Regional and Business Studies (2011) Vol 3 Suppl 1, 783-786
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HOW CAN WE MEASURE SUSTAINABILITY?

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ABSTRACT

Science has lots of developed many means to measure and monitor economic and social phenomena, processes, and environmental conditions; now we want to measure sustainability. The first step is to make an exact definition of sustainability. The definition made by the Brundtland Commission defines it in terms of needs and limitations. Sustainable growth is only possible with harmonic development. Harmonic development is based on three ideas: social forms, economical level, and carrying capacity of a natural system. Economical efficiency determines social relationships, and these are limited by the carrying capacity of natural systems. For the sake of my research I analyzed mainstream scientific authorities. The Canadian National Round Table on the Environment and the Economy created six sustainability indicators. A US company called Sustainable Measures defined ten measurable interaction factors for sustainable development. The Global Report Initiative used triple bottom line in the assessment. In my thesis I survey and compare these methods, and make a proposal regarding practicable routines for European companies.
Keywords: sustainability, sustainability indicators, measurement

INTRODUCTION

Human activities can be understood on the bases of three models: ecological, social and economic bases. We can recognize three disciplines on the bases of these three activities, which affect each other. All of these three disciplines worked out their own value measuring methods, in order to measure efficiency and the grade of result. In this survey are observed the methods of all of the three disciplines. It is suggested forming a synergic measuring mode.

Therefore, it would be possible to work out unified practical measuring and control methods. The main goal of study is to demonstrate the problem of measure sustainability.

THE IMPORTANCE OF THE MEASUREMENT

Meeting the requirements of a working system can be ensured by measuring its most important parameters. To reach this goal, the parameters to analyze the system should be continuously controlled. In this context, measuring means the exact and methodical measurement and analysis of the system's parameters. The exact defining of measurement's methods to ensure the reproduction is particularly important. It is also important that we should apply the standardized methods everywhere.

THE DISCIPLINES TO BE EXAMINED AND THEIR CONNECTIONS

Sustainability has just started to develop into an independent discipline. However, its three main important fields have been known and dealt with for a long time.

Economy

The oldest of them is the science of economy that dates back to thousands of years. However the history of recent Economy is centuries old. Its evolution can be connected to the industrial revolution, because its continuous development is generated by the need for profit. Therefore, the most important measuring methods of economy are based on the economic efficiency. The economic efficiency basically could get measurable by two factors of profitability: the amount and dynamics of expenditures and incomings. Of course, the economic efficiency of a household, of an enterprise or of a state completely differ. At the same time, the mutual conformance for the measurement principles plays an important role. It is possible to measure the efficiency of two households, companies and states.

The most generally measured parameters in Economy

The most important economic parameter in connection with households is the income pro capita, which expresses the standard of living of families.

This way, the living standards of families in a society can be comparable, even in more social systems. The other important index is the debts or savings of households, which can be measured by profitability. These indexes help us to compare more households in an economic system or more economic systems to one another. The most popular index on the level of social economy is the GDP (gross domestic product). The GDP shows the economic product in a time period of an area - mostly a state. It measures the incomes and the economic power. The GDP per capita is often used to measure the living standards of the population of a state, but it is an extremely simplified viewpoint.

Environmental protection

Environmental protection was born in the industrial revolution of new age, the ecologic disasters were only local. The significances of them became univocal with the global ecological disasters at the end of the 20th century. The age of the institutional Ecology began in the 1970s (*Buday-Sántha*, 2006). From this time on, a lot of factors had to be known to identify and estimate their impacts and roles.

The main parameters of the environmental measurements

In the environmental protection sphere the methods of measurements developed independently from each other. These are not completely clear even in our days. Compulsory world standards for the usage of ecological measurement methods have not been developed, either. The environmental protection measures the contamination of the environmental elements by laboratory methods. Emission of wastes can be featured by quantity in tons. The diversification of species can be measured by the numbers of depopulation species, or by the number of the

individual per species. The impact of climate changes can be measured by the quantity of emission of CO_2. The other method is measuring the change of the average temperature per year.

Social sciences

Social changes can be featured by several indexes. As *Lengyel* (2002) writes in his survey, the international researches pointed to the problem of GDP: the rate of index GDP principally correlated with social and cultural factors, and not with economic ones. Previously it was believed that the GDP per capita could measure the social processes. But the GDP can give information only about some areas of social processes, and cannot give direct usable information about the important questions, such as health, prospective lifetime, qualification, complacency and so on. As *Inglehart* (1990; 1999) states, not only objective capabilities, but the subjective perceptions are important conditions of the stable and balanced social entity. On the other hand, the GDP per capita distorts the ideas, because it contains all of the factors generated by negative development, which do not serve social welfare (e.g. building barracks, prisons, etc.). *Csath* (2010) cites *Bidway*, who stated that this situation confirms that there is not exact connection between the growth of GDP's and social development. Besides, the number of jobs grows first of all in union-free companies, where the payments are very low.

The indexes of the social changes

Among the indexes of the societies the life quality of society's members plays a significant role. The scientists of sociology do not agree in defining life quality. According to *Lengyel* (2002), life quality depends on the capability of personal parameters and their resources, on the other hand on the common impact of welfare. The most important methodical problem is measure the social changes. The UN published an indicator system with 15 indexes in 1997, which can measure the changes of society directly. Unlike a system with more indexes, it can create such index that can summarize the approachable data in one correspondingly measures the economic efficiency by the GDP. Such index is the ISP (Index of Social Progress), which was created from 46 other factors by heightening (*Estes*, 1997).

THE POTENTIAL INDEXES TO MEASURE SUSTAINABILITY

Sustainability is a discipline with three pillars, therefore we have to apply such indexes that correspondingly represent the interest of the related specialties.

This right expectation makes the problems of measurement more complicated. Such measuring methods should be simultaneously created which are accepted by all of the three sciences and which can be used internationally. The measuring system can provide valuable results if all states can serve with data. It is because in our global world neither economic, environmental nor social changes can be imagined without global impacts.

To be able to measure sustainability, we have to create and use such indexes that represent the harmful activities as negative in the course of examination of

economic, environmental and social processes. These activities thereby ruin living qualities and the environment. With the help of the so-called welfare indexes, this goal can be reached.

CONCLUSION

In survey it is summarized the problem of creating indexes for measure the sustainability. It is exposed to the problems of integrating data of representation for sustainability of a productive company or a state. This is a complex problem because the scientists have got used to comparing economic, environmental and social systems with common indexes. It can be seen that working out one or more superindexes is needed. The substance of problem is in the common, global usage of indexes. This study will be continuing in the next future to define exact index to compare the companies from sustainability viewpoint.

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