SUSTAINABLE DEVELOPMENT MANAGEMENT AND TRANSFRORMATION OF PLANNED ECONOMY TO MARKET ECONOMY

ILGTSPĒJĪGAS ATTĪSTĪBAS VADĪŠANA UN PĀREJA NO PLĀNVEIDA EKONOMIKAS UZ TIRGUS EKONOMIKU

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Abstract. *In the article the main requirements for sustainable economic development management system were formed using theoretical approach. According to the collected theoretical material, approaches of sustainable management of economic systems from the viewpoint of principles of sustainability are reviewed. The article evaluates the content and issues related to the environmental indicators, including the environmental space and the ecological footprint concepts, applied in sustainability measurement, as well.*

Keywords: *development, environmental indicators, management, sustainability.*

Introduction

The main attention in the paper are given to the process of the management of sustainable development and to analyze the indicators of sustainable development.

The theoretical principles of management of socially and ecologically oriented economic development realization and the content of environmental indicators, including concepts of ecological space and ecological footprint are critically investigated in the paper.

The essence of the sustainable development concept and management principles

The today"s dilemma of the world, mostly governed by economic powers, lies in the following: *at what scope sustainable development could be adequately analyzed and realized, referring to contemporary economic theories.* It should be noted that economic development orientations and concepts, valid in the previous century, cannot satisfy the humanity"s needs and they have only a limited application spectrum in environmental protection studies. The situation supposes the necessity to propose new approaches and to define the essence of economic theory, its potential role and tasks, in solving issues related to critical human existence and civilization survival in the future.

It is obvious that *unlimited growth is impossible in a limited system*, i.e. *economic growth beyond the limits of biosphere capacity would necessarily cause the environmental collapse, as there is no feedback mechanism to guarantee unregulated market economy would never exceed its ecological capacity of the environment* [2]. Thus, economic theory should eventually recognize the basic principles of science, entropy among them, and admit that economy is no longer a perpetual engine, but a one-way process. It can be more effective but it cannot be reversible.

The basic idea of sustainable development is a firm understanding that all resources, renewable as well as non-renewable, are limited. Human activities should not exceed the buffering capacity of the earth"s ecosystems.

It can be stated that alternative approach to economics was evolving as a standpoint of *relationship of complex natural-ecological systems, economic organizations and human communities*, hoping that modern world could be transformed into a better one from ecological and humanitarian point of view.

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It is worth noticing that the economy of steady state can *develop qualitatively*, but *cannot grow quantitatively*. In case of sustainable development, the economy can improve from the standpoint of knowledge, organization, technical effectiveness and wisdom. *Development without growth is what we call sustainable development*.

Though the *essence* of the *sustainable development* concept is clear enough, the exact interpretation and definition of *sustainable development* has caused strong discussions. It is possible that the terminology problem occurs in the *dual* nature of the *sustainable development* concept, covering *development* as well as *sustainability*.

But the problems of precise definition of sustainable development term and content in the economics, in the management theory can be considered as advantage, because in all levels leaved *the space for the discussions, the variety of the possible models of development*.

In the analysis of consequences of society development it is possible to distinguish a) *ecological* dimension, b) *economic* dimension, c) *social* dimension. So, in order to achieve sustainable development the three corner stones of sustainability, i.e. *economy*, *ecology* (*environment*) and *society*, must be considered. Also it is possible to distinguish three society sustainable development *management approaches*: a) *economic*, b) *ecological*, c) *social*.

Taking into consideration these three society sustainable development management approaches, it is possible to formulate generalized principle of management of *sustainable development (complexity principle)*, which require to analyze *sustainable development* as the interface of *three systems – ecological, economic and social*.

Thus, the *sustainable development* concept merges two urgent *goals*: a) *to ensure appropriate, secure, wealth life for all people* – its is the goal of *development*, and b) *to live and labor 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.

Sustainable development, as elaborated in Agenda 21, has three explicit dimensions, the *social*, the *economic* and the *environmental* one, and implicitly a fourth, the *institutional* one. (The ignorance of this *dimension* is one of the biggest shortages of management of implementation of society sustainable development). This can be visualized by the "*prism of sustainability*" (Fig. 1).

