

**SOI: 1.1/TAS**

**DOI: 10.15863/TAS**

**Scopus ASJC: 1000**

**ISSN 2308-4944 (print)**

**ISSN 2409-0085 (online)**

**№ 07 (123) 2023**

# **Teoretičeskaâ i prikladnaâ nauka**

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# **Theoretical & Applied Science**



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**Philadelphia, USA**

**Teoretičkaâ i prikladnaâ  
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**Theoretical & Applied  
Science**

**07 (123)**

**2023**

# International Scientific Journal Theoretical & Applied Science

Founder: **International Academy of Theoretical & Applied Sciences**

Published since 2013 year. Issued Monthly.

International scientific journal «Theoretical & Applied Science», registered in France, and indexed more than 45 international scientific bases.

Editorial office: <http://T-Science.org> Phone: +777727-606-81

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ISJ Theoretical & Applied Science, 07 (123), 300.  
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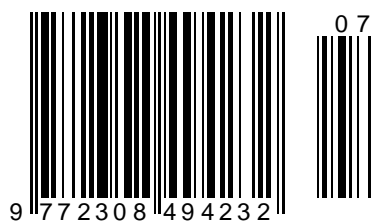
**Impact Factor ICV = 6.630**

**Impact Factor ISI = 0.829**  
based on International Citation Report (ICR)

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ISSN 2308-4944



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SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

International Scientific Journal  
**Theoretical & Applied Science**

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2023 Issue: 07 Volume: 123

Published: 21.07.2023 <http://T-Science.org>

Issue

Article



**Artur Alexandrovich Blagorodov**

Institute of Service and Entrepreneurship(branch) DSTU  
 master

**Vladimir Timofeevich Prokhorov**

Institute of Service and Entrepreneurship(branch) DSTU  
 Doctor of Technical Sciences, Professor,  
 Shakhty, Russia

**Natalya Vasilievna Tikhonova**

Kazan National Research Technological University  
 Doctor of Technical Sciences, Professor,  
 Kazan, Republic of Tatarstan

**Galina Yurievna Volkova**

LLC TsPOSN «Orthomoda»  
 Doctor of Economics, Professor  
 Moscow, Russia

**SMALL AND MEDIUM ENTERPRISES (SMEs) - THE BASIS FOR  
 SUCCESSFUL SOCIO-ECONOMIC DEVELOPMENT OF THE ARCTIC  
 REGIONS OF THE RUSSIAN FEDERATION WITHIN THE NORTHERN  
 SEA ROUTE. MESSAGE 3 ARKHANGELSK REGION**

**Abstract:** *the article deals with the actual problems of the development of the tourism industry in the European North of Russia (Murmansk, Arkhangelsk regions and the Republic of Karelia) and in the high-latitude territories of the Western Arctic. Practical proposals and recommendations are given, priority tasks are formulated to solve the main socio-economic problems of using the tourist and recreational potential, developing inbound and domestic tourism for the sustainable development of regions, unique territories and tourism centers. The results can be used to improve the legislative and regulatory acts of the tourism industry, to increase its competitiveness in the North of Russia.*

**Key words:** *Republic of Karelia, Murmansk region, Arkhangelsk region, Arctic zones, northern sea route, efficiency, social development, priority, population, comfort, tourism, hotel business, paradigm, economic policy, financial stability.*

**Language:** *English*

**Citation:** *Blagorodov, A. A., Prokhorov, V. T., Tikhonova, N. V., & Volkova, G. Yu. (2023). Small and medium enterprises (SMEs) - the basis for successful socio-economic development of the Arctic regions of the Russian Federation within the Northern Sea route. Message 3 Arkhangelsk region. ISJ Theoretical & Applied Science, 07 (123), 201-233.*

**Soi:** <http://s-o-i.org/1.1/TAS-07-123-25> **Doi:** <https://dx.doi.org/10.15863/TAS.2023.07.123.25>  
**Scopus ASCC:** 2000.

**Introduction**

UDC 338.48:374.58.

The most visited regional center of the Russian North is the Murmansk region and the ancient Vologda, over the past five years, the flow of tourists

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to these regions of the Russian North has grown by 70% as a result of the active development of the tourist infrastructure and a competent marketing policy to promote the city in the tourist market. It was planned that by 2025 the tourist flow to the regional capital should increase to 1 million people, which would provide an additional inflow of funds to the city budget in the amount of 10 billion rubles.

According to economic calculations, one tourist, on average, leaves at least 10 thousand rubles in the Arctic zone. This is about 3.5 thousand rubles per day in a hotel, 2 thousand rubles in cafes and restaurants, 1 thousand rubles when buying souvenirs and 3.5 thousand rubles when visiting excursions and museums. If 700 thousand tourists and sightseers come to each region of the Arctic every year, and 30% of them stay for at least a day, it turns out that investments in the city's economy amount to at least 2 billion rubles. Of the 700-800 thousand tourists a year, 70% are sightseers, 30% are tourists. More than half of the guests stay in the regions for business purposes, 23% of tourists are people who travel to the regions to

get acquainted with the cities of the Arctic, their architecture and history (Figure 1). Another 21% of tourists come to events.

The best examples of the successful development of tourism in the small historical settlements of the Russian North, along with Veliky Ustyug, are Totma, Kirillov, Belozersk and Yarensk. The tourist flow is growing here, new jobs are being created, additional investments are being attracted, the revenue side of local budgets is being replenished, and new event events are being developed.

A specific problem of small historical towns in the Russian North lies in a significant proportion of the aging wooden fund of valuable environmental development, the loss of which and the corresponding change in the urban historical environment means the erosion of the identity of the settlement. The sphere of cultural and historical heritage (protection of architectural monuments and preservation of authentic appearance) is the main problem of small towns in terms of culture and tourism.



Picture 1. Vologda. Kremlin

Among the small towns of the Arkhangelsk region, Kargopol, Velsk and Solvychevodsk should be especially noted, in which, despite a small tourist flow, a system of tourist information navigation is actively developing in the historical center near the main display objects (Fig. 40). The city-museum of Kargopol is the only one among the cities of the Russian North, accepted into the Association of Small Tourist Cities of Russia, a venue for bright year-round

festivals and holidays. The city is visited annually by about 10 thousand tourists (Fig. 2, 3).

The Kargopol Museum has prepared a new brand project "Kargopol is the birthplace of the President of Russian America A. Baranov", within the framework of which it is planned to create a cultural and business complex in the historical part of Kargopol, where temple white-stone ensembles and part of the civil buildings of the late 19th - early 20th centuries have been preserved. The most significant

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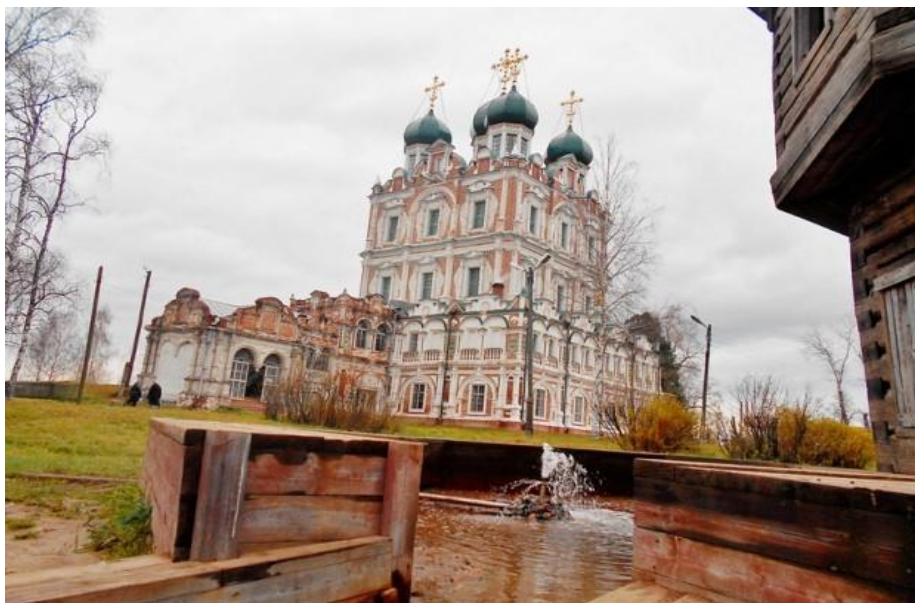
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object of this project is the museum of Alexander Baranov, the president of Russian America from Kargopol. It is also planned to create a memorial museum-apartment of the Kargopol artist Gennady Kulishov "Artist's House" and the exhibition and trade complex "Gostiny Dvor".

The historical center of ancient Velsk is replenished with new cultural display objects. The

park of wooden sculptures of the Tree of Life festival was opened, and a pedestrian museum quarter was created on the central square. In 2018, the exposition and exhibition complex "Museum of House Art Paintings of Povazhye" was opened in the Kichev house, a monument of wooden architecture transported from the outback.



**Figure 2. Solvychevodsk. Vvedensky Cathedral**



**Figure 3. Kargopol. Nativity Cathedral**



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**Figure 4. Kargopol. Trinity Church**

In the Arkhangelsk region in 2019, a new tourist route was developed along the three northernmost beautiful villages of Pomorie (Kiltsa, Kimzha, Verkola) with guests staying at the Golubino forest hotel. The developers of the modular route plan to involve local residents in the project as much as possible and give impetus to sustainable development and the preservation of villages. In order for rural areas to develop, local residents should conduct master classes and arrange a program for guests. Thus, they will have the opportunity to earn money, which is very important for the preservation of villages, small and medium-sized cities. With the growth of the tourist flow to the most beautiful regions of the region, there is an increase in the activity of local communities, they come to life, residents begin to apply for various grants. In the future, this becomes beneficial for neighboring rural settlements. As a result of the association's sixth expedition to the Russian North, several more settlements in Pomorye claim to be awarded the title of the most beautiful village in the country. Among them are the remote villages of Bolshiy Nisogory and Chulasa in the Leshukonsky District, as well as the village of Edomy in the Pinezhsky District. The association's experts noted the positive changes that have taken place in four villages that have already become one of the most beautiful villages in Russia. So, in Kimzha, with state support, the guest house "Shelter of the Traveler" was renovated, in the village of Oshevsk, on the basis of a peasant house, an artisan estate was created, uniting local craftsmen for the production of handicrafts. Oshevsk has already firmly entered the list of branded routes in Russia: a visitor center has been

created there, the Osheven Wedding program has been developed, and event events are organized.

It is planned to open a new guest house in Verkola, the House of Culture is being reconstructed, in February 2020, events related to the centenary of the writer Fyodor Abramov were successfully held. In Kielce, with the support of the French National Federation of Companions, an old well has been restored. The Arkhangelsk region may become the first Russian region where satellite villages, or halt villages, will appear. The French experience of using such settlements, which do not fall under the criteria of the ASKDGR participant, but have great tourism potential, is interesting. In the Arkhangelsk region, the village of Lomonosovo, Kholmogorsky district, can become one of such places.

It makes sense to stop at such points along the way to the most beautiful villages to eat and relax. This will help to involve a wider range of settlements. Such halts, among other things, ensure the safety of tourists during travel.

Association experts should also pay attention to other rural settlements of the Russian North, which have preserved authentic monuments of folk wooden architecture, the original culture of local residents and the traditional historical habitat. Potential candidates for joining the ASKDGR are: Karelian (Panozero, Khaikolya, Sheltozero, Shueretskoye), Vologda (Fire - the national village of the Russian North is visited by up to 15 thousand tourists a year, Goritsy), Arkhangelsk (Vershino, Sura, Dorogorskoye) villages, Old Believer the village of Ust-Tsilma in the Komi Republic, as well as the village of Varzuga in the Murmansk region (Figure 5).

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**Figure 5. Oshevensk village**



**Figure 6. The village of Verkola is the birthplace of Fyodor Abramov**

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**Figure 7. Art object in the village of Sura, which is the birthplace of John of Kronstadt**

One of the promising driving forces for the sustainable development of small historical settlements in the Russian North is territorial public self-government (TPS). For example, tourist projects of TOS in the Arkhangelsk region are recognized as one of the best in Russia (Kimzha, Yarensk).

In the village of Kimzha, the local CBT developed and implemented the brand "The northernmost mills in the world" with the creation of a museum exposition. During its work, TOS "Kimzha" has implemented more than thirty projects, including several international ones.

In TOS "Kimzha" folk crafts are preserved today: weaving, pottery, felting from wool. At the same time, the residents of the village of Kimzha are actively involved in the implementation of TOS tourism initiatives: an individual entrepreneur provides accommodation services in the guest house "Shelter of a Traveler"; a cultural program with a performance by a folklore ensemble is organized at the Politov House Museum of Peasant Life, a Mezen treat awaits tourists in a cafe with traditional cuisine Kimzhenska pauzna. In addition, representatives of the TOS "Kimzha" conduct excursions around the village and always lead guests to the famous mills. The small northern village of Kimzha implements more than one project a year, receives foreign guests, artists, and scientific expeditions. In Kimzha, all projects are connected into a single whole, the results are in demand, there is a vision of the integrity of the tourism product.

The CBT project of the village of Yarensk participated in the first international competition "Tourist brand: best practices - 2015" in the nomination "The best territorial brand in the category" Tourist brand.

According to the results of the competition, the project "Yarensk - the birthplace of Mother Winter" took first place. The CBT initiative is an important tool that can attract an active population to projects aimed at developing tourism, preserving cultural and historical heritage, folk traditions and crafts in small towns and villages of the Russian North. As a result of the implementation of local TOS projects, tourism infrastructure facilities appear on the territory, which can be the beginning of serious tourism business projects. An important role in the life of the CBT is played by local public enthusiasts from among the local residents, who coordinate all the work of local communities, for example, Tatyana Sedunova (Pinezhsky District), Evdokia Repitskaya, head of the tourist cultural and museum center "Kimzha", Nina Nikolaevna Selivanova, organizer of the first guest house in Kimzha, Nadezhda Kalmykova (Kinerna village). Thanks to these people, with the help of the development of tourism and the socio-cultural sphere, the historical villages of the Russian North are being revived.

In order to preserve the traditional historical environment and cultural landscapes, the unique rural areas of the Russian North can receive the status of a historical and cultural reserve (for example, Kimzha) or a landmark of regional or federal significance. First of all, it is necessary to maintain a balance between tourism and the traditional way of life.

In the rural historical settlements of the Russian North in the field of hospitality, it is advisable to develop a system of private guest houses using original local culinary brands in the meals of guests.

