

QUALITY OF LIFE AND OF THE ENVIRONMENT IN A ECONOMICALLY DEVELOPED WORLD

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Abstract

Economic development is a major and a permanent desideratum of the countries. However, this cannot be an end in itself but an intermediate goal needed to support a better quality of life. Also, the quality of life is not only determined by the level of the economic development but also by the quality of the natural environment. The issue of the impact of economic development on the quality of the environment and, from this perspective on the quality of life, has been debated since 1987, in the Bruntland Report. The present paper analyzes how the economic development of the last decades has supported and has affected simultaneously the quality of life and also the way in which the states of the European Union act by greening the procurement process in order to create a sustainable economy.

Key words: quality of life, quality of the environment, sustainability, green public procurement

Introduction

During 1990 - 2018 the economic development and growth had an obvious upward evolution. According to statistical data provided by the World Bank, GDP of the European Union increased by 62.43% in current data (from \$ 11.822 trillion in 1990 to \$ 19.203 trillion in 2018), and in terms of GDP / capita, growth was 51.2% (from \$ 24,747 million in 1990 to \$ 37,417 million in 2018). Prior to this period of economic progress, in 1987, within the Bruntland Report, arose the issue of sustainable development, defined as "that type of development that ensures the needs of the present generation without compromising the possibility of future generations to meet their own needs", the needs referring to both the basic ones (water, food, etc.) as well as those related to the possibility of living life in a pleasant way.

In recent years, the question of the extent to which economic growth determines the quality of life is frequently raised. Economic and social policies focused on the economic growth, seem to be incomplete as long as the their ultimate goal must be a better quality of life, not the simple monetary performance. Economic growth indicators, such as GDP, tend to become an end rather than a mean. To avoid the narrowly paradigm of material well-being and promote the idea of a holistic growth, monetary performance must be correlated with issues such as life expectancy, infant mortality, gender equity, social inequality, ecological destruction, level of happiness and so on - aspects that can be brought together within the concept of quality of life. Therefore, concomitant with the interest for the economic evolution, must be expressed the interest for the extent to which the permanent economic development sustains the well-being of the population and provides positive perspectives regarding the quality of life.

This paper analyzes the impact of economic development on the quality of the environment and the way in which the EU states act to ensure the protection of the natural environment under the conditions of supporting economic development.

1. Quality of the environment determinant for the quality of life

Although there is no a widely accepted definition for the concept of the quality of life, it can be understood noticing the indicators that international bodies use to evaluate the quality of life. Thus, Eurostat (based on scientific studies and study initiatives launched in 2009,

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evaluates the quality of life according to the indicators included in the matrix "8 + 1 dimensions of quality of life"); OECD (uses a multidimensional matrix that includes 11 categories of indicators to evaluate the present quality of life, and 4 areas of interest to predict the evolution of the quality of life); Mercer - the largest human resources consulting firm in the world - uses a system of 10 categories of indicators to measure the quality of life; Legatum Institute calculates the prosperity indicator (Legatum Prosperity Index). From the perspective of the present paper it is worth mentioning that all the methodologies presented use as a component of measuring the quality of life index the environmental aspects: Eurostat includes the category *Natural and living environment*; OECD analyzes *Environmental quality*; Mercer measures indicators of the *Natural environment* category; The Legatum Prosperity Index includes in the calculation of the prosperity index, starting with 2016, the category *Natural environment*.

The literature also highlights a close correlation between the quality of the natural environment and the quality of life (Diener and Suh, 1997) and, moreover, the quality of the environment is considered a key element in determining the well-being of the population (Holman and Coan, 2008) and one of the most important factors in ensuring the well-being of the population over time. The quality of the environment affects the quality of life also from the perspective that many people value the beauty of the place where they live and are affected by the degradation of the planet and the depletion of natural resources (Balestra and Dottori, 2011). A worldwide study identified five fundamental conditions that determine the quality of life, including health (Damos, J., 2011), and this, in turn, is directly influenced by elements such as fresh air, the level of noise, the beauty of the place where people live (Keles, 2011). Also, in view of the increasing importance of health conditions in the concept of quality of life, the European Parliament voted in favor of an Additional Protocol to the European Convention on Human Rights, which introduces the right to a healthy environment (Doc. 12003 / 11.09.2009). Moreover, there are many studies highlighting that environmental factors are involved in more than 80% of major health problems and 25% of diseases worldwide are caused by inadequate environmental conditions (Pruss-Urstin, Corvalan, 2006). In addition, in the long run, drastic changes in the environmental conditions can affect health through climate change, water and air pollution and biodiversity changes (OECD, 2011).

