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THE ECONOMIC CONDITIONS OF ENTERPRISE FUNCTIONING

The Concept of Sustainable Development and its Use for Sustainability Scenarios

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The problem of conceptual descriptions and evaluation of sustainable development are analyzed in the work. As the objectives, descriptions of the concept of sustainable development are analyzed and classified. Then the analysis of the concept of sustainable development is given. After this analysis the systematic view of the dimensions of sustainable development is provided. Methods of systematic scientific literature analysis, general and logical analysis, comparison and generalization were used for the research.

Although the essence of the concept of sustainable development is clear enough, the exact interpretation and definition of sustainable development have caused strong discussions.

Thus, we should take into consideration the fact that the concept of sustainable development may be difficult to understand and may have different meaning dependending on the analyzed literature on the concept in which it is used. For this reason, in the article we presented several descriptions of sustainable development that would include multiple aspects of this concept.

Difficulties related to the definition of sustainability show that sustainable development is a complex and multidimensional issue, which combines efficiency, equity, and intergenerational equity based on economic, social, and environmental aspects. Debates on sustainable development presented in the literature can be classified into several thematic areas: a) conceptual; b) contextual; c) academic; and d) geopolitical, which are investigated in the article in more details.

As a general concept, sustainable development encompasses three fundamental approaches: economic, environmental, and social development, which are interrelated and complementary. Traditionally, the concept of sustainable development involves three equivalent components: environmental, economic, and social development; as well as three dimensions of wellbeing, i.e. economic, ecological, and social, and their complex interrelations, which are investigated in article in more details.

We tend to think that the analysis of sustainable development should be based on the assumption, indicating that sustainable development is based not on economic, social, ecological, or institutional dimensions, but rather on their system as an integrated whole.

Not all relations identified in a sustainability analysis have the same relevance and the same meaning for the strategic instruments of regional sustainable development. Relations among sub-systems identified should be relocated in a logical structure, based on the intention of the cognitive tool being built. In order to attain this, a hierarchical framework with coherent sustainability logic is needed.

Since sustainability issues should be analyzed and solved on the system levels where they develop and manifest themselves, one can consistently formulate respective aims of the sustainable development policy for separate dimensions (economic, ecological, social, and institutional) of sustainable development on each of these levels of economic development policy, thus obtaining the matrix of the aims of sustainability policy.

Keywords: *sustainable development, dimensions of sustainability, sustainability policy.*

Introduction

The Problem. When trying to identify the essential features of sustainable development, which would allow to understand and provide the models of the management of sustainable development, their comparison and clarification of their processes, one faces a theoretical issue with the conceptual description and evaluation of sustainable development. Thus, when analyzing sustainable development and its management, the following questions arise: what does the concept *sustainability* actually mean? What is the content of this concept? In scientific literature, sustainable development has been analyzed in different qualitative aspects, such as *economic, social, ecologic, institutional, ethical, political,* etc. The variety of the applied research techniques further confirms the problematic nature of the concept of sustainable development and its evaluation (Dzemydiene, 2008).

The research object is the concept of sustainable development.

The aim of this research is to systematize descriptions of sustainable development and its dimensions.

The Tasks. In order to fulfill these objectives, the following research tasks had to be accomplished:

- To analyze and classify the definition of sustainable development.
- To analyze the concept of sustainable development.
- To provide a systematic view of the dimensions of sustainable development.

The method of the research was logic abstraction that encompasses generalizations on theoretical systems analysis of the environmental and ecological economics; this was based on the conclusions and reasoning of scientists from other countries. The main scientific studies related to the problem have been reviewed and thoroughly analyzed.

Issues related to the definition of sustainable development

Although the *essence* of the concept of *sustainable development* is clear enough, the exact interpretation and definition of *sustainable development* has caused strong discussions (Ciegis, 2004).

Heinen in 1994 indicated that there is no single unanimous approach to "sustainable development" due to a variety of scopes characteristic of different protection programs and different types of communities and institutions (Environmental Challenges in Farm Management). A similar approach was expressed by *Radermacher* (1999). *Spedding* (1996) stated that this was probably the reason for the emergence of a significant number of books, chapters, and articles containing words "sustainable" and "sustainability" in their titles yet providing no definitions of the concept.

It is possible that the terminology problem occurs in the *dual* nature of the *sustainable development* concept, covering ***development*** as well as ***sustainability*** (Ciegis, 2004). Economic literature offers over 100 (*Jacobs* (1995) mentions as many as 386) definitions on *sustainable development*, mostly oriented towards separate sectors – e.g. environmental, economic, civilization – or emphasizing managerial, technical or philosophical/ political decisions, and thus expressing rather different concepts of sustainable development (Munasinghe, 1993; Pearce et al, 1989; Pezzey, 1989; Pezzoli, 1997).