At present, the problem of preserving the historical and cultural heritage is acute in Russia, which is often perceived by the authorities, the professional community of urban planners and

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architects as a serious obstacle to the development of cities. Historical settlements and their borders, which have become the subject of heated discussions, are considered a heavy burden. The leadership of a number of historical settlements is trying by any means to get rid of this status or to replace the federal status of the settlement with a regional one. This desire is due to the ability to resolve all issues of development of the settlement at the regional level without the intervention of federal authorities. Development, as a rule, means new construction in the historical center, ignoring the legislation of the Russian Federation in the field of heritage conservation.

a) increasing the competitiveness of the seaport of Arkhangelsk, including the modernization of existing sea terminals, dredging, the creation of a new deep-water area, production and logistics complexes and access infrastructure, the introduction of coordination systems and digital management of the transport hub;

b) development of transport infrastructure (railway lines, waterways and motor roads) that ensures the connection of the seaport of Arkhangelsk with the territories of the North-West of Russia, the Urals and Siberia, including the rationale for the construction of the Karpogory-Vendinga and Mikun-Solikamsk railway sections;

c) development of the international airport of Arkhangelsk;

d) development of the woodworking industry and the pulp and paper industry, including the formation of a modern full-cycle timber processing complex, as well as the introduction of biofuel production technologies from timber processing waste;

e) development of the shipbuilding and ship repair industry, including the formation of additional capacities on its basis in order to ensure the construction of structures and the production of equipment for oil and gas production on the continental shelf;

f) development of a lead-zinc mineral resource center on the Novaya Zemlya archipelago;

g) development of diamond mineral resource centers;

h) creation and development of the federal center of Arctic medicine;

i) development of the fishing cluster, including the construction, modernization and repair of the fishing fleet, the creation of enterprises for the production of fish and other products from aquatic biological resources, the development of biotechnology and aquaculture;

j) development of a cultural, educational, ethnographic and ecological tourism cluster in the Arctic territories and sea cruise tourism in the Solovetsky Islands.

The Strategy for the socio-economic development of the Arkhangelsk region until 2035 (hereinafter referred to as the Strategy) is a strategic planning document for the Arkhangelsk region, developed as part of goal-setting, defining a strategic vision, priority areas for the socio-economic development of the Arkhangelsk region, consistent with the goals and objectives of the socio-economic development of the Arkhangelsk region areas for the long term. The legal basis of the Strategy is:

the constitution of the Russian Federation;  
federal law of June 28, 2014 No. 172-FZ "On strategic planning in the Russian Federation";  
charter of the Arkhangelsk region;  
regional law dated June 29, 2015 No. 296-18-OZ "On strategic planning in the Arkhangelsk region".

The Strategy takes into account the main provisions, namely:

Decree of the President of the Russian Federation of May 7, 2018 No. 204 "On the National Goals and Strategic Objectives of the Development of the Russian Federation for the period up to 2024";

the foundations of the state policy of regional development of the Russian Federation for the period up to 2025, approved by Decree of the President of the Russian Federation of January 16, 2017 No. 13;

fundamentals of the state policy of the Russian Federation in the Arctic for the period up to 2020 and beyond, approved by the order of the President of the Russian Federation dated September 18, 2008 No. Pr-1969;

the foundations of the state policy in the field of environmental development of the Russian Federation for the period up to 2030, approved by the President of the Russian Federation on April 30, 2012;

the national security strategy of the Russian Federation, approved by Decree of the President of the Russian Federation of December 31, 2015 No. 683;

strategy for the development of the information society in the Russian Federation for 2017 - 2030, approved by Decree of the President of the Russian Federation of May 9, 2017 No. 203;

strategy of scientific and technological development of the Russian Federation, approved by Decree of the President of the Russian Federation of December 1, 2016 No. 642;

strategy for the development of the Arctic zone of the Russian Federation and ensuring national security for the period up to 2020, approved by order of the President of the Russian Federation on February 8, 2013 No. Pr-232;

the strategy of environmental security of the Russian Federation for the period up to 2025, approved by Decree of the President of the Russian Federation of April 19, 2017 No. 176;

the economic security strategy of the Russian Federation for the period up to 2030, approved by Decree of the President of the Russian Federation of May 13, 2017 No. 208;

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strategy of the state cultural policy for the period up to 2030, approved by the order of the Government of the Russian Federation of February 29, 2016 No. 326-r;

strategy for the development of small and medium-sized businesses in the Russian Federation for the period up to 2030, approved by the order of the Government of the Russian Federation dated June 2, 2016 No. 1083-r;

strategy of the state national policy of the Russian Federation until 2025, approved by Decree of the President of the Russian Federation of December 19, 2012 No. 1666;

strategy of road safety in the Russian Federation for 2018-2024, approved by the order of the Government of the Russian Federation of January 8, 2018 No. 1;

strategy of spatial development of the Russian Federation for the period up to 2025, approved by the order of the Government of the Russian Federation dated February 13, 2019 No. 207-r;

Target models for simplifying business procedures and increasing the investment attractiveness of the constituent entities of the Russian Federation, approved by Decree of the Government of the Russian Federation dated January 31, 2017 No. 147-r; Guidelines for the development and adjustment of a strategy for the socio-economic development of a constituent entity of the Russian Federation and an action plan for its implementation, approved by order of the Ministry of Economic Development of the Russian Federation dated March 23, 2017 No. 132; The procedure for developing, adjusting, monitoring and controlling the implementation of the strategy for the socio-economic development of the Arkhangelsk region, approved by the Decree of the Government of the Arkhangelsk region of December 15, 2015 No. 498-pp; other regulatory legal acts of the Russian Federation and regulatory legal acts of the Arkhangelsk region, ensuring the implementation of strategic planning processes for the socio-economic development of the Arkhangelsk region. The strategy was developed taking into account the forecast for the socio-economic development of the Arkhangelsk region for the long term until 2035, approved by order of the Government of the Arkhangelsk region dated November 28, 2018 No. 506-rp / dsp, the forecast for the socio-economic development of the Arkhangelsk region for 2019 and for the planning period 2020 and 2021, approved by Decree of the Government of the Arkhangelsk Region of October 11, 2018 No. 421-rp, and the budget forecast of the Arkhangelsk Region for the period up to 2028, approved by Decree of the Government of the Arkhangelsk Region of February 18, 2016 No. 38-rp. The state authorities of the Arkhangelsk region took part in the development of the Strategy.

In order to ensure the openness of the Strategy development process and involve the maximum

number of interested participants in the development of the main directions and priorities of the socio-economic development of the Arkhangelsk region, an Internet portal <https://strategy29.ru/> was created, which contains reports, draft documents, civil initiatives and expert opinions, as well as a number of discussion platforms on key issues of socio-economic development of the Arkhangelsk region. Decree of the Administration of the Arkhangelsk Region dated December 16, 2008 No. 278-ra/48 approved:

the strategy for the socio-economic development of the Arkhangelsk region until 2035 (hereinafter referred to as the Strategy until 2035) as the basic document for the strategic development of the Arkhangelsk region, developed using the program-target method based on the legal, economic and organizational mechanisms used in public administration;

the main activities of the executive bodies of state power of the Arkhangelsk region for 2019-2023, which set target indicators for monitoring the implementation of the goals of the Strategy until 2035 and key activities aimed at achieving the established goals for the period from 2019 to 2023. The implementation of the goals of the Strategy until 2035 was carried out within the framework of state, targeted and other programs of the Arkhangelsk region.

The key indicator of achieving the goals of the Strategy until 2035 is the level of gross regional product (hereinafter referred to as GRP) per capita. Under the base development scenario, the projected level of GRP per capita was to be 409 thousand rubles / person, which is comparable to the level of GRP of the Czech Republic, Portugal, Taiwan and South Korea in 2022. To meet the target, the average annual growth of GRP per capita in 2035 was to be 5.2 percent, but for the period from 2019 to 2022 it was 3.4 percent. If this trend continues, the level of GRP per capita by 2035 compared to 2018 will increase by 84 percent, while the projected growth by 2035 in the baseline scenario is 140 percent. The current level of development of the Arkhangelsk region exceeds the forecast values of the pessimistic scenario, according to which, in the long term, an increase in the level of GRP per capita by 62.5 percent was expected. The current growth rates of average per capita incomes of the population (2.8 percent) are lower than the growth rates of average per capita incomes of the population under the pessimistic scenario of development (3.0 percent).

The level of average labor productivity in the Arkhangelsk region under the base scenario of development by 2035 should be 2.3 million rubles with an annual growth rate of 4 percent. The current CAGR of the indicator is 3.4 percent. If growth rates continue, average labor productivity will increase by 85 percent by 2035, slightly less than the projected doubling of the figure.

**Impact Factor:**

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<b>GIF (Australia) = 0.564</b>	<b>ESJI (KZ) = 8.771</b>	<b>IBI (India) = 4.260</b>
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In general, in the context of economic crises, the positive changes achieved have made it possible.

To increase the real disposable income of the population by 11 percent from 2018. Real average monthly accrued wages increased by 16 percent from 2018 to 2022, cash income per capita per month, adjusted for inflation, increased by 18 percent.

There are significant changes in the demographic situation of the Arkhangelsk region. First of all, life expectancy has increased by more than 3 years. A significant role was played by a persistent trend towards a decrease in mortality from socially significant diseases.

During the period of implementation of the Strategy until 2035, there were serious external and internal challenges both for the country as a whole and for each subject of the Russian Federation. The key reasons that prevented the implementation of the objectives of the Strategy until 2035 are:

insufficient level of funding, including from the federal budget, projects and activities of the Strategy until 2035, as well as programs adopted for its implementation;

lack of general plans and rules for land use and development in many urban and rural settlements of the Arkhangelsk region;

low rates of construction, including due to the lack of own working capital from developers;

unfavorable demographic trend;

backwardness of the material and technical base of industrial organizations; critical level of physical and obsolescence of equipment;

low investment attractiveness in the field of housing and communal services (hereinafter - housing and communal services);

high level of deterioration of housing and communal infrastructure; slowdown in the growth of tax and non-tax revenues of the regional and federal budgets.

The implementation of the consistency of the Strategy until 2035 in the period 2019-2022 took place in 3 stages:

from 2019 to 2020 - on the basis of annually approved and adjusted plans of priority measures for the corresponding year;

from 2021 to 2022 - through long-term state programs of the Arkhangelsk region;

from 2022 to 2023 - by consolidating the state programs of the Arkhangelsk region.



Figure 8. Administrative and territorial division of the Arkhangelsk region

## Impact Factor:

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The processes that have taken place have had a positive impact on labor productivity. The highest levels of labor productivity in the economy of the Arkhangelsk region in 2022 were recorded in the mining industry, fishing and fish farming. The leadership of the extractive industry in the Arkhangelsk region in terms of labor productivity corresponds to the all-Russian trend.

The Arkhangelsk region, like many regions of the Russian Federation, is facing the problem of population aging. The Arkhangelsk region has one of the highest rates in the Russian Federation in terms of the number of pensioners per 1,000 people. In this regard, in the Arkhangelsk region, the share of spending on social policy in total spending is higher than the average for the Russian Federation. At the same time, the structure of insurance payments corresponds to the all-Russian tendencies. About 75 percent of all insurance payments fall on the payment of pensions.

In connection with the aging of the population, the need for social services is increasing, therefore mechanisms are being developed in the Arkhangelsk region to include the segment of paid social services. The number of stationary institutions providing social services is insufficient, which is confirmed by the priority data - almost a third of citizens cannot receive this type of assistance. Therefore, in the Arkhangelsk region, a package of regulatory documents has been developed related to improving the efficiency of work in the field of social services for the population, and a

whole range of social support measures is being provided aimed at social support for all categories of citizens.

To determine the competitiveness of the Arkhangelsk region at the regional level, the positions of the Arkhangelsk region in the leading interregional rankings were analyzed: the National rating of the state of the investment climate in the constituent entities of the Russian Federation, the rating of innovative development of the constituent entities of the Russian Federation of the Institute for Statistical Research and Economics of Knowledge of the National Research University Higher School of Economics (hereinafter - ISSEK NRU HSE), Rating of Russian regions in terms of quality of life "RIA Rating", Regional Competitiveness Index AV RCI Consortium Leontief Center - AV Group is shown in Table 1.

These ratings make it possible to identify competitive advantages, as well as to identify the main shortcomings of the Arkhangelsk region in comparison with other constituent entities of the Russian Federation, based on the assessment of the Arkhangelsk region on key competitive factors, such as the economic and investment climate, sales markets and economic complexes, the quality of institutions, innovative development, human capital and quality of life of the population, natural resource capital, financial capital, real capital.

**Table 1. Positions of the Arkhangelsk region in the ratings**

Rating	Position of the Arkhangelsk region / number of positions					
	2013	2018	2021	2025	2030	2035
AV RCI Regional Competitiveness Index	42/83	39/83	36/83	40/83	37/83	45/85
National rating of the state of the investment climate in the constituent entities of the Russian Federation	-	-	-	55/76	51/83	75/85
Rating of innovative development of subjects of the Russian Federation	76/83	-	55/83	46/83	63/83	59/85

The Arkhangelsk region occupies a low position in these ratings, which is due to the location of the territory of the Arkhangelsk region in the Arctic zone of the Russian Federation, which adversely affects the investment and business climate. In addition to high energy tariffs, entrepreneurs face an increased burden associated with the need to provide state guarantees and compensations for people working and living in the Far North and equivalent areas. Low population density and adverse climatic conditions significantly increase infrastructure and transport costs.

The Arkhangelsk region has a unique development potential, which makes standard estimates inapplicable for comparison with other regions of the Russian Federation. The development of the territory of the Arkhangelsk region, taking into

account the prospects for the development of the Arctic zone and the Northern Sea Route, can create a competitive regional economy at the international level, but requires significant investment, primarily in infrastructure.

Main strategic goal: The Arkhangelsk region is the center of the Russian North, attracting and uniting people for comprehensive development, implementation of advanced ideas and comfortable living.

The main value of the Strategy is a person. The first priority of the Strategy is the preservation and development of human capital by improving the efficiency of social infrastructure and the quality of social services. The priority goals are:

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a well-formed culture and system of health savings, aimed at the responsible attitude of citizens to their health, the development of a system for the provision of primary health care and specialized, including high-tech, medical care, including through the introduction of patient-oriented principles;

high-quality and affordable education, including the modernization of fixed assets of educational organizations, improving the quality and accessibility of all educational services, providing opportunities for the use of modern educational technologies, increasing the connectivity of the labor market and the vocational education system, focusing on the needs of the economy in the formation of a system of additional professional education;

development of the Arkhangelsk region as a center of culture with a rich historical heritage through the preservation of cultural monuments and cultural heritage sites, raising the cultural level of the population, reorganizing the tourism infrastructure, adapting the tourism industry to world standards, expanding tourist destinations;

a developed system of physical culture and sports education through the promotion of a healthy lifestyle and physical activity, improving the quality and accessibility of sports infrastructure facilities, creating a system of school sports leagues, a system of support and support for talented athletes;

welfare accessible to everyone, provided by the organization of measures to support socially vulnerable groups of the population and their involvement in the economy, increasing the financial literacy of the population, promoting youth entrepreneurship and employment of young professionals, supporting young, large and single-parent families.

