

ASSESSING PERFORMANCE OF THE SUSTAINABLE SPATIAL DEVELOPMENT: ROMANIAN CASE STUDY

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ABSTRACT: The sustainable development requires to be implementing on the efficiency principles of the sustainable development, which has to be appreciated depending on a benchmark system. This study performs an analysis of the sustainable performance of Romanian regions and reveals disparities compared to the national economy. The research method used is Sustainable Value which synthesis the contribution of the economic, social and environmental resources to value creation. The obtained results highlight that some significant differences between the Romanian regions exist. They suggest the necessity of some appropriate sector policies in order to eliminate disparities, achieving the economic-social cohesion and environment protection.

Key words: region development, sustainable value, performance, sustainable spatial development, disparities

JEL Codes: O11, Q01, R11

Introduction

The sustainable development is the main objective of a coherent development strategy in the European Union, that has to substantiate the policies and national strategies of all member countries. Implementation of the Sustainable Development Strategy in the European Union aims to improve the quality of life through balancing of several objectives (environmental, economic, social), and continuously application of some action principles as prevention, responsibility, rationalisation, integration, aspects which will generate an increased economic prosperity, cohesion and social equity.

The process of continuous monitoring of the economic-social progresses within the European Union highlighted that there were significant differences on economic and social welfare of citizens of certain regions. This perspective grounded the setting of policy for regional sustainable development of EU and its implementation through structural and cohesion funds.

The sustainable regional development do not address only the economic progress of some areas but it includes in a integrated conception aspects related on the social equity and the environment protection, at the level of the entire European space. Meanwhile it signifies those way of economic development that can be sustained along the time span because it has in view not only the present welfare of humankind but specially aims to create some opportunities to contribute and participate in the future economic grows of regions.

In the specific literature the regional dimension of sustainable development is treated at the general level [Nijkamp et al., 1991], space level [Zuindeau, 2006] or sector level [Gezycy and Atalik, 1998]. Concerning Romania, there are preoccupies of assessing some aspects of the sustainable regional development as: strategies for sustainable development [Talvescu and Dima, 2008], tourism [Avramescu, 2006], regional planning [Surd et al., 2011], and regional economic growth [Miron et al., 2011].

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This paper has as main objective, the analysis of the sustainable development performance at the level of Romanian territorial structure that resulted from the regions capacity to create the sustainable value.

The necessary information to assess the sustainability of the NUTS II regions of Romania derives from the analysis of the territorial statistic data and by the Sustainable Value indicator (SV), which is calculated for each region. The data used in analysis refer to the 2008 year, time when Romania had reached a maximum level of its economic development, after that it entered in a deep economic crises. The results obtained emphasise the differences between regions from the point of view of the performance in achieving the sustainable development objectives.

The lack of sustainable performance in the case of some regions suggests the necessity of adoption of some efficient strategies and actions directions through which the European vision of sustainable development to be transposed into the local economy, in order to satisfy the needs of present and future generations.

The role and utility of using the Sustainable Value method in regional sustainability assessment derives by information provided by it, which can serve for some analysis of causes that had determined an unequal territory development. Lack of sustainable performance for some regions demands introduction of several policies and efficient strategies for transposing into local economy of the European sustainable development vision, which is able to satisfy the needs for present and future generations.

Methodology

The assessment of the sustainable development can be made on base of an analytical indicators set that provide detailed information concerning various economic, social and environmental aspects. They present information for some concrete specific aspects that characterize the sustainable development within a particular area.

The current Sustainable Development Indicators systems (*SDIs*) introduced by the European Commission in collaboration with its specialized institutions, expressed the European vision concerning the sustainable development. They can be used for monitoring and appreciation the efforts made for implementation the objectives on the line of each strategic dimension of sustainable development.

In the Monitoring Rapport of Sustainable Development Strategy in Europe from 2009 were used more 100 of statistical indicators to mark out the progresses made by the European Union towards sustainable development, 11 of them being identified as SD headline indicators: Growth of *GDP* per capita (theme Socioeconomic development), Greenhouse gas emissions and Consumption of renewals (theme Climate change and energy), Energy consumption of transport relative to *GDP* (theme Sustainable transport), Resource productivity (theme Sustainable consumption and production), Abundance of common birds, Natural resources and Conservation of fish stocks (theme Natural resources), Healthy life years (theme Public health), Risk of poverty (theme Social inclusion), Employment rate of older workers (theme Demographic changes), Official development assistance (theme Global partnership). These sustainable development indicators are extended in other indicators placed on the 2th and 3th level.

The analytical indicators of sustainable development are numerous and utilizing them into an assembly analysis can lead to obtaining of some divergent conclusions. For this reason, it is necessary to build some synthetic indicators that provide general information on the sustainability of one system.

