Green logistics as an element of sustainable development

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Abstract. The article deals with the concept, essence and objectives of "green" logistics as a new scientific direction based on the use of knowledge in the field of economics, ecology, sociology, management, and other areas on the application of logistics information technologies to reduce environmental harm while increasing the efficiency of the use of certain resources. The idea, essence and objectives of the concept of "sustainable development" are considered. A number of intersections of "green" logistics and the ideas of sustainable development are noted. It is proposed to consider "green" logistics as an element of sustainable development, which will allow us to use an integrated approach to study this design, to identify and develop their relationships. Certain options for improving the effectiveness of these two institutions through the development of interaction mechanisms are proposed. The importance and significance of scientific support and human resources for the effective solution to the tasks set for "green" logistics as an element of sustainable development are noted.

1. Introduction
The realization that the consumer attitude to the world in general, and to its individual components (resources), in particular, has far-reaching negative consequences, has led to the fact that it has become objectively necessary to form a new concept of meeting the modern needs of humanity, burdened with the realization that future generations should also be able to meet their needs. This concept has become the concept of sustainable development.

This is a multifold and complex concept. It includes various areas of scientific knowledge, applied technologies, social institutions, state mechanisms, legal base, etc. At the global level, the concept of "Sustainability" (sustainable production) has been formed. Its essence means an optimal combination of limited resources and environmentally friendly green, energy and material - saving technologies when using them. We are talking about a set of activities for the extraction and processing of raw materials, reducing the quantity and quality of waste and their utilization, creating environmentally friendly products, etc. [1].

It is precisely because all countries are interested in ensuring a favorable future for our descendants, and environmental problems ultimately concern all of us (even now), that a comprehensive approach based on the unity of science, the international community and the responsibility of specific states is necessary to achieve this good goal.

- formation of the scientific concept of sustainable development;
- consolidation of the main provisions of the scientific concept by international law;
- control of the international community, represented by international bodies of general and special competence over their implementation at the level of individual states.
Special attention should be paid to sustainable development issues in developing countries, where the era of mass urbanization and increased use of various technologies is just beginning. Therefore, it is important to initially set the right vector for the development of this process in order to avoid the mistakes that their "neighbors" - developed countries - went through. This approach will help to ensure, on the one hand, a significant increase in production and living standards, on the other hand, reduce environmental, social and other negative risks that may eventually devalue the achievements of urbanization and industrial development.

2. Sustainable development: formation and evolution of scientific concepts and norms of international law
The intensive development of industry in the XX century led to the fact that the main environmental problems were quickly identified, becoming global in nature. This was the reason for the beginning of the search for ways to resolve them. Moreover, since these problems were of a global nature, it is quite logical that their resolution required the participation of the world community.

As far back as 1987, the term "sustainable development" first appeared. It was used at a meeting of the UN General Assembly in the report of the International Commission on environment and development entitled "Our common future". It narrowed down to the postulate that making development sustainable means ensuring that the needs of the present are met, without the risk of creating a situation in which the ability of future generations to meet their needs is minimized [2].

However, over the next few decades, the evolution of ideas for sustainable development at the international level were very slow and implicit.

Thus, in 1992, the "Earth summit" conference on environment and development was held. It adopted the "Agenda for the twenty-first century", which for the first time proclaimed the importance of youth for the implementation of the ideas of sustainable development, since youth make up almost 30% of the world's population: "The involvement of modern youth in environmental and development decision-making and programme implementation is critical in the long term for the successful implementation of agenda for the 21st century..." [3].

The 2002 world summit on sustainable development in Johannesburg, South Africa ("Rio+10") gave a new, albeit small, turn in the field of sustainable development. At the Meeting, the UN Secretary-General noted that "since the Earth summit, in 1992, very little progress has been made in ensuring sustainable development, taking into account the ongoing further aggravation of the problem of poverty and environmental degradation..." [4]. However, this Meeting was of dissimilar nature.

Firstly, this Meeting had certain goals:

- ensure the renewal of political commitment to the concept of sustainable development;
- assess progress and identify gaps in the implementation of commitments already made;
- solve new emerging problems.

