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## Measuring Objective Well-Being and Sustainable Development Management

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*Achieving sustainable development is undoubtedly a goal of every society and community. What is implied here is that it is a concept that needs to be managed, i.e. a goal that one strives to achieve in a continuous and dynamic sense, including continuous and consistent measurement. This paper sheds light on analysis of objective well-being that entails achievement of sustainable economic development and is reflected in living conditions. The authors argue for the necessity of monitoring and quantification of objective well-being in an economic and a non-economic dimension, which is substantiated by analysis of selected indicators from both dimensions, having different coverage and pointing to different levels of overall objective well-being.*

**Keywords:** *well-being; objective well-being; alternative well-being measures; sustainable development management; GDP.*

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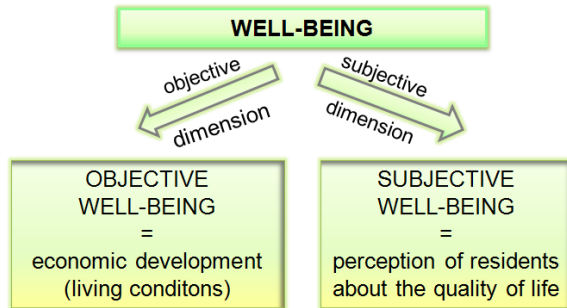
### Introduction

Well-being is currently no longer seen solely in terms of advanced material living standards and quantitative growth. Instead, the qualitative aspects and social dimension of modern progress come into play, including the structural policy and public awareness [1]. However, the literature suggests

that a clear definition and measurement of well-being is not easy and unified. Canoy and Lerais [2] comment that although there is widespread adoption of policies aimed at prosperity, at the same time it is not clear what exactly well-being is (at the level of an individual or a society as a whole), which makes a sort of a paradoxical situation. Stiglitz et al. [3] challenge the viewpoint that well-being is a multi-dimensional phenomenon based on the following key dimensions that should be simultaneously taken into account: material living standards (income, consumption), health, education, personal activities including work, political voice and governance, social connections and relationships, environment (present and future conditions) and uncertainty (economic and physical nature).

With regard to well-being as a phenomenon of a dynamic nature (stemming from the situation in which people interact with the world around them), a higher level of well-being means that people are more able to respond to difficult circumstances, to innovate and to work constructively with other people and the world around them [4]. The well-being of a society can be defined as a benefit for all people in the society, implying accomplishment of adequate economic development (the objective dimension of well-being) and the resulting positive perception of people towards the proper stage in the society, i.e. the quality of life (the subjective dimension of well-being). In other words, when it comes to quantification and evaluation of the well-being of a society, it is necessary to measure and use objective and subjective indicators. In Diener and Suh's [5] viewpoint, well-being is defined by two dimensions; one providing information often not included in the other. Allardt [6] also advocates defining well-being by applying an objective and a subjective approach.

The main conceptual framework (Figure 1) providing grounds for the discussion in this paper present a new approach to the observation of the concept of well-being. The authors share the opinion that objective well-being can be equated with economic development (which is sustainable), i.e. real, objective living conditions. Furthermore, subjective well-being, though differently defined in psychology, corresponds here to the perception of residents about the quality of life.



**Figure 1:** Dimensions of well-being

In other words, the well-being of a society can be understood as a consequence and the function of actual living conditions (objective well-being) and as a result of these conditions from the perspective of an individual or observed level of that society (e.g. community), i.e. the effects of these conditions in the community on individuals depend on how the individuals perceive them, what they think and feel about them, what they take and what consequences their action entail (subjective well-being). This approach of well-being observation is justified since even residents of rich countries enjoying the benefits of the economic growth do not reveal greater overall well-being. The reasons for that can be found in the existence of the two dimensions shown above.

Böhnke [1] points out that the indicators of subjective well-being possess a potential to provide comprehensive information about how people evaluate the living conditions in a country and what impact these conditions have on the attitudes, satisfaction, preferences and perceptions of the society. Individuals themselves are the best experts to judge their quality of life in the most direct and reliable way. This recognition of the need to go beyond income when measuring well-being has supported the development of various appertaining concepts such as living conditions and quality of life, and consequently, of alternative indicators (regarding both dimensions) of well-being that are aimed to accurately determine, but also to quantify the well-being, i.e. the actual situation in an observed society.

As to cater for a basis for political intervention at any level of a society, one should use a combination of information about the objective conditions of life and their subjective evaluation, i.e. monitoring of the well-

being in both dimensions thus becomes not only desirable, but essential. Nevertheless, a number of communities (and states) either do not have specific indicators of objective well-being or their application for developmental purposes itself is limited to internal constraints of the observed indicators (such as gross domestic product - GDP). The focus of this paper relates to measuring objective well-being, which includes achievement of sustainable economic development. The sustainable development concept has inspired a number of studies and debates within the scientific and general public that can be summed up as "a weaknesses of GDP as a measure of development". All of them highlight the weaknesses and reasons why this widespread measure cannot be exclusively used for quantification and understanding of the actual well-being of a society. The authors believe that this debate is of great importance in this context, but insufficiently taken into account in scientific research and also in shaping key strategic documents.

