



World Scientific News

WSN 72 (2017) 32-42

EISSN 2392-2192

Sustainable development as a research area in economy

Beata Sadowska^{1,a}, Monika Starosta-Grala^{2,b}, Anna Ankudo-Jankowska^{2,c}

¹Faculty of Management and Economics of Services, University of Szczecin, Szczecin, Poland

²Faculty of Forestry, Poznan University of Life Sciences, Poznan, Poland

^{a-c}E-mail address: beata.sadowska@wzieu.pl , mstarosta81@gmail.com , aankudo@gmail.com

ABSTRACT

Sustainable development means a development model in which meeting the current needs of society and the needs of future generations is treated equitably. The concept of sustainable development was created in opposition to the development of the traditional development. It was a criticism of the current development model, which was based on the unlimited exploitation of natural resources and environmental degradation. The article's objective is to present the achievements of economic theory in the evolution of the concept of sustainable development. The author asked herself a few questions: (1) What is the relationship between the economics of sustainable development and the economics of forestry?; (2) Did the economics of sustainable development have an impact on the development of sustainable forest management, or rather forest economics created the foundation for sustainable development? To accomplish such a research task, there was the analysis of Polish and foreign literature used.

Keywords: sustainable development, economic theory, environment economics, national forests

1. INTRODUCTION

The vast majority of economists and a large part of the representatives of other sciences, would agree with the opinion that economics¹ is the queen of the social sciences. The success of the economy has had a strong mark on its relations with other social sciences. As hard social science, modelled on the exact and natural sciences, the economy was in the twentieth century, and especially in the 50-80s regarded by a majority of the representatives as a model of social science. Today, the relationship between economics and other social sciences are characterized by a double line - on one hand, the economy is forcing or successfully convincing to use its concepts, models, methods and research tools on the other hand, borrows ideas, concepts and research methods from other disciplines, opens to other disciplines, cooperates with them, and seems to integrate with them.

Economic point of view, in the centre of which were the ideas of rationality, balance, efficiency and effectiveness, seemed to be a powerful tool for understanding human behaviour, not only in the economic sphere, but also in many other areas of social life. The sources of the development of economic thought were and still are deficiencies in meeting human needs in relation to production capacities and expectations (desires) of people. Economics is a social science that studies the problems of satisfying these needs. Economic sciences initially occupied only economic goods, but now also pay attention to the natural resources, determining their value and the quality, or the degree of satisfaction of everyone's life. Economics of sustainable development aims to ensure the standards of environmental, economic and social quality of life and freedom of all people living on Earth.

The article's objective is to present the achievements of economic theory in the evolution of the concept of sustainable development. The author asked herself a few questions: (1) What is the relationship between the economics of sustainable development and the economics of forestry?; (2) Did the economics of sustainable development have an impact on the development of sustainable forest management, or rather forest economics created the foundation for sustainable development? To accomplish such a research task, there was the analysis of Polish and foreign literature used.

2. EVOLUTION OF THE CONCEPT OF 'SUSTAINABLE DEVELOPMENT' IN THEORY OF ECONOMICS

Each society is able to produce goods and services that satisfy human needs. The long-term process of enlarging the production of goods and services in the country generates

¹ The term "economy" appeared already in ancient Greece at the end of 5th and 6th century BC. Firstly used it a great historian, thinker and strategist Xenophon. In his interpretation, economics is the study of the farm, about wealth management, home. But it was Aristotle, Greek philosopher, thinker and scholar of antiquity who excelled Xenophon in degree of generalization of economic phenomena. According to him, economics is related to science on the rights of the household. With the economy there are linked two names: Adam Smith called "the father of the political economy of capitalism and D. Ricardo. Both are widely regarded as the founders of the modern school of economic thinking, referred to as classical economics. This school also includes J.S. Mill and by some economists K. Marks. Economics is the study of how people deal with rarity, namely the lack of availability of unlimited wealth. It should be remembered that the universal goal of business is to satisfy the needs.

economic growth. Economic growth is a measurable economic category. The term of **economic growth** and interest in it goes back to the beginnings of economic thought. Many classics of economics [1-4] were interested in the category of economic growth, as shown in Figure 1.

