

THE ECO-EFFICIENCY INDICATORS AND THE ROMANIAN ECONOMY

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Abstract:

Eco-efficiency can become a true economic growth European model of successful with the desire to ensure and respect for the environment. Thus, the design of urban transport systems more efficient business models, production and marketing of greener products and services and more efficient use of resources, including energy, raw materials and water, could bring benefits for the economy and society as a whole. Investment in modern production technologies, which are based on mechanisms that ensure efficiency environmentally sensitive in environmental goods and services, and promoting a market for eco-efficiency internally and externally can contribute to the achievement of sustainable development undertaken at the Community level.

Keywords: *eco-efficiency, environmental protection, economic growth, energy efficiency.*

In the financial assessment of the organization, eco-efficiency measurement may be useful for delivering benefits such as:[1]

- increasing production;
- decreased investments in fixed assets and assets;
- reducing tax burdens;
- default risk reduction and price for risk taking.

The necessity of calculating and interpreting eco-efficiency indicators at the micro level can be argued as follows:[2]

- calculated value of eco-efficiency indicators to take measures to achieve the desired performance. In this case, the managers there are two possibilities: either by reducing the denominator of "environmental impact" of formula eco-efficiency (by rationalizing consumption of raw materials, the use of renewable energy sources, modernize production equipment) to get in especially of environmental performance or increasing the numerator "results indicators" and reducing or keeping constant the counter for achieving economic performance;

- help identify opportunities for reducing production costs;
- lead in establishing the direction of development both in terms of goods produced, and in terms of production processes;
- allow comparisons between entities operating in the same segment but also for measuring a single product, market segment or the entire economy.

- can lead to both decreased volume environmental taxes incurred by companies for the negative externalities they produce by identifying opportunities for reducing the counter "environmental impact" and thus to achieving economic performance.

The general formula of eco-efficiency indicators listed above can be adapted by replacing the counter macroeconomic outcome indicators. Thus, the macro can be used as outcome indicators, such as Gross Domestic Product, Gross added value, Gross National Income, Final Consumption.

Regarding the denominator formula of eco-efficiency, it is preferable to use macroeconomic indicators that have a significant impact on the consumption of natural resources and therefore an adversely impact on the environment (total energy consumption, total consumption of metals, total consumption of raw materials which affects the quality of the environment qualitatively and quantitatively).[3]

At the macroeconomic level the use of eco-efficiency indicator is the indicator "energy efficiency" reporting the economic growth (the GDP of a country) in total energy consumption:

$$\text{Energy efficiency} = \frac{PIB}{CTE},$$

where CTE is total energy consumption.

This indicator is used for the analysis and forecasting, particularly to measure the impact that energy has on the environment, but also to highlight energy consumption for unit GDP creation.[4]

Trends of evolution of this indicator and its size are directly dependent on a multitude of factors that influence the composition of GDP and energy consumption, ie the share contributed by economic sectors in the PIB, the technologies used, the type of energy used. The use of this indicator of eco-efficiency is a direct consequence of the sentence issued by eco-economists that we need to decouple economic growth, namely decoupling GDP, consumption environmental factors, namely the total energy consumption indicator. In other words, the decoupling of GDP growth of total energy consumption indicator falls within the requirements of ensuring sustainable economic and social development, in order to obtain a larger quantity of goods and services with lower energy consumption. In general terms, this means an increase in eco-efficiency in the following happen:[5]

- GDP growth given that occurs decrease total energy consumption;
- Increasing GDP while the total energy remains constant;
- Faster growth of the GDP to increase total energy consumption.

To identify alternative eco-efficiency for our country we have calculated this figure based on the calculation formula given above for the reference period between 1995 - 2014, presented in Table no. 1.

