Sustainable Development in Metropolitan Areas

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ABSTRACT
The economic and social development process involves a balance between the existing resources and their careful use. Therefore, it is necessary to adopt some coherent and unitary programs for the unitary development of the entire area.
A sustainable approach for the growth of the welfare in the metropolitan areas will require an integrated action, on an economic and social level for environment and space.
The evaluation of the sustainable development in metropolitan areas, in the DEMOS project has been carried out with the help of a series of indicators specific for this area, as for example: landscape, natural resources, the evolution of the population, the development of the housing sector, education, sanitary system and so on.

KEYWORDS
sustainable development, evaluation, indicators, metropolitan area, the movement of the population

JEL Classification
Q01, Q56, O18, R11

Introduction

The indicators are instruments of measurement for the specific characteristics of the phenomena and processes, and their assessment underlies the adoption of the measures and policies which refer to the development of the metropolitan areas.

By using a unitary system of indicators one can make efficient the process of analysis by offering model for this; one can also facilitate the evaluation of the adopted policies and programs and can provide the verification and supervision of the implementation process of the strategies, the decisions being taken on solid grounds.

THE EVALUATION OF THE SUSTAINABLE DEVELOPMENT INDICATORS

During the DEMOS project the evaluation of the indicators of sustainable development for the metropolitan areas has been accomplished starting from the fields and subfields for which the specific indicators of the metropolitan area and of the sustainable development have been identified. This, in the natural and resources field there were analysed the following subfields: Landscape, Climate, Natural Resources.

The following subfields were taken into consideration for the field Demographic Aspects: the structure of the population, the evolution of the population, the natural migration of population, the structure of the households. In what the field Housing is concerned, the following subfields were analysed: housing reserves, the development of the housing sector, the housing conditions.

Another important field refers to the social aspects as education, health, research-innovation, culture, public administration, sport and entertainment, labour force, income and poverty, civic involvement and last but not least criminality. The following subdomains have been considered for the field technical facilities of the territory: water administration, energetic facilities, ways of communication and telecommunication. The following subfields have been analysed for the economic field: Global indicators of the economic development, agriculture, industry, constructions and services. The last field refers to the ecologic aspects

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having as subfields: natural risks, the quality of air, the quality of ground and surface waters, the quality of the oils, the quality of vegetation and animal life and the problem of waste.

All these fields and subfields can be grouped into three large categories of economic, social and ecologic indicators which define both the sustainable development and the one of the metropolitan areas.

From the evaluation of the economic activity it results that the metropolitan development contributes to the optimisation of the existing resources and the support and attraction in this area of the industrial branches and of the high added values services, in order to increase the living standard and the economic competitiveness of the metropolitan area. The positive economic effects take into account the aspects mentioned below (Cândea, M. & Bran, F., 2001).

- Creating favourable frame for the development of the business on the level of the metropolitan area
- Economic development respecting the principles of sustainable development and offering incentives for local innovations by creating and developing applied research centres (technologic parks and scientific research parks, excellence and innovation centres, including the field of non-conventional energy).
- Restructuring the economic activities from the metropolitan area in order to pass to an economy with a low degree of pollution and developing the economic activities with a high added value.
- Increasing the living standard, the degree of comfort and satisfaction of the population from the metropolitan area by supporting the balanced development of the services and of their quality.
- Encouraging traditional hand made goods in order to preserve and promote the identity of the places and the local specific.
- Rethinking and reorganising the agricultural activities from the metropolitan area and directing them towards sectors which generate high added value due to the efficient use of the natural and human resources available in agriculture, supporting partnerships between producers for a type of product, promoting and developing related activities which generate income: traditional handicraft wares, agro-tourism, ecotourism, efficient and rational forest exploitation (the development of forest roads, strict plans for reforestation, creating green belts), developing the growth of industrial and medical plants and from the area, modernizing the existing ones, creating new units to harvest the agricultural products, supporting the entrepreneurs in order to access the European funds for the development of the agricultural sector with all its components.

