

Development of Indicators of Sustainability of Economic Growth and Quality of Life

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ABSTRACT

In the past, the assessment of the level of socio-economic growth in the form of indicators was focused only on the economic indicators that did not reflect environmental, social, safety and other aspects and the related comprehensive quality of life in society. These shortcomings have become increasingly stronger in relation to the development of the concept of sustainable development and the principles of globalized markets. The paper analysed the development of indicators of economic growth in conjunction with the level of consumption of natural resources and energy, social well-being and the comprehensive quality of social life. The comparison of indicators was realised in relation to their overlap with the economic, social and environmental indicators of sustainable development and the possibilities of use for growth assessment under specific conditions of globalization and within standardized indicators from the OECD and UNEP level and in organizational practice in Slovakia.

Keywords: sustainable growth, economic indicators, environmental safety aspects, social welfare, quality of life, evaluation indicators

INTRODUCTION

The concept of socio-economic growth is mostly associated only with the economic growth measured by the Gross Domestic Product (GDP) indicator. Today, in the context of globalization, the aspects of the level of consumption of natural resources measured by the inputs, energy and space used, the aspects of social well-being, the quality of life of the population and the aspects of sustainable development must also be taken into account in the context of growth. The economic growth is when the total value of goods and services produced in the economy is higher compared to the previous period. It does not matter whether the goods and services are necessary or not.

In the past, the development policies first provided for the modification, improvement and intensification of traditional economic indicators and later the development of alternative indicators of socio-economic development, the comprehensive aim of which is to reflect the level of social well-being and quality of life. These indicators are, in essence, more objective and exact due to the possibilities of international comparison. Specification and development of indicators points to a clear shift from a focus on the economic growth to the inclusion of broader social, political, security and environmental sustainability context of development and comprehensive quality of life.

Initiatives and indicators, mostly aimed at adjusting the gross domestic product GDP indicator

Gross Domestic Product – annual output (sum of goods and services), expressed in monetary units in a given country per year, is a combination of positive and negative activities, costs, and benefits. As a result, the GDP growth does not indicate whether or not the social well-being grows along with GDP. Measuring the social well-being through GDP is possible in two ways. The first is to use GDP as a component of the indicator, the second is to measure the costs and benefits of its growth.

In the late 1990s, the professional literature began to draw attention to the shortcomings of the GDP growth as an indicator of improving social well-being and quality of life. There is still a debate going on whether sustained growth (as expressed by the GDP growth) is physically possible in the long term. The second question is whether sustained growth (if possible) is desirable and whether it constitutes an indicator of increasing social well-being and quality of life (Ayres et al., 1996). A prerequisite for an answer is a normative definition of what should be considered a socially desirable development.

Social well-being and quality of life can be defined on the basis of objective living conditions, subjectively perceived satisfaction with life or a combination thereof. Living conditions refer to the conditions of day-to-day life manifested, for example, by a certain pattern of consumption or certain common choices (relating to family life or work) and are mainly examined with the use of objective indicators (Chovancova et al., 2019, Chovancova et al., 2020). The subjective component of quality assessment is also applied to the relation between the living conditions and life satisfaction, which often becomes a problem in carrying out the research studies on the quality of life.

Development modifications of GDP

From the late 1960s to the late 1980s, Sametz, Nordhaus, Tobin, Cobb and Daly (1972) mainly looked at the development of the indicators that correct GDP by introducing costs and revenues of economic activity (Daly et al., 1989). The best known and most commonly used indicators from this period are Index of Sustainable Economic Welfare (ISEW) and Genuine Progress Indicator

(GPI). ISEW is based on the ideas of Tobin and Nordhaus, economists from the early 1970s. For the first time it was defined by Daly and Cobb (1989) and in fact it is a “reconstruction” of GDP, because it deducts some of its components.