Thus, we should take into consideration the fact that the concept of sustainable development may be difficult to understand and may have different meaning dependending on the analyzed literature on the concept in which it is used (Pierantoni, 2004). For this reason, we will present several descriptions of sustainable development that would include multiple aspects of this concept.

In 1992, the World Bank described sustainable development with a laconic phrase "sustainable development is development that continues" (World Development Report, 1992). Significantly wider descriptions of the concept exist as well. In 1992, the Rio de Janeiro declaration on Environment and Development described sustainable development as *long-term continuous development of the society aimed at satisfaction of humanity's need at present and in the future via rational usage and replenishment of natural resources, preserving the Earth for future generations* (Rio Declaration on Environment and Development, 1992).

In 1990, *Harwood*, emphasizing economics, described *sustainable economy as a system that can endlessly develop towards greater benefit for people, greater efficiency of resource use, and balance with the environment that is friendly to people and other species* (Environmental Challenges in Farm Management). In 1987, *Goodland* and *Ledec* described sustainable development as the transformation (development) of economics, optimizing the economic and social benefit obtained at present without jeopardizing the possibilities for obtaining such benefit in the future. *Pirages* (1977) stated that sustainable growth means economic growth that is supported by the physical and social environment. Thus, sustainable development may be understood as the *process of economic development and structural changes helping to broaden human possibilities* (Petkeviciute and Svirskaite, 2001). This development is determined by the power of knowledge about development and is best seen through sustainable and balanced development of human possibilities and ability to assume social responsibility for oneself, the society, and future generations. *Weitzman* (1997) stated that sustainability is the measure of future consumption.

Conway and *Barbier* (1990) pointed out that *sustainability of economy is* ***the ability to maintain productivity*** (both in agricultural landed property and in the country in general). In this case, productivity is understood as the output of a useful product per input unit.

Pearce, *Markandya* and *Barbier* (1989) provided a more generalized definition of sustainable development that includes *the creation of a social and economic system that guarantees support for the following aims: increase in the real income, the improvement of the level of education, and the improvement in the populations' health and in the general quality of life*.

IUCN, UNEP, and WWF (1991) emphasized that *sustainable development, sustainable growth and sustainable consumption* were used as equivalent concepts. However, in reality these concepts are not identical. Besides, the very term *sustainable growth* bears intrinsic contradiction: no physical unit can grow endlessly. According to the representatives of these international organizations, the term *sustainable consumption* should be applied only to renewable resources. The term *sustainable development* should mean the following: *the improvement in the population's quality of life* ***while taking into consideration the ecosystem's regenerating capacity*** that can be described as the *maximal continuous load on the environment* (Catton, 1986), and the ***carrying capacity*** – the greatest number of population that can survive in the presence of ecological balance (Sorlin, 1997). At the same time, it can be stated that in some aspects sustainable development includes the analysis of conditions under which ecosystems may preserve the regenerating ability, which means making choices in the sense of time and space.

Holdgate (1993) stated that *development is* ***understanding of the potential of resources***. Sustainable development of renewable natural resources means taking into consideration the limits of the development process, even if those limits are changed by technologies. Sustainability of technology may be evaluated according to whether it increases productivity at the same time preserving environmental and other boundaries.

In a definition presented by *Pearce* in 1993, *sustainable development is related to the society's development whose* ***costs are not placed on future generations,*** or at least efforts are made to compensate for such costs (Environmental Challenges in Farm Management). This *ethical* necessity not to make the development a burden for future generations and to guarantee these generations' possibilities analogous to those available to previous generations should be seen as a *normative* basis of sustainable development (Norton,

2007). Considering the fact that sustainable development confronts economic, social and cultural restrictions, sustainability could be defined as an *ethical ideal* and **normative *ethical* principle** for further development of the society, that speaks not about the way it *is* but the way it *should be* and that foresees the need for criticism of the persistent human relationship and action algorithms (Parker, 1993; Kothari, 1994).

Thus, sustainable development encompasses a very important ***ethical*** component, a manifested right of every person to the proper and fair share of the planet's resources (Moldan, Dahl, 2007, Ciegis et al., 2008). In a wider sense, sustainability is associated with the *equity* in distribution, i.e. *the distribution of possibilities for development between the present and the future generations.* Then sustainable development may be defined as *better quality of life of the present and the future generations*.

According to the concepts provided by the DoE/ HMSO (1994), *majority of communities strive for economic development to* ***guarantee better living standards*** *for the present and the future generations.* These communities also strive to ***protect and improve the environment*** *at present and for their children* – and sustainable development actually tries to combine these two tasks.

Munasinghe (1994) presented an even broader view of sustainable development, defining it as *the process of increasing the spectrum of alternatives allowing individuals and communities to realize their aspirations and potential in the long perspective, at the same time maintaining the regeneration ability in economic, social, and ecological systems*. *O'Riordan* expressed a similar opinion, stating that in general, sustainable development can be seen as *the catalyst of creative thinking and practice* (Juknys, 2008).