From the evaluation of the economic activities one has observed that an important role in the development process goes to the capital, know-how and technologic transfers under the form of foreign direct investments which allow the global players to distinguish between the price differences(sometimes substantial) from the international, local and regional markets (Zotic, V.& Chira, C., 2005). In some circumstances the effect of these investments in the implementation – in the national trade – of some factors of production from countries, regions or areas which did not have the necessary resources and knowledge in order to be a part of the global economy.

In what the social indicators are concerned, their analysis and evaluation has given some aspects specific for the metropolitan areas.

So, for the metropolitan area Bucharest, 17 localities have a commutation rate between 70 and 80%. In other words, in these localities 70%-80% from the total number of employees go to work in other areas. 16 localities have a commutation rate between 40%-70%. The research carried out in the DEMOS project show that there is a strong interrelation between Bucharest and thee localities in what the exchange of labour force is concerned and the temporary or permanent housing attraction between the inhabitants of the polarizing town and the surrounding localities. For example the average commutation rate of the people fro Bucharest towards these localities (calculated as a ration between the number of people from Bucharest who come daily to work in the locality and the total number of employees) is around 16%, (the number of

employees from Bucharest goes beyond the local percentage). Among the most attractive localities for the labour force from Bucharest, with commutation rate of over 50% we can mention: Bragadiru, Afumați, Cornetu şi Măgurele.

This thing is also proven by the high rate of the localities having economic units where people from Bucharest work (almost 68%). The labour based on commutation is the main connection with the polarizing town of the employed population from the localities which are going to be a part of the Bucharest metropolitan area. This is also due to the high rate of employed population from the localities of origin and of the economic and cultural impact which is accomplished due to this category of population. One can talk about three types of localities: exerting a high attraction on the people from Bucharest, a number of 15 localities (commutation index above 16%), an average attraction, a number of 21 localities (between 5%-15%) and a low attraction, the rest of the localities (1%-4%).

Taking into account all the localities from the metropolitan area of Bucharest, one can say that there are localities with a high commutation towards Bucharest, a number of 30 localities (average of above 50%), with a average-moderate commutation, a number of 21 localities (between 20%-50%) and a low commutation, the rest of the localities (between 5-19%).

Another important social indicator evaluated and analysed in this paper is the residential attraction (migration of the population). From the point of view of the residential migration one can notice that the surrounding localities are more attractive than Bucharest. Therefore the average residential migration rate (calculated as a ratio between the number of persons who have moved between the locality and the total number of population) to these localities in the last 7 years is of almost 5%, and the main points of interest are Otopeni, Corbeanca, Chiajna, Baloteşti, Ciolpani and Măgurele with a more than 10% migration rate of the people from Bucharest. At the same time the residential attraction of the inhabitants of these localities towards Bucharest was 0,85% in the last 7 years (from the total number of inhabitants of the locality). Only 3% of these localities have a migration rate to Bucharest of more than 5%. Almost half of the households which are possible to be included in the Bucharest metropolitan area , respectively 47% of the total have at leas one member of the family(child/parent, husband/wife, grandparents) which live in Bucharest(permanent or temporary domicile).

In consequence the strongest community relation is the familial one and is shared by the population around Bucharest and the population from Bucharest. Although a part of the people attracted to work in Bucharest have moved their domicile in the polarizing town, 40% of the households proposed to enter the Bucharest metropolitan area have at least one member who works in Bucharest.

From the evaluation of the housing facilities the data show a good situation in these localities, the average number of houses for 1000 inhabitants (index calculated as a ration between the total number of houses and the total number or population*1000) is of 383 houses. The localities where the housing situation is above average are mainly those places where the contribution of the people from Bucharest to the renewal of the facilities is above average-

In consequence 16 localities have between 451-583 houses for 1000 inhabitants and a number of 19 localities have an average number of 353-450 houses for 1000 inhabitants. This good housing situation is influenced by the renewal rate of those localities in the last 5 years, which suggests the fact that these localities are developing. The data of the research carried out by CURS in the DEMOS project, show that 21 localities had a renewal rate of the facilities of more than 16% and a number of 24 localities have a renewal rate of the facilities of 6%-15% in the last 5 years. On the first places there are Brăneşti, Pantelimon, Voluntari, Berceni and Corbeanca with a rate of more than 30%, the contribution of the people from Bucharest to this renewal being of 52%. The percentage of the houses which were built by the people from

Bucharest in these localities in the last 5 year is more than 63% in a number of 28 localities and only 3-25% in 12 localities.

