QUALITY ADJUSTED LIFE YEAR – INDICATOR OF SUSTAINABLE DEVELOPMENT

AN DE VIAȚĂ AJUSTAT CALITATIV – INDICATOR AL DEZVOLTĂRII DURABILE

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Abstract: *Indicators of sustainable development are intended to measure the extent to which society is moving towards or away from its development goal. In this sense, an important aspect is assessing a population's quality of life. The main tool used in economic and social valuation is quality adjusted life years (QALYs). Although used in the assessment of health interventions throughout most of the European countries, in Romania its utility is unfortunately overlooked. As such, the purpose of this paper is to underline the connection between improving one's quality of life by increasing their QALYs and the social and economic dimension of sustainable development.*

Key words: *sustainable development, quality adjusted life years, quality of life assessment, human health, social value*

INTRODUCTION

Sustainable development is currently one of the most challenging topics on political as well as economic and scientific levels. Although it is frequently argued that such development is difficult to define, there is still a widespread consensus that its aim is to improve the quality of life of human beings and that it is multifaceted in that it has environmental, economic and social dimensions (De Constance, Roberts, 2011).

The concept has been defined in many ways but still there is no single definition accepted by most researchers or public actors. The most frequently quoted one is as a development that meets the needs of the

present without compromising the ability of the future (World Commission on Environment and Development, 1987).

The literature review on this topic allowed us to identify several common aspects between the diverse approaches, mainly the fact that all definitions point towards improving human quality of life. Thus, the main aim of sustainable development is to increase quality of life in a long time horizon with respect to other living beings (Mederly P. et al., 2003).

In order to assess a country's sustainable development in terms of measurability and manageability there is a need for a pertinent set of indicators. In general, sustainable development indicators are intended to measure variables related to areas of concern to which society should be alerted, such as poverty, pollution, waste generation, health problems and related issues assumed to affect the quality of life of the population.

In this paper we will approach sustainable development in terms of health problems and its method of measurement. Our paper started from the premise that a society's sustainable development requires a thorough analysis of its population's quality of life.

In this sense, the research in this paper is funded on the idea that improving one quality of life through public and also private investments impacts on the degree of economic performance.

1. RESEARCH FRAMEWORK

The paper is centered on a theoretical approach, a literature review of the quality of life and the involved concepts aiming to provide a useful indicator for its measurement.

Quality of life (QoL) can be defined in terms of health as physical, mental and social as well as patients' ability to perform common tasks in their daily existence (Lupu I., 2006). A utilitarian definition proposed by Revicki & Kaplan (1993) states that QoL reflects the preferences for certain health conditions that allow improvements in morbidity and mortality.

Based on links between health, medicine and QoL (Lepage, 2009) measurement of quality of life is used in health with Quality Adjusted Life Years (QALYs). First introduced by Zeckhauser and Shepard (1976), the indicator measures the duration and quality of life taking into accounts the impact of treatment on survival of the patient and his QoL. QALY combines health effects of interventions on mortality and morbidity into one index,

thus providing a common indicator that allows comparisons between different diseases and different health sectors (Sarah J. Whitehead and Shehzad Ali, 2010).

A major contribution to the economic valuation of investment in healthcare is the degree of its applicability to all individuals and all types of medical conditions, and it can therefore be used in investment comparison across different sectors.

2. METHODOLOGY

For the indicator identified above as relevant in assessing the quality of life we will verify the following hypothesis: is or isn't there a dependency (correlation) between the quality of life and a sustainable development?

For this purpose, we started with an analysis of the social indicators relevant in the context of economic growth thus reaching a sustainable development.

As far as the actual beginnings of quality of life research are concerned, there are enough arguments to place them in connection with the preoccupations to define national objectives and measuring the degree of achieving these objectives through social indicators (Marginean, I., 2004). The latter expresses characteristics of the public interest in the social processes, mentioning both objective social indicators (of state) and subjective social indicators (of perception and assessment of the objective states). Therefore, the completion of economic indicators with social indicators represents the actual beginning of quality of life research.

There have been many academic attempts to measure sustainability, most of which lead to the creation of the environmental sustainability index (ESI) or the environmental performance index (EPI), as explained by Zidansek A. (2007). We consider that a specific indicator to assess the quality of life dimension is needed. Because quality of life for an individual depends on his beliefs and values, it is difficult to measure it using objective indicators. This led to the creation of subjective indicators that measure an average answer to a question related to quality of life.

Many researchers have dealt with synthetic presentation of instruments to assess quality of life, including Bowling (1997), Orley and Kuyken (1994) and Leplège and Hunt (1997). From the vast array of such

social indicators, when discussing about health, one specific indicator distinguishes itself – quality adjusted life year.

