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## CONCEPTUAL DIRECTIONS IN THE DEVELOPMENT OF ENTERPRISES' ECOLOGISTICS ACTIVITIES

***The paper explores the nature of the "ecologistics" concept. The experience of its principles application in the practice of logistics companies is analyzed. Factors increasing the value of ecologistics as a factor of sustainable development are defined. Conceptual directions of the ecologistics development in the contemporary environment are suggested, specific features and advantages of their implementation are offered.***

***Keywords:*** *logistics; green logistics; ecologistics; reverse logistics; recycling logistics; ecological management.*

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## КОНЦЕПТУАЛЬНІ НАПРЯМИ РОЗВИТКУ ЕКОЛОГІСТИЧНОЇ ДІЯЛЬНОСТІ ПІДПРИЄМСТВ

***У статті досліджено сутність поняття «екологістика» та проаналізовано досвід використання її принципів у практиці діяльності логістичних компаній. Визначено фактори, що збільшують значення екологістики як чинника сталого розвитку. Запропоновано концептуальні напрями розвитку екологістики в сучасних умовах, наведено особливості та переваги їх застосування.***

***Ключові слова:*** *логістика; зелена логістика; екологістика; реверсивна логістика; логістика рециклінгу; екологічний менеджмент.*

***Табл. 1. Рис. 1. Літ. 18.***

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## КОНЦЕПТУАЛЬНЫЕ НАПРАВЛЕНИЯ РАЗВИТИЯ ЭКОЛОГИСТИЧЕСКОЙ ДЕЯТЕЛЬНОСТИ ПРЕДПРИЯТИЙ

***В статье исследована сущность понятия «экологистика», а также проанализирован опыт применения ее принципов в практической деятельности логистических компаний. Определены факторы, которые увеличивают значение экологистики как условия устойчивого развития. Предложены концептуальные направления развития экологистики в современных условиях, приведены особенности и преимущества их использования.***

***Ключевые слова:*** *логистика; зелёная логистика; экологистика; реверсивная логистика; логистика рециклинга; экологичное управление.*

**Introduction.** Expansion of economic relations and international cooperation encourages market development of transport and logistics services. The driving power of this process is globalization of company-customers activity, their concentration on the key competence and outsourcing of non-core business directions, striving for reduction of the size of logistics chain and cost optimization on its segments etc.

However, logistics tasks today are not only the cost reduction and effectiveness that increase the logistics chain. Modern ecological problems are changing priorities of transport and logistics companies' activity reducing load on the environment, its pollution. These processes caused appearance of such logistics direction as "ecologistics", or "green logistics". Development of ecologistics, as symbiosis of ecology and

economics, improves investment potential of the country in general and every enterprise in particular, satisfies conditions of environment conservation and profit increase of a business activity.

The advantages of "ecologistics" mentioned above, make the issues of defining the conceptual directions of its development quite important and relevant.

**Latest research and publication analysis.** Scientists of many countries examine issues, related to logistics development. Problems of organization and introduction of ecological approach are typical for all directions of enterprise activity, as well as for logistics business. Different aspects of ecologistics or "green logistics" are examined in works of foreign and national scholars, such as R.M. Voronina (2008), Z.V. Gerasymchuk (2012), I.I. Koblyanska (2009), P. Murphy (1996), D. Rogers (2001), J-P. Rodrigue (2001), R. Tibben-Lembke (2001), I.G. Smirnov (2002), L. Songxian (2008), N.V. Khvyshchun (2012), L. Janbo (2008) and others.

**Unresolved issues.** In spite of a great deal of researches on this subject matter, nowadays there is no definite explanation of the concept "ecologistics", its criteria and tasks, besides, the development directions are not studied in depth.

**The research objective** is to generalize definition of the concept "ecologistics", to prove conceptual directions of its development and to analyze experience of its implementation by the enterprises.

**Summary.** Environment pollution and the global warming require searching for new ways of development of transport logistics. Relatively long ago foreign scholars have been defining the urgency of these issues. They even suggested the term "green logistics" (Rodrigue, 2001).