Table no. 1

The indicator "energy efficiency" of the Romanian economy value

| Year | Final Energy Consumption (Million tonnes oil equivalent) | GDP (mil. euro) | The Energy Efficiency indicator value (Euro / kg oil equivalent) |
|------|---|--------------------|--|
| 1995 | 28738 | 28735,8 | 0,99 |
| 1996 | 31528 | 29025,1 | 0,92 |
| 1997 | 28438 | 31485,1 | 1,10 |
| 1998 | 25133 | 37111,2 | 1,47 |
| 1999 | 21792 | 33766,1 | 1,54 |
| 2000 | 22165 | 40651,3 | 1,83 |
| 2001 | 22451 | 45356,8 | 2,02 |
| 2002 | 23390 | 48614,9 | 2,07 |
| 2003 | 25176 | 52576,5 | 2,08 |
| 2004 | 25715 | 61063,9 | 2,37 |
| 2005 | 25206 | 79801,9 | 3,16 |
| 2006 | 25312 | 97751 | 3,86 |
| 2007 | 24659 | 124728,5 | 5,05 |
| 2008 | 25002 | 139765,4 | 5,60 |
| 2009 | 22387 | 118196 | 5,27 |
| 2010 | 22739 | 124327,7 | 5,46 |
| 2011 | 22750 | 131327 | 5,77 |
| 2012 | 22.801 | 133.511,4 | 5.85 |
| 2013 | 21.833 | 144.253,5 | 6.61 |
| 2014 | 21.711 | 150.230,1 | 6.91 |

Data source: own calculations based on Eurostat data:

<http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=ten00095&plugin=1>

As can be seen from the table no. 1, the index "energy efficiency" presents an increasing trend throughout the period, with fluctuations outstanding period 2007 - 2014 compared to the previous 1995 – 2006. Thus, in the period 1995 - 2006 indicator "energy efficiency" show small fluctuations, raising its 2007 growth trend observed a substantial (by 76.43% higher in 2007 compared to 2006). Important to note here is that this change of the indicator was based on the increase in a faster pace of GDP to total energy consumption.

Based on the data above can issue the following wording on energy efficiency indicator of the Romanian economy:

- The indicator increased in the period under review due to faster growth in GDP to increase total energy consumption;

- The level and trend of the indicator was influenced by the evolution of the Romanian economy structure period, and changing the economic structure from low value-added industries to industries with high added value services segment having the greatest contribution to gross domestic product;

- The indicator was influenced by the application of renewable energy directive and applying for financial aid schemes by granting green certificates, which had the side effect of improving energy efficiency.

As can be seen from the above table, the size indicator "energy efficiency" has registered an upward trend, which shows that there is greater dynamics of GDP compared to the energy consumption. This proves the desire of our country to accede to the practical implementation of possible scenarios of increasing eco-efficiency.

Fields marked the national and international environmental policy, energy consumption and energy efficiency indicators have become prominent in developing environmental objectives. Moreover, the 20/20/20 targets imposed by the new Community strategy for sustainable development will print in the future, a growing need for investment in energy branch. Thus, besides the financial aid community and the financial support national entrepreneurs carrying out activities in the production and distribution of electricity from non-renewable sources will have to direct investment policies promoted to finance environmental projects that support the achievement of the target set by 20% of electricity consumption from non-renewable sources.

The high value of projects aimed at environmental protection becomes an impediment in making the decision to invest in enterprises, they often faced with difficulties in obtaining additional financing or total environmental investments. These impediments can be countered by support from central and local authorities through:

- Creating incentive programs;
- Provision of fiscal incentives;
- Granting loans with low interest;
- State aid;
- Provide technical assistance and advisory services.

The prevention of pollution and restoring damaged in the past is an important issue considered in managing budgets of revenues and expenditures of central and local public authorities and other categories of private operators in the economy. At the same time it should be retained incumbent importance of environmental protection activity at the macroeconomic level. Thus, government authorities undertook a series of strong international obligations aimed at environmental protection, should provide funds to cover expenses resulting from the implementation of environmental programs.

Conclusions

Ecological imbalances explained their complex causality dependent directly or indirectly by human activity, is motivated increasingly stronger concrete actions to protect the environment. Thus, the financial efforts to achieve them takes the form of budget items or there are distinct national bodies finance ecological actions.

Funds for the environment can be found in each economy, whether developed or is still developing, but what differs from one country to another is the amount of these funds, a sum which is determined by national concept regarding environment and the scale of programs targeted in this direction.

If developed economies, there is a differentiation in specific funds, depending on the type of ecological actions. In developing economies, funds are generally multifunctional, providing funding for ecological restoration in many areas.

All human activity affects to a certain degree and inevitably the environment. This means that all sectors have their specific role to adjust the overall efforts to minimize their activities with

negative environmental consequences. Governments, companies involved in the industrial business or other undertakings providing environmental services (such as collection and treatment of waste or environmental consulting), and households as consumers are involved in reducing pollution and preserving a healthy environment.

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