

**COMPARISON BETWEEN SUSTAINABLE DEVELOPMENT
CONCEPT AND GREEN LOGISTICS – THE LITERATURE
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Abstract: The following article presents the essence of the sustainable development concept and revision of its definition. Then was presented the essence of Green Logistics and its paradoxes. In summary, the thesis concluded that the introduction of elements of the sustainable development concept can contribute to a broader recognition of Green Logistics.

Key words: Sustainable Development, Logistics, Green Logistics

JEL Codes: O10, Q20, Q50

Introduction

Differences which exist between this generation and the generation from 1920 to 1930 year olds from 1950 to 1960 year olds, is not only better access to health care and education, but also a lot more opportunities for home ownership, car, or annual holidays. In contrast to the previous generation, the current generation lives in a united Europe, has full freedom to travel around the world, above all, the generation currently not experienced post-war period during which countries in the process of reconstruction and the food and clothes were secreted cards. 1950-1960 experienced a generation of Polish life under Communism, which the body does not tolerate the existence of the individual in society, have experienced endless queues for food, clothing or equipment and household appliances. Today's generation of 1920-1930 year olds do not need a passport to be able to travel to 25 European Union countries, do not need permission to be able to get educated and then work in one of the selected EU countries. Currently, the generation alive in a much better conditions than the previous generation. This picture is typical of most countries around the world, which as a result of development, could provide a much more current than the previous generation. The developing world has caused significantly improve conditions in the areas, which together make up the so-called. "good life" [1]. However, with the development of

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the global economy created risks that may no longer be ignored and that their effect can greatly affect the quality of life of future generations. And in connection with these threats was the term "sustainable development", of which current definitions are presented later in this article.

Sustainable Development – history and definitions

The concept of sustainable development derives from the concept of eco-development, and is its continuation. For the first time the concept of "eco-development" appears at the United Nations Conference, held in Stockholm in 1972. This created a Stockholm Declaration which proclaimed the first principle, "*Man is both creature and moulder of his environment, which gives him physical sustenance and affords him the opportunity for intellectual, moral, social and spiritual growth*" [2]. This rule was imposed on governments to protect and improve the environment for people living today and for the future generations.

In 1975, the definition of sustainable development was extended to the IIIrd Session of the United Nations Environmental Programme, adopted then the theory has been pursuing the idea that society is a society of sustainable development that recognizes the primary role of environmental requirements, which cannot be disturbed by the development of civilization, cultural and economic. Social that have the ability of self-development and maintain its full symbiosis with their environment. Thus, they are economical society, preferring the production and consumption, feeling the need for proper waste management and care about the consequences of actions which reflect the state of the future, the same care about the needs and health of future generations [3].

The above extension of the definition of eco-development has become the basis for the formulation of the first definition of Sustainable Development. It was formulated in the report "Our Common Future", also known as the Brundtland Report. This report was developed by the World Commission on Environment and Development United Nations in 1987. Given in the report definition has gained wide acceptance around the world: "*sustainable development is a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development; and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations*" [4]. Brundtland report signals the need to change thinking about how societies live and the further development and proposes the creation of a global agenda for change. Points out that responsibly meet humanity's goals and aspiration needs to reconsider the common problems and to forge international cooperation and collaboration. World Commission on Environment and Development of the United Nations draws the attention to "*the accelerating deterioration of the human environment and natural resources and the*

consequences of that deterioration for economic and social development” [5]” At the same time attention was drawn to two key ideas:

- The position of the human economy is closely linked to the health of the environment,
- Sustainable Development requires cooperation and collaboration between on international level.

Sustainable development focuses on integration - the development in a manner that benefits all sectors of the economy, the benefits not recognizing countries' borders or borders between generations. In other words - actions taken by the present society should be considered in terms of their consequences for the future generations, both society and the environment and economy. The effects of actions taken by our society today will impact largely on the environment and future generations. Brundtland Report also lists some basic principles of the concept of Sustainable Development [5]:

- inclusion of environmental protection - the wise management of natural resources, the harmonization of human purpose in accordance with the possibilities of the environment, both locally and globally, the inclusion of environmental aspects into policies at national and international,
- inclusion of social aspects - formation of a new hierarchy of human values and attitudes, integration of society in decision-making process, creating the same opportunities of development for all members of society, taking into account the limitations and requirements of the environment in their decisions affecting economic development,
- inclusion of economic issues - the efficient use of natural resources of Earth, especially in the case of non-renewable resources, the use of closed cycles, the introduction of quality over quantity in excess.