In the last period, literature marked out numerous methodologies that are recommended for monitoring and evaluating of some economic, social and environmental aspects of community, at the territorial level. They used some aggregated indicators (adaptive indicator framework for monitoring regional sustainable development, economic index, social index, environmental index, competitiveness index, multicriteria aggregation etc) that contain a series of other relevant

indicators, through a weighting system [Van Zeijl-Rozema and Martens, 2010]. Both, the way of selecting the indicators and the method of determining the weights are related on the existence of statistical data, analysts' experience and the goal to achieve, which in some way, can influence the accuracy of final results.

An indicator that can simplify the assessment system for the various aspects of the sustainable development is the Sustainable Value indicator. It expresses the excess return of one entity resulted from a more efficient use of resources it disposes compared with another entity considered being benchmark. Although the SV concept is of recent date [Figge and Hahn, 2004], it was largely used for analysis of the sustainable development stage and of the trend at the level of companies, economic sectors, countries and regions.

With the help of the SV indicator, one can appreciate the sustainable performance, meaning the value added by an economic system that uses the economic capital, environment factors and social capital in comparison with a benchmark system. The importance of SV utilization is related to the fact it expresses synthetically the contribution of one various economic resources to the process of value creation. Therewith it can consider other elements related due to their effects, sometimes inevitable, to this process, as environment pollution, work accidents etc. But the benchmark is that element that finally, can influence the results obtained. With help of the SV indicator's calculus it can determine which will be the value added by the analyzed entity if this operate with the same efficiency that of the benchmark. The sustainable value characterizes the economic performance on base the opportunity cost of efficient utilization of resources, accordingly with the sustainable development principles.

At the territorial level, the Sustainable Value indicator is a measure of the grade in which the economic operators in one area unfold their activity on the base of the eco-efficiency principles. In this way, it can appreciate that the region in a whole has a sustainable profile. A positive value of the indicator highlights that the region obtains sustainable performance through value added creation, efficient management of resources, preservation of environment and social welfare.

Determining the contribution of using the various resources for sustainable development ($SDVC_j$) and Sustainable Value at the regional level (RSV_j) can be made on base of the following relations adapted upon the methodology introduced by researchers Figge and Hahn:

$$SDVC_i = R_i^E \cdot \left(\frac{GDP_j^E}{R_i^E} - \frac{GDP^B}{R_i^B} \right) \quad (1)$$

$$RSV_j = \frac{\sum_{i=1}^n SDVC_i}{n} \quad j=1, \dots, m \quad (2)$$

where:

- R_i^E and R_i^B represent the quantity of type i resource, used by entity or the benchmark;
- GDP_j^E - the gross added value by the analyzed entity (region j);
- GVA^B - the gross added value by the benchmark entity;
- n - the number of type of resources;
- m - the number of regions.

A plus of information on the regions sustainability can be obtained through rounded the SV methodology with that of Data Envelopment Analysis method.

Results and discussion

For evaluating and a continuous monitoring of the implementation stage for the strategic objectives of the sustainable development in Romania was used data provided by the National

Institute of Statistic. These were structured depending on the economic, social and environment criteria, at the national and regional level.

The sustainable value was calculated having in view the contribution of the economic, social and environmental resources to Gross Domestic Product formation.

The economic resources of the sustainable development represent the nonfinancial assets. These return to the territorial communities, economic benefits resulted from owning or using them for a time period and they are produced assets (fixed assets, inventories, valuables) and non-produce assets (natural resources, contracts, leases and licences) [Harrison, 2006].

In order to highlight the contribution of social resources to SV creation, were used the indicators Average number of employees and Number of injured at work.

As environmental resources in sustainable development analysis were used indicators CO2 emissions per Romanian regions, Waste disposed and Drinking water supplied to consumers.

The benchmark system utilised in appreciating the situation of each region was the national economy. In this way, for each territorial community it can be done a comparison between the efficiency indicators calculated for the main directions of sustainable development and the same average indicators that characterize the phenomenon on the whole national economy. The specificity of the territorial indicators and insufficient data provided by statistic reporting systems for longer time period does not allow to identify the trend and progresses toward sustainable development at the territory level or compared with other European Union regions.

Application of the calculus methodology presented (relations 1 and 2) leads to obtaining of some information on contribution of each region to the process of value creation in consensus with the sustainable development principles (table no. 1).