Regarding the concept of quality of the environment, it is an extended one, and the indicators used in the analysis of the quality of the environment as a determining factor of the quality of life vary depending on the institution or the author who performs the evaluation. Eurostat assesses the quality of the environment through two categories of indicators: Pollution - a category operated by: Air pollution and Noise from the neighbours and from the street - and the category Landscape and the Environment created by humans - the average satisfaction level of the population is measured against these aspects. The OECD methodology uses indicators such as: air pollution; the effects of pollution on health; water pollution; access to green spaces and sources of drinking water; carbon dioxide emissions; intensity of use of forest resources; nitrite / nitrogen surplus in agricultural land. Mercer measures the quality of the natural environment through indicators that highlight climate change and the effects of natural disasters, the Legatum Institute measures, in the Environment category indicators: the level of air pollution, the percentage of the population that has access to drinking water, the fraction of fish stocks from over-exploited national waters, water withdrawal internal sweets as a percentage of the renewable resources, the marine area protected as a percentage of the total, the terrestrial area protected as a percentage of the total, regulating the use of pesticides, the anthropic treatment of waste water, the satisfaction level of the population regarding the efforts made for environmental protection. The scientific literature also addresses the issue of environmental quality assessment indicators relevant to quality of life. Thus, there are mentioned indicators that affect the quality of air, soil, water, indicators that reflect responsible behavior towards the

environment; indicators of the quality of the urban environment (eg protected land areas, total area of forests, access to green spaces, etc.) (Streimikiene, 2015). Kelles, 2011, makes a classification of the factors that affect the quality of life from the perspective of the quality of the environment: on the first place is the access of the population to drinking water and to systems that provide hygiene, on the second place it places the level of greenhouse gas emissions from the areas. urban, on the third place places the degradation of the resources manifested by affecting the ecosystems, the fertile agricultural land, by the improper disposal of the industrial and urban waste or by affecting the cultural and historical heritage, and on the fourth place the natural disasters.

The environment quality concept is an extended one. The indicators used to analyze it as a determining factor of the quality of life vary depending on the institution or the author. Eurostat assesses the quality of the environment through two categories of indicators: Pollution (Air pollution and Noise from the neighborhood or from the street) and Living environment and green areas - the average satisfaction level of the population is measured against these aspects. The OECD methodology uses indicators such as: air pollution; the effects of pollution on health; water pollution; access to green spaces and sources of drinking water; carbon dioxide emissions; intensity of use of forest resources; nitrite / nitrogen surplus in agricultural land. Mercer measures the quality of the natural environment through indicators that highlight climate change and the effects of natural disasters, the Legatum Institute measures Natural Environment pillar: air pollution, the percentage of the population that has access to drinking water, the fraction of fish stocks from over-exploited national waters, water withdrawal, the marine area protected as a percentage of the total, the terrestrial area protected as a percentage of the total, regulating the use of pesticides, the anthropic treatment of waste water, the satisfaction level of the population regarding the efforts made for environmental protection. The literature also addresses the issue of environmental quality assessment indicators relevant to the quality of life. Thus, there are mentioned indicators that affect the quality of air, soil, water, indicators that reflect responsible behavior towards the environment; indicators of the quality of the urban environment (e.g protected land areas, total area of forests, access to green spaces, etc.) (Streimikiene, 2015). Kelles, 2011, makes a classification of the factors that affect the quality of life from the perspective of the quality of the environment: on the first place is the access of the population to drinking water and to systems that provide hygiene, on the second place it places the level of greenhouse gas emissions from the urban areas, on the third place places the degradation of the resources which affects the ecosystems, the fertile agricultural land, the cultural and historical heritage and on the fourth place the natural disasters.