The definition given by the Sustainable Development of “Our Common Future”, is the definition of very general and has an open-endedness. It is also difficult to understand in economic terms, which makes that each author defines sustainable development with its own point of view and interpretation of the definition. For example, E. Brown - Weiss said: “ *each generation is entitled to inherit a planet and cultural resource base at least as good as that of previous generations*” [6]. Yes, we can agree that the current generation can equally benefit from the Earth's natural resources as the previous generation, however, is at odds with the basic assumption of the concept of Sustainable Development which is to think about future generations. On the other hand, the philosopher Hans Jonas has formulated a basic principle of the concept of ZR saying “ *act in such a way that the effects of your action are compatible with the long term continuance of*

meaningful human on earth" [7]. This is the interpretation that refers to a single man, and in fact having an impact on the performance of entire societies.

The definition given by M. Taube expresses that "*Sustainable Development is a model for the future which should be attained in the whole World within two or four generations from now*" [8], and to achieve the objective must be established [8]:

- Stop the growth of human population around the world,
- The most important streams of matter should be kept in balance - outflows should be equal influence,
- free flow of energy should be limited and the energy obtained should be done with renewable energy sources,
- Society should protect all species and types of ecosystems,
- Quality of life should increase with the need to develop the production of goods and commodities,
- It should apply fully harmonize the desires of societies - to reduce the likelihood of war and transition costs in the sustainable world should be equally distributed between rich and poor,
- Important elements of sustainable development is the development of scientific, technological progress and economic
- Any changes leading to the achievement of sustainable world should be in accordance with the principles of democracy.

During the UN Conference on Environment and Development in Rio de Janeiro in 1992 the concept of Sustainable Development has been seized upon by politicians and referred to as a basis for building a strategy for further economic development. The result of this summit is the Rio Declaration which has been set out 27 principles for which compliance is to ensure adequate and equitable development across the planet [9]. This declaration is a kind of Ten Commandments guidance relating to all aspects of human life. The consequence of this declaration was the creation of Agenda 21 - a tool that implements adopted the Rio Declaration commitments. The definition developed by T. Borys, takes sustainable development as an integration of five levels: environmental, social, economic, spatial and institutional and political [10].

The most popular definitions of Sustainable Development are the definitions of ecological roots, however, in the literature on the concept of Sustainable Development is also a few that have "economic" base definition:

Pearce and Turner's definition says that "Sustainable Development is to maximize the net benefits of economic development while protecting and providing playback of the usefulness and quality of natural resources in the long term" [11]. Another

definition having economic foundation treats the concept of sustainable development as the realization of socially desirable objectives [12]:

- The increase in real income,
- Improving the conditions of access to health care,
- Improving the level of education,
- access to resources,
- equitable distribution of profits
- increase in basic freedoms.

In conclusion, the definition of Sustainable Development is usually a set of rules whose observance will enable future generations further development with respect for the environment. All of the above definitions indicate the necessity of integration of the three most important human issues: the environment, social order and economic growth. It should be emphasized that the concept of sustainable development focuses not only on the present generation, but it puts a strong emphasis on future generations and their unidentified needs.

The issue of Green logistics

The definition of logistics is widely used in transport, storage, converting materials into finished products and deliver them to an end users. Typically, logistics is seen as the actions of which the objective is to minimize costs and maximize profits. The term was used mostly in purely business areas exhibiting companies and in financial reports. But, for many years, the term logistics is used in conjunction with the "green" by creating "Green Logistics" - the term containing costs, yet do not appear on financial reports and on the environment and society. Over the past 40 years,

"Green Logistics" represent a lot of nature trails, the most distinguishable as follows:

- reduction in transport costs,
- Urban logistics,
- Reverse Logistics,
- logistics strategy for the company's environmental,
- green supply chains

With three major trends, research on Green Logistics, were carried out in a wider perspective [13]:

1. Public to private - initially most of the research was conducted by government agencies, they were forced by the lobbyist organizations that wanted to force

governments to act to mitigate the negative effects of transport. Apart from the state sector concerned in this subject, the company from the private sector have joined, also engaged in research on Green Logistics. At that time, corporate strategies have been formulated for the protection of the environment, both for the company and its activities in the area of logistics,

2. Operational to Strategic - a trend that has extended the involvement of companies in the Green Logistics, initially, they have committed to several changes aimed at protecting the environment, and ran toward the implementation of important issues concerning the environment strategy for the whole area of activity,

3. Local to global - in the years 1960-70 main problem was the extent to which local businesses affect the environment - air pollution, noise, vibration and traffic accidents. However, the same issue but on a global scale, was not discussed. However, in 1970, some models of climate change led to conclude that the Earth is waiting another ice age. Acid rain and the widening ozone hole that not only vindicated the logistics but also other aspects of the business may affect the environment globally. Currently, the impact of logistics on the environment on a global scale is a major goal of current research.