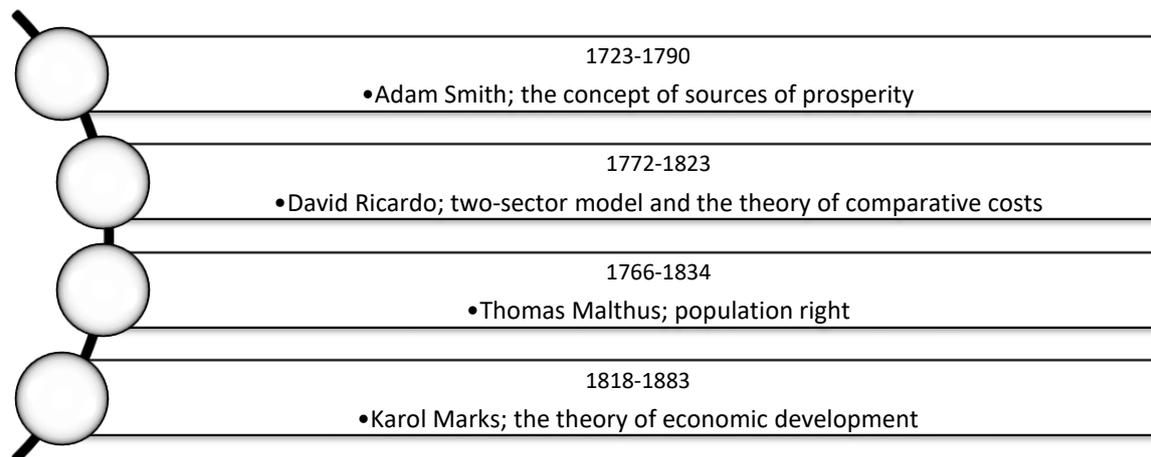


Figure 1. Growth in economic theory

Source: own study based on: 1) An Inquiry into the Nature and Causes of the Wealth of Nations, W. Strahan and T. Cadell, London 1776; 2) The Principles of Political Economy and Taxation, John Murray, London 1817; 3) An Essay on the Principle of Population, J. Johnson, London 1798; 4) Zur Kritik der politischen Ökonomie, Erschienen 1859 bei Franz Duncker, Berlin; Das Kapital. Kritik der politischen Oekonomie, Hamburg 1867 [Kapitał – Krytyka ekonomii politycznej, tom pierwszy, księga I: Proces wytwarzania kapitału, KiW, Warszawa 1951].

Economic growth means a change, which leads to increased flows of goods and services, as well as economic resources, which are expressed in natural units, cash, in a proper country and time. Economic growth is the increase in the annual production of goods and services in the country. If in the next year the entire economy manages to sell more goods and services than in the previous year, it is said that economic growth is achieved.

Economic growth takes place with the different phases of economic development, which represent a higher and higher level of income in relation to the previous state. Synthetic measure of economic growth is the level and rate of growth of gross national product in relation to 1 citizen. Many factors determine the level of economic growth, and in the system of economic growth factors it is possible to distinguish the following factors: historical, model and system, as widely shown in Figure 2.

The issue of progress in the economies of countries had been present since the birth of classical economics in the late eighteenth century. Economists have tried to distinguish the concept of economic growth and development. Defining economic development [5] emphasized that it is a broader concept of economic growth. For a long time, however, the concept of economic development was further confined to the category of economic growth. Initially, even the economists dealing with the problems of underdeveloped countries, identified economic development with growth. I. Adelman [6] defined economic development as "a process by which an economy is transformed from the state, when the growth rate of income per capita is low or negative to a state of significantly increased rates, permanently in

the long term." According to H. W. Arndt [7] this perception of economic development dominated after the Second World War for about two decades, wherein the concept of development had been used primarily by economists studying the problems of less developed countries. The researchers of developed economies still often wrote about economic growth. However, as a result of failures of countries less developed, more and more economists have come to believe that growth is important, but is not the only symptom of economic development.

