

**ICEST 2021****II International Conference on Economic and Social Trends for Sustainability of Modern Society****THE LOGISTICS CREATION OF ECOLOGICAL EFFICIENCY  
FOR THE RUSSIAN ECONOMIC UNDER COVID-19**

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**Abstract**

Proving the presented article's urgency, it should be admitted that the logistics role in the environmental efficiency formation of the Russian economic complex has become more and more important in recent years. In this research, it is proved that logistics directly affects not only the current ecological situation in the world, it forms the future format of energy efficiency, introducing green techniques into the usual schemes of products' manufacturing and distribution, as well as determining the energy sufficiency status of regions and states. According to the authors, it is necessary to implement and spread the most effective, resource saving techniques with the least harm to the environment, providing the sustainable functioning of the system, interconnected processes of production, storage and transportation, because the environmentally friendly techniques introduction is not only an indicator of necessity, but also an essential indicator of the sustainability, the strategic development stability of logistics and other market participants. In the study, the theoretical and applied comprehensive scientific tools of eco-logistics, acting as an interdisciplinary coordinator of commodity movement systems, used as methodological support. The summary of the article contains significant scientific postulates proving that effective eco-logistics of the future based on the innovative techniques introduction in the market players' activity today, using life cycle theories, investigating and implementing the most promising areas of environmental policy development. The research conclusions present the problems and prospects for eco-logistics development in one of the most important, system-forming sectors of the national economy – in the electric power industry.

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## 1. Introduction

Investigating the features of modern commodity turnover and distribution systems, it is necessary to admit the defining role of logistics and supply chain management in the formation and in the environmental efficiency development in the interrelated processes of production, storage and transportation. Thus, logistics directly influences not only the current environmental situation in the world, it is already forming the of future energy efficiency type, introducing green techniques into the usual products distribution schemes. This determines the relationship and interdependence between the state of logistics processes and the environment.

Investigating this problem in detail, we come to the conclusion that within the framework of the above relationship there is another factor, designated by us as the resource base (Albekov et al., 2017; Chekhovskaya, 2018; Emelyanov, 2019). Therefore, the triad of relationships will take into account the dependence of the state of the logistics processes, the resource base and the environment. For example, energy ecology provides for the construction and commissioning of generation facilities capable of using renewable sources to generate electricity. This logistical approach has been used for many years, but the percentage of commissioned power plants that replace the traditional generation facilities that prevail in our country is still not large enough.

## 2. Problem Statement

The theoretical and applied scientifically holistic toolkit of environmental logistics serves as an interdisciplinary coordinator of the systems of commodity movement, the state of production facilities and markets, providing future generations with the possibility of stable consumption of resources. The territorial division of the world that has occurred over the centuries has been long conventionally completed, but the division of resources, mainly energy resources, has continued over the past decades. In this way, states provide a stable future for their socio-economic communities over the long term, but military action and other negative consequences used to achieve the goals. For example, scientists predict a significant increase in carbon dioxide emissions, predicting an increase of about 20%, which would subsequently lead to an increase of 1.5 to 5° C in global air temperature from 2025 to 2030.

Investigating all the possibilities of unconventional generation in Russia, we can acknowledge the opinion of one of the leaders of the program to develop renewable generation sources in Europe, who called Russia a «sleeping green giant» (Albekov et al., 2019). We believe that the natural resources of our country provide an opportunity for the giant to wake up, but its awakening will not happen soon, it will be dormant for a long time, as there is no particular reason to rise. The discussion about the need to introduce unconventional methods of generation in real production and household processes has been going on in Russia and abroad for the past decades, growing every year, as has the number of successful projects implemented in different territories. In this perspective of the study, following the desire to present the full scientific and applied value and role of logistics in the development of green energy systems, it is necessary to assess the pluses and minuses that lie in the development of this issue, and identify the difficulties and challenges in connection with the introduction of renewable energy sources, from a logistical approach perspective (Mamaev & Alibekov, 2017).

