

PRACE NAUKOWE  
Uniwersytetu Ekonomicznego we Wrocławiu nr 308  
RESEARCH PAPERS  
of Wrocław University of Economics No. 308

# Quality of Life and Sustainable Development

edited by  
**Zofia Rusnak**  
**Katarzyna Ostasiewicz**



Publishing House of Wrocław University of Economics  
Wrocław 2013

Copy-editing: Agnieszka Flasińska

Layout: Barbara Łopusiewicz

Proof-reading: Barbara Łopusiewicz

Typesetting: Adam Dębski

Cover design: Beata Dębska

This publication is available at [www.ibuk.pl](http://www.ibuk.pl), [www.ebscohost.com](http://www.ebscohost.com),  
and in The Central and Eastern European Online Library [www.cceol.com](http://www.cceol.com)  
as well as in the annotated bibliography of economic issues of BazEkon  
[http://kangur.uek.krakow.pl/bazy\\_ae/bazekon/nowy/index.php](http://kangur.uek.krakow.pl/bazy_ae/bazekon/nowy/index.php)

Information on submitting and reviewing papers is available  
on the Publishing House's website  
[www.wydawnictwo.ue.wroc.pl](http://www.wydawnictwo.ue.wroc.pl)

All rights reserved. No part of this book may be reproduced in any form  
or in any means without the prior written permission of the Publisher

© Copyright by Wrocław University of Economics  
Wrocław 2013

**ISSN 1899-3192**

**ISBN 978-83-7695-394-6**

The original version: printed

Printing: Printing House TOTEM

## Contents

Preface.....	7
<b>Katarzyna Ostasiewicz:</b> Quality of life and sustainable development.....	9
<b>Arkadiusz Barczak:</b> Quality of life – subjective and intersubjective approaches .....	27
<b>Wolfgang Glatzer:</b> Worries and dissatisfaction. Structural challenges for future development .....	40
<b>Jennifer Gulyas:</b> Hopes and fears – components of subjective well-being ....	57
<b>Renata Tomaszewska-Lipiec:</b> Relations between work and life as a way to the sustainable development .....	69
<b>Katarzyna Czesak-Woytala:</b> Psychic welfare of Poles depending on their educational level in 2003–2011.....	83
<b>Danuta Bogocz:</b> The poor, the deprived, the excluded – how to measure peoples’ misfortunes.....	100
<b>Jolanta Perek-Bialas:</b> Quality of life in old age in the Central and Eastern European countries .....	113
<b>Hanna Dudek:</b> Equivalence scales for Poland – new evidence using complete demand systems approach .....	128
<b>Jerzy Śleszyński:</b> Synthetic sustainable development indicators: Past experience and guidelines .....	144
<b>Anna Doś:</b> Catastrophic risk financing models for sustainable development .	165
<b>Edyta Mazurek:</b> Measures of reranking of taxpayers in income distribution caused by the tax system .....	180

## Streszczenia

<b>Katarzyna Ostasiewicz:</b> Jakość życia a zrównoważony rozwój .....	26
<b>Arkadiusz Barczak:</b> Jakość życia – podejścia subiektywne i intersubiektywne .....	39
<b>Wolfgang Glatzer:</b> Obawy i niezadowolenie. Strukturalne wyzwania dla dalszego rozwoju .....	56
<b>Jennifer Gulyas:</b> Nadzieje i obawy – składowe subiektywnej jakości życia..	68
<b>Renata Tomaszewska-Lipiec:</b> Relacje praca–życie pozazawodowe drogą do zrównoważonego rozwoju .....	81
<b>Katarzyna Czesak-Woytala:</b> Wpływ wykształcenia na psychiczny dobrostan Polaków w latach 2003–2011 .....	99
<b>Danuta Bogocz:</b> Bieda, ubóstwo, wykluczenie społeczne – jak mierzyć ludzkie niepowodzenia .....	112

---

<b>Jolanta Perek-Bialas:</b> Jakość życia w starszym wieku w krajach Europy Środkowej i Wschodniej .....	127
<b>Hanna Dudek:</b> Skale ekwiwalentności dla Polski – nowe oszacowania uzyskane na podstawie kompletnych modeli popytu .....	141
<b>Jerzy Śleszyński:</b> Syntetyczne wskaźniki rozwoju trwałego i zrównoważonego – zdobyte doświadczenia i zalecenia na przyszłość .....	163
<b>Anna Doś:</b> Modele finansowania ryzyka katastroficznego na ścieżce rozwoju zrównoważonego .....	179
<b>Edyta Mazurek:</b> Pomiar zmiany kolejności podatkników w rozkładzie dochodów spowodowanej systemem podatkowym.....	188

**Katarzyna Ostasiewicz**

Wrocław University of Economics

---

## QUALITY OF LIFE AND SUSTAINABLE DEVELOPMENT

---

**Abstract:** Although most of scientists engaged in quality of life researches agree in many aspects of the definition of the very subject of their discipline, there are also many controversies. The main parting line divides objective and subjective definitions of quality of life, which, however, by many researchers are treated as complementary. Subjective indicators of quality of life, although better complying with the sense of well-being of individuals, are often difficult to be measured, because of cognitive and affective biases of humans. Objective indicators, although less inconvenient in finding their values, may seem to be arbitrary ones and require justification, possibly by implying their interdependence with subjective sense of quality of life. On the other hand, objective indicators are strictly connected with the definition of sustainable development: quality of life is a substantial part of the definition of sustainable development, while sustainability of development seems to be necessary for high quality of human life. This paper is a short review of the main concepts concerning quality of life and its relationship with sustainability of development.

**Keywords:** Quality of life; subjective indicators of QoL; objective indicators of QoL; sustainable development.

### 1. Introduction

In the age of a great specialization in science, many scientists have lost the supposed aim of their disciplines. Medicine cures diseases and organs instead of making human beings well, management tries to make people more efficient for organizations instead of evolving organizations toward being friendly for their workers, and economics focus on such indicators as GDP instead of taking care of how individuals are doing themselves.

However, the actual goal of most of people is just to live a good life.

What this “good life” means might be a quite controversial question. During centuries there were many different propositions within various philosophical and religious systems. Most of them, as Plato’s or all religious guidelines for a good life, were based on some normative ideals, differing from one system to another. Some of the outlines for a good life, however, stressed the subjective experiencing of life and personal satisfaction, like, to some extent, Aristotle’s concept of *eudaimonia*.

- Turner R.K. (Ed.), 1993, *Sustainable Environmental Economics and Management: Principles and Practice*, John Wiley & Sons, Chichester.
- Ubel P.A., Loewenstein G., Schwarz N., Smith D., 2005, Misimagining the unimaginable: The disability paradox and healthcare decision making, *Health Psychology*, vol. 24, pp. S57–S62.
- UN, 2012, *Millennium development goals report 2012*, <http://www.un.org/en/development/desa/publications/mdg-report-2012.html>.
- Van de Kerk G., Manuel A., 2008, A comprehensive index for a sustainable society: The SSI – the Sustainable Society Index, *Ecological Economics*, vol. 66, pp. 228–242.
- Victor P., 2008, *Managing without Growth: Slower by Design, not Disaster*, Edward Elgar Publishing, Cheltenham.
- Warr P., 1978, A study of psychological well-being, *British Journal of Psychology*, vol. 69, pp. 111–121.
- Wilkinson R.G., Pickett K., 2010, *The Spirit Level*, Bloomsbury Press, New York.

