core sets of sustainability indicators and based on these guidelines the EU and other states created operational indicators systems that are monitored for a decade or so.
The challenge of sustainability measurement relies, among others, in the need to use more indicators. Their list could comprise tens of indicators which sometimes annoy decision makers and lower the precision of models available for their support. Therefore, researcher proposed a range of sustainability indexes, although their use is still controversial (Srebotnjak, 2007).

3. SUSTAINABLE DEVELOPMENT INDICATORS IN ROMANIA

Romania's system of sustainable development indicator was developed using the European model. This system is organized on three levels and comprises ten groups of indicators. The three levels are:

- Level 1: main indicators (basic)
- Level 2: indicators used for monitoring and reviewing sustainable development programs;
- Level 3: analytical indicators

The sustainable development indicators are grouped in the following categories:

- Socio-economic indicators;
- Indicators of sustainable consumption and production;
- Social inclusion indicators;
- Demographic indicators;
- Public health indicators;
- Indicators of climate change and energy;
- Indicators of sustainable transport;
- Indicators of natural resources;
- Indicators of global partnership;
- Indicators of good governance.

Table 1 presents the indicators that express the state of the environment and the targets established for each of them.

Table 1. Environmental indicators comprised in the system of sustainable development indicatoes and the targets established for Romania

Domain	Specific objectives	Indicators	Targets
Climate change and energy	Improve energy efficiency thermo-electric equipment	Emissions of greenhouse gases in absolute terms; CO_2 emissions/capita; Gross domestic energy consumption.	Reducing emissions of greenhouse gases by 8% during 2008-2012.
Nature Protection and Biodiversity	Bio-diversity Preventing and reducing desertification process	The proportion of land covered with forests: Forest dynamics A forestation dynamics Protected areas to ensure biodiversity conservation	Increase forest cover from 27% to 35% of the country by the year 2040 Increased share of protected areas from 2.56 breast area of the country in 1990 to 10% in 2015.
The quality of urban life and the environment in general	Ensure a high standard of living in terms of water; Reduction of air pollution and pollutants maintained below a certain threshold in order to avoid damage to human health, ecosystems and cultural heritage	Percentage of population with access to safe drinking water; Number of people who have access to a centralized water supply system; Population connection to centralized water and sewage services; The degree of network equipment with water on the streets; Loss of water distribution networks; The age of water distribution network; Number of treatment plants. Urban population exposure to air pollution.	Doubling by 2015 the proportion of people who have access to safe drinking water; Improving and developing the infrastructure of the centralized water supply and sanitation in urban and rural human agglomerations.
Use of natural resources and waste generation	More responsible management of natural resources; Improving the quality of water resources.	Collection of municipal waste landfills and incineration in kg / inhabitant; Changing land use (agriculture, natural-building); Surface water and groundwater extraction / resources available.	
Transport	On the medium and long term, Romania must keep a balanced transport system, where railways cover 30-35% of the transport market.	Freight volumes relative to GDP; The volume of passengers transported, relative to GDP; Freight transport by type; Passenger transport by type	The external costs of transport Support equivalent to road and rail infrastructure development Supporting green transportation.

Source: National Institute of Statistics, Eurostat

The National Institute of Statistics partially linked the above presented system to Eurostat, the European system of sustainable development indicators.

3. PATTERNS OF SELECTED SUSTAINABLE DEVELOPMENT INDICATORS' EVOLUTION IN ROMANIA

From the range of environmental indicators included in the system of sustainable development indicators we selected for analysis the following: greenhouse gas emission, energy consumption, electricity from renewable energy sources (RES) and generation of municipal waste.

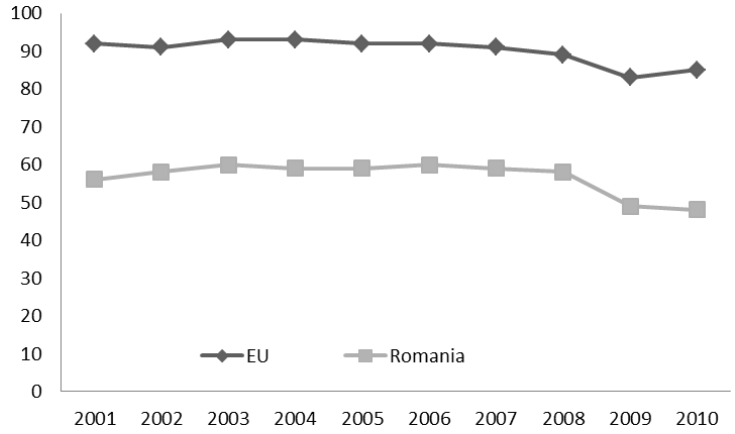

Figure 1. Greenhouse gases emission against the reference year (% of 1990)
Source: Eurostat data, own representation

