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THE SOCIAL IMPORTANCE OF THE BENEFITS OF A GREEN ECONOMY

The Slovak Republic, as a Member State of the European Union, is committed to meet the strategic objective, which is to "significantly increase the competitiveness and performance of the regions of the Slovak economy and employment, while respecting sustainable development". Today's status of environmental pollution is a global problem, especially in the field of air protection, minimization of adverse effects of climate changes, the promotion of renewable energy sources, water conservation and the rational use and protection of land. Sustainable development represents the evolution of human society while preserving the environment for future generations. The article[1] is focused on the strategic priorities with the aim of achieving economic growth in conjunction with the ecology and the quantification of indirect effects. The article describes the multi-criteria decisional analysis, which takes into account the indirect effects in the form of environmental aspects. At the end of the article the benefits of research are articulated.

Key words: *Sustainable Development. Economic Growth. Ecology. Environmental Aspects. Multi-Criteria Decisional Analysis. Paulownia.*

Introduction

Sustainable development represents the development of human society preserving the environment. It is a development which, except of economic and social aspects, takes into account the environmental aspect. Currently, there are the following ecological problems: air pollution, damage of human health and the emergence of new civilization diseases, global warming, reduced formation of oxygen because of emissions, exhaust gases in the atmosphere, enlarging the ozone layer, land pollution and its degradation, excessive pumping of mineral resources in order to achieve the economic growth, increase in the volume of waste issues and problems with their removal (recycling) and water pollution and degradation.

[1] The article is part of the solution of the scientific project no 1/0964/15 "Experimental investigation of the influence of motivation of economic agents on the payment of taxes" and of the scientific project no 1/0776/16 "The taxation of the financial sector and harmonising tendencies in the European Union".

Economic development in connection with the environment

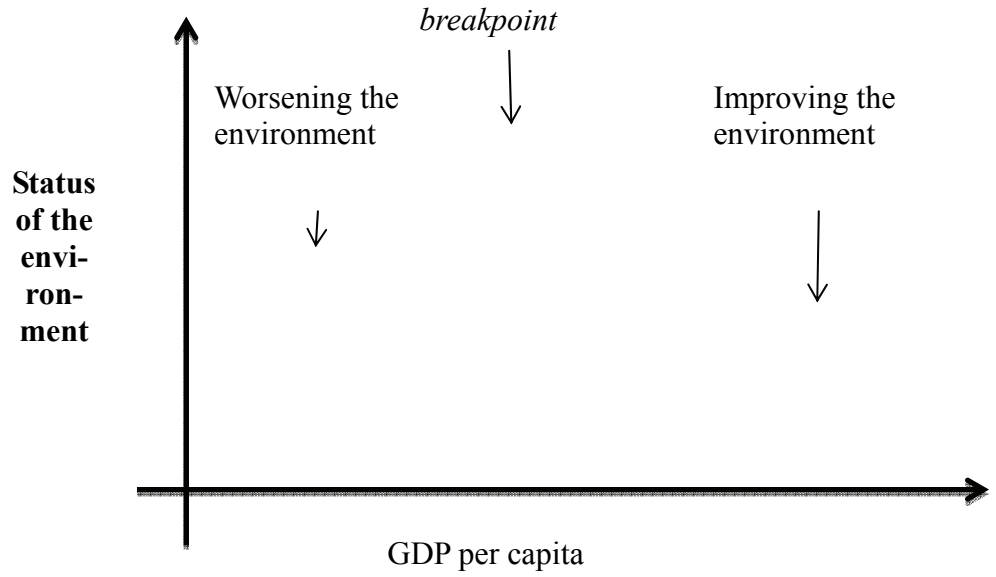
Activities of entities should contribute to the environment's pollution in the least possible way. The causes of environmental damage can be divided into two groups (**Romančíková, E. 2004**):

- *Causes conditioned by the development* - population growth, connected with the need to increase food production, increase in industrial production for the material support of the population, increased demands for energy, waste production, concentration and migration of population, economic growth as a tool for material ensuring of the increased number of people with negative implications, technical - economic impacts, conditioned by changes in production technologies and consumer habits (increase in air emissions),

- *Socio - economic reasons*: they can be derived from the functions that the environment performs in the economic system, as well as from the creation of external effects (externalities) arising from its excessive use.

In the field of environmental protection, much attention is paid to the relationship between the economic growth and the environmental pollution [Kuznets, S., 1955]. In the economic literature, that relationship is known as the Environmental Kuznets Curve [Kubicová, J., 2013, p. 88-89].

Figure 1. Kuznets Curve



Source: /Kuznets, S. 1955/.

Figure 1 depicts the situation when the economic growth in the early stages of economic development contributes to the environmental pollution, however, if the economic development reaches a certain level (expressed by the GDP), the economic growth, conversely, contributes to the improvement of the environment. The quality of environment significantly influences the status of basic socio-economic characteristics of the society, not excluding the Slovak Republic. The most important air pollutant are the following: greenhouse gases, (i.e. carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride), which reduce the quality of the Earth's ozone layer.