Besides the usual, economic measures of objective well-being, the number of those alternative ones seeking to encompass not only the material aspect thereof, i.e. those that are based on other pillars of economic development too, has lately been exponentially increased. For this reason, this paper is organized as follows: it begins with an introduction which is followed by the second chapter dealing with sustainable development as a goal pursued through quantifying objective well-being. Objective well-being is introduced in the third chapter; after brief theoretical introductory lines, it provides for an overview of selected indicators, i.e. possible ways of measuring an observed dimension of well-being (analysis of equally important subjective well-being dimensions is beyond the scope of this paper). Prior to the concluding remarks, the importance of objective well-being measurement in both dimensions is emphasized through analysis of selected indicators results.

## **Sustainable development - the concept and definition**

When defining economic development, it is possible to put an emphasis on the social, technological, institutional, cultural and other perspectives of this phenomenon. What all definitions agree upon is the time perspective, that is, economic development is a process that takes place over a longer period of time and that indicates a desired, positive change. Economic development

is a complex concept that leads to progress (qualitative and quantitative) of all people living in an area, not just for certain individuals, and it does not imply improvement in a purely economic sense, but also in the non-economic aspects such as environmental protection, social rights, culture, civil society and the like. If there is a continuous positive change in all of these aspects, future generations will be provided with the same or better terms and conditions, which mean sustainable development.

The concept of sustainable development is a social paradigm which undoubtedly affects the models and forms of behaviour and thinking at all levels of the modern society. Therefore, it requires interdisciplinary scientific research.

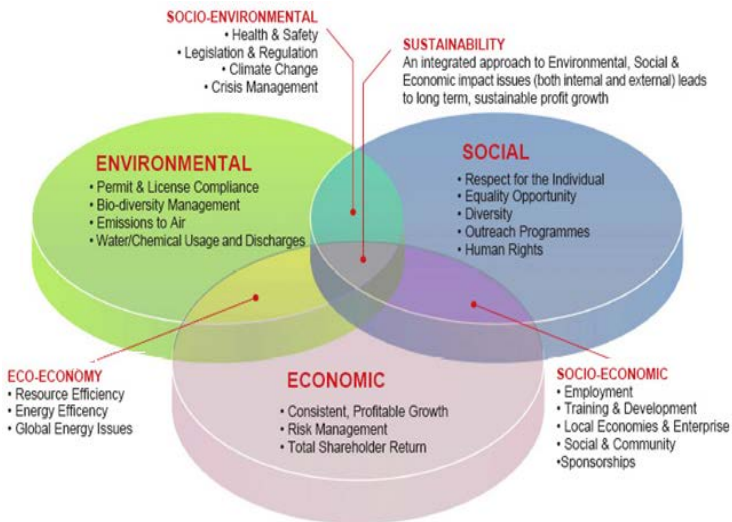
The meaning of the notions of sustainable development and sustainability entails complexity and the one thing which can be said about them with certainty is that they still provoke numerous scientific and expert debates. Essentially, it is a political and global concept which, at first, was primarily related to environmental issues in less developed countries. Although Barbara Ward (British Labour Party representative and activist) was first to use this term at the "Conference on Economic Development" in Washington in 1969, it attracted greater attention of the worldwide public in 1974 after the "Cocoyoc Declaration".

Probably the greatest influence on the present-day understanding of the concept of sustainable development and on its popularization is related to the entitled "Our Common Future" [7]. This Report defines sustainable development as development which meets the needs of present generations without compromising the ability of future generations to meet their own needs, emphasizing global efforts to preserve the environment and prevention disasters, from the individual level to top economic and political men of power. It is also pointed out that each country is capable of economic development accompanied with preservation of the basis that provides for a starting point for action.

A turning point in the global acceptance of the concept of sustainable development refers to the UN Conference on Environment and Sustainable Development held in Rio de Janeiro in 1992, known as the "Earth Summit". This conference has defined the meaning of the phrase "sustainable development" as: alignment of economic growth on the one hand and the rational use of natural resources on the other hand. The result of the conference reflects in the fact that since 1992, sustainable

development has been mentioned at all conferences dealing with environmental protection as a way to exit the global ecological crisis, is. The conference resulted in a number of important documents (e.g. Agenda 21, Rio Declaration on Environment and Development, etc.).

The concept of sustainable development is based on three main elements: uniform economic growth, protection and preservation of the environment, and respect and improvement of social and human rights. Such an approach to development is called the integral or holistic approach. All of the three interrelated elements must be simultaneously sustainable since only that way they can shape a world that is just, liveable and sustainable. The intersections of the circle, i.e. the pillars of economic development represent social-ecological, socio-economic and ecological economic elements. Figure 2 shows the key elements and sub-elements of any sustainable development program, regardless of its point of reference (company, community, region or country). The concept is also often portrayed as the three pillars (economic growth, environmental protection and social progress) which jointly and equally "hold" or enable sustainable development.



**Figure 2:** Key elements of sustainable development

Source: Verify sustainability [8]

Sustainable development as a concept is thus closely associated with the desire to develop a harmonious society oriented towards greater economic prosperity, social cohesion and environmental protection. Finally, sustainable development is associated with qualitative rather than with quantitative growth. However, the actual state of the economy does not often correspond to the imagined and necessary theoretical framework while one or more elements develop more slowly or on the expense of one another. For instance, even if an economic and a social balance are achieved, the society will not experience real progress if in process clean air and/or drinking water run out. Goldsmith [9] talks about constant Economics, i.e. explores ways to create a stable society. Constant economics is economics in which sources are not spent in vain, food is produced sustainably, goods are made to last, renewable energy sources are used and in which the values of a community are appreciated as the most valuable barrier that caters for protection from social, economic and environmental unsustainability.