As for the logistics concept, foreign scientists consider it as not only a scientific and business direction, but also one of the factors of sustainable development. But this direction is not widely examined. Polish scholars argue that the aim of ecologistics is to create its integration system (Brdulak and Michniewska, 2009). Formation of the integrated ecologisitcs system can be occurred on the level of particular enterprises as well as branches or regions of a country, group of countries etc.

To P. Murphy's (1996) mind, the term "green logistics" appeared in the early 1990th as a new method in logistics, which makes standard logistics demands more rational, effective and increases processing product rate and movement, and takes into account measures to protect the environment.

"Ecologistics" and "green logistics" concepts research make possible to define a number of approaches to their explanation. They are classified in Table 1.

We argue that the concept of "ecologisitcs" is more integrated, it covers not only logistics aspects, but also generally-economic, social and others.

J-P. Rodrigue (2001) maintains, there are certain disparities between the concepts "green" and "logistics" because the strategy of costs saving, pursued by logistics operators, is often contrary to the principles of environment protection. Logistics operators don't usually take into consideration nature protection (ecological) expenses. Moreover, logistics activity, as a matter of fact, doesn't cover all expenses for infrastructure use. As a result, logistics companies use the most polluted, the least energy-saving and the most infrastructural-intensive types of transportation in order to increase delivery rate. A researcher mentions globalization and global logistics do harm the environment not in similar way, because in the developed countries eco-

nomics subjects have to provide high standards of the environment, whereas in less developed they can be reduced.

*Table 1.* **Scientific approaches to concepts' explanation "ecologistics" and "green logistics"**

| Author | Concept explanation |
|---|---|
| **Term «green logistics»** | |
| J-P. Rodrigue (2001) | Ecologically accepted and effective distributional transport system. |
| D. Rogers, P. Tibben-Lembke (2001) | Actions, aimed at minimization of environmental impact of logistics activity |
| L. Janbo, L. Songxian (2008) | Scientific approach, provided use of new logistics technologies and modern equipment in order to reduce pollution and increase effectiveness of logistics resources use |
| **Term «ecologistics»** | |
| D. Yang, H. Pan (2008) | One of the modern logistics types, aimed at the integration of economic benefit, social and ecological aspects in order to integrate and coordinate ecological, social and economic aspects within logistics system |
| I.G. Smirnov (2002) | Providing ecological safety of the separate system both for all society and for a separate user. |
| L. Janbo, L. Songxian (2008) | System of planning and management using advanced technologies of logistics and methods of the ecological planning in the sphere of pollution reduction and recourse consumption, that affected by the ecological principles with the purpose of integration and co-ordination of ecological, social and economic aspects within logistics system. |
| U. Chortok(2007) | Management subsystem of production flows from a primary source to the end user with the minimal level of eco-destructive influence on the environment with the aim to minimize negative impact of economic activity on the environment on all stages of material and related to it flows. |

* Developed by the author on the basis of works of Z.V. Gerasymchuk and N.V. Khvyshchun (2012).

Nowadays the definition "ecologistics" as a tool of ecological safety maintenance is increasing. It is becoming the factor of sustainable development of any enterprise. Such factors are reason for the following:

- ecologistics is an example of publically useful and business profitable symbiosis of ecology and economics, which satisfies both conditions of environment conservation and profitability increase of economics activity (Smirnov, 2002);
- multi-purposes of logistics approach allows to examine it as the optimization tool of any flow processes, not only related to main economic activity, but also to other directions and spheres of enterprise activity – social, ecological. The key conceptual theses of logistics are structurally reflected in the mechanisms of ecological regulation of nature use (Koblyanska, 2009);
- conception of ecologistics is examined as an effective approach to management of resource flows with the aim not only to reduce costs, but also to decrease ecodestructive impact on the components of environment. Ecologistics provides an integration of different economic functions related to resource flows to achieve the goal of constant ecologically-safety development (Koblyanska, 2009).

By the results of researches, the authors developed conceptual directions of "ecologistics" development (Figure 1).