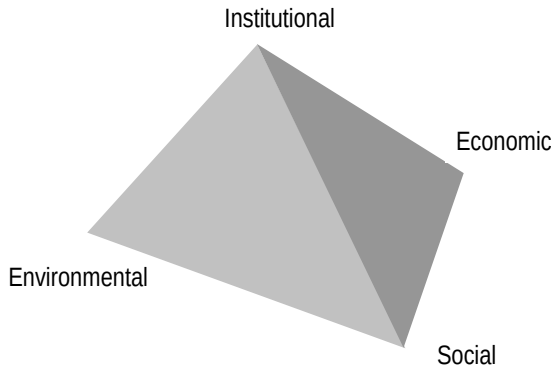

Fig. 1. **The four dimensions of sustainability [8]**

Since the concept of sustainability becomes relevant only as we understand the non-sustainability inherent in the current activities of society, it is logical to design principles for sustainability as restrictions, i.e. principles that determine what human activities must not do it under to avoid destroying the system.

Additionally, redirecting our societies and economies towards sustainability is a task that cannot be attributed to any subgroups of society, but one needs to involve society as large if it is to mastered effectively.

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Management without yardsticks is not possible. If we don"t can to *measure* society"s sustainable development targets, it is impossible to *govern*. Therefore if we want to manager sustainability, the society is in charge of formulating sustainability objectives, which should be constantly review and assessed. *Sustainable development indicators* can successfully measure the degree of objective implementation.
By using a set of well-defined indicators it becomes easier to communicate Sustainable development, and in particular, the Local Agenda 21 implementation process. Using the *Prism of Sustainable Development* model in this process enforces prioritizing, by reducing the number of indicators down to 12 to 15 (each connected with targets), while at the same time supporting a broad and balanced coverage of environmental, social, economic and institutional issues. Together with indicators for the four sustainability dimensions so-called inter-linkage indicators are needed, that link progress towards the four dimensions together.

Measurements of the Sustainability Management

The contemporary indicator of economic development is considered to be *Gross National Product (GNP)*. But GNP cannot serve as a feasible indicator for evaluating the economic growth. Therefore [3] calculated an "*Index of Socio-Economic Welfare*" (ISEW). ISEW makes different adjustments to GNP from MEW, including giving consideration to resource depletion and environmental damage, so the two indices are not strictly comparable.
Indicator – is the measure, differentiating from other values with its specific objectives, outreaching everything what could be directly measured. Indicators of sustainable development should concentrate the attention on the *start of the development cycle*, such as energy, resources, chemicals and other development sources and measures.
An optimal quantity of environmental indicators should be selected in order to improve the current indicator system and to assess competitive tendencies and system requirements.
In order to find a feasible answer how to evaluate sustainability goals of economic development, the two concepts of "the *environmental space*" and "the *ecological footprint*" can be applied. The "*environmental space*" is a more complex approach where various important resource sectors are being analyzed on the national level. Thus, the "*environmental space*" faces application difficulties in practice, comparing it to the "*ecological footprint*" *concept*, where resources are brought together into a single indicator at the desirable aggregated level. Besides, the *ecological footprint* makes the sustainability challenge more transparent.
It is known that those current projects, which applied the *environmental space* and *ecological footprint* concepts, have not presented a thorough developed scenario for securing sustainability, but have only produced presumptive framework of directives and major implementation principles. In the future this evaluation should be supplemented by actual figures, assuming the quantity of resources the world could utilize in sustainable way.
The basic idea of the *ecological footprint* concept, developed by *W. Rees* and *M. Wackernagel* [7], predisposes every individual process, activity and region as influencing the utilization of the Earth"s resources, waste accumulation and consumption of nature"s services. This complex impact caused by utilization of resources and the environment can be converted into a one-dimensional measure (that is where the substantiality of the method comes into force), namely into a biologically active land plot which should be presented in a calculated form.
Applying this method to land distribution per person demonstrates that the average ecological footprint in the world would amount to about 1.8 hectare per head. The ecological footprint in most developed countries reaches 3- 5 hectares per head. Bearing in mind the fact that most developed regions exceed the ecological footprint limits of local ecological capacities, this inevitably leads to claiming extra ecological capacity from the global fund [1].
Some critique can also be found towards the *ecological footprint* concept. How could the calculation of the ecological footprint be improved? On the first hand, the *actual* figures, not *hypothetical* should be used in comparing two types of ecological footprint, which would reflect actual sustainable and non-sustainable land utilization per person. On the other hand, more

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flexibility should be allowed in the ecological footprint calculations. Probably it would be best to use the scenario method, which permits to research complex processes under the circumstances of big changes. The modeling method, not the accounting one, should be selected to realize economically valid conclusions.

The *ecological space* concept constitutes that at any time there are limits to the degree of environmental pressure, the Earth"s ecological systems could cope without irreversible damage to these systems. (Fig. 2).