Summarizing, the quality of the environment and, implicitly, the quality of life are influenced by the air, water and soil pollution, by the level of noise, climate and biodiversity changes, by the access to green areas, by an environmentally responsible behaviour

2. Economic growth impact on the environment quality

The screening of literature through search engines and databases such as Google Scholar, Science Direct, Scopus based on key-words such as LCA (*Life Cycle Assessment*), sustainable development, environmental impact, name of the product categories, has allowed the identification of numerous studies which emphasize that a relevant part of the negative evolution of the indicators which define the quality of the environment is influenced by the industrial and consumption processes specific to the current economic and social context. The following product categories were analyzed:

➤ Paper (M'hmedi, A.I. et al, 2017; Danison, R.A., 1997; PwC, 2010) – CEPI (Confederation of European Paper Industry) statistics highlights that the paper production of the European states members of CEPI was, in 2018, over 92 million tonnes, and

corresponding wood consumption around 155,000 m³ - both indicators on an upward trend. The main consequences of the paper production and consumption are, on the one hand the increasing number of the companies, of the employees, of the financial performances but, on the other hand, the forest destruction, loss of biodiversity and climate change, energy consumption, water toxicity, air pollution

➤ Cleaning products and services (Kapur et al., 2012; Boucher & Friot, 2017; ADEME, 2010) – as a result of the awareness of the importance of hygiene and its role in stopping the spread of infectious diseases, the global cleaning products market is constantly expanding. Statistics show increases in spending, consumption, sales, market share, consumer price index, revenues. At the same time, consequences of the production and consumption of such products are: climate changes, resource depletion, ecotoxicity, negative impact on the human health, eutrophication, photochemical smog, vegetation and crops damage.

➤ Construction (Sartori & Hestens, 2007; Khasreen et al, 2009) – the construction sector is also associated with economic growth. Its coverage area is extended: buildings design, site preparation, construction, servicing and ongoing management. Sector development is associated with the employment increasing, extension of micro and small businesses, and of the added value. On the other hand, the impact on the environment is just as important. Among all the environmental consequences, the most significant is the energy consumption associated with green house emissions. Other negative environmental impacts generated by this sector are: depletion of natural resources, waste generation, deterioration in indoor air quality, global warming etc.

➤ Office IT Equipment (Choi et al, 2006; Hoang et al, 2009; Marudut et al., 2012) – the economic relevance of this product group is obvious and relevant in the knowledge economy. The economic performance associated with the production and consumption of portable devices, tablets, integrated desktops, workstations, servers, computer displays etc. are supported by numerous statistics. At the same time, the impact on the environment they generate is determined in the use phase by the need of electricity to run and in the manufacturing phase by the consumption of critical raw materials, land transformation and the consumption of energy.

➤ Transport (Jørgensen et al., 1996; Merchan et al, 2017, Bauer et al, 2015) – this product category covers the production and use of road transport vehicles (passanger cars, light commercial vehicles, buses and coaches, waste collection trucks). According to statistics provided by the European Commission the market is dominated by vehicles using diesel and petrol rather than those using alternative fuels, while the fleets are dominated by vehicles that meet Euro emissions standards of Euro 4 / IV or earlier. The development of this market is highlighted by the upward evolution of indicators such as passanger cars per 1,000 inhabitants, stock of vehicles, oil pipeline companies, employment in oil pipeline companies, investment in oil pipeline companies. The analysis of the environmental impacts highlights the extent of the negative effects of the sector, both in the vehicles use phase (GHG emissions, air pollutant emissions and noise) and in the manufacturing phase (especially for electric vehicles, associated with the battery manufacturing).

➤ Furniture (Cordella, 2017) – with a value of over USD 575 billion in 2018 and with an expected growth of about 5% between 2019 and 2026 (according to Global Market Insights), the furniture market is a developing industrial sector but also a major consumer of wood as a raw material. The furniture industry determines a negative impact on the environment mainly in the raw material production phase, but also in the manufacturing phase, packaging, distribution and use phases. Thus, the main five impact categories are: acidification, climate change, eutrophication, ozone depletion, photochemical ozone formation.

➤ Textiles (Dodd et al, 2012; Beton et al, 2013) – in the last decades the amount of clothes bought in the EU per person has increased by 40%, about 5% of household expenditure in the EU is spent on clothing and footwear and more than 30% of clothes in Europeans' wardrobes have not been used for at least a year. According to Euratex in 2015 the textile industry represented 5% share of employment and an over 2% share of value added in total manufacturing in Europe. This state of affairs is associated with important environmental issues such as: agricultural land use, terrestrial, freshwater and marine ecotoxicity and eutrophication, water depletion, CO₂ emissions, climate change, terrestrial acidification and particulate matter formation.