Radermacher (1999) provided probably one of the broadest concepts of the evaluation of sustainability, indicating that the definition of sustainability should include the following elements: a) globalization, b) a long period of time (since environmental consequences are of long-term character), d) external effects, e) environmental policy, f) the approach "from the cradle to the grave".

There is a number of other definitions of sustainable development (Pearce and Turner, 1990, Pezzey, 1992, Cesar, 1994, Faucheux et al., 1996). At the end of this short survey, we will mention the definition that was used in the National Strategy of Sustainable Development (2003): *sustainable development is the society's development that creates the possibility for achieving* ***overall wellbeing*** *for the present and the future generations through combining environmental, economic, and social aims of the society without* ***exceeding the allowable limits of the effect on the environment***.

Considering the fact that *not a single* reference presented a feasible definition of *sustainable development* which could incorporate all aspects of the concept under investigation and provide no ideal understanding of this concept, it is thought appropriate to use the definition provided in *Brundtland commission's report "Our Common Future"* (1987), which discloses the idea of *sustainable development* best. It postulates that ***sustainable development is the kind of development, which satisfies the current needs without endangering the future generations to satisfy their own***. This definition of sustainable development is the most frequently cited one and seems to be more exhaustive than the majority of others. The essence of Brundtland's statement is *fair distribution of natural resources both among different generations and among the present generation of people from the first, the second, and the third world, and finding a positive consensus between the environmental, social, and economic dimensions of environment*.

Thus, sustainable development is not about a choice between environmental protection and social progress, but rather more about striving for economic and social development that would be compatible with environmental protection.

The definition presented in the report of the *Brundtland commission* contains two essential concepts:

1) the concept of *needs*, especially the needs of the world's poor, which should be given priority;

2) the idea of *limitations* arising from the effect of technologies and social structures on the ability of the environment to satisfy present and future needs.

An important element in this definition is the *possibility for the satisfaction of needs,* which may have different meanings. It may be related to the availability of alternatives (production and consumption, or various social and environmental functions) to individuals and the society in general. *Pierantoni* (2004) closely associated the concept of these possibilities with different types of capital (economic, human, ecologic, and social), which are essential variables in definitions of sustainable development.

It is noteworthy that *human* needs (not the "needs" of animals, species, or ecosystems) are in the focus of attention, and thus the concept of sustainable development is *anthropocentric*.

Talking about *limitations*, one can state, that the sustainable development concept determines only *boundaries* – not absolute limitations, but restrains, applied to resources of the existing technological and social organisational environment and capabilities of absorbing the effects of human activity.

It is noteworthy that the definition provided by the *Brundtland commission* does not provide any more detailed explanations what sustainable development may require in practice and what actions should be taken – it has been formulated more as a universally agreed moral principle, and in many cases it is more imagined than practically applicable (Ciegis, 2004).

On the other hand, one may conclude that the *sustainable development* concept in both the *Brundtland commission's report* and its definition presented in the *Brundtland commission's report* merges two urgent *goals*:

a) *to ensure appropriate, secure, wealth life for all people*- its is the goal of ***development***,

b) *to live and labour in accordance with bio-physical limits of the environment* – it is the goal of ***sustainability***.

These goals might seem contradictory but, despite that, they have to be achieved in unison. On the other hand, *development,* which is frequently understood as a synonym to progress, has become more acceptable, since it was associated with "natural" limitations that were clearly identified in the concept of *sustainability*.

It has to be noted that the definition of *sustainable development* used in the report *"Our Common Future"* was, in fact, *a* specific turn-point from the previously dominating attitude "*growth* **or** *environment*" towards a possibility of – which is the essential contribution of *Brundtland Commission* report – *complementing* each other *economic growth* **and** *environment*. One could even say that the idea of perfect ***complementary*** interaction between the environment and development is one of the interpretations of the philosophy of the *Brundtland Commission*. This idea emphasizes not only *quantity*, but also *quality* of economic growth, and people's wellbeing existing *beside* economic growth. This idea deals with *development* rather than only *growth,* and with the *quality of life* rather than only with *real income*. The proposed concept of sustainable education clearly showed that contradiction between *growth* and *the environment* is not the real problem, and economic growth *does not necessarily* mean degradation of the environment.

On the other hand, *the realization of sustainable development remains highly problematic*. We tend to think that, striving for useful concrete application of the concept of *sustainable development,* it should be defined in such a way that would *allow for the identification of measurable criteria that would provide separate individuals or their groups with significantly different value-based orientations, political preferences, or assumptions about human nature to agree whether these criteria were satisfied in a concrete program*.

Debates on the Concept of Sustainable Development from Different Academic Perspectives

It is noteworthy that in different subjects sustainable development is defined differently (Ciegis, Zeleniute, 2008):

a) *in economics* it is development ensuring that the per capita income of future generations is not lower than that of the present generation;

b) *in sociology* it is development that preserves the community, i.e. maintains close social relationships in communities;

c) *in ecology* it is development that preserves the diversity of biological species, essential ecosystems, and ecological processes.