”Economic sustainability could be defined as realization of growth, efficiency and “equitable” distribution of wealth. Social sustainability implies participation in making decisions, mobility and cohesion, fulfilment of social identity, development of institutions and alike. The third aspect of sustainability is environmental sustainability. It respects the wholeness of different eco-systems, the carrying (receiving) capacity and protection of natural resources including biological diversity as well” [10].

In today’s literature there are many different comprehensions of the notion of sustainability and of the concept of sustainable development. In Pešić’s opinion [11], all definitions of sustainability can be classified into five groups: 1) The state in which neither usefulness nor the level of consumption decreases in the course of time; 2) The state in which resources are utilized in such a way that the future production possibilities of mankind remain preserved; 3) The state in which the stock of natural capital does not decrease in the course of time; 4) The state in which resources are utilized in such a way that they provide sustainable income or yield; 5) The group of definitions based on the concept of stability and the balance of ecological populations in the course of time.

The most quoted definition of sustainable development is certainly the one stated in the aforementioned Brundtland Report. Such a definition is acceptable from the philosophical point of view. Consequently, many have embraced sustainable development primarily as a moral obligation. Yet, it

has remained unclear how to interpret sustainable development in terms of economics. The basic criticism of this definition is hidden in the fact that even its individual elements are not unambiguously defined. Firstly, the notion of needs is problematic. It is not clear what kind of needs one is dealing with and how to meet the level of the satisfaction of needs of various people. Secondly, it is almost impossible to find a clue about preferences and needs of future generations. Although this definition is somewhat vague, [12] points out that it involves two fundamental issues. These encompass the problem of the degradation of the environment which usually goes hand in hand with economic growth and, at the same time, the necessity of such growth in order to fight poverty.

As it is often the case when complex concepts as this one are in question, during the course of time the notion keeps developing or evolving and so does its definition. Scientific researches and deliberations bring about the broadening of perspectives and introduction of new components and aspects to be considered.

Certain definitions of sustainable development, depending on their purpose, intention or author, are rather popularly oriented towards the goal of being impressive and easily memorable, while others aim to be detailed, accurate and comprehensive in a scientific sense. In contemporary literature, there is a huge variety of different definitions and approaches that analyze the features, components, preconditions and characteristics of sustainable development from different perspectives. This refers primarily to scientific literature which often analyzes the historical, ideological and scientific context of sustainable development and the evolution of the concept (e.g.: [13], [14], [15]) based on which authors often put forward their own definitions and models (e.g.: [16], [17]) while a part of literature is dedicated to the attempts of quantification and monitoring of sustainable development (e.g.: [18], [19]). There are many books in various fields of science, which partially elaborate the issue of sustainable development, but there are also those that dedicate whole chapters to this topic (e.g.: [20], [21], [22], [23]). Also, a common reference point for the study of sustainable development can be international policy documents (e.g.: [24]) and online manuals tutorials and information brochures which are mainly associated with international organizations. They are mainly intended to inform and educate the general and business public as well as the growing multitude of popular literature [25].

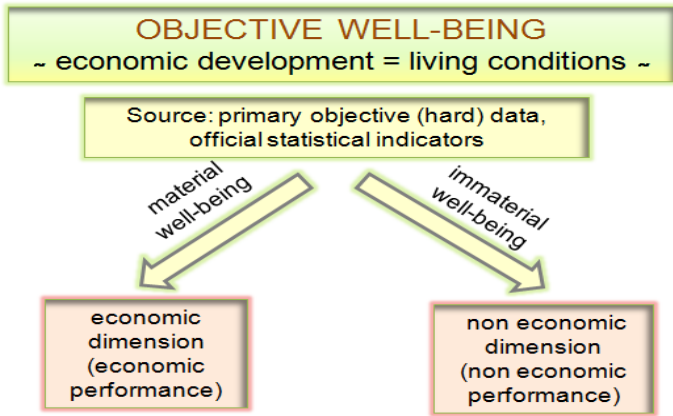


Pursuant to all of the definitions, it is clear that only occasional engagement of certain social stakeholders is not sufficient for achievement of sustainable development and that a systematic approach and commitment at different levels are indispensable. In other words, in order to achieve sustainable development, it is important to apply a holistic approach to sustainable development as a process and a goal.

To conclude with, the concept of sustainable development and its meaning is a lively, constantly developing area, but also an area of frequent misinterpretations and even abuse. Critics point out that this is due to the fact that sustainable development is a poorly defined concept which is extremely difficult to operationalize. On one hand, it draws attention of various scientific disciplines contributing to the wealth of research and theoretical material and on the other hand, this leads to a lack of consensus on fundamental issues and settings. It is often the reason why some authors declare it to be only a political phrase or a utopian concept. The efforts to eliminate these phenomena through quantification of sustainable development are discussed in this paper following a brief review of the role of sustainable marketing in sustainable development management.

## **Measuring objective well-being**

Objective well-being is based on hard data, i.e. it represents an external view of well-being and is measured by statistical indicators usually obtained from official statistical sources. Objective well-being of a society assumes achieving and sustaining economic development, which is why the following terms are used interchangeably in this paper. Interpretation of the economic development of the eighteenth and nineteenth century as the increased total output of an economy or income per capita is at the present time considered too simplistic because it does not include the entire necessary complexity of the modern world [26]. However, it is often called economic well-being, though it does not totally correspond with economic development since the former depends on both economic and non-economic factors as shown below (Figure 3).