3. Environment protection in the context of economic development

The analyzed data show a major impact on the environment and, implicitly on the quality of life, determined by the economic development. As a result, EU Member States get involved through active measures in order to implement environmental protection solutions. An important step was the promotion of Green Public Procurement. The concept of GPP was introduced by the OECD in 2002 and refers to "a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured".

In line with the EU's concerns about sustainable development and involvement of public institutions in this process, the European Commission has encouraged Member States since 2003 to develop national action plans to sustain the procurement of green products. Thus, European states are encouraged to act: politically (through the national guidelines and programs for GPP); by providing public information on the environmental impact of the products and services, by implementing LCA thinking in the assessment of the procurement contracts, through implementation of environmental management systems (EMS) by purchasing authorities.

Although EU countries have reacted differently to the implementation of the European Commission's recommendations, some of them making significant progress - Green-7 (Austria, Denmark, Finland, Germany, Netherlands, Sweden and UK) - others being still in the early stages, it can be noticed encouraging progresses regarding the environment.

The table below shows the evolution of two of the most common consequences of the impact of the economic development on the environment: GHG emissions and Exposure to PM_{2.5} and of a major consequence of the air pollution, respectively Mortality/1,000,000 inhabitants. The years selected for representation are justified as follows: 2003 (the implementation of the GPP aroused on the public agenda); 2010 (the implementation of the GPP became effective and extended), 2014 (intermediate year to suggest the evolution of the indicators); 2017 (the latest data available).

Table 1. Evolution of the air pollution indicators in the UE (2003 – 2017)

Indicators of air pollution	2003	2010	2014	2017	2003 – 2017	2010 - 2017
GHG emissions* (CO ₂ tonnes/capita)	8,00	7,20	6,20	6,30	-21,25%	- 12,5%
Exposure to PM2.5** (Micrograms per cubic metre)	16,18	16	13,84	13,09	-19,1%	-18,19%
Mortality per 1,000,000 inhabitants as a consequence of air pollution ***	475,4	438,2	400,5	402,3	-15,38%	-8,19%

Source: OECD Data

*Greenhouse gases refer to the sum of seven gases that have direct effects on climate change. The data are expressed in CO₂ equivalents and refer to gross direct emissions from human activities

**Fine particulate matter (PM_{2.5}) is the air pollutant that poses the greatest risk to health globally, affecting more people than any other pollutant. Chronic exposure to PM_{2.5} considerably increases the risk of respiratory and cardiovascular diseases in particular. Data refer to population exposure to more than 10 micrograms/m³ and are expressed as annual averages.

***It is calculated using estimates of the “Value of a Statistical Life” (VSL) and the number of premature deaths attributable to ambient particulate matter.

Figure 1. Evolution of GHG emissions in the EU countries (2003 – 2017)

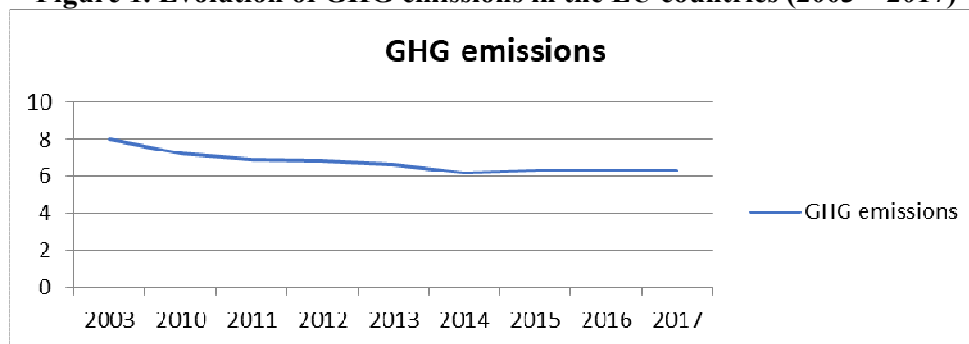


Figure 2. Evolution of Exposure to PM_{2,5} in the EU countries (2003 – 2017)