For a human-centered approach, the second important condition for improving the quality of life is the creation of a space that is comfortable for living, the development of infrastructure, as well as the formation of environmentally sustainable and cost-effective conditions for people to live and conduct economic activities. The priority goals are:

affordable, comfortable and high-quality housing through the formation of a housing construction market, increasing the availability of mortgage housing loans, creating a rental housing market, improving the quality of housing services and living conditions, ensuring an increase in the efficiency of land use for urban development purposes;

modern communal and energy infrastructure aimed at energy supply by increasing the share of self-generated capacities, increasing energy efficiency, as well as improving the quality of communal infrastructure through the formation of high quality standards;

affordable and high-quality transport communication aimed at increasing the level of

connectivity of the territory of the Arkhangelsk region through the formation of a transport framework, including an increase in the number of transport hubs and an increase in the throughput of the transport network, as well as the reorganization of the system of spatial mobility of cities;

improving the quality of life in urban and rural settlements through the improvement of public and courtyard areas with the involvement of the public, the restoration and revitalization of unused buildings and territories, the creation of a qualitatively different image of cities and towns;

creating a favorable environment, including reducing the aggressive impact of industrial production, reducing the negative factors of anthropogenic impact, increasing the efficiency of waste management and the use of "green technologies" in construction.

These goals are aimed at improving the quality of life in urban and rural settlements of the Arkhangelsk region and are a means of solving social, economic and environmental problems of sustainable development. The next key priority is to create favorable conditions for sustainable economic growth. Formation of an investment-attractive environment, increasing the innovative activity of organizations, stimulating technology transfer and active interaction between business and science, improving cluster policy will create new drivers for the development of the Arkhangelsk region. The priority goals are:

a functioning market for research and development, formed through the creation and development of high-tech laboratories and research centers, the initiation of technology transfer and the formation of small innovative organizations within emerging and developing clusters, support for young scientists, increasing the level and number of specialized industry research and development;

balance in the labor market, ensured by the creation of a system of incentives for advanced training and updating of professional competencies, employment of socially vulnerable groups of the population, improvement of working conditions in organizations, reduction of employment in the informal sector of the economy and an increase in the prestige of working professions;

an effective business support and development system implemented through the creation of a service model for providing support to small and medium-sized businesses (hereinafter referred to as SMEs). Promoting entrepreneurial activity, simplifying the access of SMEs to state and municipal procurement;

integrated development of rural areas, supported by investment projects and entrepreneurial initiatives, as well as diversified depending on the characteristics of socio-economic development and long-term prospects of the municipalities of the Arkhangelsk region;



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global competitiveness of priority sectors of the economy and the development of exports, implemented through the improvement of the cluster policy of the Arkhangelsk region. Due to the increased social burden of organizations located in the Arctic zone of the Russian Federation, innovative production is the only way to increase the competitiveness of products and growth.

A distinctive feature of the Strategy is the allocation of a separate priority dedicated to the consolidation of the population and the development of civil society. The model of innovative development is deeply unstable and requires other models of social relations and social management. The process of transforming society, acquiring a new quality for it can be successful only if the existing social capital is mobilized and effectively used, and creative human spiritual and moral foundations are developed. The priority goals are:

a society based on trust and mutual responsibility, formed through the involvement of residents in determining the goals of the long-term development of the Arkhangelsk region, subject to confidentiality, as well as through ensuring social cohesion of regional communities;

increasing the responsibility of young people for the future of the Arkhangelsk region, reducing the migration outflow from the Arkhangelsk region through the involvement of the population in the implementation of initiatives proposed by youth communities, increasing the role of youth in volunteer movements, forming a managerial reserve at the regional and municipal levels from youth representatives, organizing cultural activities for youth;

an effective system of public security aimed at reducing the number of offenses, popularizing anti-corruption, developing a unified system for preventing emergencies, involving citizens in monitoring public security and creating conditions for peaceful and dynamic socio-economic development;

increasing the role of the family as the basis of spiritual and moral development and the fundamental social institution of modern society by increasing the birth rate and ensuring social protection of the family and childhood, supporting young families, preventing family troubles and stimulating the social activity of families;

creation of a unified civil society based on the traditions and culture of the Arkhangelsk region through the strengthening of civic identity, increasing interest in and respect for the cultural values and traditions of all ethnic communities.

Formation of cultural centers with a rich historical heritage for tourists.

High level of provision with cultural objects. The Arkhangelsk region ranks 29th in terms of the availability of library collections (6,870 items per 1,000 people) and 14th in terms of the number of

museum visits (898 people). Coverage of the population of the Arkhangelsk region with library services is 31.01 percent. High level of depreciation of fixed assets of cultural institutions. The degree of depreciation of fixed assets of commercial organizations in the Arkhangelsk region in 2017 amounted to 43.9 percent, non-profit organizations - 54.4 percent. Implementation of a significant number of international and interregional projects in the field of culture and intercultural interaction. The Arkhangelsk region hosts an international festival of street theaters, since 2014 the project "International Artistic Residence" in the Arkhangelsk region "AiR: Artists-in-residence" has been implemented. Cooperation between musical organizations of the Arkhangelsk region and Northern Norway is actively developing within the framework of the international festival of choral performance "Northern Choral Assemblies". An increase in household spending on the services of cultural institutions. In the general structure of expenses of the inhabitants of the Arkhangelsk region, the share of expenses on culture is about 3.5 percent, this figure is increasing every year. High density of cultural heritage sites. On the territory of the Arkhangelsk region there are 1,957 cultural heritage sites (hereinafter referred to as CHOs), which is about 1.5 percent of the total number of CHOs of the peoples of the Russian Federation, which is 1.5 times higher than the average for the constituent entities of the Russian Federation. Critical state of a large number of OKNs. Only 40 percent of OKN are involved in the economic turnover. The remaining OKNs are either lost, or not used. Lost 30 percent of the architectural heritage of wooden architecture for religious purposes, which were under state protection; over one quarter of the existing wooden architecture buildings are in a state of disrepair and ruin. Inefficient urban planning policy. Due to the active development of territories, historical settlements and historical quarters are losing their individual appearance. In addition, it is noted that the CHO is not protected from external influences associated with modern development of territories. Low level of quality of tourist infrastructure. Many CHOs are located at a considerable distance from each other. At the same time, the low quality of the road surface of regional and local roads, the low level of development of roadside services and port and berthing infrastructure make such CPOs inaccessible to tourists. By 2035, residents of the Arkhangelsk region will be able to use ample opportunities for education and creative activities. The Arkhangelsk region will take the place of the leader in the field of Arctic tourism, a network of rural tourist destinations of ethnographic, ecological and agrotourism will be developed. The sphere of culture of the Arkhangelsk region will have an opportunity for further development, thanks to a well-thought-out long-term policy for the preservation of cultural heritage,

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comprehensive education, and tourism. The implementation of the projects will prevent the development of negative trends in terms of the irretrievable loss of CHOs in the Arkhangelsk Region: the number of CHOs, in an unsatisfactory condition; the state of preservation of COPs that are in a ruined and emergency state is stabilized by their conservation. The leadership position of the Arkhangelsk region in the field of Arctic tourism will be established. The share of buildings of cultural and art institutions of the Arkhangelsk region, the condition and equipment of which is satisfactory, by 2035 will be 100 percent. The widest possible involvement of citizens in cultural education and creative activity will be ensured. A high level of satisfaction of citizens with the quality of the provision of state and municipal services in the field of culture will be achieved. Cultural monuments make up a significant part of the cultural heritage of the Arkhangelsk region, so their preservation is a key aspect of the existence of the Arkhangelsk region. Preservation of cultural heritage includes the organization of a set of measures for the restoration, conservation and maintenance of a satisfactory state of cultural heritage of the Arkhangelsk region, which will allow new generations to join the rich historical and cultural sphere of the Arkhangelsk region. Organization of a program-targeted solution to the problem of the emergency state of the OKN. Determination of measures for the conservation of cultural heritage objects, depending on their historical and architectural value and technical condition. Ensuring the state protection of the OKN by approving the boundaries of the territories of the OKN and their objects of protection. Creation of an electronic database of OKN. There will be an increase in the number of OKN in a satisfactory condition up to 40 percent. It is planned to increase the number of mothballed conservatory objects that are in an emergency and ruined state and require restoration work, up to 50 percent.

It is planned to establish the boundaries of all historical settlements of federal significance, their objects of protection. There will be an automation of the process of accounting for information about OKN located on the territory of the Arkhangelsk region. The rejection of the project will lead to the irreparable loss of the OKN, the loss of the historical memory of the people, its spiritual component. Culture plays an important role in shaping a person's personality. The implementation of the project will contribute to the growth of involvement in the cultural life of the Arkhangelsk region and the spiritual development of the inhabitants of the Arkhangelsk region. Creation of virtual theater venues and concert halls. Acquisition of book collections of libraries of municipalities of the Arkhangelsk region. Creation (updating) of Internet sites of libraries with the possibility of providing library services in electronic form. Regular holding of

major international music and theater competitions and festivals. Creation of a network of social and cultural "centers of attraction". Formation of a cluster of creative and cultural industries. Creation of a regional symphony orchestra.

Increasing the number of children's art schools.

Staffing of cultural institutions with highly qualified specialists.

Modernization of professional educational organizations in the sphere of culture.

Improving the complex of measures of cultural support for socially vulnerable groups of the population.

It is planned to connect all libraries to the Internet.

The number of exhibition projects implemented in the Arkhangelsk region will increase to 20.

The share of cultural and art institutions in a satisfactory condition in the total number of cultural and art institutions will increase to 68 percent.

The proportion of children studying in children's art schools in the total number of children in the Arkhangelsk region will increase to 18 percent.

Public access to library collections (including in electronic form) will be 100 percent ensured.

Satisfaction of the population with services in the field of culture will increase up to 97 percent.

The main consequence of the refusal to implement the project will be the deterioration of the social situation due to limited opportunities for leisure activities and a decrease in the general level of culture of the inhabitants of the Arkhangelsk region.

Certain territories of the Arkhangelsk region are located in the Arctic zone of the Russian Federation, in particular, the national park "Russian Arctic" and the federal reserve "Franz Josef Land", which provide ample opportunities for the development of ecological and cruise tourism in the Arctic. In connection with the growing interest in Arctic tourism, it is proposed to implement a project for the development of tourism activities in the Arkhangelsk region, classified as part of the Arctic zone of the Russian Federation. The implementation of the project contributes to the disclosure of the tourism and economic potential of the territories.

Development and promotion of unique tourist routes.

Implementation of measures to develop transport and tourism infrastructure.

Organization of viewing platforms and places of recreation.

Development of measures to ensure the diversity of tourism programs and entertainment.

Improving the qualifications of specialists in the field of tourism.

The volume of paid tourist services provided by organizations located in the municipalities of the Arkhangelsk region, belonging to the land territories

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of the Arctic zone of the Russian Federation, will increase.

The number of tourists in the Arctic zone of the Russian Federation will increase.

The quality of tourism services provided will improve.

If the project is abandoned, the Arkhangelsk region risks losing a significant share of financial resources due to an increase in the tourist flow to the Arctic.

In the villages of the Arkhangelsk region, the traditional way of life, which has been formed over many centuries, has been preserved. In addition, Russian wooden architecture is a unique world phenomenon.

Determination of the list of rural settlements of the Arkhangelsk region in order to form a targeted program for the development of territories in the Arkhangelsk region.

Creation of visit - centers.

Preservation and promotion of local attractions, folk traditions, folklore, development of folk art crafts.

Organization of programs for children's recreation in rural areas during school holidays.

Implementation of a set of measures to attract investment in the development of rural areas of the Arkhangelsk region.

Tourist routes have been formed, including objects of historical and cultural heritage and places of traditional existence of folk art crafts, in rural areas of the Arkhangelsk region.

An increase in employment of the rural population in the tourism sector is expected.

An increase in the number of tourists in rural areas is expected, including at the expense of schoolchildren.

Investment projects will be implemented to develop tourism services in rural areas.

If the project is abandoned, the countryside will lose its attractiveness not only for tourists, but also for local residents, who will continue to migrate to large cities. A significant part of the unique Russian wooden architecture will be lost.

In the Arkhangelsk region, many Orthodox shrines have been preserved that attract the attention of pilgrims. The main attraction of tourist flows are the Solovetsky Islands. At the same time, it is necessary to promote other places of pilgrimage and objects of religious tourism in the Arkhangelsk region.

Modernization of the infrastructure of the Solovetsky Archipelago to increase the margin of safety of the territory for a comfortable and safe stay of tourists.

Information campaign to promote the Solovetsky, Onega Cross, Anthony-Siya, Verkolsky, Sursky, Oshevsky monasteries in order to optimize tourist flows.

It is expected to distribute the load between the objects of religious tourism in the Arkhangelsk region.

The influx of tourists arriving in the Arkhangelsk region to visit monasteries, temples and other revered places will increase.

The rejection of the project will entail a decrease in the volume of religious tourism in the Arkhangelsk region, and will become an obstacle to the popularization of its historical and cultural heritage.

The growth of the tourist flow of Russian and foreign tourists allows to increase the flow of funds into the economy of the Arkhangelsk region. The goal of the project is to remove obstacles that limit the flow of tourists to the Arkhangelsk region. The implementation of the project will ensure an increase in financial flows to the economy of the Arkhangelsk region, as well as an increase in the prestige of the Arkhangelsk region at the world level.

Creation of versions of sites of tourist organizations, tour agencies, accommodation facilities, including in foreign languages.

Attracting students of specialized specialization to work in the summer season, which will solve the problem of attracting labor force on temporary contracts during the high season. Publications about the tourist potential of the Arkhangelsk region in the mass media.

Branding of individual territories with subsequent promotion of the brand in the global market.

Creation of tourist information centers in the main tourist destinations of the nations.

Participation in international tourism exhibitions.

The share of tourism in the GRP of the Arkhangelsk region will increase.

The level of employment of the population of the Arkhangelsk region in the tourism sector will increase.

The recognition of the Arkhangelsk region in the international arena will increase.

Refusal to attract tourists will lead to a decrease in the competitiveness of the Arkhangelsk region and will entail a decrease in financial flows to the economy.

Creation of conditions for introducing citizens to a healthy lifestyle, including physical education and sports, development of sports infrastructure and increasing the availability of its facilities for all categories of the population of the Arkhangelsk region, as well as increasing the competitiveness of athletes of the Arkhangelsk region in competitions at the All-Russian and international levels .

An increase in the proportion of residents of the Arkhangelsk region who systematically go in for physical culture and sports from 11.1 percent in 2008 to 32.2 percent in 2018. However, most of the population is still not covered by systematic physical culture and sports.

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High differentiation in terms of accessibility of sports infrastructure facilities. The average provision of residents of the Arkhangelsk region with sports facilities is 49.1 percent of the norm. However, in 11 municipalities of the Arkhangelsk region (Arkhangelsk city, Vinogradovsky municipal district, Kargopolsky municipal district, Mirny city, Novaya Zemlya, Novodvinsk city, Nyandoma municipal district, Plesetsky municipal district, Primorsky municipal district, Severodvinsk city, Shenkursky municipal district) indicator is below average.

Dissatisfaction of a significant proportion of the population with the existing sports infrastructure. According to the results of the 2020 youth survey, 54 percent of the population consider the sports infrastructure of the Arkhangelsk region to be satisfactory or rather satisfactory, while 45.1 percent assess it as negative. According to young people, the best conditions for sports are created in the Vilegodsky and Primorsky municipal districts, the city of Koryazhma. The lowest indicators of youth satisfaction with the availability of sports facilities were recorded in Krasnoborsky, Kargopolsky, Plesetsky and Verkhnetoemsky municipal districts.