Secondly, two important global topics were discussed:

- green economy in the context of sustainable development
- poverty eradication.

As a result of the conference, its resolution "the Future we want" was prepared [5.], which outlined the tasks on sustainable development for the world community.

3. Sustainable development and transport issues
As a positive aspect, it should be noted that many countries, both with emerging market economy and developed in the economic and social sense, are already striving for sustainable development. This is due to the fact that at their national level, they have independently come to the conclusion that it is necessary to create economic growth that would improve the quality of life without harming the environment and natural resources. [6]

One of these issues facing states is the transport issue.

"The impact of transport on ecosystems is expressed in:
• the pollution of the atmosphere, water bodies and land, changes in the chemical composition of soils and microflora, the formation of industrial waste, including toxic and radioactive, sludge, oil-contaminated soil, boiler slags, ash and garbage;
• the consumption of natural resources – atmospheric air necessary for the flow of working processes in internal combustion engines (ICE) of vehicles;
• petroleum products and natural gas, which are fuel for ICE;
• water for ICE cooling systems and washing of vehicles, industrial and household needs of transport enterprises; land resources alienated for the construction of roads and railways, airports, pipelines, river and sea ports and other transport infrastructure;
• the release of heat to the environment during the operation of internal combustion engines and fuel combustion plants in transport industries;
• creating high noise and vibration intensity;
• the possibility of activation of adverse natural processes such as water erosion, waterlogging, formation of mudflows, landslides, and rock falls;
• injuries and deaths of people and animals, causing great financial damage in accidents and catastrophes;
• destruction of soil and vegetation cover and reduction of crop productivity” [7].

Logistics is responsible for ensuring proper distribution, storage and transportation of resources, which directly affects the environmental situation in the world.

4. Green logistics and sustainable development

Thus, there is a close relationship between logistics, the environment and natural resources, the awareness of which will contribute to solving the problems of sustainable development at the level of particular states. The specific content of this type of logistics allows us to talk about a new type of logistics – "green" (ecological) logistics. "Green" logistics covers all functional areas of logistics within the production, operation and disposal of products. Thus, logistics becomes a tool for state regulation of issues to ensure a balance between the interests of the economy and the needs of the environment. At the same time, it is an element of the concept of sustainable development.

However, opinions about the content of the term "green" logistics” are ambiguous (table 1)

| Term | Definition | Literary source |
|------|------------|----------------|
| Green logistics | A set of actions to assess and minimize the environmental consequences of logistics activities | D. Rogers, R. Tibben-Lembke |
| Green logistics | Environmentally friendly and efficient transport distribution system | Zh. - P. Rodriguez et al. |
| Environmental logistics | One of the types of modern logistics aimed at integrating economic benefits, social and environmental aspects | J. Young, H. Pan |
| Environmental logistics | Planning, design and management system using advanced logistics technologies and environmental design methods in the field of reducing pollution and resource consumption, dictated by environmental principles. The main goal is to coordinate logistics activities and social and environmental effects | L. Yanbo, L. Songtian |
| "Green" logistics | A new scientific direction that involves the use of advanced logistics technologies and modern equipment in order to minimize pollution and increase the efficiency of the use of logistics resources. From a business point of view, green logistics methods mainly include: transportation system management (combined transportation, 3PL-logistics), packaging process management (in order to reduce the environmental impact of packaging materials), organization of “green” communications and production, warehouse management and waste management | Kazim and Kabartay |
| Environmental logistics | Science and a set of measures that ensures the movement of material in any production processes up to its conversion into a commodity and waste products, followed by bringing the waste to recycling or safe storage in the environment, as well as the collection and sorting of consumer waste, their transportation, disposal or safe storage in the environment | Allan McKeown |
However, this diversity in approaches to understanding the features of "green" logistics does not affect the overall understanding of its essence. Moreover, this contributes to a greater understanding of its multi-aspect and multi-tasking, which is important, given that this is a fairly new scientific direction. So, to achieve the goals of "green" logistics, you need:

- specialization of state and municipal employees who exercise their functions and powers in this field;
- improving environmental awareness of the population as a consumer of goods and services;
- efficiency of managers and executives in business to ensure proper planning of elements of the logistics system taking into account environmental problems;
- strengthen the role of marketing technologies [9]
- modernization of existing capacities of the logistics system, taking into account the processes of digitalization of the economy and the expansion of the use of information technologies in increasing production capacity while ensuring environmental safety;
- "presence" of the state in the sphere of logistics [10], etc.