**Figure 3:** Dimensions of objective well-being

In other words, the objective perspectives of well-being are important because they provide for an insight into a wide range of economic and non-economic indicators that depict the objective 'health' of an observed level of a society. These indicators, i.e. dimensions are described in detail below.

### **Economic dimension of objective well-being**

For years, the primary goal of economic policy was to observe and quantify economic output, and use those data for a further direct movement and progress of a society. In other words, the aim was to achieve economic growth. Economic growth measured by GDP is not the only indicator of the economic dimension of objective well-being. While evaluating and quantifying this economic dimension, other indicators must be taken into account as well. Namely, GDP is one of the indicators that economists use for objective assessment of the economic 'health' of a country within its geographical boundaries, i.e. for measuring the economic performance of a society.

Currently, for the purpose of assessing achievements of an economy in a given period of time or at some point in time, i.e. for evaluating and measuring economic performance, there are other economic indicators beside GDP, such as the inflation rate, unemployment rate and balance of payments (i.e. net exports). These economic indicators represent four

dimensions of the OECD magic rectangle; depending on a position in the rectangle, one can denote macroeconomic performance. Therefore, economic performance can be identified only with the economic dimension of objective well-being with, naturally, economic growth at its centre.

Out of these four indicators, the most commonly used and, one might say, the most widely known economic indicator is GDP; until recently, judging well-being solely on the basis of GDP, which as a measure has a number of drawbacks and limitations, was common practice. Media and every day's public practice show that over time, without a basis, the GDP and objective well-being of a society become, in some way, synonyms. The consequences of an inadequate use of GDP and its interpretation as an indicator of well-being, i.e. the absence of a proper measure of the real progress of a society, are great, especially if one takes account of the strong influence of GDP data on the functioning and directing an economy as a whole (for example, the share of public debt, the availability of European Union funds, the development of regions within a country, etc.) and of decision-making at all levels. GDP is therefore only one of the economic measures which, with the non-economic ones, show an objective picture of a country.

Recent empirical research and studies (e.g.: [26], [28], [3], [29]) have shown that monetary measures should not be the ultimate ones in measuring progress and well-being because of the weaknesses and limitations of their approach and methodology, calculation and monitoring, since they are too simplistic and do not cover all aspects of human life. In other words, it cannot be assumed that monetary transactions enhance well-being and that things are generally improving and progressing just because more money is being spent. Gómez-Lobo [30] points out that traditional measure of economic activity, such as GDP, are particularly flawed with respect to the treatment of natural resources and the environment. Depletion of these assets is implicitly treated as consumable income in traditional national income figures. This raises the spectre that unsustainable consumption levels, based on the running down of these natural assets, will not be detected in time to avoid detrimental effects on future generations.

Furthermore, GDP itself as an economic indicator has a lot of limitations, leading to questionable results when measuring the progress of a society. There is a discussion in the literature about the limitations and

criticisms of GDP as a measure of well-being. Some authors emphasize issues related to the environment (e.g.: [31]), some involved or included activities (e.g.: [29], [32], [33], [34], [35], [36]), some question the methodology (e.g.: [37], [38], [39], [40], [3]), etc. However, the use of GDP as a measure of well-being, despite the many restrictions, has become a common practice [41]. Schepelmann et al. [29] point out that GDP is naturally a useful measure contained in most of the economic policies and objectives of both the EU and national, regional and local bodies and that one should not go beyond it but to reduce the dependence on this measure.

In other words, an increase of GDP certainly indicates economic growth (as a continuous positive change in GDP figures) and not economic development that has a much broader meaning. Consequently, GDP is not a sufficient measure by means of which one could draw conclusions about the objective well-being of a society. One of the possible ways of overcoming this problem is to develop and popularize measures of the non-economic dimension of well-being.

### **Non-economic dimension of objective well-being**

The inadequacy of GDP (among other things) in measuring well-being leads to development of alternative measures of well-being [42], some of which omit the production approach, include the non-economic dimension of the development and often show stages of well-being different from those suggested by the GDP. The measurement of the non-economic dimension of economic development has, in the last 20 years, been characterized by a real boom of various indicators that aim to complement purely economic indicators, i.e. to contribute to more accurate measurement of actual well-being.

Good evidence of an increased number of alternative measures of growth is offered by the UNDP [43] in a study of the indexes that measure the performance of a country called "A Survey of Composite Indices Measuring Country Performance". The main purpose of that research was to find indicators which aim to rank or evaluate the performance of a state by analysing its competitiveness, government, social aspects, human rights, environment, security and globalization etc. The main conclusion of this publication is contained in the fact that the quantity of the indicators has significantly gone up since 1990 as has the number of institutions that

produce and publish alternative indicators. The number of the relating indicators increased 8 times in the 26-year period.

Since the early 1980s, a large number of alternative indicators meeting the objectives of sustainable development and abandoning conventional economy have been developed. Different authors advocate different approaches when it comes to alternatives to GDP. Alternative indicators competing traditional economic indicators can be grouped in various ways, for example, by the organization that has created them, the area which they relate to, the target groups which they are largely intended for etc. The differences between alternative indicators are significant, depending mainly on the interests of their creators, which may be for example, monitoring of environmental issues, subjective well-being etc.