Weak involvement of the municipalities of the Arkhangelsk region in the development of the sphere of physical culture and sports. Most sports facilities are municipally owned, but a significant part of them are in poor technical condition and need major repairs or reconstruction.

By 2035, physical culture will become a mass phenomenon, the value of a healthy lifestyle will be established in the public mind. The concept of "Sport is life" will contribute to the development of a system of physical education for the population of all ages, the promotion of a healthy lifestyle, the identification of gifted children and young people, and the development of elite sports. Physical culture and sports will become a habitual part of life and a need for most residents of the Arkhangelsk region. Access to sports infrastructure will be ensured for all citizens, regardless of their age, in accordance with their preferences, level of physical fitness and health status.

In order to optimize the functioning of the industry, projects will be implemented aimed at modernizing the sphere of physical culture and sports, taking into account climatic, economic, environmental and socio-cultural aspects.

The development of mass sports and the promotion of a healthy lifestyle among all categories and groups of the population of the Arkhangelsk region are necessary for an active life at any age. The implementation of the project will increase the motivation of citizens to systematic physical education and sports and maintain a healthy lifestyle.

Development of regulatory and legal support for measures to stimulate sports and mass work and active family recreation of the population at the place of residence.

Creation of sports and health programs for people of all ages.

Conducting family sports events on a regular basis.

Implementation of the All-Russian physical culture and sports complex "Ready for Labor and Defense" (GTO).

Ensuring access of socially oriented non-profit organizations to the provision of services within the framework of regional programs in the field of physical culture and mass sports.

Creation of an information and educational system to increase the level of knowledge about the negative impact of risk factors on health, the possibilities of their reduction.

Development of measures to involve the population in a physically active lifestyle, sports.

The share of the population systematically engaged in physical culture and sports in the total population will increase to 55 percent, the share of students in the total number of students and students - up to 85 percent.

If the project is abandoned, the level of physical activity of the inhabitants of the Arkhangelsk region is expected to decrease, as well as the level of the culture of maintaining a healthy lifestyle, which will lead to the risk of an increase in morbidity.

Modern conditions require the modernization of the system of physical education in educational organizations. The implementation of the project will improve the quality of physical training in educational institutions and increase the number of students who are systematically involved in physical culture and sports.

Mutual integration of physical education programs in general educational organizations and organizations of additional education.

Development and implementation of programs for the development of school sports leagues in team sports.

Improving the interaction of subjects of physical culture and sports at the regional and municipal levels.

Opening of a network of school sports clubs.

An increase in the level of interest of schoolchildren and students in physical culture and sports is expected.

The proportion of children and young people regularly involved in sports sections, clubs and other sports-oriented organizations in the total number of children and young people will increase to 45 percent.

Ensuring the competitiveness of sports clubs in the Arkhangelsk region at the national level.

The rejection of the project will become an obstacle to solving the problems of physical education in educational organizations, which will not allow creating an effective system of educating healthy youth.

The aim of the project is to improve the system for identifying, supporting and developing abilities

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<b>ISI (Dubai, UAE)</b>	<b>= 1.582</b>	<b>ПИИИ (Russia)</b>	<b>= 3.939</b>	<b>PIF (India)</b>	<b>= 1.940</b>
<b>GIF (Australia)</b>	<b>= 0.564</b>	<b>ESJI (KZ)</b>	<b>= 8.771</b>	<b>IBI (India)</b>	<b>= 4.260</b>
<b>JIF</b>	<b>= 1.500</b>	<b>SJIF (Morocco)</b>	<b>= 7.184</b>	<b>OAJI (USA)</b>	<b>= 0.350</b>

and talents in sports among children and young people by ensuring continuity between the elements of the regional system of physical culture and sports in terms of identifying, selecting, as well as subsequent support and support of talented athletes. The implementation of the project will ensure the creation of favorable conditions for the formation, training and preservation of the sports reserve, starting from the stage of youth sports.

Development and implementation of a system of sports selection of gifted young athletes in various sports based on the model characteristics of physical and technical readiness, indicators of physical development and health assessment results.

Financial support for young talents in the Arkhangelsk region.

Creation of a scouting institute, which will allow organizing the search for talented athletes outside the Arkhangelsk region.

It is planned to create comfortable conditions for the stay of gifted young athletes in the teams of the Arkhangelsk region.

Athletes from the Arkhangelsk region will regularly participate in the World Universiade and the Youth Olympic Games.

Refusal to implement the project will not allow creating conditions conducive to worthy competition among talented athletes, which will negatively affect their motivation. The rejection of the project will lead to a slowdown in the growth of sports results due to the lack of competition between athletes.

The project is aimed at creating favorable conditions for the training of high-class athletes. The implementation of the project will increase the competitiveness of athletes of the Arkhangelsk region in the All-Russian and international sports arena.

Optimization of the training process based on the introduction of modern sports and pedagogical technologies.

Provision of sports teams in the Arkhangelsk region with modern equipment, inventory and equipment, as well as medical support.

Development of a regional program for the development of a sports reserve for Olympic and Paralympic sports.

Modernization of the management system for the preparation of high-class athletes aimed at results.

Implementation of a new system of remuneration for workers employed in the field of physical culture and sports, taking into account the effectiveness of their professional activities.

It is planned to equip the national sports teams of the Arkhangelsk region with modern equipment, inventory and equipment.

The number of athletes of the Arkhangelsk region included in the sports teams of the Russian Federation in sports will increase to 120 people.

The number of prize-winning places won by athletes of the Arkhangelsk region at all-Russian and

international sports competitions in Olympic, Paralympic, Deaflympics sports will increase to 1300 units.

It is planned to increase the number of members of the sports teams of the Russian Federation in Paralympic sports from among persons with disabilities.

The number of sports judges, trainers-teachers and specialists working in the field of physical culture and sports who have undergone advanced training and professional retraining will increase to 220 people.

The abandonment of the project will lead to the loss of competitiveness of the Arkhangelsk region in the field of elite sports at the national and international levels.

Sports infrastructure must comply with modern trends, be flexible and accessible to all segments of the population. The goal of the project is to create a modern sports infrastructure and develop the material and technical base for physical culture and sports, including through the use of public-private partnership mechanisms. The implementation of the project will ensure the creation of comfortable conditions for physical culture and sports for all categories and groups of the population.

Improving the material and technical support of physical culture and sports organizations, including through the use of public-private partnership mechanisms.

Development of a set of measures to provide support to enterprises (regardless of ownership) that build sports facilities.

Development of a system for assessing the effectiveness of the activities of local governments on the basis of indicators characterizing the development of the infrastructure of physical culture and sports. Development of measures to involve people with disabilities, disabled people and socially unprotected categories of citizens in physical culture and sports.

Ensuring the accessibility of sports facilities for persons with disabilities, the disabled and socially unprotected categories of citizens.

The number of sports facilities in the Arkhangelsk region will increase to 2,500 facilities.

The increase in the one-time capacity of sports facilities in relation to the all-Russian indicator will be 60 percent.

Increasing the proportion of people with disabilities and people with disabilities systematically involved in physical culture and sports in the total number of this category of the population up to 20 percent.

Municipal formations of the Arkhangelsk region will have sports facilities necessary for the organization and holding of physical culture and sports events, in accordance with the needs of the population.

If the project is abandoned, the residents of the Arkhangelsk region will be placed in unequal

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conditions in terms of access to sports infrastructure, which will affect the social disunity of citizens.

Increasing the income level of all categories of the population and improving the socio-economic conditions of life in the Arkhangelsk region, providing not only the opportunity to satisfy the primary basic needs of the population, but also to form a sustainable model of socio-economic activity based on the availability of goods and services to meet the needs of other categories through expanding the economic potential of the population.

From an economic point of view, the well-being of the population is determined by the level of development of productive forces and the nature of economic relations that express the current level of development and opportunities of the economy.

Growth of real disposable incomes of the population. During the period 2016-2020, the real disposable income of the population increased by 23 percent. The level of per capita income of the population of the Arkhangelsk region is higher than the national average, however, it is lower than the same indicator for the Northwestern Federal District.

The project provides for the formation of a housing construction market in the Arkhangelsk region, capable of providing the population with affordable housing, maintaining a high rate of commissioning of new housing, creating a highly efficient regional business community, organizing support for the unity of requirements for building characteristics, environmental efficiency and finishing standards for public areas. The implementation of the project will improve the living conditions of the population, as well as ensure the formation of a safe and comfortable environment for life.

Redistribution of certain powers in the field of urban planning between local governments and state authorities of the Arkhangelsk region.

Optimization of control and supervision activities and reduction of administrative procedures in construction.

Creation of a system of project financing of housing construction with the attraction of citizens' funds through banking instruments.

Adoption of strategic documents in the field of construction development and ensuring the functioning of the housing market.

Implementation of projects for the construction of affordable and comfortable housing for various categories of citizens.

Creation of conditions for the development of individual housing construction.

Creation of conditions for the growth of supply in the housing market that meets the needs of various categories of citizens.

Providing conditions for the creation of a regional business community capable of ensuring high rates of real estate construction.

The terms for obtaining urban planning plans for land plots (hereinafter referred to as GPZU), building permits, and cadastral registration will be reduced.

By 2025, the share of services provided for the issuance of GPZU, construction permits, and cadastral registration in electronic form will be 80 percent.

There will be an increase in the effectiveness and efficiency of control and supervision activities.

It is planned to develop and approve an action plan ("road map") for the development of housing construction in the Arkhangelsk region.

It is planned to create a fund to accumulate funds for financing and organizing housing construction, implemented with the provision of state support for socially priority categories of citizens.

By 2024, a transition will be made from concluding agreements for participation in the shared construction of apartment buildings to using the mechanism of escrow accounts.

The number of formed land plots for the development of individual housing construction will be increased. The volume of flexible housing stock will be increased for short-term relocation of residents from emergency premises. It is planned to increase the volume of construction of new housing to provide housing for socially priority categories of citizens. Pilot projects for the construction of turnkey cottage wooden districts in small towns of the Arkhangelsk region will be implemented. By 2035, an increase in the volume of housing commissioning will be ensured from 395 to 533 thousand square meters. m per year. The growth of private investment in the construction market of the Arkhangelsk region will be ensured. A significant increase in the comfort of living conditions for the population, providing for the comprehensive development of the housing services market, as well as the development of public control in the housing sector. As a result of the project implementation, safe and favorable living conditions for citizens in apartment buildings, uninterrupted provision of housing services, as well as a high degree of involvement of residents in housing management will be ensured.

Creation of conditions for increasing the level of satisfaction of citizens with the quality and cost of services for the maintenance and current repair of the common property of apartment buildings.

Increasing the activity and responsibility of the owners of premises in apartment buildings through the development of forms of self-government of citizens in the housing and communal services sector.

Formation of incentives for owners of residential premises to preserve and increase the value of premises in an apartment building.

By 2035, more than 75 percent of the population will be satisfied with the residential premises occupied and the intra-house infrastructure.

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The accessibility of apartment buildings for the disabled and other people with limited mobility will be increased.

By 2035, the level of collection of funds for the overhaul of apartment buildings will increase.

The energy efficiency of housing and communal services will be improved.

The rejection of the project entails the emergence of risks of reducing the involvement of the population in ensuring public control of housing and communal services, lack of incentives for the population to take care of the occupied living space.

The project is aimed at increasing the availability of mortgage housing loans to the population, taking into account the balance of interests of lenders and borrowers, the information transparency of the housing mortgage lending market and the unification of procedures for issuing and supporting mortgage housing loans. As a result, the population will be provided with access to mortgage housing loans through the formation of packages of banking offers for various categories of citizens, including those that include the possibility of making a down payment.

Formation of a sustainable system for attracting long-term resources to the housing mortgage lending market.

Formation of conditions for increasing the information transparency of the housing mortgage lending market.

Formation of a wide range of proposals for mortgage lending to the population, including those including the possibility of a down payment.

By 2024, more than 50 percent of the families of the Arkhangelsk region will have the opportunity to purchase housing on a mortgage.

A reduction in the cost of mortgage housing loans for socially priority categories of citizens will be ensured.

The population will have access to various options for mortgage lending, containing differentiated conditions.

By 2035, the volume of mortgage lending to the population will grow by 8.5 times.

The rejection of the project will entail a decrease in the possibility of acquiring housing as a property for certain categories of citizens, as well as limiting the growth of the mortgage lending market.

The project provides for the formation of a developed rental housing market. As a result of the project implementation, an institution of non-commercial rental housing will be created, which will improve the regional policy on providing housing for vulnerable categories of citizens through the provision of social housing for rent.

Development of the rental housing market as an alternative to the acquisition of housing in the property, providing for the creation of segments of institutional and non-commercial rental housing.

It will create the possibility of long-term rental housing on transparent market conditions without the risk of early termination of the contract.

The territorial mobility of the population of the Arkhangelsk region will be increased.

The possibility of accommodating specialists coming to the Arkhangelsk region will be provided through the development of the rental housing market.

Pilot projects for the construction of socially oriented rental housing will be implemented.

Mechanisms will be developed to attract investment in rental projects, including at the expense of the population and institutional investors.

The rejection of the project will limit the ability of certain categories of citizens to improve their living conditions, as well as reduce the mobility of labor resources.