This also means another problem – the personnel issue. Taking into account the importance of the tasks assigned to "green" logistics, highly qualified personnel (scientific, teaching, government, industrial and other) should be enticed into its scope, which makes it necessary to:

- to retrain and enhance proficiency of current personnel;
- to form and implement appropriate educational programs taking into account particular characteristics of educational institutions.

Thus, as part of the Federal state agrarian University of higher education "Krasnoyarsk state agrarian University", Law Institute implements two educational programs focused on the specifics of sustainable development, including rural areas:

- Field of study: 40.03.01 Jurisprudence. The educational program specialization: "Legal regulation of sustainable rural development and agribusiness";
- Field of study: 40.04.01 Jurisprudence. The Master's educational program specialization: "Legal regulation of land and property relations".

These educational programs take into account the particular nature, social and economic characteristics and needs of rural areas [11], various risks [12] and are designed to provide training for personnel who understand these features and are ready to apply the knowledge obtained in their training, taking into account these peculiarities, which will contribute to the effective implementation of their labour potential and ensure high professionalism in the performance of their work commitments. [13]

5. Conclusions
Currently, in most countries, there are many problems that prevent progress towards achieving a balance between the interests of the economy and the environment. This includes the unstable general economic situation, social tension of certain segments of society, lagging behind in the economy of most countries from the global level, outdated infrastructure and transport, including poor roads, and often their absence at all, low level of development of technological, as well as production and technical bases, and insufficient level of development of industry for the production of environmentally neutral products, etc.

However, there are a number of activities that have proven their efficiency and need to be developed at the national level:

- investment in the formation and development of emerging fundamentally new and innovative logistics centers; [14]
- creating new and updating existing strategies for innovative development, for example, in the field of transport logistics: rational use of warehouse territories through the use of specialized
• improving the legal culture and environmental awareness of the population;
• development of eco-charity for businesses (for example, planting trees, cleaning reservoirs). [16]

We should also develop such areas as:
• specialization of state and municipal employees who exercise their functions and powers in this field;
• efficiency of managers and executives in business to ensure proper planning of elements of the logistics system taking into account environmental problems;
• modernization of existing capacities of the economic system, taking into account the processes of digitalization of the economy and the expansion of the use of information technologies in increasing production capacity while ensuring environmental safety;
• promoting the development of new areas within existing sciences, such as environmental engineering [17] or food security [18]
• development of government incentives for businesses that actually strive to achieve a balance between the economy and the environment;
• reviewing (from the point of view of achieving the highest efficiency) measures of legal responsibility for businesses that violate environmental legislation;
• solution to the personnel issue, since it is necessary to train and retrain the personnel of both authorities and businesses, who would understand the particular characteristics, features and significance of the paradigm of sustainable development and could apply it in certain areas and spheres, for example, in "green" logistics.
• formation and implementation of appropriate educational programs that would take into account the socio-economic and other features and needs of individual territories.

To strengthen the effectiveness of measures taken at the level of individual states, it is necessary to involve the international community represented by its international authorities, the international legal framework and measures to influence individual states that do not properly comply with their international obligations:
• development of a unified international legal framework for all states that would consolidate the general principles of sustainable development, identify the main directions of its development, basic uniform mechanisms for its implementation, and an integrated and systematic approach to the formation of short-term, medium-term and long-term national policies in the field of sustainable development;
• formation of generally accepted methods for evaluating the achieved success and results;
• the availability of comprehensible enforcement actions for states on the part of the world community in the event of non-compliance with international obligations in the field of sustainable development in general, and its individual components, in particular (for example, "green" logistics); and others.

Given the characteristics of the ecosystem, the irreplaceability of a number of its components, the longer the start of sustainable development is delayed and this activity itself is stretched, the greater the damage will be caused to the environment, which will require a large amount of time, human, material, scientific, educational and other resources to eliminate its consequences.

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