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# SUSTAINABILITY OF HUMAN DEVELOPMENT. ASSESSMENT ON THE BASIS OF SELECTED INDICATORS

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## TRWAŁOŚĆ ROZWOJU SPOŁECZNEGO. OCENA NA PODSTAWIE WYBRANYCH WSKAŹNIKÓW

**STRESZCZENIE:** Współczesne badania nad problematyką rozwoju są w dużej mierze zdominowane przez dwie koncepcje: rozwoju społecznego (*human development*) oraz rozwoju trwałego (*sustainable development*), przy czym często poszczególni autorzy koncentrują się wyłącznie na jednym zagadnieniu. Zwraca się jednak uwagę, że obie te koncepcje są wzajemnie powiązane na kilka różnych sposobów. Trwałość jest uwarunkowana poziomem osiągniętego rozwoju społecznego oraz jednocześnie brak trwałości w postaci nadmiernej degradacji środowiska może być barierą w rozwoju społecznym. Celem niniejszego opracowanie jest integracja obu koncepcji, jak również ocena rozwoju poszczególnych krajów poprzez zestawienie wskaźnika rozwoju społecznego z wybranymi wskaźnikami trwałości: skorygowanych oszczędności netto oraz śladu ekologicznego.

**SŁOWA KLUCZOWE:** rozwój społeczny, rozwój trwały i zrównoważony, ślad ekologiczny, wskaźniki trwałego rozwoju

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## Introduction

The concept of sustainable development is currently one of the main concepts of the long-term strategy of economic and social growth. It is understood as the need to preserve three types of capital, i.e., man-made, human and natural, treated as production factors forming the basis of human well-being for future generations (in accordance with the principle of intergenerational equity). At the same time, many authors point out that the concepts of well-being, quality of life and social justice need to be revised. One of the most important modern proposals is A. Sen's concept of human development. The purpose of this paper is to integrate these two concepts and to assess the sustainability of the achieved level of development of selected countries based on the indicators of Human Development Index (HDI), Adjusted Net Savings and Ecological Footprint.

## The concept of human development

On the basis of economic sciences the category of development is generally understood quite narrowly by identifying it with economic growth and the improvement of material well-being. Development economics as a separate discipline of economics, was founded in the late 1950s. The purpose of development economics is primarily the search for the answer to the fundamental question, why have some countries become rich while others remained poor<sup>1</sup>. The seriousness of these problems meant that in mainstream economics the issue of development is to a large extent reduced to the attempts to explain the sources and mechanisms of economic growth as measured by GDP.

Starting from the 1990s, a gradual evolution of the concept of „development” took place. According to R. Piasecki the contribution of the United Nations, which several prominent economists were linked to should be appreciated. The most important achievements of the United Nations in formulating development strategies may include strengthening the awareness that development cannot be limited only to economic growth, noticing the weight of social and environmental problems; noticing the negative role of poverty and misery, which, among others, are the elements of destabilization and base for terrorism<sup>2</sup> development. All of these lead to the paradigm of economic development being gradually replaced by the so-called human development paradigm.

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<sup>1</sup> *Ekonomia rozwoju*, scientific editor R. Piasecki, Polskie Wydawnictwo Ekonomiczne, Warszawa 2011, p. 15-16.

<sup>2</sup> *Ibidem*, p. 30.

The concept of human development is largely based on the ideas of A. Sen, a prominent economist and philosopher<sup>3</sup>, concerning equality, distributive justice and egalitarianism of human capabilities, as a measure of justice.

According to A. Sen the key is to distinguish between the results achieved from the ability to achieve itself. A person's social status may be assessed either by the reference to their actual achievements or to the freedom of being able to achieve. Achievements describe what we were able to come to, but the freedom to achieve involves our realistic chances of getting what we considered to be valuable<sup>4</sup>.

The concept of capability was used by A. Sen to create a more comprehensive theory of development, which was presented in his work *Development as Freedom*<sup>5</sup>. Development is primarily understood as a process of expanding freedom enjoyed by people, which contrasts with narrower approaches likening growth to GDP increase, industrialization, technological development and modernization of social life. The goal of this approach is to improve people's lives by broadening the scope of what people can do and who they can be, for instance, be healthy, well-nourished, educated, actively participate in community life. From this perspective, the development is the removal of obstacles such as illiteracy, poor health, lack of access to resources, or lack of civil and political freedom<sup>6</sup>. There is no denying that economic growth is important, however, development cannot be assessed solely on the basis of aggregated indicators of national income<sup>7</sup>.