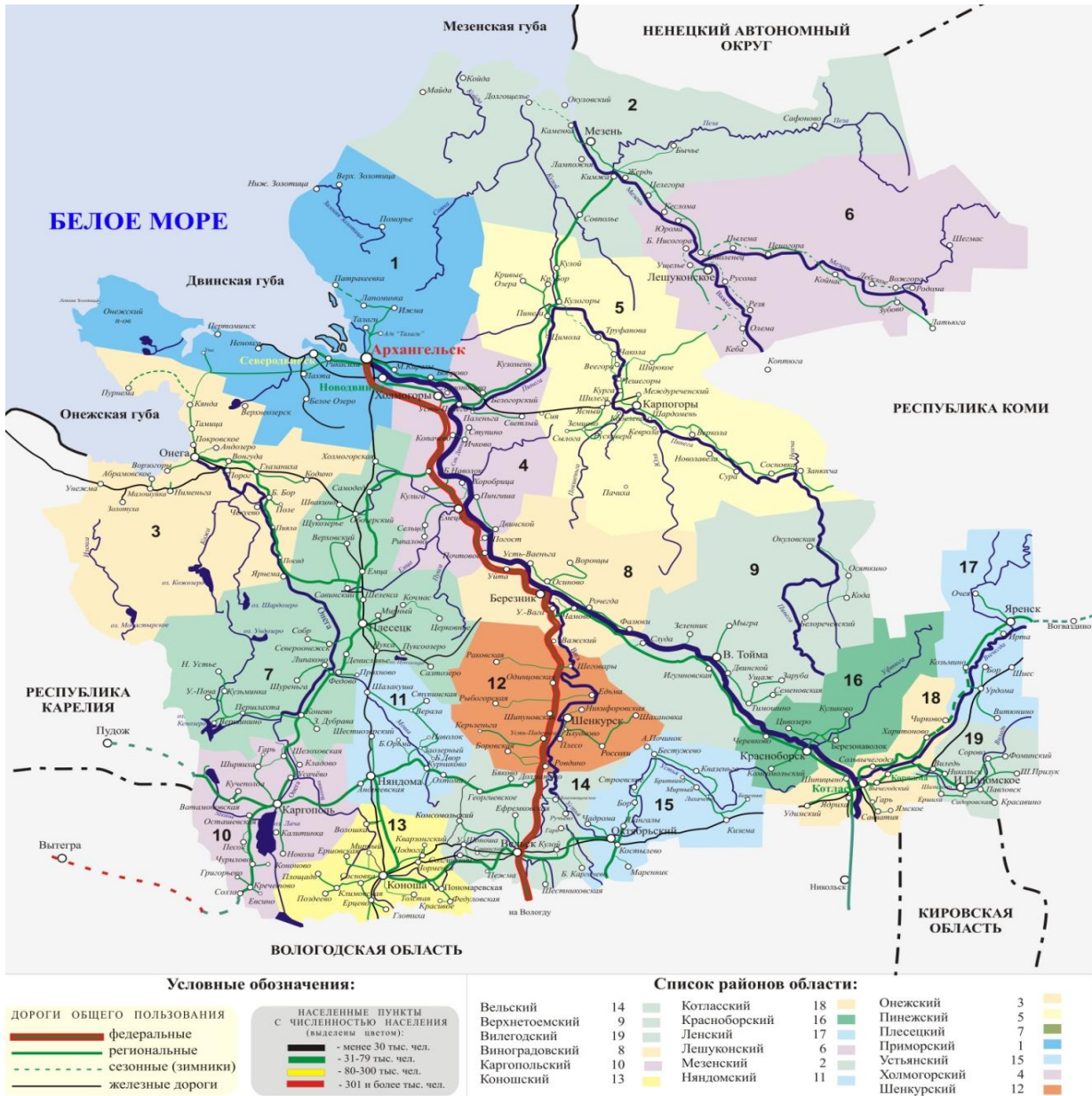
Affordable and high-quality transport links. Creation of a transport system that provides spatial connectivity of the Arkhangelsk region, as well as transport links with other constituent entities of the Russian Federation and foreign countries. Organization of fast and uninterrupted transport communication in the regions of the Far North and equivalent areas, contributing to the creation of comfortable conditions for local residents and guests of the Arkhangelsk region, the growth of trade and business contacts.

Growing importance of the Arkhangelsk region in the international and interregional transport systems. The development of navigation along the Northern Sea Route and the implementation of multimodal deliveries of goods will require an increase in the throughput and quality of services of the transport system of the Arkhangelsk region.

Lack of year-round overland transport communication in part of the territories. Six regional centers of the Arkhangelsk region (the village of Karpogory, the village of Yarensk, the village of Verkhnyaya Toima, the city of Mezen, the village of Leshukonskoye and the city of Shenkursk) do not have year-round road communication with the city of Arkhangelsk due to the lack of bridges across the Mezen, Northern Dvina, Pinega and Vychegda rivers. Ensuring transport accessibility of the population is carried out through the organization of ferry crossings and floating bridges, the operation of which is impossible during periods of stable autumn freeze-up and spring ice drift (Figure 9).

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**Figure 9. Map - scheme of public roads of the Arkhangelsk region**

114 settlements of the Arkhangelsk region with a population of more than 100 people in each do not have a motor transport connection with the network of public roads on paved roads.

Non-compliance of the road network with regulatory requirements. In 2023, 85.4 percent of public roads of regional importance are in substandard condition (according to the results of technical condition diagnostics), which requires significant capital investments.

Inconsistency of the road network and road structures with modern challenges. On the Ust-Vaga-Yadrikha highway in the period 2018-2022, there was an increase in traffic intensity for trucks and buses by 2 times, for cars - by 3.5 times. At the same time, this

road passes through large settlements and is characterized by the presence of sections without improved road surface, which significantly restricts traffic.

The total length of inland waterways included in the list of inland waterways of the Russian Federation, approved by Decree of the Government of the Russian Federation dated December 19, 2002 No. 1800-r, on the territory of the Arkhangelsk Region is 3,443 km. The main shipping routes within the boundaries of the Arkhangelsk region: r. Northern Dvina (with delta) - 680 km, r. Pinega - 654 km, r. Mezen - 372 km, r. Pyoza - 301 km, r. Vaga - 256 km, r. Vychegda - 213 km, r. Kuloy - 208 km, r. Onega/Malaya Onega – 155



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km. On the territory of the Arkhangelsk region there are the ports of Arkhangelsk and the port of Kotlas.

The supported dimensions of ship passages on the main river transport routes of the Arkhangelsk region in 2018-2022 are somewhat inferior to those of the nineties. Nevertheless, the river fleet is successfully functioning and developing, following the global trend in the development of river navigation. This trend includes the cost-effective principle of constructively reducing the draft of ships without loss of cargo capacity. In the conditions of a tough market economy, having no obvious competitive advantages, large-tonnage vessels with a large draft are recognized as economically unprofitable on the rivers of the European North, including the Arkhangelsk region, and are disposed of. The main part of the transport fleet is made up of barge-towing trains that are optimal in terms of their technical characteristics. Besides, these types of vessels successfully carry out the withdrawal of rafts. These ships and trains most fully meet the existing needs. The established dimensions of ship passages on inland waterways fully allow the transportation of goods and passengers.

In the period from 2018 to 2022, the volume of cargo transportation in the North Dvina basin of inland waterways of the Russian Federation within the borders of the Arkhangelsk region decreased from 1960.1 thousand tons to 1775.7 thousand tons. Stable characteristics of passenger traffic in the North Dvina basin of inland waterways of the Russian Federation. The volume of passenger traffic is consistently high and amounts to about 1.0 - 1.1 million passengers per year. Mostly such transportation is carried out between the island territories in the area of the city of Arkhangelsk, where there are practically no alternative modes of transport. There is a prospect of increasing passenger traffic through the development of other areas, including cruise routes.

The imbalance of the railway network. The density of railway tracks in the Arkhangelsk region is lower than the national average due to the low population density. There is no direct railway line between the city of Arkhangelsk and the city of Kotlas, as well as the city of Arkhangelsk and the Komi Republic, which contributes to significant time and financial costs.

Availability of a regional aviation network. Of the 19 municipal districts of the Arkhangelsk region, 13 districts have airports and airfields of local airlines. However, the infrastructure of most airfields and landing sites of local airlines is technically outdated and has a significant need for reconstruction and modernization.

Lack of direct air communication with other subjects of the Russian Federation. Regular air flights are carried out only within the Arkhangelsk region and to the cities of the North-West Federal District, as well as to the city of Moscow and resort cities of the

Russian Federation. To fly to other cities, you need a transfer in the city of Moscow. Foreign flights are carried out by irregular (charter) transportation and have a limited set of destinations.

The downward trend in the dynamics of indicators of cargo transportation by air. Until 2014, an increase in air cargo traffic was typical, then a slight decrease in the volume of air transport followed.

Low quality of passenger transportation services. There is an upward trend in the number of bus transportation. However, the bus network is marked by a limited list of routes, and there is also no bus service in a number of municipal districts in the east of the Arkhangelsk region. There is a continuing stagnation in the development of public transport due to the low level of development of the material and technical base. There is also low transport accessibility for people with limited mobility.

Lack of resources to maintain and develop transport infrastructure. The provision of financial resources for road activities in relation to public roads of regional significance is 18.6 percent of the regulatory requirement.

By 2035, the transport system of the Arkhangelsk region will serve as a framework linking the space of the Arkhangelsk region and providing international and interregional contacts. The population of the Arkhangelsk region will be satisfied with the high level of transport services, and the guests of the Arkhangelsk region will be satisfied with the opportunity to travel comfortably. It will be possible to eliminate transport and communication restrictions for the development of the economy of the Arkhangelsk region and the performance of a loading and transit function in servicing the Northern Sea Route.

The organization of a hierarchical system of transport communications lies at the heart of achieving the connectedness of space. Equally important is the presence of transport communications along the settlement frame. This mainly applies to land and river transport. Due to significant distances, as well as the presence of natural barriers, a regional aviation system is used to overcome space. The development of the city of Arkhangelsk as an aviation hub contributes to strengthening contacts not only with the settlements of the Arkhangelsk region, but also with other constituent entities of the Russian Federation and foreign countries.

The transport system of the Arkhangelsk region should provide conditions for the comfortable movement of people and goods. For the purpose of strategic planning in the context of project strategizing, a number of projects are proposed, the implementation of which will make it possible to achieve a new quality of transport infrastructure. Road frame of the Arkhangelsk region.

The most important aspect of the development of the Arkhangelsk region is the creation of a system of

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roads covering the entire territory of the Arkhangelsk region. The high density of the road network will ensure fast, comfortable and year-round communication. Reconstruction of the highway Arkhangelsk (from the village of Rikasikha) - Onega - Nadvoitsy (to the border of the Arkhangelsk region).

Construction of the highway Arkhangelsk - Naryan-Mar.

Reconstruction of the Kotlas-Solvychegodsk-Yarensk highway with the replacement of the roadbed with an improved one and the construction of a bridge across the Vycheгда River connecting the Vatsa-Durnitsyno-Kozmino and Zabolotye-Solvychegodsk-Yarensk highways.

Reconstruction of the Ust-Vaga-Yadrikha highway, bringing the entire highway into a standard condition and replacing the transitional pavement with an improved one, construction of sections of the highway with the withdrawal of the highway outside the residential areas of settlements (bypassing the village of Cherevkovo, the village of Shipitsyno, the village of Krasnoborsk).

Construction of the motor road Velsk - Shangaly - Kotlas on the section Oktyabrsky settlement - Udinsky settlement.

Bringing the roads connecting the district centers with the city of Arkhangelsk to the standard condition with the replacement of the road surface with improved one and the construction of bridges to unite the district centers. Stimulation of local self-government bodies for the development and modernization of local roads, construction of bridges. Reconstruction of the bridge across the Nikolsky mouth of the Northern Dvina River. By 2024, the share of regional roads that meet regulatory requirements in their total length will exceed 32 percent.

By 2035, the share of the length of public roads serving traffic in overload mode in the total length of public roads of regional significance will be 2.5 percent. All district centers will be connected to the city of Arkhangelsk all year round. Between the city of Arkhangelsk and the city of Kotlas, transport links will be improved and the volume of movement of passengers and goods will be increased, as well as between other large settlements of the Arkhangelsk region. A motor road will be built between the Oktyabrsky settlement and the town of Kotlas. Residents of settlements will quickly get to the regional center. There will be an increase in interregional cooperation due to the functioning of highways connecting the Arkhangelsk region with neighboring regions of the Russian Federation.

The efficiency of passenger and freight road transport will be increased.

The abandonment of the project contributes to limiting the interaction of the Arkhangelsk region with neighboring subjects of the Russian Federation, which will not allow influencing the peripheral territories of

the Arkhangelsk region. Refusal to build and reconstruct highways of regional significance can lead to the degradation of the settlement system and migration outflow from the Arkhangelsk region, since the poor condition of highways hinders the development of settlements and the growth of GRP as a result of the lack of involvement of certain territories of the Arkhangelsk region in the economy of the Arkhangelsk region.

Arkhangelsk is the air gate of the macro-region and the Russian Arctic. The goal for the region is to improve the current system of flights by air passenger transport within the Arkhangelsk region and beyond its borders in order to connect the city of Arkhangelsk with territorially remote regional centers and geographically isolated settlements. The leading hub for intra-regional flights is Vaskovo Airport (Primorsky District), for some destinations - Talagi Airport (Arkhangelsk). The formation of a network of interregional flights by air passenger transport is necessary to increase the spatial connectivity of the constituent entities of the Russian Federation. The city of Arkhangelsk can act not only as a hub for communication between the settlements of the Arkhangelsk region, the administrative centers of the Northwestern Federal District, largest cities of the Russian Federation, but also as an air gate for the development of the regions of the Arctic zone of the Russian Federation. Reconstruction of the runway of the Talagi airport. Organization of a cargo hub based on the Talagi airport. Assistance in the modernization of the aviation fleet. Reconstruction of the Solovki airport. Reconstruction of the Kotlas airport. Creation of an airfield in the city of Kargopol, as well as as a result of the implementation of runways in need of reconstruction of airfields in the Arkhangelsk region.

Expansion of the network of interregional passenger routes, including the administrative centers of the Northwestern Federal District and the largest cities of the Russian Federation. Organization of flights to other subjects of the Russian Federation, the territories of which are part of the regions of the Arctic zone of the Russian Federation.

By 2024, the number of direct interregional regular passenger air routes bypassing the city of Moscow will exceed 50 percent of the total number of domestic regular air routes.

Accessible and regular air communication between the city of Arkhangelsk and other settlements of the Arkhangelsk region will be provided.

Northern delivery will be implemented and work will be carried out in the Arctic zone of the Russian Federation.

Solovki and Kotlas airports will carry out long-haul interregional flights (the cities of St. Petersburg and Moscow).

The growth of passenger and freight traffic will increase the economic efficiency of carriers.

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There will be an increase in the intensity and efficiency within the regional interaction between the Arkhangelsk agglomeration and other subjects of the Russian Federation, including the subjects of the Russian Federation, whose territories are part of the Arctic zone of the Russian Federation.

Transport costs will be reduced due to the “rapprochement” of space. The variety of destinations will increase and the cost of air travel on them will decrease.

The abandonment of the project contributes to the strengthening of the spatial disunity of the Arkhangelsk region, the preservation of the high cost and inaccessibility of air transport services for the population and the transportation of goods, the loss of potential profits and the deterioration of the socio-economic conditions of hard-to-reach settlements, including in the Arctic zone of the Russian Federation.

Formation of a highly efficient system of railway communication in the Arkhangelsk region.

High-quality modernization of the railway system of the Arkhangelsk region will ensure the communication unity of the north of the European part of the Russian Federation and the Urals, namely:

construction of the railway line "Belkomur" (on the territory of the Arkhangelsk region from the Karpogory railway station to the border with the Komi Republic);

reconstruction of the railway section Konosha - Obozerskaya (reconstruction of the superstructure of the track, strengthening of power supply devices);

reconstruction of the Obozerskaya – Malenga railway section (reconstruction of the track superstructure, strengthening of power supply devices, lengthening of receiving and departure tracks at stations up to the standard of 1050 m);

strengthening of the railway section Konosha - Kotlas - Mikun in connection with the construction of the Salekhard - Nadyem railway line and the creation of the Northern Latitudinal Railway (construction of the second main tracks, bridge crossings, lengthening of the receiving and departing tracks at the stations to the standard of 1050 m).

There will be a reduction in time and cost of transport costs due to the functioning of new highways and the reconstruction of existing tracks. By 2035, there will be an increase in the capacity of the infrastructure of the railway sections of the Arkhangelsk region and, as a result, a reduction in the “bottlenecks” that limit their throughput. The economic efficiency of the activities of railway carriers will increase due to an increase in passenger and cargo flows.

There will be an increase in the efficiency and intensity of interaction between the Arkhangelsk region and neighboring regions of the Russian Federation. The implementation of Belkomur will become a driver for the development of the eastern part of the territory of the Arkhangelsk region.