Difficulties related to the definition of sustainability show that sustainable development is a *complex* and *multidimensional* issue, which has to combine efficiency, equity, and intergenerational equity on economic, social, and environmental ground. Debates on sustainable development present in the literature can be classified into several thematic areas (Rios Osorio et al., 2005): a) conceptual, b) contextual, c) academic, and d) geopolitical.

Category of the conceptual debate include the works on sustainable development that focus on its etymological origins, the semantic features of the phrase, and the analyses of the concept carried out from a linguistic point of view. The information generated within this category allows us to build a body of theoretical and critical knowledge that puts into question, from a linguistic point of view, the validity of the use of the concept in different cultural contexts, even when these concepts may have opposite or contradictory connotations. According to the analysis, conceptual ambiguity in sustainable development will not be solved by a greater description and discrimination of both theoretical and practical components involved in the literature.

Rios Osorio et al. (2005) quote research of *Tiban*, where sustainable development is analysed from the cultural domain, a field in which the existence of two different understandings of the concept are recognized: the *Non-Indigenous* and the *Indigenous* view.

The non-indigenous view is based on the arguments proposed by the *Brundtland report*, and its analysis of the concept of sustainable development identifies it with a pro-economic, liberal ideology, whose main objective is economic growth. Within this conception, the preservation of the ecosystems, culture, nature, and the environment are just tools for its achievement.

The Indigenous view is originated within the cosmovision of indigenous people, who understand nature as a whole, as life itself. Therefore, nature cannot be instrumentalized on the grounds of further material gains. The essential idea in this interpretation is that the value of nature is mediated by ethic principles that are grounded, simultaneously, in cultural values built along centuries of harmonic coexistence with and within nature. Consequently, from the indigenous worldview a different model of sustainable development is proposed; one that could be called *Integral Development* or *Ethno-development*. Culture manifests itself as an indispensable element in order to interpret the concepts of development and sustainability.

Discussion and analysis on the etymological and semantic origin of the concepts in question may seem excessive, but it must be considered a necessary approach in order to understand that there are words and phrases which cannot be homogenous in every culture, since every one of them possesses a different value system, which is simultaneously based on different perception of reality.

When scholars and researchers refer to ***the contexts of sustainable development***, the *institutional* and *academic* standpoints of the concepts are eluded. The *institutional* stance refers to the agreements and strategies involved in the concept of sustainable development, which has been reached by an international consensus. (*Institution* can be understood as a set of rules, which is used when deciding who might make decisions in specific markets ("stage of processes"), what actions are possible and what actions are limited, etc. (Hagedorn, 2008)). *The academic* context is related to the scientific approach, which has been on the base of political-institutional debates as the original cause of the emergence of the concept.

The disciplinary debate includes theoretical, conceptual, and methodological proposals, which aim at explaining the evolution in the areas of knowledge, traditionally involved in the analysis of sustainable development. The disciplinary debate is partially linked to the academic context mentioned above, but it also focuses on the evolution of the research model that is required to face the complexity of the situation created be the emergence of sustainable development. It shows that new scientific approaches are being incorporated, such as complexity

theory, system dynamics, or trans-disciplinarity, giving birth to a new scientific age that could be characterized as that of the trespassing of disciplinary limits and the rising of new epistemological models.

The disciplinary debate, from the epistemological point of view, is configured as an emergent area that includes theoretical, conceptual, and methodological proposals, which aim at explaining the evolution in the areas of knowledge traditionally involved in the analysis of sustainable development. As a result, the appearance of new disciplines is proposed. *Rios Osorio* et al. (2005) quote *Funtowicz* and *Ravetz* (1991; 1994) who proposed the concept of *post-normal science*, which represents a criticism to the epistemology of classical science, based on a reductionist concept of phenomenal reality and studied within the contexts of disciplines increasingly more specialized.

The geopolitical debate is related to the theoretical-ideological analyses that put the division between developed and underdeveloped into the question, being the basis for the distinction the concept development of the Western countries. *Rios Osorio* et al. (2005) quote *Morin* and *Kern* (1993) who argue that development has two aspects. On the one hand, it is a global myth in which industrial societies reach welfare, reduce their extreme inequalities, and provide individuals with as much happiness as society can offer. On the other hand, it is a reductionist conception, in which economic growth is the necessary and sufficient engine of all social developments, psychic and moral.

Therefore, the geopolitical debate, which had been configured as a countertrend in Western development, is readapted in order to question the new ideology on sustainable development. *Rios Osorio* et al. (2005) quote *Esteva* (1992), in whose view, sustainable development is called re-development and is an evolution of the model of Western economic development after the crisis of the seventies.