A sizeable contribution to the concept of social development was also made by M. Nussbaum. In her works she refers to Aristotle's thought, including Aristotle's essentialism, by which we mean the notion that human beings have certain solid and common to all properties<sup>8</sup>.

M. Nussbaum is also critical of the dominant approach to the assessment of development measured on the basis of GDP per capita and utility theory only.

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<sup>3</sup> For his achievements in the field of economics, and in particular the theory of social choice, welfare economics and poverty research, he has received the Nobel Prize in 1998. The importance of A. Sen's concept for the development of economics has been presented in the article by S. Pressman and G. Summerfielda, *The Economic Contributions of Amartya Sen*, „Review of Political Economy” 2000 Vol. 12, No. 1. quotation: T. Kwarciński, *Równość i korzyść. Amartyi Kumar Sena koncepcja sprawiedliwości dystrybucyjnej*, Uniwersytet Ekonomiczny, Kraków 2011, p. 8.

<sup>4</sup> A. Sen, *Nierówności. Dalsze rozwiązania*, Społeczny Instytut Wydawniczy Znak, Kraków 2000, p. 46.

<sup>5</sup> A. Sen, *Development as Freedom*, Random House, Inc., New York 1999. Polskie wydanie: A. Sen, *Rozwój i wolność*, Wydawnictwo Zysk i S-ka, Poznań 2002.

<sup>6</sup> Por. S. Anand, A. Sen, *Human Development and Economic Sustainability*, „World Development” 2008 Vol. 28 No. 12, p. 2030-2033.

<sup>7</sup> Por. *ibidem*.

<sup>8</sup> M. Nussbaum, *Human Functioning and Social Justice: In Defense of Aristotelian Essentialism*, „Political Theory” 1992 Vol. 20 No. 2, p. 202-246, quotation: A. Głąb, *Rozum w świecie praktyki. Poglądy filozoficzne Marthy C. Nussbaum*, Wydawnictwa Akademickie i Profesjonalne, Warszawa 2010, p. 165.

In addition to lack of information about the distribution of income, there is also no information about goods, which are not always correlated with high levels of income, such as life expectancy, infant mortality, education, employment opportunities, political freedom, racial, and gender relations. South Africa in the apartheid era and Singapore governed by strict political regime could be suitable examples here. Countries such as Pakistan, Zimbabwe, Honduras had similar levels of GDP per capita (in 1997), but differed significantly in the level of illiteracy among women and their participation in income<sup>9</sup>. Also utility (expressed satisfaction) may not be an appropriate measure of development, as subjective feelings of people can be determined by social membership and inability to see other opportunities.

It is necessary to clarify the exact meaning of the concept of „cability”. M. Nussbaum believes that the starting point is the concept of human dignity and a life that is worthy of dignity – i.e. a life enabling a „truly human functioning” in the sense described e.g. by Karl Marx in his *Economic and Philosophical Manuscripts* (1844). M. Nussbaum tried to create a list of ten basic and universal human capabilities (central human capabilities) as a dignified life conditions<sup>10</sup>, however, it should be emphasized that each listed capability is a separate component and the lack of one cannot be compensated by the bigger amount of the other. According to M. Nussbaum capabilities are an adequate criterion of quality of life. Providing all people with at least the basic level of their fulfillment should be the main objective of government politics.

It is noteworthy that the list of central human capabilities of Nussbaum was also the subject of empirical research<sup>11</sup>. The results obtained have confirmed that capabilities have a significant influence on the subjectively perceived state of well-being. The introduction of control variables related to personality (personality has an impact on the perceived well-being), did not affect the main conclusions of the analysis<sup>12</sup>.

Sen's concept of human development is the basis for the definition of development adopted by the United Nations Development Programme (UNDP)<sup>13</sup>. UNDP has been preparing the annual Human Development Report (HDR) since 1990. The major HDR tool is the Human Development Index (HDI), which consists of sub-indices covering the three basic dimensions: a long and healthy

<sup>9</sup> M. Nussbaum, *Women and Human Development*, Cambridge University Press, 2001, p. 61.