The starting point for the allocation of expenditure financed by EU financial assistance is the project itself. The project assessment is based on the assessment of economic, environmental and social parameters. Economic evaluation is carried out through the cost benefit analysis. Except of all social aspects (social inclusion, improving working conditions), environmental aspects must also be taken into account, which are the focus on the environment (emissions) or improving the quality of life of the population. The quantification of indirect effects, especially socio-economic and environmental effects, seems to be problematic. In this context, the assessment of direct and indirect effects that are the results of the project activities, results being needed.

Advantages of Multi-criteria Analysis

The multi-criteria analysis offers the solution of socio-economic and environmental effects. One of the most important advantages of multi-criteria analysis is that it serves more complete picture of the environmental effects resulting from the implementation of project activities. The outcome of the environmental assessment is an overview of the real impacts on the environment and the quality of life of the population, while based on expert assessment the project is or not recommended for implementation [Slavíková]. In this context, particular attention is paid to factors such as:

- changes in the natural environment (emissions of prejudical substances, habitats, animals),
- impact on the built-up area, land and impacts on water resources,
- effects on population and health risks (the emergence of civilization diseases),
- impact on the protected area (i.e. rare habitats, trees protected by law).

From the description of the MCA it is clear that the predictive value largely depends on the correct determination of weights of analyzed criteria. The quantification of weights of particular assessment criteria is one of the basic tasks in solving multi-criteria problems. It requires a good knowledge of examined issues, as well as the importance and the influence of criteria that are used to assess the achieved result. One option, that meets the mentioned requirements, is the application of method known as Analytic Hierarchy Process (further AHP), whose author is Th. L. Saaty. AHP method is used in various decision-making situations and in different areas, such as government, commerce, industry, health, education, transport, economy, energy and environmentalist. It is based on pair comparison of the degree of importance of each criterion and the extent to which the evaluated variants of solutions meet these criteria. [Saaty, Th. L., Kearns, K. P. 1985]. It allows mathematically derive the weight of each criterion instead of subjective choice of criteria weights. It is applied particularly in the selection of

options for one searched solution. AHP ensures the determination of weights using the matrix transfer of verbal expression for each pair comparison of the relevant criteria. The result is given by the weight in the relative scale of alternatives and criteria.

The result of the assessment carried out by pair comparisons using the AHP method is a matrix of preferences, which allows determine the weight of each evaluation criteria and subsequently assess the effectiveness of project activities [Saaty, Th. L., Kearns, K. P. 1985]. The structure of the mentioned matrix of preferences for the five assessed criteria and their calculation are specified in the Figure 3.

Figure 3. Preferences and Calculation of Weight of Assessed Criterion

	K_1	K_2	K_3	K_4	K_5	M_i	WK_i
K_1	1	P_{12}	P_{13}	P_{14}	P_{15}	$(1*P_{12}*P_{13}*P_{14}*P_{15})^{1/5}$	$M_1/\Sigma M_i$
K_2	$P_{21}=1/P_{12}$	1	P_{23}	P_{24}	P_{25}	$(1/P_{21}*1*P_{23}*P_{24}*P_{25})^{1/5}$	$M_2/\Sigma M_i$
K_3	$P_{31}=1/P_{13}$	$P_{32}=1/P_{23}$	1	P_{34}	P_{35}	$(1/P_{31}*1/P_{32}*1*P_{34}*P_{35})^{1/5}$	$M_3/\Sigma M_i$
K_4	$P_{41}=1/P_{14}$	$P_{42}=1/P_{24}$	$P_{43=}1/P_{34}$	1	P_{45}	$(1/P_{41}*1/P_{42}*1/P_{43}*1*P_{45})^{1/5}$	$M_4/\Sigma M_i$
K_5	$P_{51}=1/P_{15}$	$P_{52}=1/P_{25}$	$P_{53}=1/P_{35}$	$P_{54}=1/P_{45}$	1	$(1/P_{51}*1/P_{52}*1/P_{53}*1/P_{54}*1)^{1/5}$	$M_5/\Sigma M_i$
						ΣM_i	