According to *Wagman* (2000) (in Rios Osorio et al., 2005), sustainable development in the West is perceived as a metamorphosis of development models that dominated the second half of the XXth century. For *Escobar* (1995), sustainable development is a new theoretical construction that aims at transferring to the social field the problem of nature's health preservation. Degradation of natural environment and extreme changes caused some of the greatest challenges for the modern society (Vitousek et al., 1997). The emergence of sustainable development could be explained by the co-occurrence of events of economic, political, and social relevance at a global level, being the environmental aspect the cause and its consequence.

Debates discussed on sustainable development constitute a theoretical body on which diverse models of analysis are being built. These models try to approach the phenomena present at today's world conflicts: environmental degradation and its causes and effects in relation to human systems (economic, social, cultural, and political). Therefore, explicative models, together with meta-theories that will allow for the understanding of reality in scientific domains, are needed. Contemporary models cannot embrace this complexity because of the inherent limits of the disciplines that have generated them.

Based on the analysis of sustainable development definitions, we would emphasize global, regional, and community level. However, plurality of aspects related to the concept of sustainability makes it a weakly defined object of discussions. This is the reason for confrontations of its concepts. Some lack of certainty in definitions of sustainable development also has advantages, which allow different interest groups for having common ideological background. At the same time, ambiguity of the definition allows for using of sustainability phrase everywhere, and this leads to losing the essence of sustainable development. The concept of sustainable development itself is changing: new knowledge, experience affect understanding of problems and possibilities of their solutions. These are the reasons for further analysis of the dimensions of sustainable development.

Systemic Analysis of the Main Dimensions of Sustainable Development

As a general concept, sustainable development encompasses three fundamental approaches: *economic*, *environmental*, and *social development*, which are interrelated and complementary. Traditionally, the concept of sustainable development involves three equivalent components: environmental, economic, and social development; as well as three dimensions of wellbeing, i.e. *economic*, *ecological*, and *social*, and their complex interrelations. In other words, sustainable development is a certain compromise among environmental, economic, and social goals of community, allowing for wellbeing for the present and future generations.

Ghosh (2008) presents the concept of sustainable development as a geometric shape, i.e. a triangle encompassing three main areas: economic, social, and environmental.

Of course, sustainability ***can be defined in relation to only one dimension*** (economic, environmental or social), therefore involving the sustainability of some economic systems, natural processes or social phenomena (Pierantoni, 2004). This interpretation focuses on an impact analysis and does not identify a long run analysis. Also, as *Pierantoni* (2004) argues, in this case, sustainability might have different meanings and because of that it might include short-run or long-run strategies, as well as require indicators used for short-run effects, and other related to long-run effects. This determines confusion in development of sustainability indicators (for more detail, see Ciegis, 2009).

For the purpose of further analysis, it is useful to compare three interpretations of sustainable development (*economic*, *ecologic*, and *social*) found in contemporary literature. At the same time, it is necessary to understand, that the conformity and usage of which to perceive sustainable development is not an easy task, as the three proposed elements of sustainable development *have to be equally assessed*. (Kahuthu, 2006) argues that disregarding at least one of the aspects of sustainable development would mean threat for the whole sustainability).

1) **The economic** *sustainability* element is based upon *Solow's* (1974, 1986, 1993) amplified *theory on capital*

convertibility and *Hicks-Lindahl concept of maximum income, which can be acquired by saving essential wealth (capital) resources for the benefit of future generations,* (implementing the principle of fair distribution among generations). Economic sustainability seeks to maximize the flow of income and consumption that could be generated while at least maintaining the stock of assets (or capital), which yield beneficial outputs (Hicks, 1946; Maler, 1990). The main goal of implementation of sustainability principles is safeguarding of an optimal amount of general capital (or sum of different kinds of capital) for the future generations. Already in 1974, *Solow* analyzed the problem of an optimal distribution of capital accumulation among generations. In the framework of neoclassical theory of economic growth, it allows for discussing criterion of "*Hicks-Solow sustainability"* (Pierantoni, 2004, van den Bergh, 2007, Toman et al., 1995). However, here we face some issues, related to *capital*, which should be preserved, *identification* types and its *convertibility*, as well as other *types of wealth*, together with *evaluation* of ecological resources (Ciegis et al., 2005).

2) **The ecological** approach to *sustainable development* pays most attention to *stability of biological* and *physical systems* and refers to *Holling's* (1973, 1978, 1986) et al. scientific works. Therefore, ecological sustainability (or criterion of "*Holling's sustainability"*), on the contrary to the criterion of weak "*Solow-Hartwick sustainability"*, concentrates on general vitality and health of ecosystems. It is described as ability to regenerate, vitality and organization's versatility, dynamics, and hierarchy (Common, Perrings, 1992). According to this approach, *the primary task of economic development is to determine the natural systems limits for various economic activities*. In this case, the vitality of sub-systems becomes essential in the critical view of global stability of the total ecosystem. Thus, the significance of *preserving biological variety* is emphasized here in order to secure balanced nature, elasticity of ecosystems at a global level and their ability to adapt to changes in biosphere, as well as ability to secure future possibilities. Referring to biological variety, it is worth noticing that it cannot be replaced by anything else. This fact gives us a strong argument *against discount application in determining the value of biological variety.* It is also important to consider the significance of *thermodynamic laws* for the economic sustainability (Ciegis, Ciegis, 2008).