## JAKOŚĆ ŻYCIA A ZRÓWNOWAŻONY ROZWÓJ

**Streszczenie:** Choć koncepcja jakości życia i badania nad nią zyskują coraz większą wagę w nauce, wciąż nie ma pełnej zgody co do samej definicji tego pojęcia. Najważniejsza linia podziału przebiega pomiędzy definicjami subiektywnymi i obiektywnymi. Subiektywne określenia jakości życia, choć dobrze współgrają z poczuciem zadowolenia z życia jednostek, nastroczają wielu trudności pomiarowych. Dzieje się tak głównie z powodu rozmaitych obciążeń poznawczych i afektywnych, jakimi obarczone są odpowiedzi respondentów pytanych o subiektywną jakość ich życia. Ponadto, nawet subiektywne odczucia mogą dotyczyć albo satysfakcji z życia jako całości, albo chwilowego zadowolenia, przy czym w badaniach nie jest łatwo oddzielić te różne aspekty. Z drugiej strony, obiektywne wskaźniki jakości życia są łatwiejsze do zmierzenia, jednakże wydawać się mogą arbitralne, jeśli nie mają uzasadnienia w postaci jakiegoś odniesienia do subiektywnego dobrostanu. Pomimo możliwych zastrzeżeń, to właśnie obiektywne wskaźniki są lepszą podstawą formułowania wytycznych politycznych i jako takie stały się częścią definicji zrównoważonego rozwoju. Jakość życia, obecnego i przyszłych pokoleń, jest zarówno punktem wyjścia określenia, w jaki sposób powinien dokonywać się rozwój, jak i celem takiego zrównoważonego rozwoju. Niniejszy artykuł jest krótkim przeglądem koncepcji związanych z subiektywnymi i obiektywnymi określeniami jakości życia, trudnościami z nimi związanymi oraz współzależnościami z koncepcją zrównoważonego rozwoju.

**Słowa kluczowe:** jakość życia, subiektywne wskaźniki jakości życia, obiektywne wskaźniki jakości życia, zrównoważony rozwój.

In today's world and within the discourse of secular science it is rather agreed that the well-being should be defined as an individual-centred concept, not a normative one. Although some researchers shrink from using the notion of "happiness" within the discourse of pure sciences, preferring "well-being" or "quality of life" to it, in fact, these two latter are often considered as more quantifiable counterparts of the former.

Giving up a naive enthusiasm about the economic growth that turned out not to be a panacea for all the evil of the world, there has arisen an urgent need of defining human well-being and of interdisciplinary studies concerning both factors that improve human well-being and ways of promoting them.

Quality of life researches, being in fact not a distinct discipline of science, are an interdisciplinary branch of investigations, characterized rather not by a field of researches but by the goal which is making people live and feel better.

The preliminary goal of quality of life researches is to define or at least to particularize the subject of these researches.

## **2. Objective and subjective measures of quality of life**

Within scientific discourse (at least within pure sciences) each quantity should be defined in terms of measurements by which it is or it might be measured. As for the quality of life there are two predominant paradigms of quantifying. One of them consists in asking people directly about their quality of life, either in general or in specific aspects separately, and either about positive or about negative feelings. The other one assumes a certain degree of knowledge about universal human nature and human needs and measures some environmental quantities that are supposed to influence (or even determine) one's quality of life. Each approach has its shortcomings and advantages.

As such notions as "quality of life" or "well-being" have existed in a common language much longer than the attempts of quantifying them, it would be reasonable if scientific definition captured the basics of common intuitions concerning them. For example, so-called common-sense would probably agree that it is better to live without pain than suffering serious ache; and that it is better not to bury own children deceased because of hunger. Such intuitions should be in correspondence with formal definitions and indicators of the quality of life. From this point of view both subjective and objective indicators suffer sometimes from possible inconsistency with reasonable presumptions. For example, is it right to equalize quality of life of two persons who declare that they are "very happy" (the same subjective indicator of the quality of life): one because he won one million dollars and the other one because he managed to survive and take away from the zone of civil war? On the other hand, is it justified to ignore clinical depression reported by someone who is rich and physically well?

The coarse correspondence between subjective and objective indicators of the quality of life may be postulated basing on the knowledge of the general structure of human mind and needs. For example, Maslow's hierarchy of needs imposes a structure of individual's level of satisfaction, which may be used as a proxy for determining the quality of life. Still, one may argue against such a theoretical linkage between personal experiencing of life and estimation of its quality as unnecessary theoretical impedimenta, as an individual is an ultimate expert to evaluate the quality of his/her own life. On the other hand, for comparison and goals of policy making a more objective tool of measuring quality of life is needed.

Subjective and objective indicators of the quality of life, their advantages and shortcomings, will be examined more detailed in the following sections. The problems of objective, subjective and inter-subjective approaches to QoL are discussed also by A. Barczak [2013] in this volume.

### **3. Subjective indicators of the quality of life**

It may seem most natural to let individuals evaluate themselves quality of their lives, by simply asking them, how well they are (or, investigating the "dark side of quality of life", how bad they are, see W. Glatzer [2013], and J. Gulyas [2013] in this volume).

One of possible discrimination of subjective quality of life components is to distinguish cognitive and affective aspects of well-being [Andrews, Whitey 1976]. Satisfaction of a life as a whole refers to cognitive-judgmental aspects of life and is strongly embedded in convictions and values of individuals. On the other hand, there are also affective aspects of well-being, that is, positive and negative affects. These cognitive and affective aspects of the quality of life have not, in general, to be strongly correlated [Diener et al. 1985; Larsen et al. 1985]. It is also possible to assess one's subjective quality of life with regard to his/her preference either to pleasure or to satisfaction, cf. also R. Tomaszewska-Lipiec [2013] in this volume.

There are many tools to measure satisfaction of life, and some of them may be shown to have reliable psychometric properties [Diener et al. 1985]. As an example let us cite one of the simplest questionnaires, that is, Personal Wellbeing Index-Adult (PWI-A) [International Wellbeing Group 2006]. Respondents are asked a question: "How satisfied are you with your life as a whole?" In more detailed version of this tool, the question regarding satisfaction of life is decomposed into eight domains of life.

Within the whole abundance of similar indexes, single-item and multi-items measures can be distinguished. As for single-item measures – one question is supposed to capture the satisfaction of the life as a whole. Despite their obvious advantages – to mention only simplicity of use and short time of investigation – they are also criticized (e.g. [McKennell 1974], starting from objection of oversimplifying. Still, they are in use. Besides single-item version of PWI-A, mentioned above,



another frequently used example is Cantril's "Self Anchoring Ladder" [Cantril 1965]. Regardless of their good psychometric properties, e.g. temporal reliability [Palmore, Kivett 1977], single-item measures neglect information on components of which subjective well-being is composed [Diener 1984]. Thus, multi-item indexes are constructed. Examples of such are multi-item version of PWI-A [International Wellbeing Group 2006] or Diener, Emmon, Larsen and Griffin Satisfaction with Life Scale [Diener et al. 1985].