Source: own elaboration

The weight of a particular criterion is located in the last column of the matrix, which is labelled with the name WKi. For the criteria in the matrix symbol K is used, P represents the value of expressed preferences and Mi denotes the fifth root of the product of preferences of pair comparison of criteria in the line with the criteria in the column of matrix of preferences. The value of the exponent of the product of preferences is calculated as the reciprocal value of the number of criteria. In the case of financial decision-making on the allocation of budget funds, the results of cost-benefit analysis (e.g. indicator of economic net present value or economic internal rate of return) can be also considered to be a partial indicator applied in the selection of the optimal solution and be incorporated into the process of pair comparison with other selection criteria. This procedure shows that in the decision-making process about the allocation of public resources, the financial efficiency is analyzed in conjunction with the environmental aspects. The assessing of the environmental effects within the development of renewable energy sources in Slovakia is in the background. An accurate example, which in many cases does not reflect the environmental aspect, is the inappropriate location of biomass plants. These plants have a dominant position in Sweden, where the location of the plant must exceed the limit of 20 km from the snare of citizens (also in terms of expert assessment of health risks to the population). Many mayors, deputies and citizens should firstly assess the environmental aspect before the financial and economic effect. In the case that the plant is located in the village because of wrong decision of citizens and deputies, it is a heavy burden for citizens and their quality of life in the village (the socio-economic aspect is not taken into account).

The main objective of Europe 2020 is to support the sustainable growth and the efficient use of natural resources (the so-called green growth). The green economy is a tool for achieving the sustainable development. Three main objectives have been included in the investment strategy of the Operational Program Environmental quality:

- supporting the shift towards a low-carbon economy in all sectors,
- supporting the climate change adaptation, risk prevention and management, support of economic activities beneficial to society,
- and the protection of the environment and promoting the efficiency when using natural resources.

From the perspective of environmental protection and efficient use of natural resources, the Nordic countries Norway, Finland and Sweden are an example. Greenery, in the form of green roofs, hedges and green areas - the so called green architecture has a dominant position in the Nordic countries.

Richness of Norway is not just in its oil resources but **mostly the nation's view of values manifested in the idea of generating the Norwegian Oil Fund.** Thanks to this Fund Norway has been achieving surplus budget for many years and so Norwegian generations are secured against adverse situations, risks and fiscal fluctuations in the country. Norway is ranked among countries with higher number of electro-mobiles which share on total number of vehicles has been gradually increased up to 12%. Electro-mobiles benefits are tax allowances and reduced air pollution. Their owners do not pay for parking in the cities and they can drive in lines reserved for public transportation.

In order not to lose their competitive advantages entrepreneurs must aim at the internal reconstruction of the business – reengineering. Environmental issues are also part of such internal reconstruction of the business. From the retail chains there was LIDL who got this policy right and I highly appraise that. *In present time its competitive advantage has been even improved.* There is an environmental LIDL Logistics Centre built in Sered' that meets all requirements set by the BREEAM International Environmental Certification. Compared to other retail chains LIDL is gaining its competitive advantage thanks to modern and environment-friendly technologies (LED lights, natural base of its cooling mixture, heat generated by cooling room used for heating, system of soaking tanks to store the rain waters, charging stations for electro-mobiles, garden adjustments at 2.5 hectares)

Conclusion

The quality of the environment significantly affects the status of basic socio-economic characteristics of the society, not excluding the Slovak Republic. Currently, it is necessary to harmonize the action of the economy while maintaining the environment and ecology, because the increasing destruction of the environment on the Earth, caused largely by the economy, is seriously threatening the existence of human civilization [KLINEC, 1998]. The tool for achieving sustainable development is the green economy. The main objectives of the green economy are the following:

- revival of the economy and increased well-being,
- elimination of poverty,

- reduction of carbon emissions and the protection of ecosystems.

Nowadays, dominant position must be showed by the green architecture (greenery, in the form of green roofs, hedges and green areas, lakes). Green roofs have a number of advantages, such as to cool and clean air, they help stabilize houses and serve as a suitable insulation of a house. Water should have ecological function, i.e. in the current overheated atmosphere, it should cool the atmosphere. It is necessary, especially in cities to build lakelets and fountains, because of cooling the air at the time of heats. Another solution is to plant green ivy walls along roads, especially in cities, in order to eliminate noise in cities. At the same time, ivy also has an exceptional ability to suck tars formed by the combustion and exhaust gases from cars. Concurrently, the noisy environment deteriorates the quality of life in towns and villages. Currently, many research studies confirm that tars formed by the combustion and exhaust fumes from cars, are strong carcinogens for the human body. In the centre of Slovak towns and villages it will be necessary to build low emission zones (in the city centre, municipalities, only cars with the lowest exhaust emissions will be used). In terms of bio-waste disposal, especially in cities, it is of great importance to build urban compost in housing estates, which will operate on the principle of compost in gardens or rural composting in the modern household.

From the climate perspective the high eco-trees are having significant role and it is necessary to plant them as much as possible in present time. Inert ecological trees are so called Paulownia emperor's trees. There are trees with high growth potential up to 30m (with annual augmentation of three metres). They provide much oxygen and absorb detrimental CO_2 from atmosphere. These are valuable trees having high rate of usage by animals breeding, by furniture production, by oxygen generating and CO_2 absorption.

Standard of living and quality of life of citizens will depend on the protection, enhancement of the environment and the efficient use of natural resources. The support of adaptation to climate changes must be based on changes in t human thinking in relation to the environment.

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