3) Sustainability forces limitations upon the society's ability to exchange with the surrounding natural systems and upon the society's structure as well. People-oriented the **social-cultural** sustainability concept *reflects the interface between development and dominating social norms and strives to maintain the stability of social systems*. Social sustainability seeks to reduce vulnerability and maintain the health (i.e. resilience, vigor, and organization) of social and cultural systems, and their ability to withstand shocks (Chambers, 1989; Bohle et al., 1994; Ribot et al., 1996). Socio-cultural sustainability requires at least the preservation of certain *critical* components of *social capital*, the latter being understood as the ability of the society to solve social, economic, and environmental problems, and to be active in forming the development of the whole system (Berkes, Folke, 1994). *Responsibility* for the planet requires *global solidarity and consolidation,* based on systematic approach to the reality, holistic thinking, seeing the biosphere and humanity as one system, and *global cultural basis.* Sustainable development actually represents this shared responsibility. At the same time, the concept of sustainable development is a way to solve two different and sometimes conflicting groups of aims: "development-progress-growth" and "stability-safety-environment" (The Baltic Agenda 21, 1998). The corporate social responsibility for social-cultural sustainability is partly important too (Juscius, Snieska, 2008).

4) *Helm* (1998) stated that the implementation of any policy depends on the *institutional* aspect – the importance and significance of institutions in the policy, and the competence of these institutions. For this reason, the implementation of the policy of sustainable development requires the evaluation of the **organization (institutional)** *sustainability* dimension, since effective, properly functioning institutions are essential for sustainable development in the realization of the social, economic, and environmental aims set by the society. The National Strategy of Sustainable Development (2003) also states that the assurance of the *purposeful development, rational combination of departmental, regional, institutional, and group interests, and limitation of those interests for the sake of the general interests of the society are possible only in the presence of strong management on the state, regional, and municipal levels as well as clear inter-institutional division of functions.* Estimation of Sustainable Development requires the Germination on Institutional Level too (Grybaite, Tvaronaviciene, 2008). *Institutional* structuring of ecologically sustainable programs implies making normatively-oriented decisions on various levels of social institutions and organizations concerning alternative scenarios of development by combining various functional decisions that take into account the environmental requirements (Ciegis, 2004). The ignorance of *institutional dimension* and *institutional capital* is one of the biggest shortages of management of implementation of society sustainable development (Platje, 2008). *Mauerhofer* (2008) proposes a 3-D sustainability model for the evaluation of activity; the institutional aspect was introduced into the model as well as for a better reflection of the idea of sustainability.

We tend to think that the analysis of sustainable development should be based on the assumption developed by *Jiliberto* (2003), indicating that sustainable development is based not on the economic, social, ecological, or institutional dimension, but rather on their *system* as an *integrated whole*. That system is not algebraic sum of the four (or more) systems but an entity or system to be identified as the starting point and converted into the object of analysis. One should take into account the fact that the need to identify relationships and indices is strong only when the multidimensional structure of sustainable development is applied, i.e. sustainable development of economics is analyzed together with environmental conditions that do not entail exhaustion of future generations' natural resources. In case on a one-dimensional interpretation, sustainability only involves specific problems in a certain dimension, and hence relationships with development in other fields may be very weak.

It is also noteworthy that social life – especially the sphere of social activity – is composed of various sectors, such as education, economics, nature, etc. When analyzed in an integrated manner, these sectors are transformed into systems. These spheres, sectors, or systems are the *structural units* that should be integrated when analyzing sustainable development of a region.

Jiliberto (2004) argues that it is necessary to overcome the flat vision of systemic relations. The relations identified in a sustainability analysis have not all the same relevance and the same meaning for the strategic instruments of regional sustainable development. Relations among sub-systems identified should be relocated in a logical structure, based on the intention of the cognitive tool being built. In order to attain this, a *hierarchical* framework with coherent sustainability logic is needed. A system of hierarchically related systems can be considered as a *holarchy*; i.e. a hierarchically organized structure made of *holons* (totalities that at the same time are parts of greater wholes). This hierarchical structure of sustainable development sub-systems corresponds to a contingent, as opposed to universal, logic and is evidently *normative* in character.

The holarchic approach proposed by *Jiliberto* (2004) indirectly emphasizes that sustainable development is dynamic holarchic equilibrium rather than static balance in time and space. Seeking such equilibrium little depends on its more or less precise identification, but rather on the identification of different processes that may allow for approaching such equilibrium. Like in any qualitative approach, the holarchic approach benefits most from *systematic* studies.