There is another group of subjective well-being indexes that concentrate on affective side of life experiencing. Some of such indexes are single-item, as for example Gurin Scale [Gurin et al. 1960] or "Delighted-Terrible Scale" proposed by F.M. Andrews and S.B. Withey [1976]. However, affective measures of well-being have to face the fact that – as it had been observed long time ago – positive and negative effects are independent and do not necessarily correlate [Bradburn 1969; Harding 1982; Warr 1978]. Some single-item measures try to seize that fact by asking about positive affects but allowing explicitly negative answers (like "Delighted-Terrible Scale" in which for a question "how happy you feel about how happy you are" respondents choose from the scale ranging from "delighted" to "terrible" [Andrews, Whitey 1976]). However, within multi-item scales the questions about positive and negative effects may appear separately, e.g. like within Affect Balance Scale proposed by N.M. Bradburn [1969].

There are also indexes that aiming to capture all three aspects of subjective quality of life (that is, satisfaction, positive and negative effects) are composed of items pointing at all these three directions, as, for example, Dupuy Well-Being Schedule [Dupuy 1978] (as cited in [Diener 1984]).

Although it is not accessible in such a short paper to overview the whole abundance of proposed measures of subjective well-being and to discuss all their advantages and shortcomings, let us mention a few chosen difficulties that encounters basing on respondents' answers while judging their quality of life.

*Cultural/class/personality bias.* There has been by now a century of discussions over cultural bias of IQ tests, still inconclusive (see, e.g., [Gould 1996]). Similar objections may be raised with regard to well-being questionnaires. Let us quote four questions which respondents are asked within Bradburn Affect Balance Scale [Bradburn 1969]: "During the past few weeks, did you ever feel: so restless that you couldn't sit long in a chair?/on the top of the world?/proud because someone complimented you on something you had done?/remote from other people?" There are two main objections that may be raised here. The first is the very language and manners in using it. Although Polish word *szczęście* is translated into English as "happiness", there are differences between use of them in Poland and in the USA. For Polish people, Americans "overuse" the word "happiness", being happy of too trivial causes, sometimes being even "more than happy", while for Polish people, *być szczęśliwym* still seems to be the best accessible state of mind. Also, the former two of quoted questions may be difficult to translate in terms of a given country

realities (“sitting long in a chair” in the poor countries, where not all the citizens have furniture). Even if a researcher manages to overcome difficulties with different connotations of seemingly corresponding words, there still remains the matter of cultural values [Costanza et al. 2007; Diener, Suh 1997; Felce, Perry 1995]. For example, in some cultures feeling proud is not a desirable state of mind, while in some being remote from other people does not seem so catastrophic as in others [Diener, Suh 1997]. Additionally, there are studies which point out that throughout different cultures even the dependence between two mentioned above dimensions of subjective quality of life, namely, cognitive and affective, may strongly differ. It turned out that hedonic balance was a stronger predictor of life satisfaction in individualistic (e.g. the United States) than in collectivistic (e.g. Japan) cultures [Schimmack et al. 2002].

*Adaptation.* It has been observed that although the sense of well-being generally correlates with the wealth within a given society (e.g. [Andrews (Ed.) 1986] or a recent study of D. Kahneman and A. Deaton [2010]), the increase of total wealth of this society does not affect the average sense of well-being [Inglehart, Rabier 1986; Maddison 1991]. That has been called an Easterlin Paradox [Easterlin 1995] and is commonly explained by adaptation, expectations (habit formation) [Easterlin, Crimmins 1991; Rainwater 1990] and the relative nature of the perception of individual’s wealth [Hopkins 2008]. Analogous phenomena of adaptation have been observed with reference to other domains of life and the sense of well-being. For example, there is much evidence that even people with serious handicaps (e.g. paraplegics) reveal, after some period of adaptation, unexpectedly high mood, close to the mood reported by healthy people [Brickman et al. 1978; Riis et al. 2005; Ubel et al. 2005]. On the other hand, such favourable experiences as winning the lottery or moving to better climate, improve perceived quality of life only in the short run [Brickman et al. 1978; Kahneman 2011]. Even without taking into account the fact that adaptation is never complete and universal [Lucas 2005], it would not be desirable to state that taking care of people’s health does not matter, as they can be happy in all circumstances. Both healthy and ill persons declare that it is better to be healthy and this fact has to be taken into account besides subjective moods of examined people. Likely, it would not be proper to neglect the problem of poverty, victimization, etc., despite the fact that people whose circumstances and options make them having low expectations may report satisfaction of the situation intolerable for the majority [Felce, Perry 1995; Flynn 1989].

*Measuring – priming effect etc.* This problem of measuring subjective well-being concerns both life satisfaction and affects, but the latter to a higher degree. First, there is a probability that an individual places himself/herself on a scale (e.g. Cantril’s ladder [Cantril 1965]) basing on the individual scale, calibrated according to own worst and best experiences. Moreover, the memory of people asked how did they feel during the last week or any given period is greatly deceptive. Here the huge role play the so-called priming effect and affect heuristics [Kahneman 2011; Schwarz et al.

1991; Strack et al. 1988]. Both of them consist in dependency of the judgments (also regarding estimation of own affects) on events directly preceding giving answers, either events in reality or those bringing some memories into mind. For example, there has been observed either high or zero correlation between reported quality of a certain domain of life and the overall satisfaction – depending whether the question regarding this certain domain of life has been asked before or after the question about the overall satisfaction [Strack et al. 1988]. To avoid this last problem it is partially helpful to use such methods as Experience-Sampling Method [Hektner et al. (Eds.) 2006; Larson, Csikszentmihalyi 1983], Ecological Momentary Assessment [Stone et al. 2003], or Day Reconstruction Method [Kahneman, Krueger 2006; Kahneman et al. 2004], which take aim at probing of reconstructing experiences just after their appearances, which makes them less prone to distortions of the memory. However, such methods are money- and time-consuming, thus, may be unhandy in most of situations.

Last but not least, although one may agree that each individual is the ultimate authority to value his/her well-being, investigating the quality of life should be not simply an academic exercise but rather a research which will help to develop and introduce some policies that will improve well-being of people. However, the vision of influencing human mental states directly is both unrealistic by now and undesirable by the majority (see, for example, *Nineteen eighty-four* by George Orwell or *Brave new world* by Aldous Huxley). Thus the more practical goal to be formulated is to influence the living standards of people such as to maximize the probability of achieving personal goals and subjective sense of well-being. And this leads us to objective indicators of the quality of life, supposedly, correlating with subjective sense of a good life.