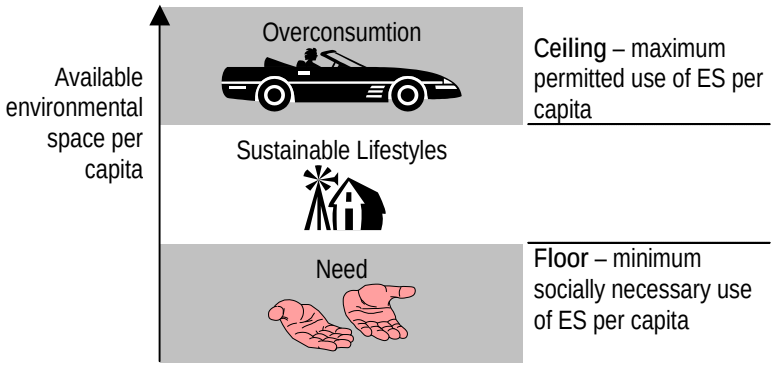

Fig. 2. **Living with our Environmental Space**

Mechanisms of progressive resource taxation based on the environmental space as a "threshold concept" should be considered as a necessary instrument for the enforcement of sustainable development.

It is beyond any doubt that it will not be possible to prepare further strategies of effective environmental protection without clarifying, how much ecological space we have globally.

Thus, the amount of the ecological space is *limited* in its nature and at least it can be measured *quantitatively* up to some degree. In addition, the *environmental space* concept offers an opportunity to determine, how much environmental space of one country is used by inhabitants of the other one, by comparing the *global* utilization of an individual resource, expressed as the average per person in *national* consumption.

Economic System Change Influence on Environmental Management Processes

During independence restoration and economical independence gaining processes it was stressed the importance of environment. The big activity of those days society also determined that the problems of environmental quality improvement would be integrated beside other immediate problems. It is believable, that market economy system would be much more superior solving ecological problems that have reached the crucial limits. The centralized ruled system will be estimated as unable operatively, flexible and effective co-ordinate the relations between economical enlargement and environment. But the idea to pass the solution of ecological problem to market was too much optimistic and not rational at all. The experts with great experience [5] indicated that market economy is ecologically blind enough and socially deaf enough. So rational solution of economical enlargement and environmental quality relations is possible only actively functioning State regulation.

Emphasizing that economical transformation is a very complicated processes, it is indicated that in the first stage it consists of three elements: liberalization, macro economical stabilization and systemic transformation. The systemic transformation at first is understood as privatization. Private propriety is a basis of market economy functioning; privatization is a foundation – stone of transformation. The estimation of effectiveness of privatization processes in Lithuania is not synonymous. Naming its negative sides it is necessary to specify that it be not used the possibilities of ecological situation improvement in companies during the process of privatization. The problems of privatization and diminution of negative influence of companies

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to environment were successfully solved in some neighbor countries, which fulfilled the transformation. In Lithuania it was not tried to do it in case of overdue estimation of such possibility or in case of other reasons.
On the basis of monitoring system in Lithuania it was tried to compare the gathered information about main polluting materials throwing out to environment – common emission in millions of ton per year with Gross National Product tendencies (Fig. 3).