Dill [44] distinguishes three phases and types of international indicators: the ones that primarily measure economic phenomena, indicators that measure education, happiness, social development, rule of law and human rights and indicators that cover environmental aspects. Wesselink et al. [45] present the policy cycle as a framework showing how different approaches to the indicators can be used or configured for specific stages of the same policy cycle. Although they mostly focus on environmental indicators, their contribution to the understanding of the core strengths of each indicator is significant.

Schepelmann et al. [29] and Goossens et al. [28] classify measures focused on economic development in three main groups: indicators adjusting GDP, indicators replacing GDP and indicators supplementing GDP. The indicators adjusting GDP mainly relate to the adaptation of traditional measures of economic performance (such as GDP) by inclusion of environmental and social factors (e.g. Measure of Economic Welfare, the Index of Sustainable Economic Welfare, Genuine Progress Indicator, Genuine Savings etc.). They result in a positive or negative signal given to the public and can serve as an important communication tool.

The indicators replacing GDP tend to measure and assess well-being more directly than GDP, taking into account the assessment of, for example, the average satisfaction. Some of the indicators that belong to this group are Human Development Index, Ecological Footprint, Happy Planet Index, Environmental Sustainability Index, Environmental Performance Index, etc. However, some of the strengths and advantages of GDP could be lost by its pure replacement and can affect the decision-making process.

The third group of indicators are the ones supplementing GDP based on national accounts systems like System of Economic Environmental Accounts, National Accounting Matrix including Environmental Accounts, and represent one of the good options to 'go' next GDP. This group also includes the indicators supplementing GDP with additional environmental and social information (such as Millennium Development Goals, Political and civil freedom indicators etc.). Some of the most important non-economic indicators of economic development are presented below; one from each of the groups defined and selected according to the criteria of wide recognition and acceptance in the scientific and general public.

1. *Genuine Progress Indicator (GPI) – an indicator adjusting GDP*

The GPI was created in 1995 as one of the first alternatives to GDP by a non-governmental think-tank organization named Redefining Progress from San Francisco and it represents a variant of ISEW. It is calculated for the needs of the USA. The index enables policymakers at a national, state, regional or local level to measure how their citizens live in economic and social terms [45]. The purpose of the GPI is to measure the wellbeing of the country and the quality of life and not just economic results and transactions.

Berik and Gaddis [46] suggest that the methodology of the GPI, although initially designed to assess the situation at the national level, can be used at the level of smaller regions due to the large impact which local politics can have on the well-being. These authors further state that USA data indicate that developed local GPI studies refer to the following states: California, Ohio, Minnesota, Maryland and Michigan. Maryland is a state that has begun using the GPI in state planning; 2009th Governor Martin O'Malley established a working group that collaborates with a university which aims to explore how the government can measure social well-being in order to develop an alternative to traditional economic indicators. The working group has chosen the GPI, which already has its history in the USA, and somewhat adapted it to their needs and available data. That is how the GPI model for Maryland was created. The model comprises 26 indicators divided into three categories: economic, social, environmental (like the aforementioned pillars of sustainable development). The GPI calculated for the state of Ohio relies on the same methodology (Figure 4). The results referring to the period from 1990 to 2007 were published in a study released in 2011.



**Figure 4:** Economic, social and environmental components of the GPI  
Source: Berik and Gaddis [46]

The fundamental principle of calculating the GPI indicator includes separation of the costs of purchase, maintenance and replacement of durable goods from the base consumption that is contained in the GDP, followed by a whole series of addition or subtraction of the positive and negative consequences of this consumption. Personal consumption, which is contained in the GDP, is modified by the GPI first through the index of income distribution between the rich and the poor, then through work in households, higher education as well as volunteer work (categories that remain completely unevaluated by GDP calculation). Additionally, the GPI takes into account a range of costs that are often taken "for granted" such as loss of free time.

2. Human Development Index (HDI) – an indicator replacing GDP  
The HDI was developed by the UNDP in 1990 as a measure of well-being and of the impact of economic and public policy on the quality of people's lives,

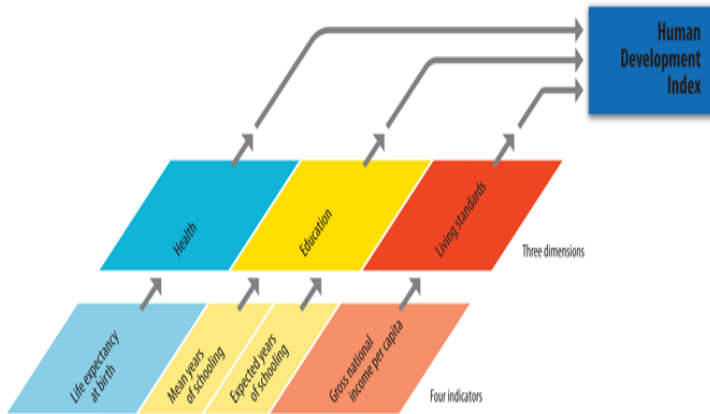
i.e. as a measure of human development, which implies an increase in choice (based on common natural resources) and the ability of people to live a life they appreciate and for which there is a reason to be appreciated. It is also often used for determination of the level of development of a country and represents a comparative measure of life expectancy, literacy, education and standard of living.

The Human Development Index is one of the most popular alternative measures of economic development. This has been confirmed by numerous results when searching scientific databases and by Google which is used by the general public. For example, on 31 May 2013, using the advanced search tool in the Google search engine, "Human Development Index" gave around 2,950,000 hits as an "exact word or phrase". The results of the HDI and all the associated methodologies are published in the Human Development Report – HDR which has been, since its launch in 2009, downloaded from the official site by almost half a million people and the HDR website has been visited over 3 million times [47]. This shows that this report and the index enjoy great and exponentially growing attention of the general public, even bigger than the World Development Report issued by the World Bank.