First of all, the difficulty, is in the fact that these technologies are quite impressive in terms of one-time investments (Erokhina, 2018; Vasilyeva, 2016), so most of the funds being erected are usually adapted to the existence of raw material dependence. Secondly, it should be noted that even with a high degree of depreciation of fixed assets of generating facilities and a certain level of retirement of generation capacity, they are still operating in most regions of Russia.

The base of fixed assets, built during the Soviet Union, provides electricity to most of the Russia's territory. Therefore, with no particular need to look for more efficient ways to generate, Russian society continues to consume energy produced from coal, oil, and gas. Now, regional producers and grid distribution generation facilities are not interested in replacing operating capacity with renewable generation facilities (Ermakov & Kuzminykh, 2019; Skuzovatova, 2016; Zelikov et al., 2018). Recently, a new strategy for the development of the industry until 2035 adopted. It includes plans to increase the share of capital investments in the construction of fixed assets of alternative generation. The document also notes that the majority of energy production facilities prove to be economically efficient precisely at the stage of operation. However, for the reasons we mentioned earlier, state and private commercial structures prefer stable long-term functioning generation funds. However, now we are talking about import substitution programs, building up production facilities in the economic complex of Russia's regions. Therefore, it is the introduction of green logistics technologies in the processes of the electric power complex that is especially relevant. Recently, the state support stimulates the development of industries of the economic complex, but on this issue it is necessary to take into account the limited financial resources that are so necessary for investment in fixed assets of each of the industries of the economic complex (Albekov, et al., 2019).

### **3. Research Questions**

The prospects of the development of eco-efficiency in modern logistics processes have not only social, but also purely economic roots. The introduction of innovations in logistics processes is often associated with increased costs, but the practice of the most effective solutions in supply chain management has proven that highly environmentally friendly technologies implemented, for example, in the warehouse or transport activities provide significant savings in operating costs in the strategy for decades to come.

The effective environmental logistics of the future based on the introduction of innovative technologies in the activities of modern domestic enterprises today, while ensuring a smooth development process based on the principle of life cycle theory, highlighting, researching and implementing the most promising areas of environmental policy development.

### **4. Purpose of the Study**

From the point of view of efficiency in logistics and supply chain management, it is already necessary to introduce technologies that cause the least possible harm to the environment and ensure the stable functioning of systemic, synergistic processes of production, storage and transportation, as well as other logistical operations. The positive public attitude toward the introduction of environmentally friendly technologies is increasing every year, and the increasing incorporation of highly environmentally friendly

standards into socio-economic processes being designed and implemented at the state level. The logistics, in our opinion, is the very catalyst and optimal mechanism that can, avoiding the clash of interests, implement compromise solutions to achieve the greening of interconnected flow processes in supply chains.

## 5. Research Methods

The rapid development of the socio-economic systems, provided primarily through logistics activities, has already led to the decision to assess the current state and prospects for the development of companies - market leaders by criteria not only inherently economic, but also taking into account indicators of social and environmental responsibility (the index of Dow-Jones sustainability) (Mamaev et al., 2019; Mikhaylyk et al., 2019). Therefore, the world's leading corporations have become accustomed to the view that the introduction of environmentally friendly technologies is not only a sign of necessity, but also an indispensable indicator of sustainability, stability of strategic development in the long term. The cost savings, optimization of flow processes, as the dominant postulates of the theoretical and methodological support of logistics, predetermine the need for further improvement of supply chain management based on the spread and application of highly environmentally friendly technologies. In this respect, reverse logistics, as the final link in supply chain management, is of unparalleled importance because of its ability to recycle waste, and manufacturing and distribution logistics, provide process efficiencies for green innovation.