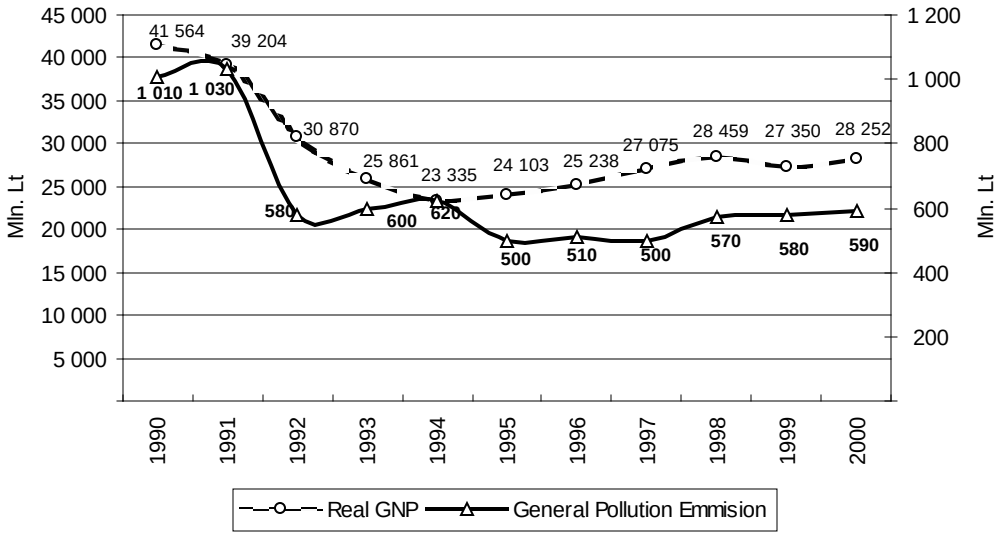

Fig. 3. **GNP and general pollution emission in Lithuania**

The calculations shows, that even if there is such diminution of the pollution economical damage for anthropogenic pollution makes about 1,7 milliard Lt., or it is about one tenth of GNP. Comparing with other European countries analogical indexes it is possible to state that ecological stability as one of three sustainable development components is in operatively improvable situation.
The period of economical systems transformation in Lithuania matched with global sustainable development tendencies development, with the solution of its localization problems. Quickly becoming clearer the advantages of sustainable development coordinating the questions of economical development and environment it becomes one of the most important problems of the country.
Analyzing the process of economical transformation it was stressed that there was a lack of comprehensive and effective strategy of this question. For the first five transformation years environmental reforms also were accomplishing without clear strategic goals. Just in autumn 1996 the Lithuanian environmental protection strategy was confirmed. The project that got juridical power was prepared by Lithuanian and foreign experts, who tried as accurate as possible to foresee and to ground tendencies of environmental changes till 2010. Every strategy has to include three main elements: purposes (at first permanent), activity directions, and resources necessary for achieving the purpose. The weakest link in country"s environmental protection strategy is the third element. In strategy formation group worked investments group was often unable to defend its suggestions based on economical calculations. Probably, that if there was a more real consideration to the demands of the third strategic element, the strategy would be more precise.
At this time it is more often used the concept "preparation for the European Union integration" that means in environmental usage respect that Lithuania in this field must be able to solve problems the way European Union directives demand. Estimating the dilemma of to join or not to join European Union in environmental usage respect, the merits are very bright. At first, the country in a short time would adopt what is accumulated in the solution of most progressive economical development and environmental quality keeping problems. Secondly, it would

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appear a possibility to Lithuania using the support of European Union rapidly to realize ecological projects. In conformity with the goals of EU the main Lithuanian projects would be connected with waters cleaning, with diminution of air pollution and with waste regulation.
Analyzing the environmental usage evolution in the period of centralized ruled economy it was stressed the importance of information about environmental quality changes. EU directives especially stress the significance of such kind of information and present the rational system of sustainable development indicators. This indicators system includes integrated sustainable development indicators that reflect the interaction of environmental, economical, social aspects. Basing on such information it will be possible to compare operatively the changes of environmental quality, to estimate the rapidity of acting progress. At this time in Lithuania functioning monitoring system will have to be corrected according to the demands of stabile environment indicators system.
Trying to estimate economical changes in the period of economical transformation, it is purposeful to periodize it. Estimating the period of integration into EU its positivism to the outlook to environmental quality stabilization and improvement becomes apparent. It is believable that realization of integration demands to environmental usage and stabile development in Lithuania will let to state the approach to the end of the period of economical system transformation. Also it should be a further development to stabile social – ecological market economical system.
One of the most important reasons determined the crisis environmental state in the period of centralized economy market was insufficient investments to environment. In last years of centralized economy period there were prepared the projects of ecological situation improvement of the whole country and its separate regions. These projects had a very indefinite and not-concrete financial background.
The restoration of the independence is connected with today and from the distance of time real enough estimated euphoric outlook to the rapid increase of environmental investments of that time. The wish to start using market economy mechanism instruments in environmental management as quickly as possible did not correspond with the situation of that period. In the act of law of Environmental Protection, passed in the beginning of 1992, it is indicated that ecological and economical interests of the State are coordinated applying economical mechanism of environmental protection. This mechanism consists of taxes for nature resources and environmental pollution, subsidies and credits of the State, State regulated tariffs and customs system, system of economical stimulation sanctions and compensation.
Sustainability will be won on the *market* – or not at all. We are needing a new approach, which would have to be an integral part of the market economy where self-interest would drive ecological improvements yielding profits rather than generating added costs by government edict. In market economy ecological taxes are very important instrument of environmental usage processes management. On the basis of these taxes collected means are returning to environment as the investments influencing balance of economical and environmental processes. Countries that are progressively developed in market economy use different kinds of ecological taxes. It is the taxes for nature resources usage, taxes for environmental pollution, taxes for ecologically dangerous production, compensational payments for diminution of nature resources quality, etc.
The insufficiency of income collected from ecological taxes, the inefficiency of other sources of investment was noticed in the first year of market formation. When the State strategy of environmental protection was started to be prepared, in which project preparation group also participated the author of this text, one of the main accents was the determination of eventual sources and the size of investments necessary to strategy realization.
Estimated the environmental conditions and calculated costs necessary for its improvement it became clear that in the next decade till the year 2005, to which the realization of this strategy was orientated, it will be impossible to solve the most important ecological problems for the same as earlier reason – the lack of the financial resources. Optimistic regulations that during economical systems changing period, which is never followed with rapid speed of economical