The HDI as an indicator of the quality of life (the maximum value is 1) is an aggregate measure of the progress of a country which has three basic dimensions of human development: a long and healthy life (expected average length of life); education/knowledge (adult literacy rate and the rate of participation in primary, secondary and tertiary education); a decent standard of living/ income (at purchasing power parity). These three dimensions together with four indicators form a basis for calculation of HDI (Figure 5).

The life expectancy at birth indicator as part of the health dimension is calculated using the minimum value of 20 and the maximum value of 83.4 years (for Japan in 2011). It is observed through its maximum value in countries viewed through time series (from 1980 to 2010). The education dimension is expressed as the geometric mean of two indicators: the average years of schooling of adults aged 25 and the expected number of years of schooling of children entering primary school age.





**Figure 5:** Components of the HDI

Source: HDR [47]

The decent standard of living dimension is measured by gross national income (GNI) per capita (in PPP \$) instead of GDP per capita (in PPP \$). In terms of the economic wealth component, the minimum box of revenue amounts to \$100 minimum and the maximum one to \$107,721 (data for Qatar in 2011). Both values are estimated in the same period, from 1980 to 2011. The results of all of the three dimensions of the HDI are aggregated into a single index using the geometric mean.

The interpretations and classifications of the results of the HDI have somewhat changed over the years. In the year 2006 (the HDI was calculated for 177 countries around the world) countries with HDI 0.8 or higher (a total of 63) were considered high HDI countries (Norway was in lead with 0.965; the medium HDI group (from 0.5 to 0.8) included 73 countries). The HDI below 0.5 indicated a low level of development (characteristic at the time for 31 country, most of which are located in Africa; Niger took the last place with an HDI of 0.311).

The 20th anniversary HDR report published in 2010 [47] showed considerable progress in many aspects of human development over the past 40 years, though at the expense of income distribution and environmental degradation. The same report stated that the average HDI from 1990 to 2010 increased by 18% (or even by 41% if one takes the year 1970 as the starting point). Norway (0.938) and Australia (0.937) remained at the top. Three new

measures have also been developed: Adjusting Human Development Index for Inequality, a New Measure of Gender Inequality and a Multidimensional Measure of Poverty.

The latest HDR report [48] dated 2013 is entitled "The Rise of the South: Human Progress in a Diverse World." It examines the profound shift in global dynamics driven by the fast-rising new powers of the developing world and its long-term implications for human development. The Report argues that the striking transformation of a large number of developing countries into dynamic major economies with growing political influence is having a significant impact on human development progress. China has already overtaken Japan as the world's second biggest economy while lifting hundreds of millions of its people out of poverty. India is reshaping its future with new entrepreneurial creativity and social policy innovation. A key message contained in this and previous HDRs, however, is that economic growth alone does not automatically translate into human development progress. Pro-poor policies and significant investments in people's capabilities—through a focus on education, nutrition and health, and employment skills - can expand the access to decent work and provide for sustained progress. The 2013 Report [48] identifies four specific areas of focus for sustaining development momentum: enhancing equity, including the gender dimension; enabling greater voice and participation of citizens, including youth; confronting environmental pressures; and managing demographic changes.

### 3. Millennium Development Goals (MDGs) – an indicator supplementing GDP

The Millennium Declaration [49] as a key policy document of the UN for the 21st century was adopted in September 2000 by statesmen from 189 UN member states who made a promise to free people from extreme poverty. The document is known for a total of eight major Millennium Development Goals and the activities that are aimed at achievement of these Goals by the year 2015. MDGs are as follows:

- Eradicate extreme poverty and hunger;
- Ensuring universal primary education;
- Promote gender equality and empower women;
- Reduce child mortality;
- Improve maternal health;

- Combat HIV /AIDS, malaria and other infectious diseases;
- Ensure environmental sustainability;
- Develop global cooperation for development.

Such objectives suggest [49] that the basic premise of the MDGs is that every person has the right to food, education and health care; the preservation of the environment is a priority on a global level and that the MDGs can be achieved by continuous development and strengthening the global partnership within which the wealthiest should provide assistance to the poorest.

Specific MDGs can seldom be observed in isolation because they are not separate entities but rather a set of multidimensional objectives and targets that are largely complementary. Therefore, the process of their achievement is mutually dependent and conditioned. More specifically, in addition to the eight goals, a total of 21 sub-goals that are measured by 60 indicators have been established.

For instance, regarding the first goal (eradicating extreme poverty and hunger), three sub-goals have been established:

- a) in the period from 1990 to 2015, halve the proportion of the population whose income is less than one dollar a day,
- b) Achieve full productive employment and decent work for all, including women and young people,
- c) in the period from 1990 to 2015, halve the proportion of the population that suffer from hunger. Each sub-goal has indicators that enable quantification.