Cleaner production (CP) (Status and prospects of development of green economy) is a pilot project of the United Nations Organization from industrial development ("UNIDO Cleaner Production Program"). The general project objective is an

increase of enterprise competitiveness, radically reduced waste quantity, saved production costs and costs for end technologies (Kharichkov, 2010).

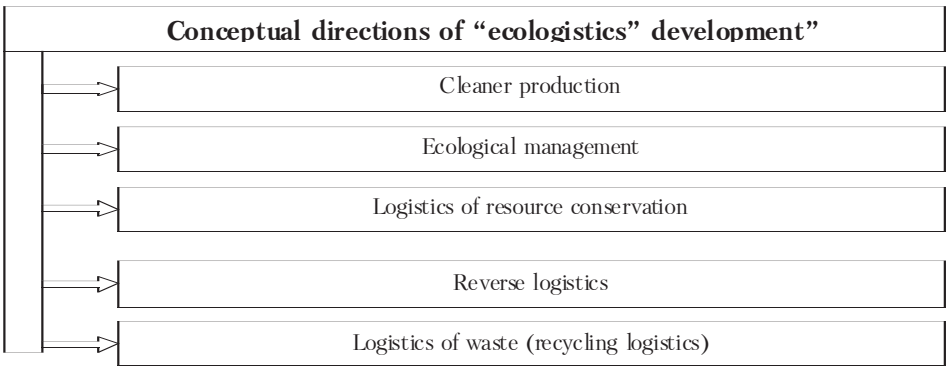


*Figure 1.* **Conceptual directions of "ecologistics" development,** *developed by the author*

Cleaner production is an integrated approach to increase production efficiency that means use of preventive strategies of management. They increase productive use of nature resources, minimize waste and emissions and with the help of optimization of productive use of nature resources (materials, energy, water). These are minimization of impact on the environment and nature by means of waste and emissions decrease, risks minimization for people.

Therefore, realization of cleaner production conception by means of conservation of natural resources in processes, production will be instrumental for their efficiency increase and extent of risk decrease not only related to a man, but also to the environment (Kharichkov, 2010).

With regard to production processes the CP strategy is directed to more effective use of raw material and energy, elimination of toxins and contaminants, prevention of waste and pollution appearance in its source.

As for products and goods, the CP strategy is directed to reduce their impact on the environment within life cycle – from development to use.

One of the tools of the CP strategy realization is ecological management that we can consider as the separate direction of ecologistics development.

Ecological management is concentrated on the control on waste and emission of contaminants, assessment of pollution impact on the environment according to the approach, explained in the international standards ISO 14000.

All in all, the development of management standards in the ecology sector is occurring simultaneously with intensive development and introduction of ecological standards in the production sphere, directed to provide energy efficiency or use prohibition of some hazardous substances for environment, food safety etc. Environmental requirements for production labeling, stamp with ecological footprint on it are widely spreading. It demonstrates energy supply needed for production and transportation (Potapenko, 2011).

Besides the standards of ISO 14000 series in the sphere of ecological management, new standards of ISO 50000 are also being developed. The standard on administrative management ISO 26000 plays an important role in growth of corporate social

responsibility for pollution environment by the industry (Status and prospects of development of green economy).

Logistics by means of organizational-economic measures solves a problem of efficient use of resources that is the reason to create appropriate scientific approach in industrial logistics – logistics of efficient use of resources (De Brito and Dekker, 2003).

Logistics of efficient use of resources, based on the application of advanced information and computer technologies, consists of such main directions in industry organization as planning of innovations, using optimal materials consumption; development of technologies with efficient use of resources; decrease of resource and energy consumption of production in all elements of logistics chains in the system "material-technical support-industry-production distribution" (De Brito and Dekker, 2003).

At present the reverse logistics is fast developing, a lot of scholars consider it as the process of return to commodity stocks and supplies (goods, packing, and waste) from consumer to producer.

Reverse logistics is one of the most important directions of logistics development in general. Some scientists and experts identify this direction with the process of waste management (recycling). However, the definition "reverse logistics" is considerably wider. In fact, waste utilization is a component of reverse logistics. Utilization of unnecessary or obsolete materials; production purchasing, required utilization or renewal; materials handling of return production with defects are different aspects of general program of reverse streams of logistics (Stock and Lambert, 2005).