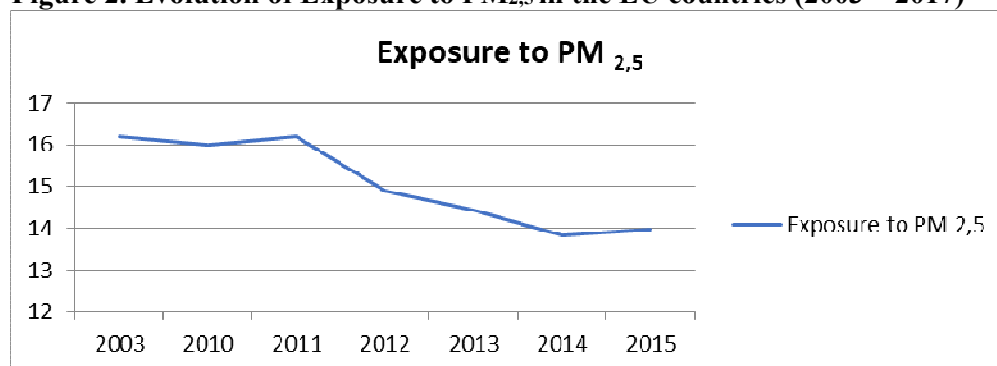
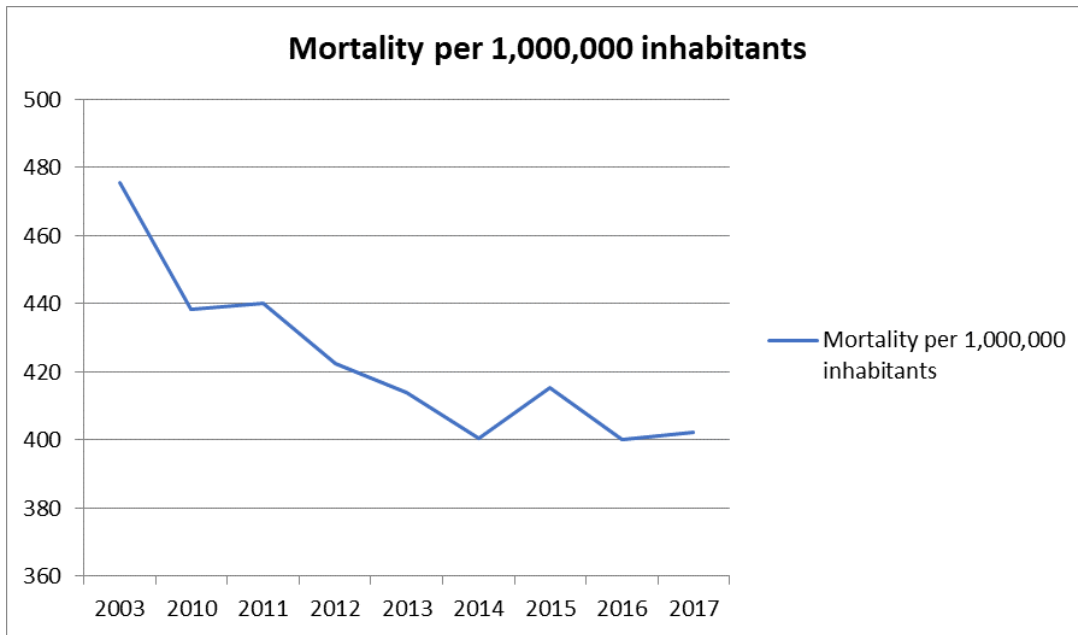


Figure 3. Evolution of Mortality per 1,000,000 inhabitants in the EU countries (2003 – 2017)



Conclusions

In 1987 the World Commission on Economic Development in the Sustainable Development Report stated “We remain convinced that it is possible to build a future that is prosperous, just, and secure. The possibility depends on all countries adopting the objective of sustainable development as the overriding goal and test of national policy and international co-operation”. At 30 years after this moment we notice the interest of the states of the world and especially of the European countries, analyzed within this paper, to ensure the economic development in the context of maintaining a clean environment, capable of sustaining a quality life.

The regulation and implementation of the GPP process, which also influences the purchases made by the private sector, is proving to have the expected results as long as, with reference point in 2003, we notice an obvious decrease of the environmental pollution indicators associated with the industrial processes. For this reason, the process must be supported ideologically and practically, and the research in the field must identify solutions to overcome the barriers that public authorities claim in implementing green procurement.

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