The researchers who removed the negatives that the GDP data contain proved that the process of growth in some industrialised countries effects worsening of the living conditions of the major part of population (EEA, 2015, Kemm et al. 2004). One of the corrections was that they deducted from GDP all the purchased items that were needed to mitigate the damage caused by the growth itself, and because of that the net benefit for people turned out to be almost equal to zero. Another correction strips GDP of the costs needed for the modern economy to function, but which in themselves do not bring anyone any pleasure or satisfaction, i.e. the “Category of regrettable needs”.

The third correction concerns the changes in the value of activities that people carry out only for themselves. The fourth correction concerns the natural capital, which is inevitable for growth. ISEW is one of the indicators on the basis of which it can be said whether the process of economic growth is really beneficial. ISEW may also include the following items as positive (Table 1).

Apart from these components, the items which can be considered negative may also include rents on land and real estate, costs of bureaucracy in public administration, the costs related to intellectual property (patents, copyrights), the costs of unfounded and dubious legal disputes, interest, etc. (Butek et al., 2016). However, these categories are, by their very nature, dubious and questionable. The index has a potential in its ability to the balance positive and negative activities and to integrate the areas that are not included in GDP.

Genuine Progress Indicator (real wealth of nations)

Is an indicator based on sustainable consumption, i.e. income which Hicks (1939) identified as the maximum level of production and consumption that has not yet reduced the capacity to produce and consume at the same level in the future. The basis for this idea is to distinguish income from the reduction in capital. The question of extent to which the official GDP indicator really means well-being was taken up for consideration by Jonathan Rowe and his colleagues from Redefining Progress organisation. They proposed and developed

Table 1. Positive and negative aspects of Index of Sustainable Economic Welfare

Index of Sustainable Economic Welfare	
Positive aspects	Negative aspects – externalities and hidden costs
<ul style="list-style-type: none"> • Equality and fairness of income distribution. • The degree of economic self-sufficiency of the national economy. • Non-market transactions (informal sector including black economy, domestic work, barter). • Quantity and quality of leisure time. • Range of preventive measures in the field of public health (vaccinations, sewerage, etc.). • Human capital (education and science). • Infrastructure (public transport, telecommunications, research, and development, etc.). • Energy efficiency of the economy. • Level of safety and provided services. 	<ul style="list-style-type: none"> • Advertising costs. • Pollution. • Loss of land (desertification, loss of natural wetlands and marshes, soil erosion, loss of agricultural land). • Uncontrolled urbanisation. • Non-purpose commuting to work. • Excessive consumption (in particular of non-recyclable and short-term consumption goods). • Costs of crime control (expenditure on the police and prison system). • Production for military purposes. • Production of illegal and harmful goods that reduce work productivity (drugs, cigarettes, alcohol).

the afore-mentioned Genuine Progress Indicator, which measures the changes in prosperity and sustainable economic growth (Carson, 2010). GPI builds on traditional GDP for the country and incorporates the changes in income distribution, household work values, negative impact of crime, family breakdown, air and water pollution, commuting to work costs, and impacts of the loss of forests and arable land. According to Rowe (2009), the concept of GDP derives from two assumptions:

- All that is produced and sold is good. Higher production and sales fuel both the development of economy and higher prosperity. However, the problem is that GDP only allows one to add. Therefore, according to the GDP indicator, economy is growing stronger, even if we add car crashes, divorces, environmental pollution, crime, and other negative events requiring funding.
- The GDP indicator includes only those items which can be priced.

It does not take into account a large part of human activity and natural processes people do not directly pay for (family, community, natural oxygen producers – trees, etc.). Rowe (2009) suggests that the breakdown of these vitally important things, which are imperfectly indicated precisely by divorce rates, crime rates, and environment pollution, should be taken into consideration as minus items.