Generally speaking the activity of the population from the metropolitan areas is non-agricultural, involving also the commutation phenomenon between the polarizing town and its surrounding settlements. But in most of the households from the localities which are proposed to be included in the Bucharest metropolitan area there are preoccupations related to gardening. Therefore the evaluations show that in 53% of the cases the respondents or someone from their household deal with vegetable cultivation. It is true that only 8% of these households are growing vegetables in order to sell them, and most of them carry out this activity for their own consumption. This is a way of providing nourishment for the subsistence households and on the other hand an additional way of income for those who carry out other activities. At the same time, most of the households which deal with raising animals are also involved in raising poultry. The households from this category have an average of 19 poultry, a pig and no ovine, bovines and beehives.

Although a large part of these evaluated localities have a large share of the agricultural field (the share of the agricultural field on the total surface of locality), in almost 50% of these 61 localities the agricultural surface represents 80%-90%. This may be a positive thing from the perspective of the potential of these localities to supply perishable goods to the polarizing town. The analysed data show that the average of the arable surface with vegetables destined for Bucharest represent 7%, the main suppliers being Cornetu, Copăceni, Popeşti Leordeni, Grădinari and Dragomireşti Vale with more than 30% cultivated arable surface. 15 localities from the Bucharest metropolitan area have between 10%-50% arable surfaces destined for the cultivation of perishable goods for Bucharest from the total agricultural surface.

From the point of view of the tourism potential, these localities represent an oasis of green spaces for Bucharest with a deficit from this point of view (Minciu, R., 2000). The results of the evaluations carried out in this study show that in these localities the total average surface of forest and water is of almost 14% and from the 61 localities Pantelimon, Moara Vlăsiei, Snagov, Comana and Buftea stand out with more than 40% forest and water surface. 14 localities have a 20%-54% water and forest surfaces and 19 localities have between 10%-18,5%. One can add to this the share of the monuments and tourism placements related to the total number of houses from the locality. 21 from these 61 selected localities have a share of 2%-7%. In consequence one can say that the situation of these localities has a positive impact on the polarizing town from the point of view of the green space and of the tourism development.

From the point of view of the educational facilities, these 61 localities are situated on a good position, one teacher having 18 students. The evaluations show that 19 localities have a high share, where a teacher has 6 to 9 students and only 5 localities are underprivileged, a teacher having 20 to 50 students.

From the point of view of medical facilities the situation is not very good because there is only one doctor for 1000 inhabitants. In 13 localities the number of doctors for 1000 inhabitants varies between 1,02 and 4,64. Another indicator which proves that the situation from these areas, from the point of view of the medical facilities, needs to be improved is the one referring to the share of the clinics for 1000 inhabitants which in 41 localities is zero.

The distance indicator to Bucharest (in minutes) is essential for the facilitation of the interrelations between the central town Bucharest and the settlements included in the Bucharest metropolitan area. The distance influences all the relations between the tow types of communities and that is why the values of the indicators which identify the border of the Bucharest metropolitan area were divided to the “distance” indicator to Bucharest. The strong relation between these localities is based on the transport means to the polarizing town and it is estimated that half of the inhabitants from the 61 evaluated localities usually take the minibus in order to get to Bucharest and 305 the bus.

The time consumed to get to Bucharest is another factor for the metropolitan area which lasts for about 20 minutes with the most used means of transport. One has to mention first that the urban attraction of Bucharest involves in one way o another 94% of the population over 18 years old from the localities proposed to be included in the Bucharest metropolitan area. The most frequently used means of transport to get to Bucharest is the minibus (38% of the people who are travelling to Bucharest). One quarter of this population (26%) use for these travels "their personal car", at the same amount the classic public transport (bus). Only 1% of the population is frequently taking the train.

