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PROBLEM OF THE RELIABILITY OF THE EVALUATION OF THE SUSTAINABILITY OF THE COUNTRIES

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Introduction

Despite more than 20-year experience of the sustainability indicators at the time is not developed a generally accepted standardized evaluation system, that could on the unified basis characterize the stability of countries and contribute to a global sustainability policy.

The existing systems of sustainability assessment include about 140 private indicators. Their calculation is based on extensive source material. They are generally sufficiently representative and objective, but the calculation is possible only for a limited number of countries where the system of collecting and maintaining of statistical data on various aspects of life (economic, social, environmental) exists.

However, when accessing the website of the UN Department of Statistics revealed that a number of countries with information "older" then 2006; sets of indicators of different countries vary considerably. The result is inability of cross-country analysis and trends identification. Creates complexity dimension of an array of hundreds of indicators (difficult to comply with the requirements of operability and decomposability); hence there are mistakes in their interpretation.

Alternatively, as a basic tool to assess the sustainability of the countries developed Environmental Performance Index (EPI). It is calculated by Yale University (USA), according to world statistics, since 2000. It is based on two main groups of estimates (partial indicators) - environmental health and vitality of ecosystems (Environmental…, 2014). On the basis of the dynamics of the indicator groups for countries identified trends and track the transition of countries in categories of environmental health and vitality of ecosystems.

This evaluation system fully characterizes the dynamics of development. However, the analysis of more than 10-year-old use of EPI revealed the following main problem points and proposed solutions for improvement.

Stocktaking

1. Quality of the initial information. The quality of the primary information defines the objectivity of the assessment and, consequently, of management (political) decisions.

Used to calculate the EPI data sets are based on a limited number of partial indicators. Their selection, in our opinion, is poorly justified and does not fully reflect the state of the problem. Thus, the air condition is evaluated only through the indicators of presence of particulate matter (PM2.5), the population in terms of air pollution and the quality of indoor air. Not considered are the parameters of another air pollutants (eg persistent organic pollutants under the Stockholm Convention). For the water resources considered only the availability of drinking water, without assessing its quality and potentially available reserves.

EPI includes evaluations of the fish resources use and fishing load on coastal water area (total weight of the category "Fishing" - up to 10%), though obviously not for all countries, this figure is relevant. At the same time, for the category "Agriculture" accepted the weight up to 5%, although agriculture provides food security of the countries and for some of them is the basis of existence.

Next significant gaps are the lack of performance of the education level and characteristics of the national regulatory systems in the environment protection. Our experience in the analysis of environmental

problems in developing countries shows significant problems in the regulatory environmental management. The results are numerous environmental problems, socio-economic damages, inefficient use of resources.

In our opinion, the division of "environmental performance" to "environmental health" and "vitality of ecosystems" is debatable. The "performance" means the correlation of the results achieved and used resources. In the case of environmental performance would need to display the appropriate environmental outcomes and efforts to achieve them.

Sustainable development is considered from the standpoint of "E4"-strategy (Zidanšek , 2007) - *Economy, Environment, Energy, Education*. EPI covers only a part of the picture (the ecological status of the territories and the health status of the population). Actually it is only a *consequence* of the existing nature use practices and implementation of policy decisions; the reasons (the character of economic development and education as a condition of rational nature use and environmental awareness) are not considered.

In our opinion, it is necessary to extend the data for the EPI from two to four groups with the inclusion of the economic aspects of environmental management and education. It is important because sustainable development is provided if there is in the country not only specialists, but primarily due to the sufficient level of education (hence, understanding environmental problems).

2. Quantitative analysis of the original data. Now in ecological and economic research are well-established multivariate statistical techniques, permitting analysis of diffuse information. It involves filtering of original data with the identification of gross errors and inaccurate information (Thinh, 2002; Roelandt, 1999; Redina, 2011; Khaustov, 1999).

Our control calculations confirmed the above problems: many indicators used are weak information on the dynamics of environmental and social processes. Therefore, the proposed assessment ofs trends (Summary, 2014) need a more reasonable representation through the time series analysis for each country. It is important to identify the cyclical nature of individual indicators and integrated assessments. It is possible to assess the contribution of primary (private) performance and to identify vulnerabilities in the ecological and social assessments. Furthermore, the calculations indicate a more objective ranking of countries compared to EPI.

In the EPI calculations is not carried out to evaluate the information content of the used characteristics, detection of duplicate and independent parameters. The rates are almost equal, which is theoretically incorrect. We have developed some methods for assessing the information content of indicators and manifestations of their synergies. This is a critical moment for all types of quantitative research, especially involving economic information. Accounting synergies will allow more legitimate to apply the criteria of sustainable development in practice (Prigogine, 1985).

3. Criteria for grouping countries according to the nature of the sustainability trend. Multivariate data analysis allowed to produce "natural" grouping of countries on a complex of initial data with analysis of their informativeness. Of course, the formed groups will be changed with the following changes of the source data. It will allow a more objective identification of trends in sustainable development and policy stability for the countries and regions.

4. Lack of concepts of "sustainability standard". When analyzing, groups of countries identified on the basis of the complex partial indicators using multivariate statistical methods. For each of these groups may form an image of "standard" - the conditioned country, characterized by the typical (average) values. Quantitative data of the "standard" is required for the purposes of comparative analysis. So a group of the most ecologically successful (sustainable) countries formed the standard of the country "sample". For the least successful the "standard" will be characterized by the most significant problem indicators. As a result of this differentiation helps to discover the various problems that are specific to this group

of countries

5. Implementation of the results. So far, the EPI has only information functions, creating a common understanding of the situation in the countries. It is advisable to expand the use of the index under the auspices of the UN, to make it the basis of roadmaps for the countries concerned. Groups of countries, formed on the base of the EPI private indicators, require specific approaches to improve the situation and implementation of the sustainability principles.

Suggestions

The analysis allows the formulation of proposals to optimize the evaluation system.

1. Expansion of evaluations areas: the inclusion of the economic aspects of the characteristics of natural resources and education in the countries.
2. Addition of the indicators into the existing groups of assessments - including pollution index components.
3. Use of multivariate statistical analysis for the processing of the raw data and the identification of groups of countries and the formation of images of " standard countries" and lists of common problems for groups of countries.
4. Formation of road maps using the allocated specific problems for groups of countries.

The presented concept can be implemented within the framework of a special project of the UN with the involvement of experts from different countries of different levels of sustainability. The end result is the development of practical recommendations for common methodological approach to the evaluation criteria of sustainable development.

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