GPI distinguishes between the financial transactions which increase our well-being and the ones which reduce it – the more free time people have for themselves, the higher GPI and vice versa. At the same time, all costs of maintaining

the quality of life, mental and physical health, e.g. commuting costs, health treatment, degrading the harmful consequences of polluted environments are deducted. For that reason, GPI does not calculate the costs on crime reduction or environment pollution as parts of a national product. GPI is falling when the area of wetlands and forests is decreasing, when mineral reserves are being reduced. Another item on the minus side is external debt. Rowe (2009) points out that a country should not consume more than can be covered by its national product. On the other hand, he does not question the foreign debts for domestic investment. Rowe (2009) proposes a radical revision of the tax system that taxes positive activity (human work) and “rewards” ecological destruction. The experts of Redefining Progress assume that the human work should largely be untaxed and that VAT should be eliminated. The tax burden should be applied to the use of mineral resources and environment pollution. The proposed changes to the tax system would thus provide the state with revenue, they would promote both positive economic stimuli and t even new workplaces, owing to cheaper workforce.

GPI is an index which takes into consideration the changes in the abilities of the nature to provide services and generate natural capital. Daly and Cobb (1989) turned the attention to the fact that the increase in production is related to the increase in consumption and it also generates costs. Lawn (2006) established a framework for identification of the costs of economic activities which he involves in a common balance with the growth benefits. In accordance with the Lawn’s model, the economic activities include

the following groups of costs: of depletion of resources, of crime, caused by family breakdown, of the air, water, and noise pollution, from the loss of agricultural land, from the loss of natural wetlands, marshes, and flood plains.

GPI is based on the concept which perceives capital in broader dimensions than the common macroeconomic balance sheets. In the context of GPI, four types of capital are considered: physical, human, financial, and natural. The social capital, which is difficult to define and measure, is excluded from the index.

More exact indicators for growth assessment

Apart from the indicators which are aimed at correcting and complementing GDP, the cooperation of UNO, EC, IMF, and OECD in 1993 resulted in establishing of the following concepts:

- **System of National Accounts (SNA).** The system of macroeconomic accounts, balance sheets, and sets of data based on the internationally recognised definitions and accounting standards. These sets of data can be used as an adjunct to GDP but with a limited evidential value (Lequiller, 2005).
- **Net Economic Welfare (NEW).** It measures the overall national output and includes only the consumption and investment directly contributing to the economic welfare. It is calculated as an addendum to GDP and includes the value of leisure time, informal economy, and the costs of environmental damage. Its predecessor is Measure of Economic Welfare (MEW) which was created by Nordhaus and Tobin in 1973. MEW extended GDP by several input items, such as the value of household work, and corrected its value by the negative effects of urbanisation. However, it did not take the environmental damage into account. (Islam et al., 2002).
- **Human Development Index (HDI).** It is an indicator which links and compares average life expectancy, literacy, education, and material living standards (measured by GDP indicator) and its aim is to draw the attention of governments to the sustainable human development. This index is standardised and internationally comparable. On the basis of HDI, it is possible to categorise countries into developed and developing ones, using three bands according to the achieved value of the index – low, medium, and high. The index was

designed in 1990 by Amartya Senom, Mahbub ul-Haq, Gustav Ranis and Meghnad Desai. After its establishing, it started to be used in the reports on human development of the United Nations Development Programme (UNDP). It is considered to be the first major attempt at the improvement of the evidential value of society development indicators which expands the perception of development itself (UNDESA, 2002, Soltes et al. 2018). Nevertheless, it shows the shortcomings deriving particularly from its simplifying nature. The original index did not contain the environmental dimension and that absence was being corrected by issuing additional independent indicators. The most often used was the so called ecological footprint which is expressed in the units of area, i.e. the size of the area needed for biological support of a given territory, organisational unit or an individual.

The ecological footprint values have been connected to HDI value by Morse (2003), creating a set of indicators labelled as HDI/EF. The HDI deficiency is that it does not adequately cover more dimensions of human development – e.g. poverty and fairness of income distribution, gender equality, housing, access to public services or markets, human and political rights, personal security, etc. That is why there are accompanying indices of human development, e.g.: Gender-related Development Index (GDI), Gender Empowerment Measure (GEM) or two different indices: Human Poverty Index 1 and 2.