The use of this economic indicator in assessing the quality of life has increased in popularity recently with the creation of national agencies in the health assessment of technology investments. Evaluation of interventions in terms of health gains compared with the financial effort required can be achieved by assigning a monetary value on health gains identified. A representative institution in this regard is the National Institute for Health and Clinical Excellence (NICE) in England which uses QALY as the reference unit and sets its monetary value (Devlin N, Parkin D, 2004).

Basically, QALY is calculated by multiplying the amount of time spent in a specific health state with its associated utility (Sassi, F., 2006), as shown in the formula bellow:

$$\text{QALYs lived in one year} = 1 * Q, \text{ with } Q < 1 \quad (1)$$

where: Q – health related quality of life utility attached to the relevant year of life.

Thus, to generate a QALY a proper identification and association of utilities for different health states is required. Utilities reflect the quality of life associated to an estimated health either directly by individuals, or indirectly using a variety of measurement methods. Utilities are measured on a cardinal scale from 0-1, where 0 is death and 1 full health, being the key factor in calculating a QALY because it transforms a simple year of life gained by a treatment or an intervention in a quality adjusted life year. For example, if a person is in a state of health for 10 years, and that health has a utility of 0.6, it would generate a total of 6 QALYs (0.6 times 10 years).

Among the issues mentioned, estimating utilities is the most complex problem. Many authors criticize the existing approaches, citing lack of empirical study to determine the value of a QALY (Towse, A., 2009).

CONCLUSIONS AND DISCUSSIONS

In order to achieve a sustainable development, basic human values and needs must be addressed in such a way that health and responsibility of individuals are increased simultaneously.

Throughout this paper we validated the working hypothesis and demonstrated that there is a direct connection between a populations' quality of life and a country's degree of economic growth. This relation suggests that sustainability does not require sacrificing the health of the current generation but that improvement of health might actually benefit sustainability.

In this sense, QALYs should be included amongst the most important social indicators used when assessing the development potential of a country.

Since this paper addressed the problem form a theoretical point of view, further research in this area is recommended. As such, we will concentrate our efforts on this topic in identifying the most beneficial method of valuating a QALY in monetary terms.

REFERENCES

1. BOWLING, ANN, 1997, Measuring health: A review of quality of life measurement scale*,* Milton Keynes, Open University Press.
2. DE CONSTANCE V., ROBERTS J.L., 2011, Tools for Mainstreaming Sustainable Development in Small States, Commonwealth Secretariat: pp. 225.
3. DEVLIN N, PARKIN D, 2004, Does NICE have a cost-effectiveness threshold and what other factors influence its decisions? Health Economics 13: pp. 437-452.
4. LEPAGE, A., 2009, The quality of life as attribute of sustainability, The TQM Journal, Vol. 21 Iss: 2: pp. 105 – 115.
5. LEPLÈGE, A., HUNT SONYA, 1997, The problem of quality of life in medicine, Journal of American Medical Association, 278: pp. 47–50.
6. LUPU I., 2006, Calitatea vieții în sănătate. Definiții şi instrumente de evaluare, Calitatea vieții, xvii, nr. 1–2 : pp. 1-21.

7. MARGINEAN, I., 2004, Quality of life in Romania, The Expert Publishing House, Bucharest: pp. 28.
8. MEDERLY, P., NOVACEK, P., TOPERCER, J, 2003, Sustainable development assessment: quality and sustainability of life indicators at global, national and regional level, foresight, Vol. 5 Iss: 5 pp. 42 – 49.
9. ORLEY, J., KUYKEN, W., 1994, Quality of life assessment in health care setttings, Heidelberg, Germany, Springer Verlag.
10. REVICKI, D. A., KAPLAN, R. M., 1993, Relationships between psychometric and utility - based approaches to the measurements of health-related quality of life, „Quality of Life Research", 2: pp. 477–487.
11. SASSI, F., 2006, Calculating QALYs, comparing QALY and DALY calculations, Published by Oxford University Press in association with The London School of Hygiene and Tropical Medicine, pp. 402-408.
12. TOWSE, A., 2009, Should NICE's threshold range for the QALY be raised? Yes. BMJ, 338: pp. 268-269.
13. WHITEHEAD, SARAH J., SHEHZAD ALI, 2010, Health outcomes in economic evaluation: the QALY and utilities, British Medical Bulletin, 96: pp. 5–21.
14. WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT, 1987, Brundtland Report: Our Common Future, Oxford: Oxford, University Press.
15. ZECKHAUSER R, SHEPARD DS, 1976, Where now for saving lives? Law and Contemporary Problems 40: pp. 5–45.
16. ZIDANSEK, A., 2007, Sustainable development and happiness in nations, Science Direct, Energy 32: pp. 891 – 897.