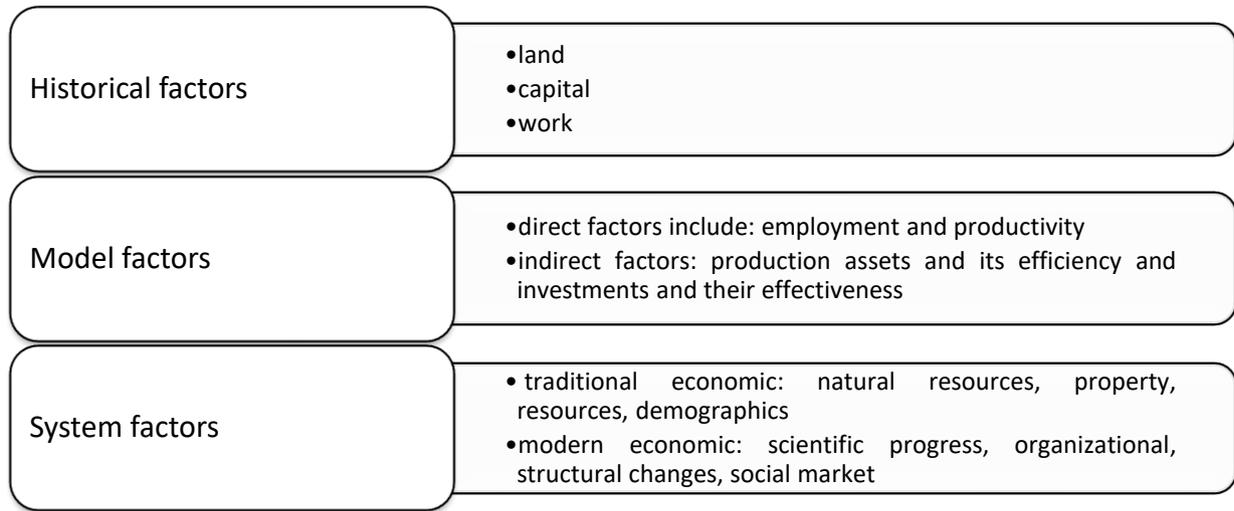


Figure 2. Systematics drivers of economic growth

Source: own study

Economic development is a process of long-term positive changes taking place in the economy. It includes both quantitative changes, growth of production, employment, investment, size of functioning capital, income, consumption and other economic values characterizing the economy from the quantitative (economic growth), as well as the accompanying changes in qualitative (changes in the structure of production capacity of the economy, improvement of technological infrastructure, the importance of virtual economic relations, computerization).

Economic growth is a category of quantitative and economic development is a quantitative and qualitative category. The scope of economic development includes economic growth. Economic growth and economic development are not the only elements of the evolution of the concept of "sustainable development" in economic theory. In economics, until recently, there was only distinguished the concept of economic growth and development. Over time, scientists began to introduce new terms to describe the degree of prosperity, calling it the concept of socio-economic development. UNDP [8] defines the socio-economic development, as a process of expanding human choices that leads to a long and healthy life, knowledge and maintain a decent standard of living. The concept of "socio-economic development" is therefore related to beneficial quantitative, qualitative and structural changes in the economy and society of the country. Socio-economic development is defined as the expansion of freedom and opportunities for people who are living how they like, respect and appreciate.

"Growth and Development" are now important categories of the theory of sustainable development. The main assumption of the theory of sustainable development is the steady development of systems such as: economic, social, ecological, technological and cultural. None of these systems should adversely affect the other and should not limit the other. Economic growth and development, neoclassical environmental economics, ecological economics, environmental economics create a new foundation for sustainable economic development.

3. THE INFLUENCE OF ENVIRONMENTAL ECONOMICS IN THE DEVELOPMENT OF ECOLOGICAL ECONOMICS

Modern economics was established in the eighteenth and nineteenth century, its' most important school is called classical economics, and its main precursor was Adam Smith [9]. It did not deal with the meaning of natural resources for the economy, for example, Ricardo [10] argued that air, water and other resources are given in unlimited quantities. The disciples of Adam Smith's theory developed in the direction of radical liberalism, thus the importance of natural resources and knowledge of the environment was not under consideration and did not play a significant role at the time [11].