Currently, the development of reverse logistics an is integral part of logistics management, realized in the form of guarantee and post-guarantee services.

From the point of view of environmental protection, logistics covers all "life cycle" of product, particularly the opportunity to reuse and utilize waste, choose the most environmentally-friendly types of transport etc. (Smolensky and Stepanyuk, 2006). The logistics is referred not only to economic problems of enterprise, but also to the issues of environmental protection. That is why we can solve problem of waste management with the help of such direction of ecologistics as waste reuse. Its tasks are to reduce: 1) environment pollution; 2) natural resources use (Pavlikha, 2004).

To define the logistics activity on waste management it is better to use the terms "recycling logistics" or "logistics of utilization and recycling" (Voronina, 2008).

Logistics system on waste management has to cover all stages of wastes life cycle: their finding, planning on gathering and use, preparing before use and realization, providing practical use and control on their use (A. Alimov, 2009).

In the opinion of I.G. Smirnov (2002), there are a lot of advantages in introduction and recycling realization:

- saving of natural raw materials;
- economical energy consumption and related emissions to the environment;
- minimization of needs in the sphere of waste storing and its burning up;
- minimization of harmful emissions into atmosphere, related to recovering of natural raw materials and typical industrial processes;
- minimization of greenhouse gases emissions impacted on climate changes;
- decrease of industry costs;

- making new work places and competitiveness increase.

As we see, the mentioned advantages are related to both separate enterprise, its specific activity performance, and society in general.

Today we can state that logistics conception of recycling is not developed in Ukraine because only lately logistics methods and approaches have been used within typical industry systems.

Conceptual principles of "ecologistics" are used in practical activity of foreign and national logistics companies.

In such a way, the company "Hewlett-Packard" (USA) reduced toxic chemicals by 71%, "Dow Chemical" and "General Motors" appointed responsible people for waste management and their utilization, "Xerox" introduced the so-called "reverse logistics", replacing their customs' old technics and mending its renovation.

These companies came to the conclusion that waste use reduces energy consumption, gaseous emissions and solid contaminants; saves raw material resources. They increased competitiveness and improved financial performance (Moskvitina, 2011).

We can admit the successful functioning of the program of "green logistics", that is developed and introduced by the largest logistics group company of the European Union "StinnesLogistics AG" (Germany) and, particularly its biggest constituent part German-Swedish transport and logistics company "Schenker-BTL", working in Ukraine.

The company "Schenker-BTL" not only developed the program of "green logistics", but also provided its access to the Internet, especially stressed on the processes of possible volume and chemical depots of pollutant emissions and constant control over ecological standards of logistics system; that is the pioneer development in the world logistics practice. It covers both European and other world's regions, particularly 44 countries, 4215 settlements, 400 000 distance and calculation rate reaches 50 trade supplies in one second or 3000 in minute.

The example of a formed ecologistics system in Ukraine is the transmission of waste plumbate batteries and petroleum products to their further utilization on the subsidiary enterprise "West" of Ukrainian JSC "Vtorkolirmet" and on petroleum base of Volyn region.

Such a logistics chain is working as "metal waste of Lutsk city – CJSC "Ukrvtorchormet" of Donetsk city (Moskvitina, 2011).

**Conclusions and perspectives for further researches.** The process of ecologization on the modern stage of economy development considers all spheres of social life. That's why today "ecologistics" is one of the main factors of sustainable development of not only transport and logistics companies, but also enterprises of all branches of the economy. Ecologistics development increases the enterprises' competitiveness and improves their financial performance. Founded on "green" technologies, ecologistics is logistics of future that provides environmental protection, accomplishing logistics activity.

Ecologistics has to be considered as a system of formation and management of logistics processes (transportation, storing, industrial premises, and utilization) in order to minimize negative impact on the environment. Modern development of ecologistics is made by conceptual directions, among them reverse and recycling

logistics that became especially popular nowadays. Further researches could be carried out in the field of effective development of ecologistics.

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