#### 4. Objective indicators of the quality of life

Regarding all difficulties with constructing and applying subjective measures of well-being, some objective indicators may appear more convenient and more useful from policy makers' point of view. There are many sets of indicators that are regarded by different authors as relevant (e.g. [Campbell 1981; Flanagan 1978; Lehman 1988]). Mostly, it is (*explicite* or *implicite*) assumed that such objective factors influence subjective satisfaction of life (e.g. [Allen et al. 1985; Felce, Perry 1995]). For example, an analysis of a relationship between happiness (subjective) and education level (objective) for Polish people is performed by K. Czesak-Woytala [2013] in this volume.

However, it appears that inter-correlations between quality of life measures are higher within the groups (subjective and objective) than between these groups [Cummins 2000]. Moreover, there are also studies which suggest that (objective) quality of life and subjective satisfaction are not strictly connected and subjective well-being is dependent more on internal disposition than on external conditions

[Costa et al. 1987; Edgerton 1990; Lazarus, Lannier 1979]. Thus, some researches try to discern these two perspectives on quality of life, as defined via external conditions and as defined in terms of subjective evaluation, integrating them as irreducible components of the overall quality of life [Borthwick-Duffy 1992].

In this section we will concentrate on objective indicators of the quality of life.

Most of them are non-controversial, however, the relative importance of various ones may be discussed, e.g. [Felce, Perry 1995]. Inclusion of some indicators to the set of determinants of the quality of life bases either on so-called common sense or on particular psychological theory. As to the former, it is commonly supposed that it is better not to suffer physical pain than to suffer. However, in principle, that may be questioned by some philosophical or religious doctrines, which brings up questions regarding normative ideas. Thus, it may seem more scientific not to refer to what “everybody knows”, but rather to *define* well-being as such an existence which complies with a specific psychological theory of well-being. Probably the best known such a theory is Maslow’s hierarchy of needs [Maslow 1943], which precisely defines a ladder leading from bad to good quality of life. Still, there are different psychological theories and there is no time, especially for policy makers, to wait until a consensus concerning the precise scientific hierarchy of the human needs will emerge. Thus, in the field of the quality of life researches as well as within political discourse, some aspects of human life are regarded as important for the quality of life within explicit justification of such a choice. For example, the concept of poverty line is widely accepted and applied while discussing the quality of life. A few such concepts of poverty, deprivation and social exclusion are used by Bogocz [2013] here in this volume to investigate the quality of life of citizens of various Polish voivodeships. J. Perek-Białas [2013] investigates the quality of life in old age, using some objective indicators as defined by WHO. Also, H. Dudek [2013] considers here equivalence scales to be applied to families’ incomes that allow better estimation of some material aspects of well-being.

Below, we will discuss briefly some problems that are connected with the use of objective indicators of the quality of life.

*The very use of objective measures.* First of all, if we do not want to make a distinct discrimination between quality of life (objective) and well-being (subjective), and treat them as completely independent dimensions of life’s condition, one may rise an objection that human well-being is only weakly dependent on external circumstances, relying mainly on internal disposition and willpower, as claimed by some fashionable encouraging psychologists, e.g. W.W. Dyer [2001] or J. Kabat-Zin [2005]; more rigorously by scientific psychologists, e.g. D. Gilbert [2006] (raising an issue of the so-called *impact bias*) and other researchers, whose experiments were mentioned before in the context of subjective measures [Brickman et al. 1978; Riis et al. 2005; Ubel et al. 2005]. However, this independence on environment is neither complete nor related to both cognitive and affective satisfaction of life. There are obviously at least two stimuli which are not subjected to habituation phenomena,

namely, pain and noise [Kahneman 2011] (e.g. it would be difficult for a person with chronic pain to obtain a positive hedonic balance). Moreover, such a disposition would too easily absolve policy makers' from indolence. Last but not least, even in cases when adaptation takes place, this process may take painful years, which should not be too easily disregarded. However, even if assuming some relation between objective circumstances and subjective well-being, there is another difficult and controversial task of identifying such external factors.

*A selection of objective measures.* There are four main sources of hints which factors are essential for human's well-being. Some main objective indicators are based on human rights. Violating human rights is basically considered as lowering well-being. Such a source of quality of life measures may be regarded as, at least partially, normative. The three of the remaining sources are mainly based on the dependence of perceived quality of life on environmental factors. First, most traditional and easy in use is the co-called "common sense." Most of people would agree that no pain, having enough food and having someone to love promote the sense of well-being. For example, good health is rather unquestionable (also in practice of policy making) as an indicator of high quality of life. However, such common intuitions may be misleading. Thus, in general, statistical analysis of data concerning objective indicators and subjective well-being is performed. The results do not necessarily support intuition. For example, there is an intriguing and not completely clear connection between wealth and well-being (e.g. [Duncan 1975; Kahneman, Deaton 2010; Smith et al. 1994]), and the results of analysis seem to contradict both versions of simple intuition ("money can buy happiness" vs "money can't buy happiness"). Even more surprising are the results of the studies showing that having children decreases parents' happiness [Alesina et al. 2004], and life satisfaction [Di Tella et al. 2003]. (However, let us mention the very likely possibility that the quality of life of people without children who are willing to have descendants would be even lower than those with children.) Recently, strong evidence appeared that living in highly unequal society significantly lowers the quality of life [De Vogli et al. 2005; Wilkinson, Pickett 2010], however, there are also contrary traces [Lynch et al. 2001; Osler et al. 2002]. The identification of factors influencing either non-controversial objective indicators of the quality of life (health, life duration) or subjective perception of well-being is a task for researchers within the field of QoL investigations. The third source that may throw light on influence of external factors and well-being is neuroscience, namely, functional neuroimaging. This kind of data is most difficult and most expensive to obtain. Still, scientists were able to prove that, for example, cooperation activates neural *reward system* and behaviours considered as unfair (during ultimatum game) activate *bilateral anterior insula*, associated with negative emotional states [Sanfey et al. 2006]. Finally, let us mention another problem concerning the choice of objective QoL indicators. Namely, there exist some indirect indicators of the quality of life, which are often used, also in popular media, but may appear to be of the opposite nature under different circumstances.

For example, low divorce rate in the society may indicate the happy marriages (high quality of life) or prohibitively high (for women) cost of divorce (low quality of life) [Dasgupta 2000]. The same problem may concern suicide rate or fertility rate.

Even if we reached the consensus about the actual choice of a set of QoL indicators, there would still be a problem of choosing weights. Namely, if one does not want to deal with a (sometimes quite rich) set of indicators, they have to be aggregated in one way or another to obtain one, synthetic indicator of quality of life, convenient especially in practice of policy makers. The same problem, whether to aggregate or not, and how, concerns indicators of sustainable development, which will be mentioned below and is discussed by J. Śleszyński [2013] in this volume. Moreover, there are also objections raised as to the reliability of some objective indicators of QoL. For example rape incidents are underreported to the police as well as infant mortality in countries, where babies are born at home [Diener, Suh 1997]. Last but not least, it is worthwhile to cite R. Costanza stating that “there are no completely ‘objective’ measures because QoL is by its very nature a normative, subjective concept” [Costanza et al. 2007].