Referring to the classical economics, there was neoclassical theory developed in the late nineteenth century. The main thinkers of this period are: Carl Menger, Leon Walras, Alfred Marshall. During this period in the 70s of the twentieth century the neoclassical theory of the environment was developed. Its theoretical basis was the welfare theory. It is an interdisciplinary science drawing its roots from ecology and economics.

This theory aimed at protecting the environment and natural resources [12]. The protection of natural resources for purely economic issue was also considered [13].

The objective of neoclassical economics environment was limiting the exploitation of natural resources by protecting the environment, since the socio-economic factors resulted in overexploitation of natural resources and high costs of farming in the national economy. Environmental economics has taken a number of issues bordering economy and ecology. Among the most important issues, there should be mentioned the use of natural resources for economic purposes [14]. Environmental economics described what economic reasons underlie environmental issues and natural resources, and what are the economic consequences of the degradation of nature [15].

The most important conclusions of the neoclassical theory of the environment include:

- natural resources play an important role in human life and in the economy,
- there can be distinguished a market failure, determining losses and the burden on the environment,
- there is a wrong allocation of resources, which is caused by externalities understood as an unwanted ecological effects of human economic activity. The current economic environment is often referred to as the economics of externalities,
- issues are taken to correct negative externalities by internalising the costs that should be borne by polluters. An instrument to correct these negative effects is a tax, which in order to bring the desired effect should be equal to the marginal external effect. This type of tax is called a Pigou tax [16]

- actions to protect the environment should be taken as long as the cost does not exceed the costs of avoiding pollution.

Many neoclassical environmental economists have recommended the use of indirect instruments of sustainable development, such as voluntary payments of the environment use. These demands, however, were rejected. Neoclassical economists were of the opinion of weak balance of economic, social and environmental objectives.

It is important to agree with Holstein [17] that taking responsibility for the future generations cannot be reconciled with the neoclassical theory. On the basis of criticism of the shortcomings of neoclassical economic environment theory, ecological economics was developed [18]. Its key features include:

- the existence of the limits of natural resources use,
- striving for a sustainable social system with a high quality of life for all residents within the natural constraints,
- some processes in the economy are irreversible and require compliance with the principles of thrift,
- principle of intergenerational equity and intergenerational assumed, as a matter of evidence
- the main task of ecological economics and the economics of sustainable development is to achieve a sufficiently high standards of environmental, economic, social and cultural rights for present and future generations within the tolerance limits of the environment.

Ecological economics has made a significant contribution to the economic theory of sustainable development. The main development of its representatives are published in the journal of Ecological Economics. Examples of their achievements are related with [19]:

- introducing the concept of environmental services and developing a method of estimating,
- demonstrating that maximizing economic growth is always associated with an increase in the flow of matter and energy between the environment and the economy
- the assumption that the goal of economic analysis is to optimize management processes in relation to ecosystems under their interactions

The concept of sustainable development was born from ecological economics.

4. ECONOMICS OF SUSTAINABLE DEVELOPMENT AND ECONOMICS OF A FOREST

The issue of the environment has begun to emerge in the late 60s and 70s of the last century. In 1972 in Stockholm at the first United Nations Conference on "Environment and Development", the problem of subjectivity of the natural environment and opportunities for the harmonious development of man and nature was presented. The definition of sustainable development appeared in the report, G. H. Brundtland, which was presented at the World Conference on Economic development in 1987. According to this report, sustainable development is meeting the needs of today, in a way that does not limit future generations to meet their own needs [20].