Further attempts to expand and improve the measurement of changes in the well-being and quality of life of society led to an increasingly complex understanding of the whole issue. Psychological factors, subjective and objective factors from sociology, political science, and ecology began to be involved in the indicators. The following indicators may be given as examples of such an effort:

- **Gross National Happiness (GNH).** The index proposed in Bhutan in 1972 was the first attempt at a holistic concept of well-being (national happiness), the aim of which was to connect spirituality with the material sphere. This indicator based on the Buddhist values is one of the first steps towards a complex measurement of the quality of life within society, based not only on quantitative objective indicators but also on qualitative and subjective indicators.

- **Cost-Benefit Analysis (CBA).** In GDP establishes better conditions for understanding of the social welfare concept which should be reflected in a more effective designing of measures and policies and their implementation (Islam et al., 2002). Once the social well-being function has been introduced into GDP, an international comparison would also be possible, which is a prerequisite for international recognition of indices.
- **Fordham's Index of Social Health.** It is being compiled each year by Marc Miringoff together with his colleagues from Fordham University Graduate Center, Tarrytown, New York. It collects sixteen factors in order to acquire a complex view on the condition of "human welfare" in individual phases of life. For children it monitors: child mortality, child abuse, and poverty. In the case of young people, it investigates: the incidence of suicides of adolescents, drug use, and the percentage of students who did not finish school. For adults it is: unemployment, average weekly earnings, and the percentage of persons under 65 years of age with health insurance. In the case of elderly people, the report monitors: poverty and the costs paid for health care. In all age groups: suicides, fatal road accidents caused by alcohol, the use of food cards, and the gap between the rich and the poor.
- **Environmental Performance Index (EPI).** It has been used since 2006 and was introduced by the United Nations Organisation. According to certain indicators EPI assesses natural environment, health, and ecosystem (Rowe, 2009). The indicators in question include e.g. quality of water and air, emissions, greenhouse effect, influence of living environment on population's health.
- **Legatum Prosperity Index LPI.** It has been in use since 2010 and compares the prosperity of the country and living standards of its population with other countries. This index was introduced by the independent organisation Legatum Institute, based in London. Countries are ranked according to several dozens of reviewed indicators. They constitute eight important categories: economy, business and opportunity, government, education, health, security and protection, personal freedom, and social capital.
- **Better Life Index (BLI).** It has been used since 2011 and it was published by Organisation for Economic Co-operation and Development

(OECD). Its purpose is to overcome the preferred GDP indicator of living standard. BLI is an interactive instrument where citizens contribute by their evaluations in 11 categories (OECD, 2011). It represents a synthesis of material conditions such as housing, work and social aspects such as satisfaction, security, interpersonal relations. The monitored categories involved in the quantification of this index are: housing standards, levels of income, health, interpersonal relations, living environment, satisfaction with life, standards of public administration, public security and employment opportunities (Lequiller, 2015).

Indicators of sustainable development, green growth and green economy

The issue of sustainable social development and various green initiatives, concepts and standards focused on green growth and the green economy are currently among the priority political and economic topics. Sustainable development and green initiatives are closely interlinked and mutually supportive of a common goal – improving the quality of life. From the OECD level (2011), four main areas were proposed and the corresponding groups of indicators for monitoring green growth:

- Indicators of environmental productivity and resource productivity expressing the link between the efficiency of natural resource use, production and consumption.
- Indicators of natural capital stocks monitoring the state and quality of natural resources due to their depletion and continuous decline, which poses a risk of slowing growth.
- Indicators of environmental quality of life expressing the direct or indirect impact of the quality of the environment on human health and life.
- Indicators of political response and economic measures used by politicians and forecasters to streamline implemented policy measures.