In spite of all controversies as regarded to adequacy of objective measures of the quality of life, their reliability, selection of a given set and weights put on each one of this set – there seems to emerge among quality of life researchers a consensus about certain domains of life essential for its high quality.

Making an impressive effort to “order chaos” (see the title of the paper, *The domains of life satisfaction: An attempt to order chaos*), R.A. Cummins [1996] has overviewed over 1500 papers on QoL and has assigned appearing terms to seven grouping categories, called “domains of life satisfaction.” They are: material well-being, health, productivity, intimacy, safety, community, emotional well-being. R. Costanza et al. [2007] present a similar list of domains, calling them “needs,” assigning each of them types of inputs needed to satisfy these needs. Among those types of inputs are natural, social, human and build capital, and time.

Adopting concept of needed inputs for domains of life satisfaction listed above, one can see that natural capital is an input needed for sure for health and, maybe, for emotional well-being. However, it may be claimed that in a long term natural capital is needed also for material well-being or even for the very existence of human race. This leads us to the connection between quality of life and sustainable development. This connection is stressed also by R. Tomaszewska-Lipiec [2013] in this volume.

## 5. Sustainable development

The term “sustainable development” (SD, in what follows) came into use in 1987 after publication of Brundtland Commission’s report on the global environment and development. SD was defined there as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” [Brundtland Commission 1987]. There are two different philosophical

backgrounds of sustainable development movement. The one predominant within political discourse is based on awareness of the fact that satisfying human needs depends on the state of the natural environment. The other one refers to the moral value of the nature itself and is connected with the so-called *deep ecology* (the term coined by A. Naess [1973]) which states that true value of nature is intrinsic and independent of its utility. Somewhere between these two approaches, “utilitarian” and “based on values,” there is a standpoint that communion with the nature is in fact one of the essential human needs, either emotional or spiritual, that goes beyond satisfying simply material needs. Thus, the questions of sustainable development are tightly connected with questions of quality of life researches domain. This connection is often expressed explicitly, like by J. Agyeman et al. [2003], who define SD as dictated by “the need to ensure a better quality of life for all, now and into the future.”

The area of SD researches is quite heterogeneous. Besides different philosophical background mentioned above, there are two different concepts of sustainability: weak and strong, see e.g. [Cabeza-Gutes 1996; Hartwick 1977; Neumayer 2010; Solow 1974]. The strong sustainability requires preserving natural capital while weak sustainability allows for replacing natural with human-made capital. Thus, the latter apparently refers to utilitarian background of SD, while the former either to the one based on inner value of nature or to utilitarian, but skeptical with reference to technological possibilities. The very definition of SD is unambiguous, as we will see later. Sustainable development is a relatively new-coined term. As such, it is, on the one hand, easier to define – there are no restrictions according to intuitions connected with some pre-existing common expression (as it was the case of “quality of life”). On the other hand, the lack of such a basis allows for more arbitrariness in defining, which could potentially result in overwhelming diversity.

Although the explicit concept of SD is relatively young, it may be considered as pre-existing in both common and scientific consciousness. The modern ecological movement was born in the middle of the previous century, the time of publishing *A silent spring* by Rachel Carson and the Chief Seattle Speech creating a furor in the United States. During a few decades, from the popular culture (or even subculture) ecological feelings made their way into the mainstream of scientific and political discourse. Today, guidelines towards sustainable development have become an inherent part of policy in European Union countries [Eurostat 2011]. SD is an irremovable constituent of the Millennium Development Goals adopted by United Nations to be achieved by 2015 [UN 2012].

## 6. Indicators of sustainable development

The term “sustainable development” at the very first moment is most frequently associated with ecology. Handbooks of SD are usually illustrated on their covers with some pictures of trees or – to emphasize the expected effect of omission – dried

and chapped soil. However, sustainable development concerns some important social and strictly economic questions as well. Together with defining, there comes a question of measuring and constructing proper indexes of SD.

The European Union uses more than 100 indicators to monitor the EU Sustainable Development Strategy [Eurostat], grouped into 10 themes, and eleven indicators have been identified as headline ones. The themes cover both social and environmental questions. However, the choice of this particular set of indicators is definitively not a unique one. There exists a plenty of possible sets of “proper” indicators, e.g. [Bell, Morse 2008; King et al. 2000].

Besides the choice of issues that come into play while speaking about sustainable development (which may be considered as a question of defining SD itself) there is another problem of either dealing with some bunch of indicators or to construct the synthetic indicator [Ebert, Welsh 2004]. As the advantages of having one synthetic measure are very tempting, in spite of many controversies around the very concept there are still attempts to construct some aggregate measures of SD, using such diverse methods as weighted averages, based on fuzzy logic or principal component analysis and others [Esty et al. 2005; Hak et al. 2007; Hosseini, Kaneko 2011; Ostasiewicz 2012; Phillis et al. 2011; Van de Kerk, Manuel 2008]. The problems of why, what and how to aggregate are discussed also in this volume, see J. Śleszyński [2013].

Roughly speaking, all SD indicators may be divided into three groups with regard to their main concern. First of all there are “ecological” indicators. Part of them are intended to measure the state of natural resources, the other part – a progress toward this aim. For example, within EU SD indicators there is a “common bird index” (ecological diversity, a goal itself), and, on the other hand, “greenhouse emission,” the low level of which is not a goal itself but rather a way to achieve a slowdown of the climate changes. The second group of indicators constitute “social” indicators which are apparently related to the quality of life indicators, at the level of whole societies rather than individuals’ one, which is frequently taken into account within the framework of QoL studies. These indicators are for example life expectancy at birth, social inclusion or employment rate of older workers – which relate more to today’s quality of life than to future perspectives. The third group of SD indicators involves strictly economic ones. Some aspects of economic side of sustainable development are discussed by A. Doś [2013] in this volume. Also, E. Mazurek [2013] investigates here some questions of fairness of taxation systems. From all indicators, those concerning economic of SD raise most controversies.

Generally, disagreement about proper indicators of SD has three sources. First, what is the actual goal of SD. Second, how to achieve this goal. And third, how to properly measure approaching the goal.

*Goal.* The first root of disagreement has been already mentioned, while speaking about the precise definition of sustainable development. Depending on philosophical and ethical background one may put emphasis on the utilitarian or



inner value of natural environment. However, even if we agree to accept definition given by Brundtland Commission, which explicitly puts emphasis on the human part of this puzzle, there may be still a trade-off between needs of the present and of the future. Thus, everybody addressing sustainable development has some, most frequently implicit, “discount rate” to be applied while regarding gains and losses of some politics. R.B. Howard and R.B. Norgaard [1992] state this problem explicitly, presenting the area of “Utility of Future Generations” vs “Utility of Current Generation” and giving some models of development. Still, it is controversial how to weigh the future utility, which is essential matter while tending to maximize joined utility of present and future generations. The trade-off between present and future may appear even more troublesome. Let us mention one of the (rather provocative) statements. Future welfare is increased by raising current savings. As rich people have higher propensity to save than poor, it would be beneficial – from the point of view of the future welfare – to redistribute the income from currently poor to rich [Neumayer 1999]. Aside from such (rather ridiculous) examples one has to face more difficult cases of developing countries (e.g. [Panayotou 1993; 98]).