During the period of the spread of coronavirus infection, the distant digitalization has adjusted the traditional everyday life and changed the conditions of traditional activity, reinforcing the contours and scope of professional activities in relation to networking (Erokhina & Parkhomenko, 2017, 2019; Filippov, 2015). Let's concentrate the summarizing part of the article on the problems and prospects of development of ecology in one of the most important, backbone industries of the national economy - the electric power industry. This industry is a supporting branch in relation to the rest of the economic complex in any state, which predetermines the role of logistics in the formation of environmental efficiency of the Russian economy complex, especially in the context of the pandemic COVID-19.

## 6. Findings

In the past few months, every socioeconomic system, in every country, has undergone significant changes due to the spread of coronavirus infection and the impact of the pandemic on both producers and consumers. The provision of electricity is a continuous process, and all of the related characteristics of the economic complex depend on the stabilization of this industry. The impact of the pandemic on the electric power sector was initially negative, as energy, consumption worldwide has declined, and for the Russian economy, the drop in oil prices that occurred even before the pandemic had a temporary negative impact.

However, in the current situation, another trend should be noted - the development, because of the pandemic, of clean generation and the demand for energy produced precisely using renewable energy sources.

Every state in the world strives to provide its citizens and industrial facilities with access to a sustainable energy supply. The market for renewable generation is divorced from traditional funds and has significant reasons to be vulnerable as part of the formation of socio-economic imbalances and crisis

situations. Undoubtedly, the spread of the COVID-19 pandemic has had a significant impact on the electric power industry, which primarily manifested itself in a drop in demand, relatively quarantined production facilities, as well as a looming crisis of non-payment for utilities due to the temporary unemployment of the population. For example, the International Energy Agency estimates that demand will fall by between 2.5% and 5% in 2020 (Karh et al., 2017; Panyukova, 2018; Voronov & Voronov, 2015). Like any logistical system, power supply chains, while acting as the engine of the global economy, are at the same time the guarantor of the stable functioning of socially important sectors of medicine, healthcare, education, and at the same time business activity, which has significant network specialization due to quarantine.

With the private sector's access to electric power facilities, conditionally dividing the industry into generation, transmission, and consumption, each state that has implemented such a reform has ensured access to private investment and high chances of developing new generation facilities, which should certainly be renewable due to their efficiency. The traditional methods of power generation based on the combustion of hydrocarbons, for example, are not a priority at this stage of global economic development. Taking care of future generations, the strategic development of the electric power industry for each state is associated with increase in energy generation funds based on renewable sources now. In the year 2020, power generation based on renewable energy sources worldwide will increase by an average of 2-4%. The significant efficiency of environmental processes in this regard achieved by solar and wind power generation facilities. It should be noted, however, that most of the power plants in question were built and commissioned in 2017-2019.

## 7. Conclusion

The role of logistics in shaping the environmental efficiency of the Russian economic complex under the COVID-19 pandemic based on meeting the steadily increasing demand through the growth of renewable energy generation around the world, but the Russian energy sector today still based on the operation of thermal power plants. In this regard, in our opinion, the most effective are the measures of state support, the spread of which should directly affect the new generation facilities, power plants operating on natural sources.

Although the pandemic has generated quite a few negative consequences in the development of the energy complex, both in Russia and around the world, to summarize, we emphasize that commercial industrial demand, increasing every year, growth of economic activity, and stable growth of energy consumption, will solve many issues of greening logistics systems of the Russian electric power complex, which emerged before the crisis. In this regard, the way out is seen in the state support and logistics support as the dominant and necessary categories for the development of the fundamental industry, systematically involved in the formation of environmental efficiency of the Russian economic complex.

## References

- Albekov, A. U., Israilova, E. A., Polubotko, A. A., Matishov, G. G., & Parkhomenko, T. V. (2017). *Green economy. Modernization of socio-economic system of South of Russia*. Rostov n/D: IPK RSEU (RINH).