Within the analysis of sustainable development, four ***levels*** may be identified (Hinterberger et al, 1997): the *micro level* (including enterprises and consumers), the *meso level* (including institutions and their networks), the *macro level* (including fiscal, monetary, and distribution conditions), and the *meta level* (including social aims).

Since sustainability issues should be analyzed and solved on the system levels where they develop and manifest themselves, one can consistently formulate respective aims of the sustainable development policy for separate dimensions (economic, ecological, social, and institutional) of sustainable development on each of these levels of the economic development policy, thus obtaining the *matrix of the aims of sustainability policy* (Spangenberg et al, 2000), which may be used when preparing sustainability scenarios that would consistently include all four dimensions and levels and would imply active participation of the society in their realization (Ciegis, Gineitiene, 2008; Ciegis, Streimikiene, 2005). A number of modeling approaches, using different simulation tools, have shown that such scenarios can be constructed in a coherent and workable manner. This has some relation with integrated approach to strategic planning in public institutions too (Bivainis and Tuncikiene, 2007).

Conclusions

1. Analysis of sustainable development concept descriptions proved that *none* of hundreds of *sustainable development* definitions found in the literature include all the aspects of the concept and provide perfect understanding of it. Therefore we tend to think that the most appropriate definition that best expresses the idea of *sustainable development* is provided in the report of the *Brundtland commission*, stating that *sustainable development* is *the development that satisfies the needs of the current time period without jeopardizing the ability of future generations to satisfy their needs*.

2. Difficulties related to sustainability definition show that sustainable development is a *complex* and *multi-domain* issue, which has to combine efficiency, equity, and intergenerational equity on economic, social, and environmental ground. Debates on sustainable development present in the literature can be classified into several thematic areas: a) *category of conceptual discussions*, b) *contexts of sustainable development*, c) *academic debates*, and d) *geopolitical discussions*.

3. On the basis of the theoretical statements presented by advocates of various versions of sustainable development, three main groups of concepts of sustainable development may be identified. These groups would then allow for further analysis of sustainable development as the interaction of the *ecological, economic, and social systems*, taking into account *ethical* aspects: a) *the economic approach to sustainability*; b) *the ecological approach to sustainable development*; c) *the social concept of sustainability*; d) *the organization (institutional) dimension of sustainability*.

4. The article is based on the assumption that sustainable development is based not on economic, social, ecological, or institutional dimensions, but rather on their *system* seen as an *integrated whole*.

5. The relations identified in a sustainability analysis have not all the same relevance and the same meaning for the strategic instruments of regional sustainable development. Relations among sub-systems identified should be relocated in a logical structure, based on the intention of the cognitive tool being built. In order to attain this, a ***hierarchical*** *framework* with coherent sustainability logic is needed.

6. Since sustainability issues should be analyzed and solved on the system levels where they develop and manifest themselves, one can consistently formulate respective aims of the sustainable development policy for separate dimensions of sustainable development on each of these levels of the economic development policy, thus obtaining the *matrix of the aims of sustainability policy*, which may be used when preparing sustainability scenarios.

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Darnaus vystymosi samprata ir jos naudojimas darnumo scenarijams

Santrauka

Šiame darbe nagrinėjama darnaus vystymosi konceptualaus apibūdinimo bei vertinimo teorinė problema. Šiuo tikslu išsamiai aptarti ir suskirstyti darnaus vystymosi sampratos apibūdinimai. Toliau apžvelgta darnaus vystymosi koncepcija. Po šios analizės pateiktos darnaus vystymosi dimensijų sampratos. Darbe taikoma sisteminė mokslinės literatūros analizė, taip pat bendroji ir loginė analizė, lyginimo ir apibendrinimo metodai.

Nors pati *darnaus vystymosi* koncepcijos *esmė* yra pakankamai aiški, bet tikslus *darnaus vystymosi sampratos apibrėžimas* yra problemiškas ir sukelia daug diskusijų. Apibrėžimo problemos iš dalies susijusios su *darnaus vystymosi* koncepcijos sudėtine (*dviguba*) prigimtimi, apimančia tiek *vystymąsi*, tiek ir *darnumą*. Ekonominėje ir aplinkosauginėje literatūroje pateikiama keli šimtai *darnaus vystymosi* apibrėžimų, daugiausia orientuotų į atskirus sektorius, pvz., gamtinį, ekonominį, visos civilizacijos, arba akcentuojančių vadybinius, techninius ar filosofinius / politinius sprendimus, taigi ir išreiškiančių gana skirtingas darnaus vystymosi koncepcijas.

Taigi reikia įvertinti tai, kad darnaus vystymosi sąvoka gali būti nelengvai suvokiama ir gali turėti skirtingą reikšmę priklausomai nuo nagrinėjamos literatūros arba konteksto, kuriame ji vartojama. Todėl straipsnyje pateikti įvairūs darnaus vystymosi apibrėžimai, apimantys daugelį šios koncepcijos aspektų.