<sup>10</sup> M. Nussbaum, *Capabilities as Fundamental Entitlements: Sen and Social Justice*, „Feminist Economics” 2003 No. 9(2-3), p. 40-41.

<sup>11</sup> P. Anand et al., *Capabilities and well-being: evidence based one the Sen-Nussbaum approach to welfare*, Social Indicators Research 2005 Vol. 74 No. 1, p. 9-55.

<sup>12</sup> Ibidem, p. 42.

<sup>13</sup> Human development is the expansion of people's freedoms and capabilities to lead lives that they value and have reason to value. It is about expanding choices. Freedoms and capabilities are a more expansive notion than basic needs. Many ends are necessary for a “good life,” ends that can be intrinsically as well as instrumentally valuable – we may value biodiversity, for example, or natural beauty, independently of its contribution to our living standards. UNDP, Human Development Report 2011, <http://hdr.undp.org/> [Date of entry: 15-08-2012].

life (measured by the ratio of the expected average life expectancy at birth), access to knowledge and education (measured by the average and expected number of years of education), and the standard of living (gross national income per capita at purchasing power parity), thus directly relating to the idea of A. Sen and M. Nussbaum's proposals.

## The problem of human development sustainability

It has been noted that the research on human development and the research on the sustainability of development are often intertwined. However, according to E. Neumayer, at a very basic level, human development is exactly what the proponents of sustainable and balanced development want to maintain<sup>14</sup>.

S. Anand and A. Sen noted the following in this connection: „*This has a terribly hollow ring if it is not accompanied by a moral obligation to protect and enhance the well-being of present people who are poor and deprived. If one thinks that people will be deprived in the future unless different policies are followed, then one is morally obliged to ask whether people are deprived right now. It would be a gross violation of the universalist principle if we were to be obsessed about intergenerational equity without at the same time seizing the problem of intragenerational equity: the ethic of universalism certainly demands such impartiality*”<sup>15</sup>.

It should be noted that the Human Development Report 2011 is largely devoted to the problems of reconciling human development with the need to preserve and protect the environment. The report mentions the notion of sustainable human development, similar to that of A. Sen, understood as the expansion of significant freedoms of the present generation and attempting, at the same time, to avoid serious breach of freedoms of future generations<sup>16</sup>.

However, it should be noted that the concern for future generations can be a hindrance to prosperity of those living today. On one hand, the increase in consumption today, poses a threat for future generations meeting their needs and aspirations. On the other hand, social development by improving health, nutrition, education, etc. contributes to the development of the so-called human capital. This will have its impact also in the future, for example through increased productivity and people's ability to generate bigger income. Therefore, human development can be an important means of ensuring sustainability. It is important to note that this is consistent with the modern theory of endogenous economical growth. The complicated relationship between the diversity of human development (at the international level and within the country) and sustainabil-

<sup>14</sup> E. Neumayer, *Human Development and Sustainability*, Human Development Research Paper 2010/5, UNDP, <http://hdr.undp.org/> [Date of entry: 15-08-2012].

<sup>15</sup> S. Anand, A. Sen, *Human Development and Economic Sustainability*, "World Development" 2008 Vol. 28 No. 12, p. 2038.

<sup>16</sup> *Sustainable human development is the expansion of the substantive freedoms of people today while making reasonable efforts to avoid seriously compromising those of future generations.*

ity were also analyzed by other authors<sup>17</sup>. It was found that there might be a reciprocal relationship between them – inequalities in human development cause lack of sustainability. At the same time lack of sustainability may contribute to an increase in inequalities. It is believed that these relationships are nonlinear. The narrow scope of this study does not allow for a broader discussion of the nature of these relationships.

It is important to note that the majority of these observations is not based on empirical studies, therefore they are of speculative nature. Empirical research is needed in this area.

Research also shows a clear correlation between the level of development (measured by HDI) and the so-called Index of Climate Hazard covering the risk of the sea levels rise and storm waves, extreme weather phenomena, and reduced productivity in agriculture. This means that countries with a low level of development will be the most affected by climate changes<sup>18</sup>.

The potential impact of environmental destruction on the issues of gender equality and women's rights should also be mentioned. Research shows a strong correlation between high levels of deforestation and the weakening of women's health, more housework and a reduced level of income. At the same time, it is acknowledged that there is a link between women's stronger position and reduced fertility in urban areas and a more sustainable use of resources in rural areas<sup>19</sup>. The weight of the problem is emphasized by the European Parliament draft resolution on women and climate change, which states that „in addition to other disastrous effects, climate change intensifies discrimination on grounds of sex.”<sup>20</sup>. As a justification, it was stated, among others, that women account for 80% of refugees and displaced persons, and their mortality rate in the case of a natural disaster is five times higher than for men.