The effect of the discussions on the G. H. Brundtland Report was the organization in Rio de Janeiro in 1992 the second UN Conference that adopted the "Rio Declaration on Environment and Development" and the global action program Agenda 21. The declaration emphasis sustainable development in the long term, which should be achieved through sustainable production, consumption and creating economic systems that take into account the value of the environment [21]. The next step was a conference of the World Summit on Sustainable Development in Johannesburg in 2002. It should be remembered that the basic context of the discussion of the concept of sustainable development was only about "dwindling resources" in view of the ongoing economic growth and development [22].

Sustainable development today is defined also by scientists and practitioners mainly as [23]:

- socio-economic development harmonized with the natural environment [24]
- manner of managing binding to the use and evolution of the natural resources and the organization of social life, while maintaining a high quality of life [25]
- integration of order: social, economic, ecological, cultural, spatial, institutional.

The current concept of sustainable development is a part of "forest", but rather a sustainable forest. It is interesting to refer to history and to draw attention to the protection of the natural environment, including protection of forests, and to consider how the economics of forestry is associated with the concept of sustainable development. Table 1 below shows the historical conditions of forest management [26], as determinants of building sustainable forest management, which is one of the elements of sustainable development.

Table 1. Historical conditions of forest management.

Lp.	Name/date	Characteristic
1.	Regulations, which regulate the management of forests in Nuremberg, 1294.	documents drawing attention to the need to protect the stand from over-exploitation of forest resources
2.	Wiślański status, 1347 r.	contained provisions on the protection of oaks and trunks and forbade wayward cattle grazing and kindling a fire in someone else's forest
3.	Warcki status, 1423 r.	increased the number of valuable species of trees and exacerbated fines for illegal logging
4.	Business instructions on natural forest regeneration on the surface formed after the cut - Chancellor of the Crown and a member of the National Education - Andrzej Zamoyski, 1775-1784 r.	a pioneer in the introduction of forestry in Poland
5.	Antoni Tyzenhauz	precursor to the intensification of forestry production and its increased use

6.	Krzysztof Kluka, 1778 r.	popularized natural regeneration, failure to excessive logging
7.	1991 r.	The Law on forests - forest management is conducted according to universal forest protection, durability, maintenance of forests, continuity and sustainable use of all forest functions

Source: own study based on: Kusia W., Jaszczak R.: *Propedeutyka leśnictwa*. Wydawnictwo uniwersytetu Przyrodniczego w Poznaniu, Poznań 2015, s. 19-24.

Modern understanding of the concept of sustainable development was presented for the first time in 1713 in a published study of Saxon official and thinker H. C. von Carlowitz, which title was: *Sylvicultura economica* [27]. He advocated the need to maintain a permanent forest stand. In many countries, together with economic development there were attempts to rely on sustainable forest management principles, promoting the cutting such amount of trees, that does not exceed their natural growth [28].

Traditionally, forest economics is a science that studies how people deal with the scarcity and lack of unlimited availability of forest goods, or how to solve the problem of allocation of scarce resources and distribution of manufactured goods (services) in order to meet the various needs of the extent to which it is in this case possible [29]. Recalling the words written by T. Molenda it should be noted that [30]: "forest economics differs from biological and technical branches of forest and it has in common with detailed economics that first of all it is not the science of the forest and wood and the " things " or facts, but the science of meeting social needs in the field of forestry through the production and distribution of manufactured products. When asked what reasons justify the separation of forestry economics as a separate discipline in economic sciences, HJ Vaux cites three arguments: the long-term production of forest products, lack of physical borders in the forest stand between the means of production and the final product and irrational monetary of many important forest values.

Current definitions of forest management are more complex, yet highly varied. In general they emphasize that forest management covers all human activity associated with the forest, the aim of which is permanently optimum satisfaction of human needs for tangible and intangible forest goods.

Over the past few decades there have been many important new issues of interest to the economics of forestry, with the majority of them being connected with the search for a balance between economy and ecology. The essential features of multifunctional and sustainable forest management, relate to two separate aspects, ie. social and ecological. Implementation of the model of multifunctional forest management through inter alia the inclusion of the public in the decision-making process decisive about the use of forests and their multilateral values.