Currently, the term "green logistics" is often used interchangeably with "reverse logistics", but in contrast to the reverse logistics, green logistics „summarises logistics activities that are primarily motivated by environmental considerations”.[14]



Figure 1. Comparison of reverse logistics and green logistics.

Source: Author's elaboration based on [15]

J.P. Rodrigue showed that the "green" and "logistics" are often in opposite to each other. With regard to "logistics" are used in a strategy aimed at minimizing the cost, but this comes at the expense of the environment, for example, air transport is the fastest transport, often eliminating the costs of storage, however, transmitting to the environment significant amounts of CO², [see 16]. Another example would be the use of low-cost packages, which, however, after the consumption of saturated with waste dumps, because they are not subjected to the

recycling or recovery cost is too high. In this way, there is a kind of paradox between the "green" and "logistics". Paradoxes are occurring in several key areas - cost, time/availability, Network, Reliability, storage, e-commerce.

Dimension	Outcome	Paradox
Costs	Reduce costs by improving packaging and minimizing waste.	Environmental costs are often much higher than cost of packaging.
Time/flexibility	Creation of integrated supply chains and JIT provides efficient distribution system.	Increased production, higher sales and distribution system needs more space, more energy and increases CO ² emissions.
Network	Increasing the efficiency of the system due to changes in network.	Concentration of environment impacts next to major hubs and along corridors, impact on local communities.
Reliability	Effective and punctual transport system.	Trucks and planes put a negative impact on the environment
Storage	Reducing the demand for private warehouses.	Continuous use of roads, causing increased congestion on the roads.
e-commerce	Increasing the number of business opportunities and diversification of supply chains.	Changes in the physical distribution cause an increased energy consumption

Table. 1. Paradoxes of Green Logistics

Source: author's elaboration based on [16]

Green logistics forces all users logistics system, to consider how their actions affect the environment. The main objective of green logistics is to coordinate all activities in such a way that while the use of their supply chains in the most efficient way, minimizing the cost was going to be borne by the environment. In the past, "cost" related only to the cash, now "cost" is also understood as the additional costs of logistics activities: climate change, air pollution, waste.

Conclusion

The concept of sustainable development can become a kind of benchmark for green logistics, because the concept is widely discussed issues concerning environmental protection, social development and economic development. Logistics, usually occurs only in the scale of enterprises, even in the case of a company with a global reach, logistics operations will be conducted solely within the company and its effects will adversely affect the closest environment of the company. However, despite the introduction of the concept of sustainable development for logistics operations can contribute to the emergence of "green logistics", which not only will focus on actions to minimize its harmful effects on the environment but it will introduce the tools and behaviors that contribute to improving society local community and its rapid economic development. Currently, green logistics mainly focuses on issues concerning environmental protection, an introduction to the elements of the concept of sustainable development will allow for its efficient operation in all areas listed in the concept of sustainable development and will help popularize the 'sustainable logistics' term.

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PORÓWNIANIE ISTOTY KONCEPCJI ZRÓWNOWAŻONEGO ROZWOJU I ISTOTY GREEN LOGISTICS – PRZEGLĄD LITERATURY

Abstrakt: niniejszy artykuł prezentuje istotę koncepcji zrównoważonego rozwoju wraz z przeglądem najpopularniejszych jego definicji. Następnie zaprezentowana zostanie istota Green Logistics wraz z jej najczęściej występującymi paradoksami. W podsumowaniu zawarta została teza iż wprowadzenie elementów koncepcji zrównoważonego rozwoju może przyczynić się do szerszego zrozumienia istoty Green Logistics.

可持續發展的概念綠色物流的比較研究 - 文獻回顧

下面的文章，提出了可持續發展的概念，並修改其定義的本質。然後提出了綠色物流的本質和它的矛盾。總之，論文的結論是，引進的可持續發展概念的元素，可以促進更廣泛的認可的綠色物流。