The green economy initiative, led by UNEP, provides analysis and advice to countries on the political reforms and investments needed to achieve the green transformation of key sectors of the economy. The initiative included the development of a framework for assessing the progress in moving towards a green economy. This framework of indicators and performance, which provided the

opportunities for governments and other stakeholders to form part of the green economy advisory services that UNEP offers to governments. The framework for green economy indicators consists of three main areas (OECD, 2014):

- The green transformation of key economic sectors and economy: it focuses on investing in the green transformation of different sectors of the economy and their related contribution to production and employment.
- Goods and efficiency: it assesses the resource efficiency and productivity, the decoupling of economic activities from resource use and the related environmental impacts in sectors and at economic levels in a comprehensive way, all following the work of the International Resource Panel.
- Overall indicators of progress and well-being referring to various initiatives from the overall economic progress and well-being measures, including poverty reduction and degradation of natural capital.

Table 2 shows the results of the research of indicators used so far in terms of the possibility of their usage as supporting indicators for sustainable development monitoring.

CONCLUSIONS

Scientific studies have long pointed out that it is not possible to live at the expense of future generations or at the expense of people from other countries and nature. Adam Smith, the founder of modern political economy stressed that the success of the economy is assessed according to how well people do in it.

The economic growth and quality of life have been shown to depend on ability of society to live within the environmental constraints. Governments must adopt measures to create a sustainable community while they must also monitor individual countries, their governments and citizens, and today – quite naturally and businesses. The globally accepted indicators are helpful.

Although significant progress has been made in recent years in reducing the unfavourable environmental aspects of consumption and production, the air quality has improved, waste and industrial pollution are more effectively controlled and regulated, products are more environmentally friendly, consumers are more aware and companies are more environmentally efficient, the overall environmental profile of society is not satisfactory.

Table 2. Usability of analysed indicators for measuring economic growth, consumption level, welfare and quality of life in the field of monitoring sustainable development

Indicator	Area of focus	Pillars sustainable development			
		Economic	Social	Environmental	Institutional
GDP	Gross domestic product	•	○	○	•
ISEW	Index of sustainable economic welfare	•	•	•	⊙
GPI	Genuine progress indicator	•	•	•	⊙
SNA	System of national accounts	•	○	○	•
NEW	Net economic welfare	•	•	•	•
MEW	Measure of economic welfare	•	⊙	○	⊙
HDI	Human development index	⊙	⊙	•	•
GDI	Gender-related development index	⊙	•	○	⊙
GEM	Gender empowerment measure	⊙	•	○	⊙
HPI	Human poverty index	⊙	•	○	⊙
GNH	Gross national happiness	⊙	•	•	⊙
ISH	Index of social health	⊙	•	○	⊙
EPI	Environmental performance index	○	⊙	•	•
LPI	Legatum prosperity Index	•	•	○	•
BLI	Better life index	⊙	•	•	•
SDI	Sustainable development indicator	•	•	•	•
GGI	Green growth indicator	⊙	•	•	⊙
GEI	Green economy indicator	•	⊙	•	⊙

Legend: ○ unusable /not suitable, • usable, ⊙ partially usable /with restrictions.

New globalized challenges aimed at improving the environmental quality of life, in particular including climate change, the rapid depletion of natural resources and biodiversity, call for stronger action. Fundamental changes are needed in the way of obtaining natural resources and in the process of production, distribution, use and disposal of products. It is necessary to take measures at all levels of society – from individuals and industrial sectors, firms, central and local government to current trends, strategies and objectives transferred to the real quality of life – green consumption, green production and sustainable comprehensive quality of life of and individuals.

Acknowledgement

This work was supported by the Scientific Grant Agency of the Ministry of Education of the Slovak Republic (KEGA 032EU-4/2020, KEGA 002TUKE-4/2020 and VEGA 1/0518/19)

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