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growth, it would be possible to solve effectively ecological problems, were denied. Referring to results of internal and external experience and trying to keep the equilibrium between the optimistic and pessimistic poles of economical development perspectives, strategically necessary investments were assigned following to priority directions.

The priorities of environmental investments were grouped into two blocks: environmental quality keeping and environmental protection in economical activity sphere. Such kind of management of investment corresponds with general investments theory propositions that firstly the blocks of investments are divided, later on their base investments politics is formed and made decisions of possible sources of investments [4]. The priorities investment directions of the first block in State environmental protection strategy were named the cleaning of flowing waters, the stabilization of air pollution and gradually diminution, the regulation of waste. Effective investments in these directions would improve environmental quality till necessary standards, which were approved while Lithuanian orientating to European Union demands.

The second block of priorities investments direction includes environmental problems salvation in economical activity sphere, the necessary condition of effective investments is to create such kind of legal-economical system for minimizing contradictions between economical qualitative growth and its influence to environment. Environmental policy here must orientate at first to preventive means, which give an opportunity to realization sustainable development principles. With this main direction directed the goal of the State environmental protection strategy indicating that strategy strives for "making a presumption for sustainable development of the country keeping clean and sound nature environment, saving biological and landscape variety and optimizing nature usage". The State environmental protection strategy in this block of priorities presents the detailed activity programs for separate economical branches.

Finally, legal and other instruments, suitable new institutional arrangements – among many other things – can be developed with the common goal to approach sustainability in the most reliable, transparent and systematic way possible. Sustainable environmental management can make use of economic policy mechanisms, but in the final analysis needs to be cognizant of the fundamental laws of nature, as much as those of economics.

And it is clear that corporate philosophy and responsibility will face crucial changes. Increasing demand for sustainable development during the last decades has initiated actions from firms. Firms have expanded the scope of corporate responsibility to include environmental issues in all levels of their operation, and a major development of environmental corporate strategies, as well as a green-washing of industry has been observed in the world [9,10], and in Lithuania too. M. Porter and C. van der Linde [6] suggest corporate strategy changes to enhance environmental as well as business performance of firms. But despite all these preventive actions a continuous increase in environmental impact has been observed.

Sustainable development is currently one of the leading driving forces for the greening of industry. Within the sustainability framework, the substance chain management manages the economically and ecologically oriented cooperation between companies in production or value – added chain.

Conclusions

According to theoretical presumptions of various theoreticians, three major groups of sustainable development management approaches – economic, ecological and social – can be interpreted and identified, which allows sustainable development to be analysed as the interface of ecological, economic and social systems.

Sustainable development, as elaborated in Agenda 21, has three explicit dimensions, the *social*, the *economic* and the *environmental* one, and implicitly a fourth, the *institutional* one. The *"prism of sustainability"* can visualize this.

In search for solutions of adequately evaluating the achievements of sustainability in economic development, the concepts of "the *environmental space*" and "the *ecological footprint*" can be applied.

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Change of economic system was linked with basic positive changes in environmental processes management. Passing ecological problems solution to market was too optimistic and not rational. Experience of developed countries emphasize that market economic is quite blind and deaf in ecological meaning. General pollutions were compared to gross national product. There were decreases of both these indicators in Lithuania in the years of 1990 – 1994. Later, until the year of 2000 both gross national product and general pollutions increased.

Economical development performs insufficiently taking into account influence to environment and trying to reduce it. Decrease of influence to environment increasing influencing activities at the same time is possible only establishing more perfect technologies and defining regulations of environmental quality. It is easier because of coincidence of economic systems" transformation period in Lithuania with global evolution of sustainable development principles and solution of sustainable development localization problems.

Sustainable development localization meets with some difficulties like un – ecological finance markets, economical indicators prevailing over environment, distortional system of subsidies, lockage of financial means, scantiness of local administrations" authority.

Sustainable development should be a core value in any business organization because it supports a strategic vision of firms surviving over the long term. And, if businesses are serious about the concept of sustainable development, then many of the sacred tenets of doing business will have to be re-examined.

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