Trade has a special role on the level of the metropolitan areas. An obvious example is the Bucharest metropolitan area where only 10% of the population over 18 years old from the localities proposed to enter the Bucharest metropolitan area never goes in the town for shopping which means that although trade is expanding and has penetrated all the settlements, the commercial attractiveness of the polarizing town is significantly reduced. A significant share of the population (43%) goes weekly or even daily to Bucharest for shopping and the same share (43%) goes to Bucharest for shopping one a month or a few times a year.

The traditional-modernist character of these households from the localities proposed to be a part of the Bucharest metropolitan area comes from the evaluation of the household infrastructure indicators (the facilities of the household). More than a half of these households (54%) have as their main source of water "the fountain and the pump wells". One has to notice the fact that 39% have running water in their house, even if in most of the cases they have their own well, and only 2% the water supply comes from the public water pipe (hydrant).

From the point of view of the sewerage, the situation of these households (and implicitly of the localities) is contradictory. In spite of this, almost 605 of the households are connected either to the public system (40% of the cases), or they have their own septic tank (205 of the cases). From the 40% of the households that do not have any sewerage system, 16% have declared that they will not be able to afford a septic tank, while 37% consider that they will not make a septic tank because they will never afford it. The research carried out in the DEMOS project has their own bathroom and toilet connected to the public system. In consequence, the urban public utilities infrastructure has reached a third of the households of these localities, half of the households are still waiting and almost one fifth are waiting for a solution for this problem.

From the point of view of the communications system, the households from these localities are in a good situation, only one third of these households have no mobile phone in the household. In these localities, the average of the mobile phones per household is of 1,54. The situation of the mobile phones in each household is as it follows: in 18% of the cases there is one mobile phone, 2 mobile phones may be found in almost 22% on the households, 3 mobile phones may be found in 11% of the households and in 7% of the cases there are even 4 mobile phones.

In what the protection of the environment is concerned, the evaluation carried out in the DEMOS project point out the existence of some problems related to indicators as the air pollution, the waste or the quality of the drinking water. Therefore, the problem with collecting the waste and the garbage from these localities is not solved yet. Although in 73% of the cases, the population estimates that there is such a service supplied by a sanitation company, a quarter of the inhabitants say that " each household manages on its own"(11%) or that they "take the garbage to the garbage pit from the outskirts"(10%).

So, the quality of the environment from the localities proposed to be included in the Bucharest metropolitan area has favourable circumstances, due to the lakes, forests and the problems referring to: the air pollution, road agglomeration and waste collection are essential and need an integrated solution (Gherasim, V., 2003). The quality of the urban environment has suffered changes in the last decades, being influenced by a series of factors: the intensity of the noise, the intense traffic, the development of some

activities with an impact on the atmosphere. The green spaces and open areas are constantly threatened by the high demand of surface with a certain, well delimited destination. Generally speaking, the town is a great consumer of resources and a great producer of polluting emissions and waste, being constant threat for the environment.

The indicators of this theme point out the areas where human health has to be connected to the environment, where this thing becomes obvious. The action of the environmental factors in the human body is exerted not only on the exposed population, but also to their descendants, leading to transmissible hereditary mutations, or congenital malformations. The knowledge and the determination of some environmental risk factors is very important and is maybe the most valuable activity for the promotion and maintenance of the population health. The evaluation of the population health lies in the identification of the risk factors which depend on: the quality of the air, the drinking water supply, collecting and disposing the liquid and solid waste, urban noise, the habitat – improper conditions (noise, lighting), the quality of the services (all types) offer for the population.

CONCLUSIONS

The sustainable development is a concept which is expected to solve of the problems of the contemporary society: poverty, the degradation of the environment, the loss of confidence in institutions, the uncontrolled expansion of urbanisation, the insecurity over a working place, the alienation of the youth, the elimination of the traditional values, inflation, unemployment and other economic-financial or geo-political crises. This concept cannot solve all these big problems, in the same way as the states are not willing to submit themselves to some norms which are said to be compulsory in order to get to a sustainable development. (Popescu, D., 2004). One could reach to such a development through local efforts as it was proven by applying the directive of the Agenda 21. After the national and international bodies have defined the priorities of a sustainable development, the population and the economic operators, with the help of the local bodies (local administration, school, church) should try to comply with them and also to focus on this abstract notion on the level of the metropolitan areas.

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