Transportation of goods along Belkomur will contribute to the development and increase in the traffic of the Northern Sea Route.

The rejection of the project will limit the volume of cargo deliveries both within the Arkhangelsk region and beyond. Refusal to build Belkomur will not allow to realize the potential of interaction of the Arkhangelsk agglomeration with the eastern part of the territory of the Arkhangelsk region, the constituent entities of the Russian Federation, the territories of which are part of the Arctic zone of the Russian Federation, and the Urals, and will also limit the cargo turnover of the Northern Sea Route, which will lead to economic lagging behind these territories. Refusal of electrification and reorganization of passenger routes will hinder the economic convergence of the cities of the Arkhangelsk region.

The development of inland waterways in the North Dvina basin contributes to unlocking the transport potential of natural highways, namely, the use of inland waterways as an alternative to overland ones. In addition, for certain territories of the Arkhangelsk region, river transport is the most accessible type of communication, which helps to increase the transport accessibility of other settlements of the Arkhangelsk region. Carrying out track works (including dredging) in the North Dvina basin of inland waterways in order to maintain the established dimensions of the track, which is a positive factor for the development of inland waterways.

It is planned to reconstruct and build berths, to assist in the organization of freight ferry traffic, the organization of passenger ferry traffic, including the formation of cruise routes.

The established dimensions of ship passages in the North Dvina basin of inland waterways within the boundaries of the Arkhangelsk region will be maintained.

By 2024, the capacity of inland waterways will increase.

The cargo flows of the enterprises of the timber industry complex of the Arkhangelsk region and the construction industry to inland water transport will increase.

The number of passenger transportation by inland water transport will increase both in terms of passenger traffic and the number of routes. Accessibility will be ensured during the navigation period of settlements where water transport is the only mode of communication. Tourist routes will be implemented. Project abandonment risks.

The abandonment of the project will lead to an increase in the pressure on the land transport infrastructure, as well as additional costs due to the fact that the land mode of transport is a more expensive mode of transport. Failure to implement the project will contribute to maintaining the transport isolation of hard-to-reach settlements of the

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Arkhangelsk region, located along the rivers, and will intensify the negative socio-economic processes in them. The potential for the use of forest and recreational resources in hard-to-reach settlements of the Arkhangelsk region, unfortunately, will remain unrealized.

High-quality passenger traffic is aimed at the implementation of an affordable and high-quality system of urban and intercity passenger traffic. Organization of regular bus routes on the territory of the Arkhangelsk region, including in the eastern part of the territory of the Arkhangelsk region, for communication between the city of Arkhangelsk and the village of Leshukonskoye, the city of Arkhangelsk and the city of Mezen. Assistance in the renewal of the bus fleet. Creation of conditions at bus stations, bus stops and buses for comfortable movement of people with limited mobility. Stimulating the activities of local governments for the development of passenger transport within municipal districts and large settlements of the Arkhangelsk region.

The spatial connectivity of the entire territory of the Arkhangelsk region with the cities of Arkhangelsk and Kotlas will increase. The number of intercity bus routes will increase.

By 2035, the share of the rolling stock of automobile and urban public transport, equipped for the transportation of people with limited mobility, in the total number of rolling stock of automobile and urban public transport will be 55 percent.

The satisfaction of the population with the quality and availability of passenger traffic will increase.

The abandonment of the project will limit the spatial mobility of the population, as well as the socio-economic development of the eastern part of the territory of the Arkhangelsk region.

Improving the quality and comfort of the urban and rural environment of the Arkhangelsk region and creating conditions for their further development.

The quality of the environment is a complex characteristic of territories and their parts, which determines the level of comfort in the everyday life of the population. This characteristic is formed through improvement measures that provide not only aesthetic and engineering training, but also integrated sustainable development at the intersection of social, economic and environmental aspects. Low quality index of the urban environment. The average indicator for the Arkhangelsk region remains low with decreasing rates and varies from 123 to 154 out of 300 points maximum.

The uneven level of quality of the environment for life in urban and rural settlements of the Arkhangelsk region due to urbanization, as well as due to the territorial isolation of individual settlements and the lack of minimal infrastructure.

Low rates of improvement of the environment due to the adoption of insufficient measures to

transform the territories without a common vision and a systematic approach.

The lack of a unified concept for the development of outdoor advertising and advertising in urban passenger transport, as well as the presence of visual noise due to the high level of wear and dilapidation of facades.

Significant deterioration of a large number of public areas, characterized by the lack of utilities, insufficient lighting, and poorly developed infrastructure. On the territory of the Arkhangelsk region, there are 284 undeveloped public areas with a total area of 381.2 hectares, or 77.2 percent of the total number of public areas, of which 20 are presented in the form of city parks.

The unfavorable state of yard areas is an important problem. At present, there are 11,219 yard areas in the Arkhangelsk region in need of improvement, with a total area of 6,286.8 hectares, or 85.4 percent of the total number of yard areas.

Preservation of the traditional wooden architecture of the Russian North as a cultural heritage.

High potential for the renovation of unused or obsolete territories of former factories and plants, in particular, the territories of the Arkhangelsk brewery built in 1884 and the Arkhangelsk State Circus built in 1905, located in the center of the city of Arkhangelsk.

Low level of public participation in the territorial development of the urban and rural environment of the Arkhangelsk region.

The widespread use of the institution of territorial public self-government in the Arkhangelsk region, which is characterized by low efficiency due to the lack of active management strategies.

Low budget opportunities of the municipalities of the Arkhangelsk region for the modernization of urban and rural settlements of the Arkhangelsk region.

The quality and comfort of the urban and rural environment will increase. The ecological state and appearance of urban and rural settlements in the Arkhangelsk region will improve. Public and courtyard areas will be landscaped. The development of the urban and rural environment will be carried out with the participation of residents and taking into account physical, spatial and information accessibility.

Implementation of modern approaches to improve the urban and rural environment: from the improvement of individual territories to the creation of an integrated vision of their development with public participation and flexible opportunities for revitalizing spaces and investments.

To form the urban and rural environment, a systematic approach should be applied, which is a way of organizing the process of a comprehensive study of the relationships and patterns of development. For the purpose of strategic planning, a number of interrelated

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projects are proposed, the implementation of which should be carried out in parallel.

Public areas are centers of social gravity, recreation and communication. They are open spaces (streets, squares, parks, squares, embankments and beaches), as well as public buildings and premises. Public spaces play an important role in ensuring the productivity of human interaction with the environment. At the moment, the public areas of the Arkhangelsk region are characterized by significant wear and tear and poor infrastructure. According to the methodological recommendations for the integrated development of single-industry towns, the improvement of everyday spaces should go through 5 main steps that are included in the project.

Improving the physical condition of public territories with the help of rational functional zoning of territories and their filling with landscaping elements.

Creation of a pastime infrastructure for different age categories of the population.

Revival of local attractions.

Renovation of social infrastructure facilities and adjacent territories.

Transformation of abandoned buildings and territories.

The quality of public areas will improve.

An algorithm for the improvement of public territories with the participation of the population will be developed, allowing to take into account the strategic development of individual settlements.

By 2024, 284 public areas of the Arkhangelsk region (including city parks) will be landscaped, which will account for 83 percent of their total number, in accordance with the state program of the Arkhangelsk region "Formation of a modern urban environment in the Arkhangelsk region (2018-2024)". Thus, within the framework of the Strategy, the following forecast is relevant, shown in Table 2.

**Table 2. Forecast for the improvement of public areas**

<b>Year</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>
Number of landscaped public areas	296	333	370
Percentage of total (%)	80	90	91-100

The rejection of the project will lead to a deterioration in the ecological state and appearance of the settlements of the Arkhangelsk region. The low level of improvement of public territories and settlements in general will have a negative impact on the environmental quality index.

Yard territories are spaces where local communities are formed, which are a necessary element of harmonious development. At present, the state of yards in the Arkhangelsk region is a serious problem. In order to determine the tasks and prioritize in relation to courtyard areas, it is necessary to improve them together with the residents, making a joint choice of a solution in each specific case.

Ensuring safety and psychological comfort by defining the boundaries of private and public space.

Formation of the frame of pedestrian and transport links.

Formation of the main functional areas (entrance, parking, quiet rest, noisy rest, technical maintenance) and their rational location in each yard improvement project.

Creation of accessibility infrastructure for people with limited mobility.

Increasing the functional diversity of recreation areas, including playgrounds for children and adults, as well as walking pets.

Optimization and reorganization of existing parking spaces. Improving the lighting of yard areas.

Ensuring the availability of household equipment. Landscaping and reducing the number of neglected areas.

Increasing the level of microclimatic comfort of courtyard areas with the help of green spaces of additional infrastructure. The quality of yard areas will improve. An algorithm for the improvement of yard areas with the participation of local residents will be developed.

By 2022, 11,219 yard territories of the Arkhangelsk region will be landscaped, which will be 85 percent of their total, in accordance with the state program of the Arkhangelsk region "Formation of a modern urban environment in the Arkhangelsk region (2018 - 2024)". Thus, the following forecast is relevant within the framework of the Strategy.

Refusal of the project will lead to a low rate of improvement of yard areas, which will lead to dissatisfaction of local residents with the quality of the urban and rural environment.

Public participation and real consideration of opinions in solving issues of urban and rural development increase the satisfaction of the population with the environment and quality of life due to the realization of the need to influence what is happening. It is important to define common and individual responsibilities, creating opportunities and incentives for cooperation in the formation of territories. Participation in planning reduces the number of conflicts and increases trust between public

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authorities and local residents with the prospect of joint management.

Development of a public participation regulation with accessible mechanisms of interaction and a determined level of public involvement at all stages.

Identification of all stakeholders and their inclusion in the processes of landscaping.

Initiation and moderation of joint interactive design and implementation of projects, taking into account relevant public information.

Creating a platform for feedback and evaluating the result of joint activities.

Involvement of the public in the management of the territory and participation in socially significant events.

A high level of responsibility will be achieved due to the emergence of the opportunity for the population to influence the formation of the urban and rural environment.

An effective process of communication with residents will be organized.

An understanding of the hidden problems and needs of the territories in each case will be achieved.

The quality and efficiency of design solutions will increase. The social significance and sustainability of projects will increase.

The efficiency of the public institute for the development of territories will increase.

The number of projects aimed at the improvement of territories implemented with the participation of citizens will increase from 10 percent in 2018 to 20 percent in 2023 in accordance with the state program of the Arkhangelsk region "Formation of a modern urban environment in the Arkhangelsk region (2018 - 2024)". Refusal of the project increases the risks of dissatisfaction of the population with new projects for the improvement of territories.

The use of the urban concept of "new urbanism" revives compact settlements, based on the functional differentiation of the territory and existing local traditions to develop an effective environment aimed at meeting the needs of residents. The principles of such a compact development can be used at different levels: from the strategic policy of the Arkhangelsk region to the development of a vision for a particular settlement and the improvement of its individual territories. The project allows to form and control the state of the urban and rural environment with an integrated approach to quality, where the main priority is the comfort of residents.

Increasing pedestrian accessibility and increasing the number of routes between the main objects of everyday life with the creation of comfortable and safe conditions.

The interconnection of territories through the organization of networks and hierarchies of streets that will ensure the redistribution of transport, convenient walking, peace in courtyards and the possibility of protecting private land.

Creation of conditions for a diverse development that attracts investments of different levels and creates a multifunctional environment.

Mixed use (multifunctionality) of buildings and territories for self-sufficient life on a local scale.

Development and observance of general rules and norms for the quality of architecture and urban planning.

Creation of a local community by stimulating relationships between various social groups of the population and their joint participation in the improvement of the territory.

Formation of the optimal building density using various types of buildings and plots for the efficient use of territories and resources.

Creation of an efficient ecological network of public and individual transport, providing for the daily use of non-motorized vehicles and walking to move.

Sustainable urban planning aimed at preserving the environment, green areas and reducing the impact on them with the help of environmentally friendly materials and technologies.

Comprehensive observance of the above development principles leads to an increase in the quality of life of local communities and residents in general.

General plans and integrated schemes for the development of territories will be updated.

Equal comfortable conditions for urban and rural environments will be created for residents of different settlements.

A unified concept for the development of outdoor advertising and advertising in urban passenger transport will be developed, as well as unified rules for the maintenance and repair of building facades in cities.

The quality index of the urban environment will increase by 2035 to the state of "good" (201 - 250 points out of 300) in all cities of the Arkhangelsk region, which are monitored.

The rejection of the project will become an obstacle to the formation of a common vision in planning and will lead to uneven development of individual territories and the settlements themselves as a whole. This will significantly reduce the effect of the implementation of major projects for the improvement of territories, the success of which directly depends on an integrated systematic approach in the general context of development.

Revitalization involves the functional change of obsolete or unused territories to recreate and revitalize the environment while maintaining their historical appearance and value. Such transformations serve cultural, recreational, commercial and economic purposes, and support for their implementation can be initiated by both local governments and business communities, and residents of the Arkhangelsk region. According to the guidelines for the implementation of projects to improve the quality of

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the environment of single-industry towns, the revitalization of territories is a strategic sequential process that includes 3 stages: preparation, activation and development.

Development of a vision concept for obsolete or unused territories with a set of new functions based on research and analysis of priority areas for the development of such territories.

The use of territories based on their individual characteristics with the involvement of residents to participate in socially significant events. An active information campaign, openness to interaction and stimulation of feedback are important principles in the dynamics of the process.

Systematic development of territories through their improvement and integration with the city, as well as improving the fund of premises and spaces. This process is designed taking into account the available investments and strategic spatial solutions.

The quality of the environment will improve in terms of its functionality and satisfaction of local needs.

Entrepreneurial and investment opportunities will develop.

New social spaces and creative clusters will be created. There will be an activation of awareness of local identity.

By 2035, the quality index of the urban environment will increase to the state of "good" (201 - 250 points out of 300) in all cities of the Arkhangelsk region, which are monitored.

The abandonment of the project will become an obstacle to the transformation of obsolete or unused spaces, which will affect the dynamics of territorial renewal.

Improving the quality of the environment and creating the prerequisites for creating an environmentally oriented growth model for the economy of the Arkhangelsk region, which ensures the preservation of a favorable environment to achieve a high quality of life for each person.

High risk of anthropogenic impact. The presence on the territory of the Arkhangelsk region of objects of accumulated harm to the environment; high concentration of technogenic and natural-anthropogenic complexes around the large industrial centers of the Arkhangelsk region.

Regulatory inefficiency. The absence of regional environmental quality standards, which does not allow assessing the potential for industrial development in terms of environmental impact.

The problem of providing high-quality drinking water. An increase in the gap in the level of provision with high-quality drinking water in urban and rural settlements. Low rates of development and approval of projects for the organization of sanitary protection zones for sources of domestic and drinking water supply.

On the territory of the Arkhangelsk region there are 102 wastewater treatment facilities, most of which do not provide wastewater treatment up to standard indicators. The main reasons are high physical deterioration (by 74.7 percent on average), the use of outdated wastewater treatment technologies, a significant overload of treatment facilities both in terms of volume and concentrations of pollutants.

Lack of an effective waste management system. Growth in production and consumption waste volumes in the absence of an effective waste management system.