## Human development in relation to selected indicators of sustainability

At operational level, the relationship between human development measured by HDI index and selected indicators of sustainability, especially *adjusted net savings*<sup>21</sup> and *ecological footprint*<sup>22</sup> is analyzed most often. It can be assumed that the adjusted net savings rate is an indicator of weak sustainability (allows

<sup>17</sup> E. Neumayer, *Sustainability and Inequality in Human Development*, Human Development Research Paper 2011/4, UNDP, <http://hdr.undp.org/> [Date of entry: 15-08-2012].

<sup>18</sup> P. E. Ehrlich et al., *Securing natural capital and expanding equity to rescale civilization*, "Nature" 2012 Vol. 486, p. 69.

<sup>19</sup> *Ibidem*, s. 71.

<sup>20</sup> <http://www.europarl.europa.eu> [Date of entry: 10-09-2012].

<sup>21</sup> Bank Światowy, <http://www.worldbank.org> [Date of entry: 10-09-2012].

<sup>22</sup> Global Footprint Network, <http://www.footprintnetwork.org> [Date of entry: 10-09-2012].

substitutions between different forms of capital), whereas ecological footprint is an indicator of strong sustainability.

According to E. Neumayer sustainability indicators should not be combined with development indicators (for example, by modifying HDI) so as to create a single indicator. Instead, they should be used complementarily to assess whether the achieved level of human development is sustainable<sup>23</sup>. Comparing the value of HDI and real net savings of selected countries, it was found that in 1998 countries with low and medium levels of human development were particularly vulnerable to the potential lack of sustainability. This does not only mean that it is likely that they will not be able to achieve a greater level of social development, but also will not be able to maintain it in the future<sup>24</sup>. New research confirms this conclusion<sup>25</sup>. In 2007, the countries with a very high level of human development met the condition of weak sustainability (positive value of genuine savings), primarily because of high investment in manufactured and human capital. On the contrary, lack of weak sustainability was characteristic for countries with medium or low levels of social development, especially the ones dependent on the extraction of their natural resources. In addition, all countries with a very high level of development did not meet the condition of strong sustainability (a given country's ecological footprint indicator per capita is higher than the world average value of biocapacity per capita)<sup>26</sup>.

In another study, a clear correlation between the increase of HDI and the increase of pressure on the environment was found by analyzing changes in HDI indicators and ecological footprint in the years 1975 – 2003<sup>27</sup>. As a necessary (but not sufficient) condition of sustainability of certain countries  $HDI \geq 0.8$  was adopted and the value of the ecological footprint to biocapacity ratio  $\leq 1$ . In 2003 out of 93 countries, only Cuba met both conditions.

Changes in the methodology of calculating HDI index<sup>28</sup> (since 2010) as well as new calculations of adjusted net savings (2009) and the Ecological Footprint (2007) provide an opportunity to reassess the sustainability of countries with different levels of development, as well as the relation between the indicators. Annex 1 shows the values of HDI, ANS (*adjusted net savings*), EF (*ecological footprint*) and the difference between the value of the ecological footprint of individual countries and the world average biocapacity per capita being equal to 1.8 of global hectares (EF-BC). Assessing the correlation between indicators a

<sup>23</sup> E. Neumayer, *The human development index and sustainability – a constructive proposal*, "Ecological Economics" 2001 Vol. 39, p. 102.

<sup>24</sup> *Ibidem*, p. 111.

<sup>25</sup> E. Neumayer, *Sustainability and Well-being Indicators*, UNU-WIDER Research Paper No. 2004/23, <http://www.wider.unu.edu/> [Date of entry: 15-08-2012].