Table no. 1

Sustainable value on the development regions in Romania, mill. lei

Development regions (NUTS II)	Contribution to Sustainable Value			Sustainable Value
	Economic component	Social component	Ecological component	
Nord-West	-33338,5	147,3159	-39528,4	-3029,99
Centre	-65902,8	-11558,6	6638,714	-2950,95
Nord-East	-137566	5546,1	25676,98	-4430,95
South-East	6529,305	-9816,35	-77686,3	-3373,89
South-Muntenia	123473,4	13407,29	15334,16	6342,286
Bucharest-Ilfov	317088,4	22345,65	116135,6	18982,07
South-West Oltenia	62976,21	-4584,4	-117108	-2446,52
West	-19590,1	-16238,8	11103,63	-1030,22

Source: calculated data (for 2008)

The results obtained suggest that in present in Romania there are important differences between the regions from the point of view of sustainable development. The variation of regions' contribution to creation of sustainable value is due to the differences of efficiency for the resources used in each region in comparison with the average performance registered at the national economy level (opportunity cost of resources). If a region is characterized by a rational utilization of the own development resources which can be exploited in an efficient way for exceeding the opportunity cost of the resources within the economy, it creates sustainable value and proves that detains a net advantage face to other areas.

Among the development regions, only areas South-Muntenia and Bucharest-Ilfov create sustainable value. The South-Muntenia region contributed with about 13% to GDP formation in Romania. In its economy there are some sectors with tradition and high performances: oilfield and chemical equipment, petrochemicals industry, automobiles, agriculture and tourism mountain. The competitive advantages of this region are: transport infrastructure developed (Henri Coandă

International Airport, highway A1), agricultural area favourable for practising ecological farming, labour force qualified and cheap. The Bucharest-Ilfov region produced 20% of GDP. It has a different economy structure both as the national economy and as to other regions. The contribution of its economic sectors in GDP formation is like as of the European Union ones, the tertiary sector has a share of 60%, industry 19% and constructions over 7.5%.

Ones of the last places from the point of view of capacity to create sustainable value are occupied by Nord-East and South-East regions. The South-East region contributed with a positive value to GDP, due to its economic component. The environmental resources were not well capitalized, on this direction being registered the higher loss of sustainable value. Economic activities of this region generate a very high amount of polluting emissions from steel industry.

The Nord-East region is ranked on the last place in classification due to a huge loss of sustainable value but it is characterized by a different situation. It utilized in a more efficient way its social and environmental resources but had an inadequate management of non-financial assets. The sustainable value loss on the economic component generally is because the region activities add less value in comparison with average level of the national economy.

The other four regions (West, South-West Oltenia, Centre and Nord-West) also presented a negative sustainable value. In those cases, the better efficiency for one of the components analyzed is balanced out by the lack in efficiency of the other two groups of resources in comparison with the national economy average.

An indicator that can round the analysis of regional development is the Gross Domestic Product. It expresses synthetically the level of economic development of a region and therewith, the specific productivity.

Classification of the development regions depending on the sustainable development and the Gross Domestic Product per inhabitant is presented in table no.2.

Table no. 2.

Ranking of the Romanian development regions according to sustainable value and GDP/inhabitant, 2008

Development regions (NUTS II)	Contribution to sustainable development		GDP/inh.	
	Type	Rank	Value (lei)	Rank
South-Muntenia	favourable	1	15835.9	5
Bucharest-Ilfov		2	42614.4	1
West	unfavourable	3	22331.0	2
South-West Oltenia		4	15214.6	7
Centre		5	19582.5	3
Nord-West		6	18634.4	4
South-East		7	15702.1	6
Nord-East		8	12365.9	8

Source: National Institute of Statistics, Romanian Statistical Yearbook 2009; calculated data

The analysis of regional GDP/inhabitant points out those regions with a higher economic competitiveness as Bucharest-Ilfov, Centre and Nord-West, which have a productivity between 18634.4 lei/inh and 42614.4 lei/inh, followed by regions South-Muntenia, South-East Oltenia and Nord-East.

The comparison of regions ranked depending on the sustainable performance with the classification made according to the economic performance level expressed with GDP/inh indicator shows that only the existence of regional economic competitiveness is not sufficient for generating a positive contribution in sustainable development. Taking in consideration all the elements that can

impact on the development for improving its sustainability level, reveals that generally, the regions' performance is modifying in the sense of its lowering.

Conclusions

The analysis of the sustainability level of the development regions in Romania emphasised a lack of homogeneity in territory concerning the sustainable development.

The results were obtained by analysis of the sustainable value that came out from the economic activities specific for each region. The SV methodology allowed the identification of qualitative differences between regions related to their balanced development both in economic aspect and ecological and social one, being a useful tool in regional development analysis.

The positive sustainable values have Bucharest-Ilfov and South-Muntenia regions. South-East and Nord-East regions register the lowest efficiency of the sustainable development.

The total implementation of the European vision of sustainable development in Romania demands the increasing of the responsibility level of the decisions making factors, and establishing of some territorial strategies for a coherent sustainable development that can ensure economy growth and of the living conditions for the local communities in a deeply accordance with the environment. Among the priority objectives of the regional policy have to be the anticipation and promotion of some economic changes which can contribute to the increasing of competitiveness of regions in an integrated context of the sustainable development.

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