In 2035, the environment will be perceived in society as a guarantee of ensuring individual and public health of the population. Reducing the negative impact of current economic activity and the elimination of the results of past economic activity will affect a significant improvement in the environmental situation. The population will be provided with access to high-quality drinking water and health-promoting facilities. By creating a highly efficient waste management system, a significant reduction in the impact of waste on the health of residents and the environment will be achieved.

The project involves increasing the efficiency of regional environmental supervision, improving the environmental monitoring system, as well as developing mechanisms for public environmental control. The implementation of the project is aimed at reducing the overall anthropogenic load on the environment by increasing the environmental efficiency of the economy of the Arkhangelsk region.

Improving the efficiency of state environmental supervision, industrial and public control in the field of environmental protection and state environmental monitoring.

Ensuring rational nature management, including minimizing the damage caused to the environment during the exploration and production of minerals.

Reducing pollution and reducing the level of air pollution in cities and other settlements of the Arkhangelsk region.

Creation of conditions for reducing the negative impact on the environment.

Increasing the efficiency of protecting forests from harmful organisms and the adverse effects of the environment, creating conditions for the rational, multi-purpose, sustainable and efficient use of forests. Organization of state forest pathological monitoring by ground methods by 2020.

Ensuring compliance with the requirements of legislation in the field of forest relations, including the prevention of illegal logging, increasing the efficiency of restoring dead and cut down forests, and the quality of breeding and genetic properties of planting material.

The development and modernization of the existing automated observational network will be ensured.

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Regional environmental quality standards for the Arkhangelsk region will be determined.

By 2024, a radical reduction in the level of atmospheric air pollution in large industrial centers will be ensured, including a reduction by at least 20 percent of the total volume of emissions of pollutants into the atmospheric air in the most polluted cities.

The ratio of the area of forests where sanitary and recreational measures were carried out to the area of dead and damaged forests will be 0.2 percent.

By 2020, the volume of payments to the budget system of the Russian Federation from the use of forests located on the lands of the forest fund, per 1 hectare of forest fund lands, will amount to 79.9 rubles.

The forest cover of the territory of the Arkhangelsk region will be kept at the level of 54 percent.

There will be an introduction of an intelligent system for monitoring and controlling the state of the environment for the purpose of modeling the consequences of the impact of anthropogenic factors.

Widespread use of environmental audit will be ensured when creating new industrial facilities in the Arkhangelsk region.

There will be an increase in investments for the purposes of technological re-equipment of enterprises in the Arkhangelsk region.

The specific indicators of emissions and discharges of pollutants into the environment will decrease.

The rejection of the project entails the risk of negative consequences of environmental degradation, including a negative impact on the quality of life and health of the population, the state of flora and fauna.

The project is aimed at eliminating the consequences of the negative impact on the environment of past economic activities, as well as minimizing damage from current economic activities. The implementation of the project will improve the environmental situation in the municipal districts of the Arkhangelsk region, which are subject to the influence of objects of accumulated harm on the environment, and will also increase the investment attractiveness of territories that previously experienced a negative impact.

Elimination of the negative consequences of the impact of anthropogenic factors on the environment.

Rehabilitation of territories and water areas contaminated as a result of economic and other activities.

By 2025, measures will be taken to eliminate the accumulated environmental damage in the specially protected natural area of federal significance - the Franz Josef Land archipelago.

An annual increase in the area of land rehabilitated as a result of the elimination of oil pollution and damage from economic activities will be ensured.

The number of residents living in unfavorable environmental conditions will be reduced by at least 4 times.

The involvement of ecologically rehabilitated territories, restored habitats of objects of the animal and plant world into economic circulation and an increase in their investment attractiveness will be ensured.

The rejection of the project entails the risk of pollutants entering the groundwater, pollution of surface and underground water bodies, including water supply sources.

The project is aimed at preserving and restoring the protective and environment-forming functions of the natural ecological systems of the Arkhangelsk region, as well as ecological systems associated with providing the population with water and contributing to health protection. The implementation of the project will ensure environmental rehabilitation and conservation of water bodies, reproduction and conservation of biological diversity, and improvement of the environmental conditions of human life.

Prevention of pollution of surface and ground waters, improvement of water quality in polluted water bodies, restoration of water ecological systems.

Improving the efficiency of the activities of the territorial bodies of the Federal Service for Supervision of Consumer Rights Protection and Human Welfare in the field of organizing sanitary protection zones for sources of drinking and domestic water supply.

Improving conservation and management measures natural resources, including forest, hunting and aquatic biological resources, to preserve the ecological potential of forests.

Expansion of measures for the conservation of biological diversity, including the development of a system of specially protected natural areas.

The time for development and approval of projects for the organization of zones of sanitary protection of sources of drinking and domestic water supply as part of a water intake unit will be reduced.

By 2024, the quality of drinking water for the population will be improved, including for residents of settlements that are not equipped with modern centralized water supply systems.

By 2035, 90 percent of drinking and domestic water supply sources will meet hygienic standards for sanitary-chemical, microbiological, parasitological and radiological indicators.

The share of contaminated wastewater in the total volume of wastewater discharged into water bodies to be treated will be reduced to 36 percent.

The physical wear and tear of wastewater treatment facilities in the Arkhangelsk Region will be reduced to a level not exceeding 40 percent.

By 2035, 75 percent of the population will be provided with high-quality drinking water.



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Non-state mechanisms for the conservation of natural ecological systems will be developed - voluntary certification.

An increase in the environmental and social responsibility of business in the Arkhangelsk region will be ensured.

The active participation of the population in the discussion of environmental problems, as well as the promotion of environmentally responsible behavior will be ensured.

By 2035, an inventory of all specially protected natural areas located in the Arkhangelsk region will be carried out.

The abandonment of the project will lead to risks of deterioration in the quality of the environment, which is necessary for favorable human life and sustainable economic development.

By 2035, a large-scale modernization of rural settlements in the Arkhangelsk region will take place. In many rural settlements of the Arkhangelsk region, powerful tourist, agro-industrial, timber and service centers will appear, around which entire rural clusters will be formed. The village will be provided with digital, transport and energy infrastructure, in connection with which, due to the absence of restrictions, communication between urban and rural settlements of the Arkhangelsk region will be significantly accelerated. In rural settlements of the Arkhangelsk region, life will become much more comfortable, and traditional values will become much closer and more accessible to the townspeople.

The development of rural settlements in the Arkhangelsk region is carried out by increasing the level of employment of the population, the implementation of social services and infrastructural equipment of the territory. To do this, it is necessary to develop traditional sectors of the economy, entrepreneurial initiatives of the population and tourism activities, and to optimize the provision of services, create support settlements, relocate residents from sparsely populated areas and develop remote services. The mechanism for implementing the proposals and projects of local residents is the creation of rural communities.

The development of rural settlements in the Arkhangelsk region is aimed at creating comfortable living conditions for the population and doing business. For the purpose of strategic planning in the context of project strategizing, a number of projects are proposed that contribute to the implementation of a given direction of development.

Support for traditional sectors of the economy and development of small business

Activities in the field of agriculture, fisheries and forestry are traditional for residents of rural settlements of the Arkhangelsk region. Support for traditional types of economic activity in the Arkhangelsk region, as well as entrepreneurial initiatives of the population is a basic condition for the development of rural settlements in the Arkhangelsk region.

Determination of zones of primary specialization of activities (agriculture, fisheries and forestry).

Assistance to the population in organizing and supporting business activities, including the creation of cooperatives.

Creation of conditions for supporting entrepreneurial initiatives of the population living in rural settlements of the Arkhangelsk region.

Assistance in the formation of markets for products.

By 2035, the index of agricultural production in farms of all categories will exceed 105.5 percent.

By 2035, the share of peasant (farm) enterprises and individual entrepreneurs in the production of agricultural products will be at least 20 percent.

By 2035, the growth rate of revenue from the sale of goods, products, works, services of agricultural consumer cooperatives (in comparable prices) will exceed 112 percent compared to the previous year.

By 2035, the employment rate of the rural population will be at least 65.5 percent.

The competitiveness of products of the Arkhangelsk region will increase.

Refusal to support traditional sectors of the economy and small businesses in rural settlements of the Arkhangelsk region will exacerbate the negative socio-economic situation in them, namely unemployment, falling incomes and migration outflow of the population.

To make it interesting and exciting for the tourist, for each object found, he will be awarded points, which at the end will be summed up and a prize will be issued based on its results (for example, an electronic discount certificate from a partner company). In this case, the user receives a specialized card with useful information about the object.

At the end of the route, the total result based on the points received will be displayed. As a reward for completing a quest in the bot, it will be possible to provide customers with special vouchers from partner organizations. To receive a reward, you will need to contact the administrator.

The prize is given out once a month.

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**Figure 12. Arkhangelsk. Embankment of the Northern Dvina**

The Arkhangelsk region is notable for its wooden architecture and Pomeranian cuisine. Here is the largest open-air museum of wooden architecture in Russia "Small Korely". The region focuses on the development of Arctic, rural and ethnographic tourism. Currently, there are more than a hundred ethnographic sites, on the basis of which tourists are offered excursion programs and master classes aimed at preserving traditional folk traditions and crafts. Gastronomic tourism is becoming more and more popular in Pomorie. A gastronomic notebook-map of the Arkhangelsk region has been created, which provides information from the districts of the region about local culinary dishes and farm products.

In 2018, 409,000 organized tourists visited the Arkhangelsk region (of which 9,000 were foreigners), which is 4.6% more than in 2017. At the end of the 2019 tourist season, the tourist flow increased to 427,000 people. More than 1 million people take part

in excursion programs of the region. Most often, residents of Moscow and St. Petersburg come to the region. Representatives of Germany, Finland, Sweden, France, Italy, Norway and the Netherlands are leading among the foreign guests of Pomorye. New objects of tourist infrastructure are being opened in the region, new projects, excursion programs and routes are being developed.

In the Arkhangelsk region, 21 tour operators for domestic and inbound tourism are registered, more than a hundred programs have been developed, and twelve TICs operate. Guests of the region are welcomed by 169 hotels, hostels and sanatoriums. In 2019, the greatest entrepreneurial activity in the field of tourism was noted in Arkhangelsk, Kotlas, as well as in Kotlas, Pinezhsky, Nyandoma and Krasnoborsky districts.



**Figure 13. Museum "Small Korely". Hip bell tower inscribed in the natural landscape**

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**Figure 14. Museum-reserve "Small Korely". Architectural and landscape exposition**



**Figure 15. View of Pinega from Krasnaya Gorka (Krasnaya Gorka village, Pinega district)**

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**Figure 16. Shrines of Permogorye (Permogorye village, Krasnoborsky district)**

Pinezhsky and Mezensky districts have become active centers for the development of rural tourism. The main problem here is transport accessibility: for example, on the Arkhangelsk-Golubino-Pinega-Mezen highway, the road is constantly broken by timber trucks and becomes impassable after rains. The road to Mezen must be built simultaneously with the development of roadside services and infrastructure.

Of particular note are the projects that, in order to increase the tourist and investment attractiveness of the region, are designed to contribute to the socio-economic development of the territories, among them: "Travel with taste" (development of infrastructure for popular tourist destinations), "ARHIprodukt" (promotion of northern products in the key of gastronomic tourism) and "ARCHITsentr" (a new socio-cultural public space in Arkhangelsk in the building of the Sea and River Station). "ARCHITsentr" will allow guests and residents of the region to get acquainted with the historical and cultural heritage of Pomorie with the help of modern museum and multimedia tools.

At present, the implementation of the investment project of the Belomorsky tourist cluster (Arkhangelsk, Lomonosovo village) has begun in Pomorie. Previously, it was planned to submit a joint application from the Arkhangelsk and Murmansk regions (TRC "Belomorsky" and "Belomorje") for entry into the federal target program for the development of tourism for 2019-2025. in RF. Tourism in the Arkhangelsk region is, first of all, a

sustainable way of developing the territory, which improves the quality of life of the local population through attracting guests.

Traveling around the region starts from Arkhangelsk, the first seaport in Russia, the starting point for the development of the Arctic. The Arctic theme has become the leitmotif of the development of tourism in the capital of Pomorye: the tourist route "Arkhangelsk: here the Arctic begins" is one of the branded tours of Russia and includes visits to the main sea and Arctic attractions. In 2018, 120 thousand tourists visited Arkhangelsk, which is 9% more than in the previous year.

New arctic weekend tourist routes have been developed in the Primorsky region ("Patrakeevka is the birthplace of captains", "Heathland is the birthplace of pilots"), in the village of Voznesenye and the Onega region ("Pomors near the White Sea", "Onega is the residence of Princess Moroshka").

The number of people wishing to visit the ancient city of Kargopol is growing: in 2018, its white-stone architecture and numerous museums attracted more than 9 thousand tourists, which is 18% more than in 2017. This is largely facilitated by the tourist routes of Kargopol, approved as branded tours Russia "Kargopolye - the land of hidden time" and "Kargopolskaya gosteba". Bright event events - the annual winter festival of bell art "Crystal Ringings" and the holiday of folk craftsmen of Russia, aimed at preserving and developing traditional folk crafts - in different years became national events of the year in

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Russia according to the tour portal "National Calendar of Events". The gastronomic traditions of Kargopol are being developed by the eco-gastronomic festival "Lamb Sunday".

For foreign tourists, the Russian North is attractive primarily for its original wooden architecture. For example, the Kargopol-Kenozersky tourist region is known as the territory where the largest number of sacred monuments of wooden architecture is concentrated in the world. The brand of this territory is the preserved ancient wooden churches and chapels with unique "painted skies", votive worship crosses and holy groves.

In the Kargapolsky district and the Kenozersky sector of the Plesetsky district there are unique villages, one of the last islands of the original Russian way of life, culture, traditions, outstanding examples of the cultural landscape of the Russian North. Some of these tourist villages are located on the territory of the Kenozero National Park, the only one in Russia where about a hundred architectural monuments have been preserved, among them masterpieces of Russian wooden architecture of the 18th–19th centuries, which have no analogues in the world. The park was the first in Russia to follow the path of implementing the idea of sustainable livelihoods for the local population of villages through tourism activities. At present, the volume of the tourist flow in the national park is about 16 thousand organized tourists per year. A distinctive feature of the provided tourist services and tourist products is their deep connection with local traditions, with the true flavor of the northern Russian village. Therefore, today the park has abandoned the creation of unified standard hospitality infrastructure facilities, focusing on the formation of an authentic atmosphere of homely village comfort with interiors that use genuine peasant household items.

The development of the Kenozero National Park is a rare example of a SPNA contributing to the revival of villages through projects to restore architecture: temples, clubs and historical buildings.

As an example of best practices, Kenozersky National Park is included in three federal tourism collections at once: "Best practices of ecological tourism in the Russian Federation", "Best practices of ethnographic tourism in the Russian Federation" and "Best regional practices for the development of rural tourism".

The developed tourist infrastructure of the national park contributes to the development of domestic and inbound tourism in the Arkhangelsk region: nine ecological trails, seven excursion routes, 114 tourist stops (including picnic spots), two bicycle rental points, eight viewing platforms, sixteen museums (including expositions, landscape theatres), three visitor centers, six information centers, two eco-classes and three conference rooms. The park organizes accommodation and meals for tourist groups, equipped kitchens in hotels for self-catering.