Kadangi *nė vienas* iš literatūroje pateiktų *darnaus vystymosi* sampratos apibrėžimų tiksliai neapima visų nagrinėjamos koncepcijos aspektų ir nepateikia tobulos šios sąvokos sampratos, iki šiol tinkamiausias apibrėžimas, geriausiai išreiškiantis pačią *darnaus vystymosi* idėją (straipsnio autorių nuomone), pateiktas JT Aplinkos ir plėtros komisijos (arba *Brundtland komisijos*) pranešime *Mūsų bendra ateitis*, kuriame sakoma. *Darnus vystymasis – tai toks vystymasis, kuris patenkina dabartinio laikmečio poreikius, nesudarydamas pavojaus būsimoms kartoms patenkinti savuosius*.

Būtina pažymėti, kad šiame pranešime vartojamas *darnaus vystymosi* apibrėžimas faktiškai buvo savotiškas posūkis nuo anksčiau vyravusios nuostatos *augimas* arba *aplinka* iki beveik visada galimo (tai esminė *Brundtland Komisijos* pranešimo idėja) *ekonominio augimo* ir *aplinkos* vienas kito *papildymo*. Net galėtume sakyti: ši idėja yra viena iš interpretacijų, kurią pateikė *Brundtland komisija.*

Darnaus vystymosi apibrėžimo problematika akivaizdžiai rodo, kad darnus vystymasis yra *kompleksinė* ir *daugialypė* koncepcija, kuri jungia efektyvumą, lygybę ir kartų lygybę ekonominiu, socialiniu ir ekologiniu pagrindu. Mokslinėje literatūroje pateikiamas darnaus vystymosi interpretacijas galima priskirti keletui sričių: a) konceptualiai, b) kontekstinei, c) akademinei, d) geopolitinei. Šios sritys straipsnyje aptartos detaliau.

Aptartosios darnaus vystymosi diskusijų kategorijos sudaro teorinį darinį, kuriuo remiantis sudaromi įvairūs analitiniai modeliai (supaprastintai pateikiami realaus pasaulio tam tikri aspektai). Šiais modeliais remiantis nagrinėjami nūdienos konfliktų reiškiniai: aplinkos degradacija ir jos priežastys bei pasekmės ekonominių, socialinių, kultūrinių ir politinių sistemų atžvilgiu.

Kaip bendra sąvoka, darnus vystymasis susieja tris esmines dimensijas: *ekonominį*, *aplinkos* ir *socialinį* vystymąsi, įvardijamas kaip tarpusavyje susijusias ir viena kitą papildančias. Todėl tradiciškai darnaus vystymosi koncepcija apima tris lygiavertes komponentes: aplinkos apsaugą, ekonominę plėtrą ir socialinį vystymąsi, bei tris gerovės dimensijas: *ekonominę*, *aplinkos* ir *socialinę,* bei jų tarpusavio kompleksines sąveikas. Visos jos straipsnyje aptartos detaliau.

Kadangi bet kokios politikos įgyvendinimas priklauso nuo *institucinio* aspekto (institucijų svarbos ir reikšmės politikoje, jų kompetencijos) vykdant darnaus vystymosi politiką, reikia įvertinti ir *organizacinį (institucinį)* darnumo matmenį.

Analizuojant darnų vystymąsi turi būti remiamasi prielaida, kad darnus vystymasis grindžiamas ne ekonominiu, socialiniu, ekologiniu ar instituciniu matmeniu, bet jų *sistema*, suprantama kaip *integruota visuma*.

Taip pat pažymėtina, kad socialinis gyvenimas, ypač visuomeninės veiklos sfera, yra sudarytas iš tokių sektorių, kaip švietimas, ekonomika, gamta ir t.t., kurie, nagrinėjant juos integruotai, yra transformuojami į sistemas. Šios sferos, sektoriai ar sistemos ir yra tie *struktūriniai vienetai*, kuriuos reikėtų integruoti analizuojant darnų regiono vystymąsi.

Analizuojant darnų vystymąsi, ne visi identifikuoti ryšiai vienodai svarbūs ir reikšmingi strateginiams regiono darnaus vystymosi instrumentams. Todėl identifikuoti posistemių ryšiai turėtų būti perkelti į loginę struktūrą atsižvelgiant į konstruojamos kognityvinės priemonės tikslą. Tam reikalinga *hierarchinė* struktūra, atitinkanti sąryšius įvertinančią darnumo logiką.

Kadangi darnumo problemos turi būti aptariamos ir sprendžiamos tuose sistemų lygmenyse, kuriuose jos atsiranda, kiekviename iš šių ekonominės plėtros politikos lygmenų, norint gauti darnaus vystymosi atskirų matmenų *darnumo politikos tikslų matricą,* kuri gali būti panaudota darnumo scenarijui sudaryti, nuosekliai galima suformuluoti atitinkamus darnumo politikos tikslus.

Raktažodžiai: *darnus vystymasis*, *darnumo dimensijos*, *darnumo politika*.

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