3.1. Greenhouse gas emissions

Greenhouse gas emissions are one of the most important environmental indicators because they are generated mainly by the burning of fossil fuels for energy production in almost all sectors of economic activity. Meanwhile, greenhouse gases are responsible for the first global environmental priority.

Usually greenhouse gases are reported not as total emissions but as percentage of the reference year emissions, the reference year being 1990 according to the UN Framework Convention on Climate Change (UNFCCC). This indicator's evolution in EU and Romania is presented in figure 1. It could be noticed that in Romania the greenhouse gases were emitted at almost half of the level of the 1990. Out of the context interpretation could consider this as an important progress.

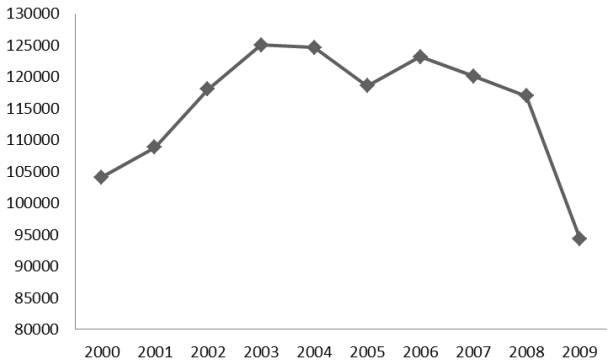

Figure 2. Greenhouse gases emission in Romania (tones/year)
Source: National Institute of Statistics data, own representation

Nevertheless, in Romania this significant reduction of emissions is occurred due to cease of activity in many industrial units after 1990. In other words, it is not the merit of the environmental policy the fact

that Romania already reached the Kyoto target. In fact the reduction of the emission level in the last decade was little (around 10%), with an important contribution of the 2009, then the effects of the global financial crises hit the economy and its appetite for energy too (figure 2).

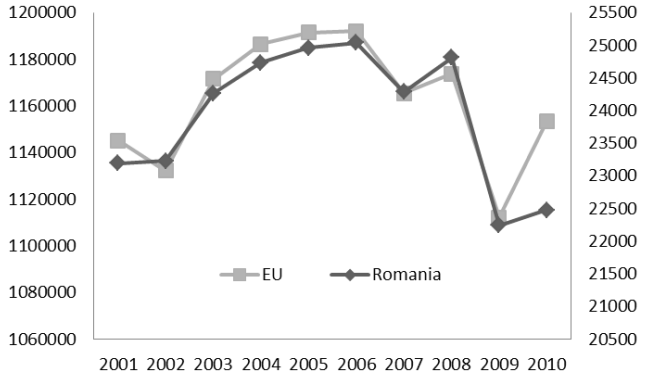

Figure 3. Energy consumption in EU and Romania (tones of oil equivalent/year)
Source: National Institute of Statistics data, own representation

3.2. Energy consumption

Energy consumption in Romania in 2010 was of 22475 thousands tonnes of oil equivalent (down 3,10% against 2001), while EU energy consumption increased in the same year to 1153312 thousands tonnes oil equivalent, stable compared to 2001 (figure 3). Otherwise, it is interesting to notice that the dynamic of energy consumption is very similar in Romania. This could indicate the same set of factors that influence this indicator.

3.3. Electricity from renewable energy sources

Shifting electricity production from a resource structure dominated by fossil fuels to a more diversified one is heading the world agenda of sustainability and of energy security. All forms of renewable energy are expected to bring in their contribution, although there are significant differences in their potential, at least on the short run (Zamfir, 2011; Bran et *al*., 2010).

The impact of environmental and energy policies is noticeable in the evolution of the electricity production from renewable sources, especially in the case of wind power. Thus wind power has the highest growth rate at global level, electricity production from this resource increasing annually by 30%. In Romania, we are witnessing a burst of wind power. The installed power was in 2009 of only 14 MW, summiting at the beginning of 2012 to 850 MW generated by 1000 wind turbines (AWEA, 2012).