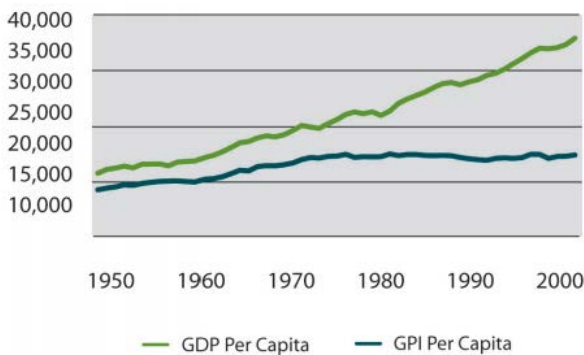
The free software tool The Dashboard on Sustainability available on the website European Statistical Laboratory illustrates the complexity of the relationship between environmental, economic and social issues, and is based on a set of MDG indicators. The Tool contains more than 60 indicators in approximately 200 countries for the period from 1990 to 2010 and the data were updated in January 2012.

In September 2010, the UN Summit on MDGs was held in New York. It was the tenth anniversary of the adoption of the Millennium Declaration, i.e. the 65th session of the UN General Assembly which resulted in the adoption of a resolution entitled "Keeping the Promise: United to Achieve the Millennium Development Goals", i.e. the world again pledged to accelerate progress in achieving the set aims until the year 2015. It was concluded that the general expectation was higher than the achieved results,

which was surely partly caused by the economic crisis 2007-2009. In order to ensure further progress, the recommendations of the final document on MDGs emphasize the necessity of continued efforts at national and international levels throughout all three time periods: short, medium and long. The recommendations and guidelines are described in detail in the document for each of the eight goals separately.

### The importance of the measuring economic and non-economic dimension

The indicators that belong to the previously mentioned groups encompass the goal to present a state or degree of achieved well-being in a fashion different from the one offered by GDP itself. For example, the final GPI is a number that represents "real well-being" and its results often indicate different levels of well-being which do not overlap with the one represented by GDP. Figure 6 shows different levels of well-being, depending on a selected measure - GDP per capita, i.e. GPI per capita in the period of 50 years.



**Figure 6:** Comparison of real GDP and GPI per capita in the 1950 - 2004 periods in \$2000

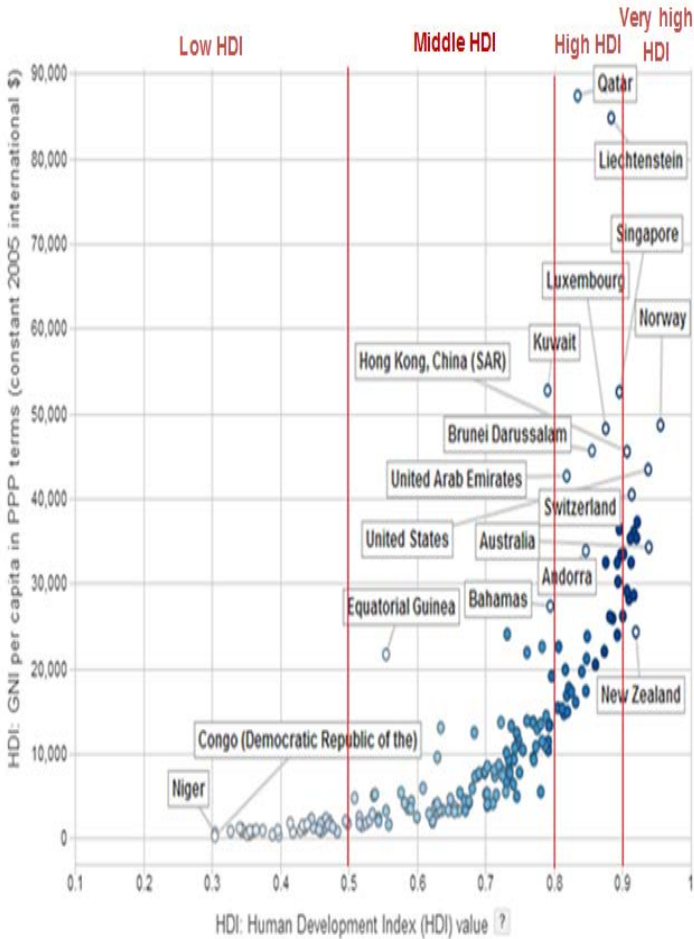
Source: Talberth et al. [45]

More precisely, if GPI is stable or indicates a rise in given year, it implies that the stocks of natural and social capital (which the flow of goods and service depends on) will be at least of the same volume for the next

generation; if GPI is falling, the economic system will erode those stocks and limit the prospects of the next generation [45].

In the period under review, the GPI per capita recorded a growth of 1.33% per year, while for the comparison sake, the real GDP in the same period rose by 3.81%. It is disturbing that in the late 1970s, the GPI actually stagnated between \$14,000 - \$15,000, i.e. economic growth expressed by a GDP increase was realized at the expense of inequality in that period, reducing the quality of life and facilitating the destruction of nature. The reason for different results of progress stems from different methodologies; GPI includes all costs or useful work whereas GDP excludes them or treats them as an economic benefit (the cost of crime, the cost of water pollution, the cost of air pollution, the cost of the loss of natural forests, the cost of climate change); the former includes the exploitation and loss of natural resources, environmental pollution which occurs as a result of growing consumerism, social categories (work at home, parenting, volunteering), the loss of free time; personal consumption is corrected with the index of income distribution between the rich and the poor. More specifically, if the GPI is stable or increasing, it implies that the stock of natural and social capital (which the flow of goods and services depends on) to be at least as big for the next generation; if the GDP increases, the economic system will erode stocks and limits the prospects of the next generation [45].