*Achieving goal.* Neoclassical theory seems to treat technological progress as a valid tool to enable unlimited economic growth; there are even concepts of exploring the resources of the cosmic space to satisfy demand for energy of the human race (type II, and beyond, civilizations, in Kardashev scale). However, some believe that the goal outlined by the SD definition can only be achieved by drastically changing our growth-based economic system. There exists within economics an influential stream which questions the possibility (or even desirability) of substitutability of natural capital. Such a position is taken by the adherents of ecological economics (with expressive term of *steady-state economy*), see e.g. [Costanza 1991; Daly 1991; Victor 2008]. The controversy on this line refers to the difference between weak and strong sustainability of development, mentioned above. The differences in point of view regarding this very fundamental question inevitably influence the opinions how to proceed to ensure proper life conditions to our successors, and thus some indicators may have quite different significance for adherences of this different standpoints.

*How to measure.* The most controversial SD indicators are those which relate to economic growth. Although the EU uses the “growth rate of real GDP *per capita*” as one of headline indicators to monitor progress toward development goals [Eurostat], this is dictated rather by convenience (and data availability) than its well-grounded justification as a proper measure of real development. The argumentation concerning inadequacy of GDP is well known. GDP and GNP are critiqued e.g. for not taking into account the household labour and the welfare loss due to environmental degradation (hidden costs of current production), and considering so-called “defensive expenditures” as a contribution to welfare [Neumayer 1999]. To correct these shortcomings, another indexes have been constructed, e.g. ISEW (Index of Sustainable Economic Welfare) [Daly, Cobb 1989] and its followers – GPI (Genuine Progress Indicator) [Redefining Progress 1995] and SNBI (Sustainable Net Benefit

Index) [Lawn 2000]; or GSDP (Gross Sustainable Development Product) [European Communities 2009]. However, each of these alternative propositions is also subjected to substantial critique. In particular, each one of them may be regarded as politically or ideologically biased, e.g. [Neumayer 1999].

The problems of constructing SD indicators are also discussed here in this volume, see J. Śleszyński [2013].

## 7. Summary

Quality of life studies gain recently more and more attention, both among scientists and policy makers/popular culture. As a domain of science, QoL researches are strictly connected with rather ethical or philosophical than scientific concepts, like values and human rights. Within a given constraint of accepted definition of what good life means, there is a need for measuring the level of life quality. This is an inevitable practical question which will allow for formulating and evaluating changes in policy. Although there is no unanimous decision how to define and, what follows, to measure quality of life, there are many common points in this variety of views. Obviously, to satisfy many (or most, if not all) of human needs there is a need for preserving natural environment which supplies humans with both material and more unsubstantial goods. From this ascertainment a movement of sustainable development arises. This kind of development is roughly defined as such a governance of this ultimate common pool which is the whole Nature, as to satisfy needs of present-day people, and enable future generations to satisfy their own needs as well.

The papers collected in this volume constitute a contribution to studies on the quality of life and sustainable development problems.

## Literature

- Agyeman J., Bullard R.D., Evans B., 2003, *Just Sustainabilities: Development in an Unequal World*, The MIT Press, Cambridge, MA.
- Alesina A., Di Tella R., MacCulloch R., 2004, Inequality and happiness: Are Europeans and American different? *Journal of Public Economics*, vol. 88, pp. 2009–2042.
- Allen H.M., Bender P.M., Gutek B.A., 1985, Probing theories of individual wellbeing: A comparison of quality-of-life models assessing neighbourhood satisfaction, *Basic and Applied Social Psychology*, vol. 6, pp. 181–203.
- Andrews F.M. (Ed.), 1986, *Research on the Quality of Life*, University of Michigan Press, Ann Arbor.
- Andrews F.M., Whitey S.B., 1976, *Social Indicators of Well-being: America's Perception of Life Quality*, Plenum, New York.
- Barczak A., 2013, Quality of life – subjective and intersubjective approaches, [in:] Rusnak Z., Ostasiewicz K. (Eds.), *Quality of Life and Sustainable Development*, Research Papers of Wrocław University of Economics no. 308, Publishing House of Wrocław University of Economics, Wrocław.

- Bell S., Morse S., 2008, *Sustainability Indicators: Measuring the Immeasurable?* TJ International, Padstow.
- Bogocz D., 2013, The poor, the deprived, the excluded – how to measure peoples' misfortunes, [in:] Rusnak Z., Ostasiewicz K. (Eds.), *Quality of Life and Sustainable Development*, Research Papers of Wrocław University of Economics no. 308, Publishing House of Wrocław University of Economics, Wrocław.
- Borthwick-Duffy S.A., 1992, Quality of life and quality of care in mental retardation, [in:] Rowitz L. (Ed.), *Mental Retardation in the Year 2000*, Springer-Verlag, Berlin.
- Bradburn N.M., 1969, *The Structure of Psychological Well-being*, Aldine, Chicago.
- Brickman P., Coates D., Janoff-Bulman R., 1978, Lottery winners and accident victims: Is happiness relative? *Journal of Personality and Social Psychology*, vol. 36, pp. 917–927.
- Brundtland Commission, 1987, *Our Common Future*, Oxford University Press, Oxford.
- Cabeza-Gutes M., 1996, The concept of weak sustainability, *Ecological economics*, vol. 17, pp. 147–156.
- Campbell A., 1981, *The Sense of Wellbeing in America*, McGraw Hill, New York.
- Cantril H., 1965, *The Pattern of Human Concerns*, Rutgers University Press, New Brunswick, NJ.
- Costa R.T., McCrae R.R., Zonderman A.B., 1987, Environmental and dispositional influences on wellbeing: Longitudinal follow-up of an American national sample, *British Journal of Psychology*, vol. 78, pp. 299–306.
- Costanza R. et al., 2007, Quality of life: An approach integrating opportunities, human needs, and subjective well-being, *Ecological Economics*, vol. 61, pp. 267–276.
- Costanza R., 1991, *Ecological Economics: The Science and Management of Sustainability*, Columbia University Press, New York.
- Cummins R.A., 2000, Objective and subjective quality of life: An interactive model, *Social Indicators Research*, vol. 52, pp. 55–72.
- Cummins R.A., 1996, The domains of life satisfaction: An attempt to order chaos, *Social Indicators Research*, vol. 38, pp. 303–328.
- Czesak-Woytala K., 2013, Psychic welfare of Poles depending on their educational level in 2003–2011, [in:] Rusnak Z., Ostasiewicz K. (Eds.), *Quality of Life and Sustainable Development*, Research Papers of Wrocław University of Economics no. 308, Publishing House of Wrocław University of Economics, Wrocław.
- Daly H., Cobb J., 1989, *For the Common Good*, Beacon Press, Boston.
- Daly H., 1991, *Steady-state Economics*, Island Press, Washington, DC.
- Dasgupta P., 2000, Valuation and evaluation: Measuring the quality of life and evaluating policy, *LSE STICERD Research Paper No. DEDPS22*.
- De Vogli R., Mistry R., Gnesotto R., Cornia G.A., 2005, Has the relation between income inequality and life expectancy disappeared? Evidence from Italy and top industrialised countries, *Journal of Epidemiology & Community Health*, vol. 59, pp. 158–162.
- Di Tella R., MacCulloch R., Oswald A.J., 2003, The macroeconomics of happiness, *Review of Economics and Statistics*, vol. 85, pp. 809–827.
- Diener E., 1984, Subjective well-being, *Psychological Bulletin*, vol. 95, pp. 542–575.
- Diener E., Emmons R.A., Larsen R.J., Griffin S., 1985, The satisfaction with life scale. *Journal of Personality Assessment*, vol. 49, pp. 71–75.
- Diener E., Suh E., 1997, Measuring quality of life: Economic, social, and subjective indicators, *Social Indicators Research*, vol. 40, pp. 189–216.
- Doś A., 2013, Catastrophic risk financing models for sustainable development, [in:] Rusnak Z., Ostasiewicz K. (Eds.), *Quality of Life and Sustainable Development*, Research Papers of Wrocław University of Economics no. 308, Publishing House of Wrocław University of Economics, Wrocław.