Historically, the economics of forestry particularly was interested in the economic nature of the forest, mainly production function, property, fixed and current assets, the productivity of the forest. Modern multifunctional forest management is to ensure that you get the maximum social benefit, taking into account the multilateral nature of the relationship of forests and forest management with the economic and social context, both on a local, regional

as well as national or international scale. Furthermore, such a model should be socially acceptable, environmentally friendly and feasible from an economic point of view.

5. CONCLUSIONS

Starting from the seventies of the twentieth century, there were created a variety of concepts, definitions and directions of research that deal with the problems of over-exploitation of natural resources and creating conditions for sustainable development. Economics of sustainable development unlike the economics of forestry (in historical perspective) goes beyond the purely economic approach. The basic values of the economics of sustainable development are equity within and between generations, and activities within the three functions: economic, ecological and social.

Sustainable development, as a research area of economics form the basis of considerations of this paper, and the purpose of the study was to present achievements of economic theory in the evolution of the concept of sustainable development. The author asked herself a few questions: (1) What is the relationship between the economics of sustainable development and the economics of forestry?; (2) Did the economics of sustainable development have an impact on the development of sustainable forest management, or rather forest economics created the foundation for sustainable development?

Sustainable development refers to economic processes in the context of socio-ecological, with particular emphasis on links between man and nature, and the individual voices of people calling for moderation appeared in antiquity – they were related to programs of afforestation and felling. Already in the sixteenth century, in the code of Rhineland-Palatynat forest it was written, that it is allowed to cut down only as many trees as it can grow, so that it would not run out of wood for future generations [31]. This could be considered as the first signs of sustainable growth.

This iterative research process based both on literature studies - Polish and foreign, enabled the realization of the objective. The study and detailed analysis gave rise to define the following conclusions:

- sustainable development is an area of research in economics,
- forest economics, as a science which treats of certain economic processes, does not belong to the science of forest, but to the economic sciences,
- many thinkers, representatives of social doctrine, which is the economics, starting with Aristotle, A. Smith, D. Ricardo, Keynes dealt with the issues of economic growth, development, the environment, resources, scarce goods,
- in economic theory there is an evolution of the concept of "sustainable development" – from the definition of "growth" through the concept of "development", "economic development", "socio-economic development"
- economic growth and development, neoclassical environmental economics, ecological economics, environmental economics create a new foundation for sustainable development,
- forest economics encompasses social needs so historically it has been the starting point for sustainable forest management; many scientists for years note that non-productive issues become important to the economy - social and environmental issues; forest economics is thus a link in sustainable forest management,

- sustainable forest management is one of the important elements of sustainable development, along with the evolution of the overall concept of economic sustainability there was starting to shape a sustainable forest management, from an economics of forestry, drawing on the economics of sustainable development assumptions specifying particular functions of its activities, balancing activities and processes within the production area, environment, culture and society.

References

- [1] W. Strahan, T. Cadell T, *An Inquiry into the Nature and Causes of the Wealth of Nations*, London (1776).
- [2] J. Murray, *The Principles of Political Economy and Taxation*, London (1817).
- [3] J. Johnson, *An Essay on the Principle of Population*, London (1798).
- [4] *Zur Kritik der politischen Ökonomie*, Erschienen (1859) bei Franz Duncker, Berlin; *Das Kapital. Kritik der politischen Oekonomie*, Hamburg (1867) [Kapitał – Krytyka ekonomii politycznej, tom pierwszy, księga I: Proces wytwarzania kapitału, KiW, Warszawa (1951)].
- [5] *The New Encyclopedia Britannica, Micropedia*, (2003), 15th Edition, vol. 4, Chicago, pp. 355-356.
- [6] I. Adelman, *Theories of Economic Growth and Development*, Stanford University Press, Stanford (1961), s. 1.
- [7] H.W. Arndt, *Economic Development*, University of Chicago Press, Chicago (1989), s. 51.
- [8] UNDP (1990), *Human Development Report 1990*, Oxford University Press. pp.10.
- [9] H. Rogall, *Ekonomia zrównoważonego rozwoju. Teoria i praktyka*. Wydawnictwo Zysk i Spółka, Poznań 2010, s. 84-85.
- [10] D. Ricardo, *Principals of political Economy and Taxation* (2006/1821). Wyd. Pol.: *Zasady ekonomii politycznej i opodatkowania*, PWN Warszawa 1955, s. 72.
- [11] H. Rogall, *Ekonomia zrównoważonego rozwoju. Teoria i praktyka*. Wydawnictwo Zysk i Spółka, Poznań 2010, s. 54-55.
- [12] S. M. Lele, *World Development* 19 (1991) 607-621.
- [13] H. Siebert, *Ökonomische Theorie der Umwelt*, Tübingen; Wicke L.: *Umweltökonomie – Ein praxisorientierte Einführung*, wyd. 4, München.
- [14] G. Heal, *Oxford Journals* 3 (2009) 4-21.
- [15] H. Folmer, L. Gabel, H. H. Opschoor, *Ekonomia środowiska i zasobów naturalnych. Wprowadzenie* (w:) H. Folmer, L. Gabel, H. H. Opschoor, *Ekonomia środowiska i zasobów naturalnych*. Wyd. Krupski, Warszawa 1996, s. 13.