The observed HDI also points to similar discrepancies in the level of achieved well-being. Specifically, countries that are characterized by the highest rank in terms of the HDI are not necessarily those with the highest aggregate income which is shown in the Figure 7. The chart was prepared for the purposes of this study, using the programme Public Data Explorer, based on the 2012 HDR report.



**Figure 7:** Comparison of GNI per capita and HDI in 2012

Source: Made by using Public Data Explorer [50]

For instance, Qatar, Liechtenstein, Kuwait and Singapore have the highest GNI per capita but not the highest HDI (the chart was additionally divided into four parts: low, medium, high and very high); Norway, United States, Australia, Qatar and Luxembourg are ranked high according to the HDI but they are not featured by the highest GNI per capita. Many countries are still located in the lower left corner of the chart which is characterized by a low level of GNI per capita and a low HDI (Niger is in the worst

position). The graph shows a positive correlation between HDI and GDP per capita, which is understandable considering that the GDP is part of the HDI calculation (although other variables can prevail too). States that are ranked higher pursuant to their HDI than pursuant to their GDP per capita use their resources more efficiently in order to improve people's lives (education and health care opportunities are more accessible to general population) and vice versa.

However, it is necessary to bear in mind that with respect to interpretations of the HDI, the most important thing is not which state is on top and which is at the bottom, i.e. the scale of states, but it is vital that each state finds a way to achieve a higher level of the HDI every year and ultimately joins the group of countries which are characterized by a very high HDI. Dasgupta [31] explains how the overall well-being per capita of a society may decrease during the period of growth of GDP per capita and that the HDI represents progress in this sense. Ultimately, human development is not only associated with health, education and income but also with active involvement in shaping development, equality and sustainability.

One can conclude that the described short analysis of indicators in both dimensions confirms the aforementioned necessity of monitoring objective well-being in the economic and non-economic dimension, given that these indicators point to a different degree of objective well-being. Additionally, the third of the elaborated indicators (MDGs) is by definition an indicator supplementing GDP. Namely, it is designed to complement the economic dimension of well-being and it acknowledges the proposed assertion through an unquestionably high level of acceptance and commitment of the global political scene to achieve respective goals.

## Conclusions

In recent years, there have been great improvements in the availability of information and research related to the measurement of sustainable development. However, monitoring data and indicators separately and unsystematically can lead to a vague or even a completely wrong perception of the direction and progress of sustainable development a regional, national or international levels. There is a need to observe data in a systematic and global way as to make them comparable and traceable in time. Different indices intended for measuring sustainable development offers a solution in

this context. They appear as indicators that have narrower or wider coverage and are adapted to specific requirements. Measuring or monitoring is, as described in this paper, a necessary precondition for effective management and serves as (or should be) a measure of objective well-being in terms of sustainable development management. This relationship between the dependent and independent variable turns out to be often inapplicable in practice in this view since objective well-being is (still) often equated with the economic dimension.

The non-economic dimension of objective well-being has shown that economic development (objective well-being) should not be measured by purely economic indicators because that way one can have an insight into the complete picture. The indicators from both dimensions of objective well-being are mostly based on official data obtained from statistical offices. While concerning the economic dimension, the main focus is put on economic growth and GDP, the non-economic dimension is characterized by a large number of alternative indicators of well-being, with the HDI being the most popular one.

It still remains to be seen how, to which extent and what way alternative measures of objective well-being will be taken into account in policy making by national and local governments and institutions. Some authors [34] argue that measures used by international and private institutions are partly arbitrary, limited in use and that they reflect the priorities of their constructors. Also, a large part of alternative measures are new and still in the development phase and are facing various problems: internal (in the sense of the lack of methodological verification) as well as external (question of whether they will be broadly accepted and implemented or not; will they come to life?). However, they certainly give a clearer and broader picture of the activity and health of a society and, unlike GDP, give a much better answer to the question of what is important in the context of the well-being of people. Furthermore, alternative measures allow public policymakers to make better decisions that are consistent with the present situation in a country and are based on a broad range of observations of economic development. A larger number of well-being indicators provide different perspectives of observing trends in a country and possibilities of evaluating previous measures and their impacts and identifying good practices in the environment etc. It would therefore be irrational to ignore their existence as well as to deprive the perspective of a



wider picture of the state of a country which is today, more than ever before, easily accessible.

Bearing in mind the undeniable fact that any conclusion is only as good as the data on which it is based, many experts criticize these indices because of insufficient data verification. Namely, although the indices are mainly based on data reports of respected organizations such as the World Bank, the United Nations Development Program, the Organization of the UN for Food and Agriculture (FAO) etc., one should pay due attention to the fact that many reports of these organizations are based on reports of the governments of certain countries, which are often not subjected to independent external verification. It should also be noted that some authors challenge even base-concepts, assumptions and goals (such as the concept of climate change, e.g. [51]) which often seem to be an underlying base and / or one of the fundamental goals of creating these indicators.

It is however undeniable that the described and other similar indices, indicators and benchmarks already enable, to a certain extent, the state, other policy makers and other interested parties to somehow quantify data on the efforts and results achieved in the field of natural resource management and to realize sustainable development. This way, one can more easily monitor trends, evaluate the positive or negative effects of the actions taken, identify key issues and best practices (benchmarks) and ultimately optimize the benefits to a society from investment into sustainable development. Work on these indicators is still a relatively new area of research which is very dynamic and thus facing many problems primarily related to the weighting of different elements, determining the scope of indicators as well as to the independent verification, credibility and availability of necessary data.

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