- Dudek H., 2013, Equivalence scales for Poland – new evidence using complete demand systems approach, [in:] Rusnak Z., Ostasiewicz K. (Eds.), *Quality of Life and Sustainable Development*, Research Papers of Wrocław University of Economics no. 308, Publishing House of Wrocław University of Economics, Wrocław.
- Duncan O.D., 1975, Does money buy satisfaction? *Social Indicators Research*, vol. 2, pp. 267–274.
- Dupuy H.J., 1978, *The research edition of the general psychological well-being schedule* [unpublished].
- Dyer W.W., 2001, *Pulling Your Own Strings*, Quill, New York.
- Easterlin R.A., 1995, Will raising the incomes of all increase the happiness of all? *Journal of Economic Behavior & Organization*, vol. 27, pp. 35–47.
- Easterlin R.A., Crimmins E.M., 1991, Private materialism, personal self-fulfilment, family life, and public interest, *Public Opinion Quarterly*, vol. 55, pp. 499–533.
- Ebert U., Welsh H., 2004, Meaningful environmental indices: A social choice approach, *Journal of Environmental Economics and Management*, vol. 47, pp. 270–283.
- Edgerton R.B., 1990, Quality of life from a longitudinal research perspective, [in:] Schalock R.L. (Ed.), *Quality of Life: Perspectives and Issues*, American Association on Mental Retardation, Washington, DC.
- Esty D.C., Levy M., Srebotnjak T., Sherbinin A., 2005, *2005 Environmental Sustainability Index: Benchmarking National Environmental Stewardship*, Yale Center for Environmental Law & Policy, New Haven, CT, <http://www.yale.edu/esi>.
- European Communities, 2009, *Beyond GDP. Measuring Progress, True Wealth, and the Well-being of Nations*, Office for Official Publications of the European Communities, Luxembourg.
- Eurostat, <http://epp.eurostat.ec.europa.eu/portal/page/portal/sdi/indicators>.
- Eurostat, 2011, *Sustainable Development in the European Union*, [http://epp.eurostat.ec.europa.eu/cache/ITY\\_OFFPUB/KS-31-11-224/EN/KS-31-11-224-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-31-11-224/EN/KS-31-11-224-EN.PDF).
- Felce D., Perry J., 1995, Quality of Life: Its definition and measurement, *Research in Developmental Disabilities*, vol. 16, pp. 51–74.
- Flanagan J.C., 1978, A research approach to improving our quality of life, *American Psychologist*, vol. 33, pp. 138–147.
- Flynn M., 1989, *Independent living for adults with a mental handicap: A place of my own*, Cassel, London.
- Gilbert D., 2006, *Stumbling on Happiness*, Random House, New York.
- Glatzer W., 2013, Worries and dissatisfaction. Structural challenges for future development, [in:] Rusnak Z., Ostasiewicz K. (Eds.), *Quality of Life and Sustainable Development*, Research Papers of Wrocław University of Economics no. 308, Publishing House of Wrocław University of Economics, Wrocław, pp. blok.
- Gould S.J., 1996, *The Mismeasure of Man*, W.W. Norton & Company, London.
- Gulyas J., 2013, Hopes and fears – components of subjective well-being, [in:] Rusnak Z., Ostasiewicz K. (Eds.), *Quality of Life and Sustainable Development*, Research Papers of Wrocław University of Economics no. 308, Publishing House of Wrocław University of Economics, Wrocław, pp. blok.
- Gurin G., Veroff J., Feld S., 1960, *Americans View Their Mental Health*, Basic Books, New York.
- Hak T., Moldan B., Dahl A. (Eds.), 2007, *Sustainability indicators: A scientific assessment*, SCOPE, vol. 67, Island Press, Washington, DC.
- Harding S.D., 1982, Psychological well-being in Great Britain: An evaluation of the Bradburn Affect Balance Scale, *Personality and Individual Differences*, vol. 3, pp. 167–175.
- Hartwick J.M., 1977, Intergenerational equity and the investing of rents from exhaustible resources, *The American Economic Reviews*, vol. 67, pp. 972–974.
- Hektner J.M., Schmidt J.A., Csikszentmihalyi M. (Eds.), 2006, *Experience Sampling Method: Measuring the Quality of Everyday Life*, Sage Publications, Thousand Oaks, CA.
- Hopkins E., 2008, Inequality, happiness and relative concerns: What actually is their relationship? *The Journal of Economic Inequality*, vol. 6, pp. 351–372.