- [16] K. Lofgren, Środowisko i zasoby naturalne w perspektywie ekonomicznej. [w:] H. Folmer, L. Gabel, H. H. Opschoor, *Ekonomia środowiska i zasobów naturalnych*. Wyd. Krupski, Warszawa 1996, s. 33.
- [17] L. Holstein, *Nachhaltigkeit und neoklassische Ökonomik*, Marburg, s. 98.
- [18] H. Rogall, *Ekonomia zrównoważonego rozwoju. Teoria i praktyka*. Wydawnictwo Zysk i Spółka, Poznań 2010, s. 118-124.
- [19] H. Bartmann, *Umweltökonomie – Ökologische Ökonomie*, Stuttgart (1996), s. 7.
- [20] B. Poskrobko, (2010a), Filary ekonomii zrównoważonego rozwoju, [w:] *Ekonomia zrównoważonego rozwoju. Materiały do studiowania*, B. Poskrobko [red.], Wyd. WSE, Białystok, s. 131-160.
- [21] World Commission on Environment and development, *Our Common future, report*, Geneva 1987, [http:// www.un-documents.net/wced-ocf.htm](http://www.un-documents.net/wced-ocf.htm) [dostęp: 24.11.2016r.].
- [22] K. Pezzoli, Sustainable Development: A Transdisciplinary Overview of the Literature. *Journal of Environmental Planning and Management* (1997), Vol. 40, p. 549-574.
- [23] A. Scerri, J. Paul, *International Journal of Social Research Methodology* 13 (2010) 41-53.
- [24] B. Pionek, *Koncepcja rozwoju zrównoważonego i trwałego Polski*. PWN, Warszawa 2002, s. 16.
- [25] M. Słodowa-Hełpa, *Rozwój zintegrowany. Warunki, wymiary, wyzwania*. CeDeWu, Warszawa 2013, s. 38.
- [26] W. Kusia, R. Jaszczak, *Propedeutyka leśnictwa*. Wydawnictwo Uniwersytetu Przyrodniczego w Poznaniu, Poznań 2015, s. 19-24.
- [27] H. C. von Carlowitz, *Sylvicultura economica – oder Anweisung zur wilden baumzucht*. Nachdruck der Ausgabe 1713, Freiberg 2000.
- [28] W. A. Duerr (1960). *Fundamentals of Forestry Economics*. Mc Grow Hill Book Company, New York - Toronto - London.
- [29] G. Oesten, A. Roeder, (2008) *Management von Forstbetrieben, Band I*, Institut Forst Ökonomie der Universität Freiburg.
- [30] *Zagadnienia ekonomiki leśnictwa*, red. W. Krajewski. Państwowe Wydawnictwo Rolnicze i Leśne, Warszawa 1969.
- [31] F. Luks, *Nachhaltigkeit*, Hamburg 2002, p. 20.

(Received 20 March 2017; accepted 30 March 2017)