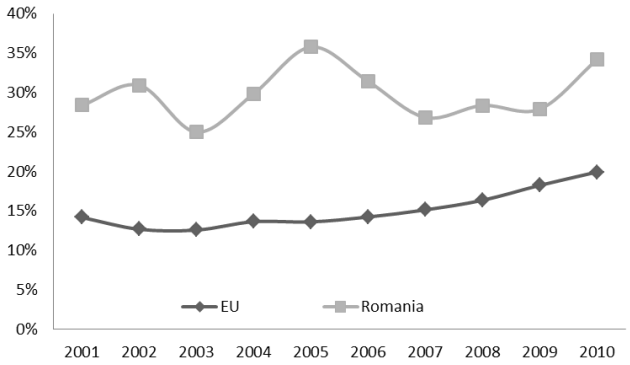

Figure 4. Evolution of renewable electricity's proportion
Source: Eurostat data, own representation

Compared with the EU level, Romania could be considered in a favourable position because the proportion of electricity produced using renewable energy sources is above the target set by the Europe 2020 strategy. This proportion varied between 25 and 36% in 2001-2010 (figure 4). Nevertheless, this situation does not reflect the effects of the current policies, but the legacy of investments made well before. The fact that in the last decade the growth rate of renewable electricity's proportion was higher in the last decade in EU (40%) than in Romania (20%) is supportive in this respect.

3.4. Generation of municipal waste

Human activities' material flow is in many respects very different from the natural one. These differences are accounting for major environmental degradation issues that widely known as pollution problems. Among these municipal waste generation and disposal are current priorities in urban environmental management and also reflect an important aspect of progress toward sustainability.

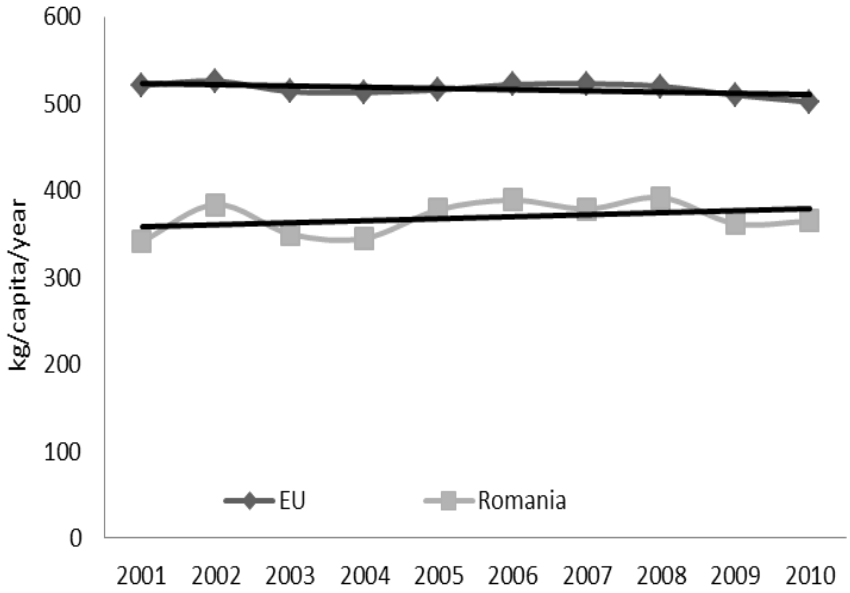

Figure 5. Municipal waste generation
Source: Eurostat data, own representation

Municipal waste generation in Romania is below the European level, but its trend is of great concern since in the last decade it recorded a positive variation (increasing with 7%) while at EU level waste generation decreased with 3% (figure 5).

4. CONCLUSIONS

Environmental policy is the most important sector of public intervention that contributes to sustainable development. Its endorsement with proper and complete information is an important condition for effective and efficient progress toward a cleaner and resilient natural environment. In Romania, sustainability is an important managerial challenge. Although the system of sustainable development indicators was up taken from the Eurostat, the availability of data is scarce in terms of time series, but supportive by coverage of various sectors. The analysis of several sustainability indicators reveals a good ground for comparisons, although their interpretation needs a good knowledge of the local context in order to provide valuable information for decision making.

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