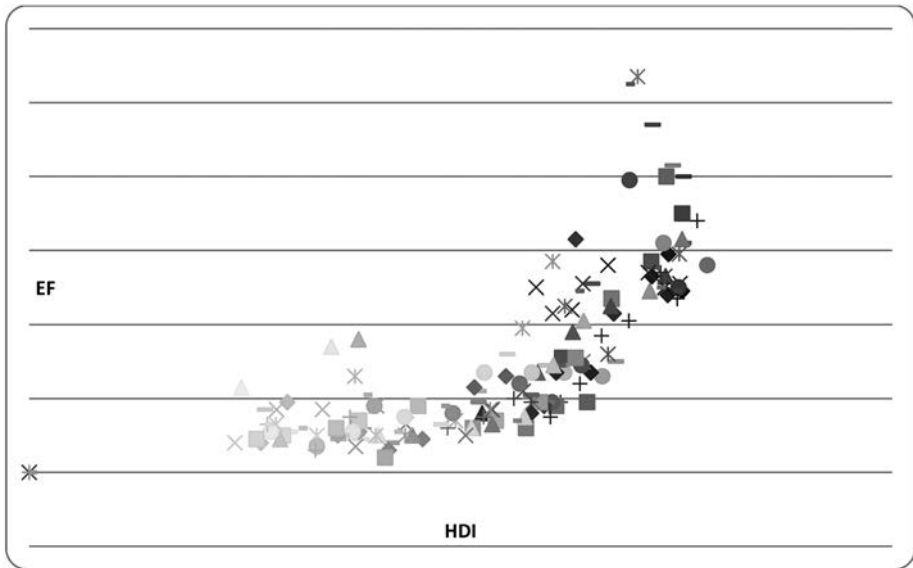
<sup>26</sup> E. Neumayer, *Human Development and Sustainability*, Human Development Research Paper 2010/5, UNDP, <http://hdr.undp.org/> [Date of entry: 15-08-2012], p. 13.

<sup>27</sup> D. Moran et al., *Measuring sustainable development – Nation by nation*, "Ecological Economics" 2008, Vol. 64, p. 470-474.

<sup>28</sup> <http://hdr.undp.org/en/statistics/hdi> [Date of entry: 15-08-2012].

Pearson's correlation coefficient was calculated which is 0,126 for HDI and ANS; 0,751 for HDI and EF. The values of HDI and EF are presented in Figure 1.

Figure. 1. Correlations between human development and pressures on the environment



Source: independent work based on: Program Narodów Zjednoczonych do spraw Rozwoju, <http://hdrstats.undp.org/> [Date of entry: 15-08-2012].

It can be concluded that there is a strong correlation between the level of human development and environmental pressure measured with the ecological footprint indicator. This relation is (roughly) exponential – HDI index increments result in an increasing demand for environmental goods. Simultaneously, there is no correlation between human development and the value of ANS.

Assuming that the necessary condition for strong sustainability is a positive value of EF-BC, whereas the condition for weak sustainability is a positive value of ANS, it can be said that almost all the countries included in the group of very high and high levels of human development do not meet the condition of strong sustainability, i.e. the demand for environmental goods exceeds regenerative capacity of the environment. At the same time, most countries in the group of medium and low human development level meet the condition of strong sustainability. The argument that the condition of weak sustainability is not met mostly in countries with a low level of development has not been proven. It is worth to note that several countries (United States, Ireland, Greece, Portugal) from the group of a very high level of human development do not meet the condition of weak sustainability. Probably the cause is the global financial crisis causing a significant decline in savings and investment. It is worth noting that these



countries do not meet the condition of strong sustainability either. Among other countries which do not fulfill both criteria are: Saudi Arabia, Trinidad and Tobago, Russia, Kazakhstan and Oman. All of them are characterized by the dependence on the exploitation of natural resources.

## Conclusion

The arbitrariness of the adopted indicators and their specific values is debatable, however, it clearly shows that progress in human development is made through greater use of natural resources, often greater than the ability of the environment to regenerate, thereby causing the degradation of the environment. The main challenge in the field of development policy is to break the relationship between the progress in human development and the use of the environment.

Two-sided nature of the relationship between human development and sustainability causes the need for these problems to be solved together. Actions directed exclusively on one of those areas may not be effective.

A promising direction of research would be the attempt to assess the correlation between the level of human development and the indicators used in the determination of the so-called *planetary boundaries*<sup>29</sup>. This will determine the extent to which human development of countries takes place within the so-called critical thresholds. Correlations in groups of countries with different levels of development may prove interesting.

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<sup>29</sup> J. Foley, *Bilans zdrowia Ziemi*, „Świat Nauki” 2010, No. 5, p. 50-53.