- Albekov, A. U., Parkhomenko, T. V., & Polubotko, A. A. (2019). Logistic development of green energy in the economy of Russia. *Vestnik of Rostov State University of Economics*, 2(66), 12-18.
- Chekhovskaya, S. A. (2018). Logistics as Business Science. *Business Education in the Knowledge Economy*, 1(9). <https://cyberleninka.ru/article/n/logistika-kak-biznes-nauka>
- Emelyanov, S. M. (2019). *Theory and Practice of Public Relations*. Publishing House Yurait.
- Ermakov, I. A., & Kuzminykh, S. S. (2019). Application of distributed registry technology as one of the mechanisms of digital integration of supply chains. *E-Management*, 2. <https://cyberleninka.ru/article/n/primeneniye-tehnologii-raspredelemnogo-reestra-kak-odnogo-iz-mehanizmov-tsifrovoy-integratsii-tsepey-postavok>
- Erokhina, T. B. (2018). Digital Communication Process in Marketing and Logistics Consumer Solutions. *Vestnik of Rostov State University of Economics (RINX)*, 4(64), 100-106.
- Erokhina, T. B., & Parkhomenko, T. V. (2017). Development of emotional background of the consumer personality in distribution logistics. *Innovative achievements of green logistics: international experience and Russian practice (XIII Southern Russian Logistics Forum)*, 406.
- Erokhina, T. B., & Parkhomenko, T. V. (2019). The Impact of Marketing and Logistics on Minimizing Consumer Risks. *Vestnik of Rostov State University of Economics (RINX)*, 4(68), 40-44.
- Filippov, E. E. (2015). Social Logistics: an Instrument for Solving Socio-Social Problems. *Upravlenie*, 2(8), 65-67.
- Karh, D. A., Lazarev, V. A., & Kondratenko, I. S. (2017). Logistics services in the supply chain: problems and prospects. *Journal of new economy*, 3(71), 130-139. <https://doi.org/10.29141/2073-1019-2017-15-3-11>
- Mamaev, E. A., & Alibekov, B. I. (2017). Multi-agent systems of logistics: information and analytical aspects. *Bulletin of Dagestan State University. Series I. Natural Sciences*, 32(4), 56-62. <https://doi.org/10.21779/2542-0321-2017-32-4-56-62>
- Mamaev, E. A., Kovaleva, N. A., Khashev, A. I., & Mulyukov, O. V. (2019). Imitation and analytical approaches to assessment of condition and modeling of city transport system nodes. *IOP Conference Series: Materials Science and Engineering*. <https://doi.org/10.1088/1757-899X/786/1/012086>
- Mikhaylyk, M., Baginova, V., & Mamaev, E. (2019). Empirical markers in the concept of digital logistics of multichannel supply chains. *E3S Web of Conferences*, 91, 08056. <https://doi.org/10.1051/e3sconf/20199108056>
- Panyukova, V. V. (2018). International experience of blockchain technology application in supply chain management. *Economics. Tax. Law*, 4. <https://doi.org/10.26794/1999-849X-2018-11-4-60-67>
- Skuzovatova, N. V. (2016). Development of logistic systems of retail network trade in crisis conditions. *Vestnik NSUEU*, 1, 233-247.
- Vasilyeva, E. (2016). Smart Grid in Russia: practice and prospects. *Rational Enterprise Management*. 1-2. [https://borlas.ru/press/533\\_document.pdf](https://borlas.ru/press/533_document.pdf)
- Voronov, V. I., & Voronov, A. V. (2015). International Logistics of Spaces and Borders: main aspects of formation of the concept, mission, goals, objectives, functions, integral logic, principles and methods. *Management*, 2(8), 27-36.
- Zelikov, V. A., Chernyshev, M. A., Lysochenko, A. A., & Chumachenko, S. G. (2018, April). The model of managing the risk component of intermodal transportations based on new information and communication technologies within optimization of transport logistics of a modern company. In *International Conference Project "The future of the Global Financial System: Downfall of Harmony"* (pp. 1036-1042). Springer, Cham. [https://doi.org/10.1007/978-3-030-00102-5\\_110](https://doi.org/10.1007/978-3-030-00102-5_110)