- Hosseini H.M., Kaneko S., 2011, Dynamic sustainability assessment of countries at the macro level: A principal component analysis, *Ecological Indicators*, vol. 11, pp. 811–823.
- Howarth R.B., Norgaard R.B., 1992, Environmental valuation under sustainable development, *The American Economic Review*, vol. 82, pp. 473–477.
- Inglehart R., Rabier J.-R., 1986, Aspirations adapt to situations – but why are the Belgians so much happier than the French? [in:] Andrews F.M. (Ed.), *Research on the Quality of Life*, University of Michigan Press, Ann Arbor.
- International Wellbeing Group, 2006, *Personal Wellbeing Index*, Australian Centre on Quality of Life, Deakin University, Melbourne, [http://www.deakin.edu.au/research/acqol/instruments/wellbeing\\_index.htm](http://www.deakin.edu.au/research/acqol/instruments/wellbeing_index.htm).
- Kabat-Zinn J., 2005, *Full Catastrophe Living: How to Cope with Stress, Pain and Illness Using Mindfulness Meditation*, Random House, New York.
- Kahneman D., Deaton A., 2010, High income improves evaluation of life but not emotional well-being, *Proceedings of the National Academy of Sciences of the United States of America*, vol. 107, pp. 16489–16493.
- Kahneman D., Krueger A.B., 2006, Developments in the measurement of subjective well-being, *The Journal of Economic Perspectives*, vol. 20, pp. 3–24.
- Kahneman D., Krueger A.B., Schkade D.A., Schwarz D., Stone A.A., 2004, A survey method for characterizing daily life experience: The day reconstruction method, *Science*, vol. 303, pp. 1776–1780.
- Kahneman D., 2011, *Thinking, Fast and Slow*, Farrar, Straus and Giroux, New York.
- King C., Gunton J., Freebairn D., Coutts J., Webb I., 2000, The sustainability indicator industry: Where to from here? A focus group study to explore the potential of farmer participation in the development of indicators, *Australian Journal of Experimental Agriculture*, vol. 40, pp. 631–642.
- Larsen R.J., Diener E., Emmons R.A., 1985, An evaluation of subjective well-being measures, *Social Indicators Research*, vol. 17, pp. 1–17.
- Larson R., Csikszentmihalyi M., 1983, The experience sampling method, *New Directions for Methodology of Social and Behavioral Science*, vol. 15, pp. 41–56.
- Lawn P., 2000, *Toward Sustainable Development: An Ecological Economics Approach*, Lewis Publishers, Boca Raton.
- Lazarus R., Lannier R., 1979, Stress related transactions between person and environment, [in:] Pervin L., Lewis M. (Eds.), *Perspectives in International Psychology*, Plenum, New York.
- Lehman A.E., 1988, A quality of life interview for the chronically mentally ill, *Evaluation and Program Planning*, vol. 11, pp. 51–62.
- Lucas R.E., 2005, Time does not heal all wounds: A longitudinal study of reaction and adaptation to divorce, *Psychological Sciences*, vol. 16, pp. 945–950.
- Lynch J., Smith G.D., Hillemeier M., Shaw M., Raghunathan T., Kaplan G., 2001, Income inequality, the psychosocial environment, and health: Comparisons of wealthy nations, *The Lancet*, vol. 358, pp. 194–200.
- Maddison A., 1991, *Dynamic Forces in Capitalist Development*, Oxford University Press, Oxford.
- Maslow A.H., 1943, A theory of human motivation, *Psychological Review*, vol. 50, pp. 370–396.
- Mazurek E., 2013, Measures of reranking of taxpayers in income distribution caused by the tax system, [in:] Rusnak Z., Ostasiewicz K. (Eds.), *Quality of Life and Sustainable Development*, Research Papers of Wrocław University of Economics no. 308, Publishing House of Wrocław University of Economics, Wrocław, pp. blok.
- McKennell A., 1974, Surveying subjective welfare: Strategies and methodological considerations, [in:] Strumpel B. (Ed.), *Subjective Elements of Well-being*, OECD, Paris.
- Naess A., 1973, The shallow and the deep, long-range ecology movement, *Inquiry: An Interdisciplinary Journal of Philosophy*, vol. 16, pp. 95–100.

- Neumayer E., 1999, The ISEW: Not an index of sustainable economic welfare, *Social Indicators Research*, vol. 48, pp. 77–101.
- Neumayer E., 2010, *Weak versus strong sustainability: Exploring the limits of two opposing paradigms*, Edward Elgar Publishing, Cheltenham.
- Osler M., Prescott E., Gronbaek M., Christensen U., Due P., Engholm G., 2002, Income inequality, individual income, and mortality in Danish adults: Analysis of pooled data from two cohort studies, *British Medical Journal*, vol. 324, pp. 13–16.
- Ostasiewicz K., 2012, Ordering EU countries according to indicators of sustainable development, *Statistika*, vol. 49, pp. 30–51.
- Palmore E., Kivett V., 1977, Change in life satisfaction: A longitudinal study of persons aged 46–70, *Journal of Gerontology*, vol. 32, pp. 311–316.
- Panayotou T., 1993, *Green Markets: The Economics of Sustainable Development*, ICS Press, San Francisco.
- Perek-Białas J., 2013, Quality of life in old age in the Central and Eastern European countries, [in:] Rusnak Z., Ostasiewicz K. (Eds.), *Quality of Life and Sustainable Development*, Research Papers of Wrocław University of Economics no. 308, Publishing House of Wrocław University of Economics, Wrocław, pp. blok.
- Phillis Y.A., Grigoroudis E., Kouikoglou V.S., 2011, Sustainability ranking and improvement of countries, *Ecological Economics*, vol. 70, pp. 542–553.
- Rainwater L., 1990, Poverty and equivalence as social constructions, *Luxembourg Income Study Working Paper 551*.
- Redefining Progress, 1995, Gross production vs genuine progress. Excerpt from the *Genuine Progress Indicator: Summary of data and methodology*, Redefining Progress, San Francisco.
- Riis J., Loewenstein G., Baron J., Jepson C., Fagerlin A., Ubel P.A., 2005, Ignorance of hedonic adaptation to hemo-dialysis: A study using ecological momentary assessment, *Journal of Experimental Psychology: General*, vol. 134, pp. 3–9.
- Sanfey A.G., Rilling J.K., Aronson J.A., Nystrom L.E., Cohen J.D., 2006, The neural basis of economic decision-making in the ultimatum game, *Science*, vol. 300, pp. 1755–1758.
- Schimmack U., Radhakrishnan P., Oishi S., Dzokoto V., Ahadi S., 2002, Culture, personality, and subjective well-being: Integrating process models of life satisfaction, *Journal of Personality and Social Psychology*, vol. 82, pp. 582–593.
- Schwarz N., Strack F., Mai H.-P., 1991, Assimilation and contrast effects in part-whole question sequences: A conversational logic analysis, *Public Opinion Quarterly*, vol. 55, pp. 3–23.
- Śleszyński J., 2013, Synthetic sustainable development indicators: Past experience and guidelines, [in:] Rusnak Z., Ostasiewicz K. (Eds.), *Quality of Life and Sustainable Development*, Research Papers of Wrocław University of Economics no. 308, Publishing House of Wrocław University of Economics, Wrocław, pp. blok.
- Smith G.D., Blane D., Bartley M., 1994, Explanations for socio-economic differentials in mortality, *European Journal of Public Health*, vol. 4, pp. 131–144.
- Solow R.M., 1974, Intergenerational equity and exhaustible resources, *Review of Economic Studies*, vol. 41, pp. 29–46.
- Stone A.A., Shiffman S.S., DeVries M.W., 2003, Ecological, [in:] Kahneman D., Diener E., Schwarz N. (Eds.), *Well-being: The Foundations of Hedonic Psychology*, Russell Sage Foundation, New York.
- Strack F., Martin L.L., Schwarz N., 1988, Priming and communication: Social determinants of information use in judgments of life satisfaction, *European Journal of Social Psychology*, vol. 18, pp. 429–442.
- Tomaszewska-Lipiec R., 2013, Relations between work and life as a way to the sustainable development, [in:] Rusnak Z., Ostasiewicz K. (Eds.), *Quality of Life and Sustainable Development*, Research Papers of Wrocław University of Economics no. 308, Publishing House of Wrocław University of Economics, Wrocław.