The cultural landscapes of the Kenozero National Park most fully and successfully illustrate the features of the historical and cultural development of the territories of the North of Russia and the exceptional role of the natural component in this process. Particular attention is paid to the study of elements of traditional living culture as the most important mental component of the cultural landscape of Kenozero with a subsequent assessment of its role in the development of regulated tourism. National parks have become in Russia one of the main organizational forms for the protection of cultural landscapes, while they have a colossal historical, cultural and eco-tourism potential. In recent years, there has been a tendency for tourism activities to move into the cultural space of national parks, into the space of cultural landscapes.

The Kenozero National Park is an example of the most vivid manifestation of primordial Russian traditions here, elements of the traditional living culture of the Pomors, wooden religious architecture in harmony with the natural component of the territory. The assessment of the natural and cultural-historical heritage of a given territory from the standpoint of cultural landscape science and the principles of organizing cultural space acquires significance as a kind of factor in the formation of ecological culture and ecological consciousness through tourism.

In the Arkhangelsk region, rural tourism is actively developing, which has become one of the priority areas for the development of the tourism industry. The region is among the leaders in terms of rural tourism development in Russia, which can become one of the factors contributing to the diversification of the rural economy, increasing employment and incomes of the rural population; development of small business and, as a result, improvement of the quality of life in the countryside.

The Arkhangelsk region is distinguished by a large number of preserved authentic villages of interest to tourists. A network of guest houses is being built to accommodate them. For the active development of rural tourism, it is necessary to allow the opening of mini-hotels in private homes on a notification basis.

More and more foreign guests want to see the Pomor villages of the northern regions of the region, known as the original centers of live folk culture, which have preserved the centuries-old way of life, song culture and rituals, folk crafts.

The long-term development of the Arkhangelsk region will be carried out within the framework of the general federal socio-economic policy, taking into account regional specifics. First of all, this implies participation in the implementation of federal sectoral strategies, long-term programs, and priority national projects.

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In accordance with the forecast for the socio-economic development of the Arkhangelsk region for the period up to 2035, the average annual index of

investments in fixed assets during 2020-2035 will be 105.39 percent.

## References:

- (2021). *National tourism portal. Regions of Russia. News*. Retrieved 20.01.2021 from <https://russia.travel/>
- (2021). *Arctic tourism in Russia* / otv. editor Yu. F. Lukin; comp. tourist guide for the regions of N. K. Kharlampiev; Sev. (Arctic) feder. un-t; St. Petersburg. state un-t. (p.96). Arkhangelsk: NArFU.
- Lukin, Yu. F. (2021). Arctic tourism: rating of regions, opportunities and threats. *Arktika i Sever*. 2021 No. 23, pp.116-122.
- (2023). *Expert: in the Arctic, it is necessary to create mini-tour clusters within the framework of protected areas*. Retrieved 07/10/2023 from <https://tass.ru/ekonomika/6316401>
- Bertosh, A. A. (2019). Arctic tourism: conceptual features and features. *Proceedings of the Kola Scientific Center of the Russian Academy of Sciences*. 2019. V. 10, No. 7-17, pp. 169-180.
- Leonidova, E. G. (2018). *Development of tourism in the regions of the Arctic zone of the Russian Federation. North and the Arctic in the new paradigm of world development. Luzin Readings - 2016: Materials of the VIII Intern. scientific-practical. conf. (Apatity, April 14-16, 2016)*. Apatity: IEP KSC RAS, 2018, pp. 206-211.
- (2023). *How to tame any tourist in the Arctic*. Retrieved 07/09/2023 from <https://nordnews.ru/news/2019/09/05/?newsid=115305>
- Khotenov, A. V. (2023). *500 places of the Russian North that you need to see*. (pp.3-4). Moscow: Martin.
- (2002). *Karelia: epic tourism program "Kalevala": Sat. report and theses. message intl. scientific-practical. conf. (Republic of Karelia)*. (pp.59-86). Petrozavodsk, November 20-21, 2002). Moscow: RIB "Tourist".
- (2023). *Official Internet portal of the Republic of Karelia. News // Tourism*. Retrieved 07/18/2023 from <http://gov.karelia.ru/news/?tags=15>
- (2023). *Investment portal of the Republic of Karelia. Tourism*. Retrieved 07/18/2023 from <http://kareliainvest.ru/republicforinvestors/projects/turizm/>
- (2023). *Unified tourist passport of the Republic of Karelia*. Retrieved 07/18/2023 from <https://ar.investinrussia.com/data/image/regions/unif-turpass2016.pdf>
- (2023). *Karelia: Tourist portal. Kinerma*. Retrieved 07/10/2023 from <http://www.tierk.ru/regions/region/settlement/?PID=7515&ID=8172>

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SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

### International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2023 Issue: 07 Volume: 123

Published: 22.07.2023 <http://T-Science.org>

Issue



Article



**Denis Chemezov**  
Vladimir Industrial College  
M.Sc.Eng., Academician of International Academy of Theoretical and Applied Sciences,  
Lecturer, Russian Federation  
<https://orcid.org/0000-0002-2747-552X>  
[vic-science@yandex.ru](mailto:vic-science@yandex.ru)

**Pavel Balabanov**  
Vladimir Industrial College  
Student, Russian Federation

**Sergey Prokopenko**  
Vladimir Industrial College  
Student, Russian Federation

**Maksim Perov**  
Vladimir Industrial College  
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**Denis Kosolapov**  
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Vladimir Industrial College  
Student, Russian Federation

**Aleksandr Cheryomushkin**  
Vladimir Industrial College  
Student, Russian Federation

## NUMERICAL SIMULATION OF AERODYNAMIC CHARACTERISTICS OF HELICOPTER ROTOR BLADES

**Abstract:** The results of helicopter flight simulation under conditions of the development of the rotor speed up to 300 rpm were presented in the article. Vector schemes of load distribution and air flow velocity along the length of the rotor blades were demonstrated. The results of numerical simulation of the deflection of the rotor blades were presented during takeoff and flight of the helicopter. The aerodynamic characteristics and the material stress of the rotor blades for one revolution around its axis were analyzed.

**Key words:** helicopter, rotor blade, lift force, degree.

**Language:** English

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**Citation:** Chemezov, D., et al. (2023). Numerical simulation of aerodynamic characteristics of helicopter rotor blades. *ISJ Theoretical & Applied Science*, 07 (123), 234-237.

**Soi:** <http://s-o-i.org/1.1/TAS-07-123-26> **Doi:**  <https://dx.doi.org/10.15863/TAS.2023.07.123.26>  
**Scopus ASCC:** 2202.

### Introduction

A helicopter is an aircraft in which the lifting and driving forces at all stages of the flight are created by one or more rotors [1].

The complexity of the helicopter control lies in the constant elimination of emerging forces and moments on the elements of the aircraft both on the ground and during maneuvers [2-3]. Compared to an airplane, the helicopter is not fully dynamically balanced for different weather conditions.

The main rotor of the helicopter is a drive structure that includes a swashplate and several fixed blades [4-7]. The blades, due to the change in the angle of attack, create a lift force of the necessary magnitude to takeoff of the helicopter. The swashplate provides adjustment of the forces arising due to the action of ascending or descending air flows when performing the helicopter maneuvers. The swashplate includes a number of parts that work synchronously: a non-rotating outer ring, a turning inner ring, a ball joint, controls and linkages to the rotor blade.

The topic of the helicopter aerodynamics has been researched and optimized in a number of articles [8-10]. The use of special computer programs and well-known laws of aerodynamics made it possible to perform a full-fledged calculation of the simulated helicopter flight in the atmosphere. However, there are very few studies on the simultaneous influence of several parameters on the stability of the helicopter flight. Therefore, the purpose of the study was a visual representation of the calculated values of some aerodynamic characteristics of the rotor blades and their effect on the helicopter flight.

### Materials and methods

The process of rotation of the helicopter rotor at a speed of 300 rpm was simulated. For this purpose, a model of the swashplate with blades mounted on it was created. The helicopter model was not created, which allowed to reduce the calculation time. The models of the parts included in the swashplate were given the properties of structural steel: density – 7850 kg/m<sup>3</sup>; heat capacity at constant pressure – 475 J/(kg×K); thermal conductivity – 44.5 W/(m×K); electrical conductivity – 4.032×10<sup>6</sup> S/m; coefficient of thermal expansion – 12.3×10<sup>-6</sup> 1/K; Young's modulus – 200×10<sup>9</sup> Pa; Poisson's ratio – 0.33; Lamé parameter ( $\lambda$ ) – 1.5×10<sup>11</sup> N/m<sup>2</sup>; Lamé parameter ( $\mu$ ) – 7.5×10<sup>10</sup> Pa. The calculation method was as follows:

1. Functions are written to determine the variables under study.
2. A module is selected to perform numerical simulation of the process.

3. The boundary conditions for solving the problem are set: the equation of state, connections, loads, etc.

4. The quality of modeling results is set by generating a mesh on the model with a certain size of the finite element.

5. The type of study with the time limits of the process calculation is selected.

The results of numerical modeling were presented in the form of schematic and graphical figures. The frequency analysis of eigenfrequencies of the rotor blades of the helicopter was carried out at 0.17124 and 11.739 Hz. The aerodynamic characteristics of the rotor blades of the helicopter were represented by the calculated maximum and minimum values of the studied parameters in the form of graphs constructed in the Excel program. The calculated values were obtained by modeling one revolution of the main rotor.

### Results and discussion

Figure 1 (A-C) shows the load distribution on the rotor blade at 0, 180 and 360 degrees of rotation, respectively. The rotor blade is considered in longitudinal section. Vectors determine the direction and magnitude of the load along the length of the rotor blade. From the vector diagrams presented, it can be seen that during the rotation of the main rotor, the load on the blade increases proportionally and reaches the highest value at the tip. At the same time, at the beginning of turning the rotor, the action of the load down from the blade is noted, and at 180 degrees of rotation or more, the load acts up from the blade. When the rotor is half-turned, the load acts on 2/3 of the blade length, in other cases, the load acts on the entire length of the blade. This is due to the appearance of a lift force that tends to bend the blade upwards. Figure 1 (D) shows the distribution of air flow velocity on the rotor blades of the helicopter when viewed from the top view. There is a proportional increase in speed on the rotor blades of the helicopter with the highest value at the tip. The direction of rotation of the rotor blades is clockwise.

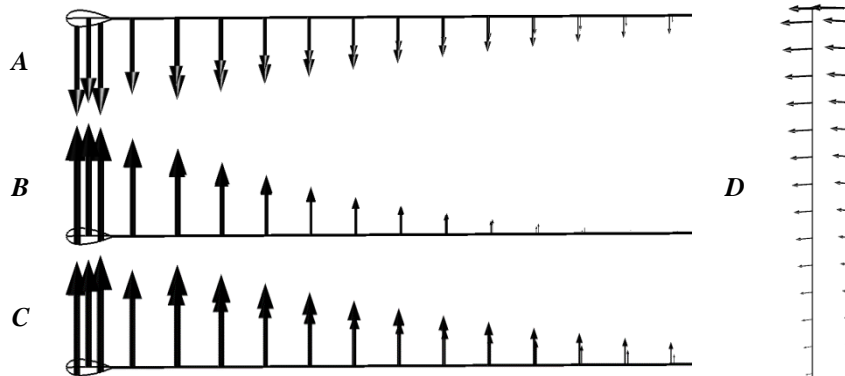
Eigenfrequencies of the rotor blade of the helicopter were determined at low and high frequencies (Fig. 2). This made it possible to identify deflections of the rotor blade under various operating conditions of the helicopter without taking into account forced vibrations arising from the action of external forces. Since elastic rotor blades were used for the calculation, at a high frequency, eigenfrequencies deflect the rotor blade upwards by 10-11 degrees from the initial position. Thus, bending



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oscillations occur, which increase with increasing rotation speed of the helicopter rotor.



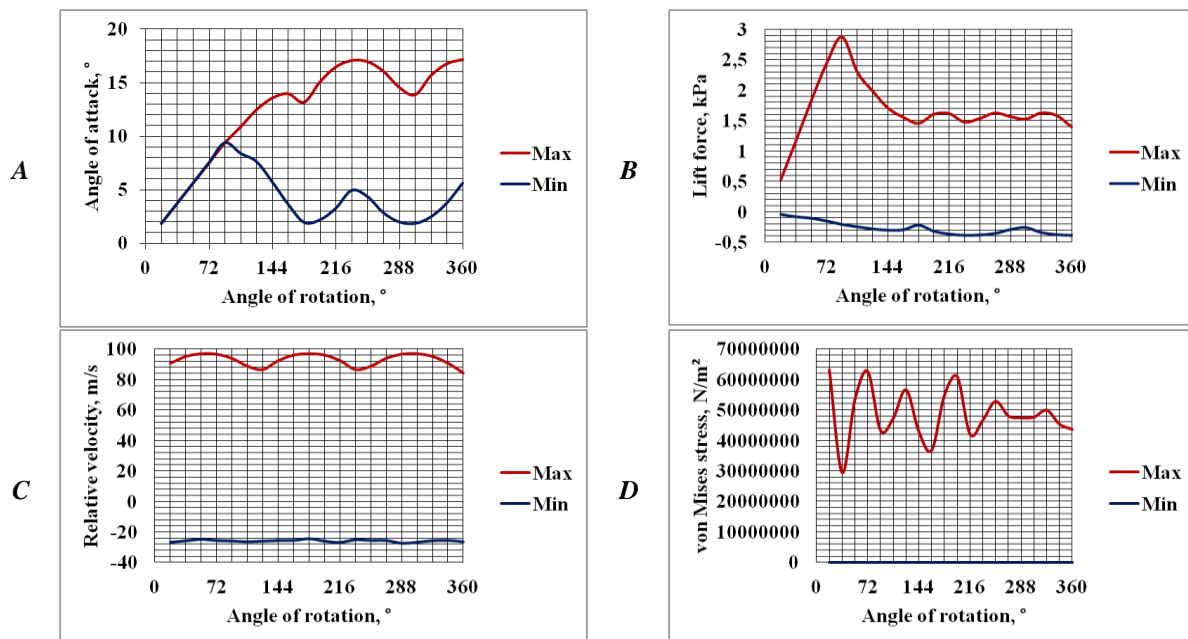
**Figure 1. Load distribution (in the form of vectors) on the length of the rotor blade of the helicopter (A-C) and the distribution of air flow velocity on the rotor blade of the helicopter (D).**



**Figure 2. The deflection of the rotor blade of the helicopter from the initial position at eigenfrequencies of 0.17124 Hz (A) and 11.739 Hz (B).**

It should be noted that the calculated values of the angle of attack, lift force, relative velocity and von Mises stress were determined for three turning rotor blades of the helicopter (Fig. 3). In one revolution of the main rotor, the angles of attack of the blades vary in the range from 2 to 17 degrees. The angle of attack is positive. At the same time, the angle of rotation of the blades in the range of 0-90 degrees leads to an increase and maintenance of the same angle of attack for all three rotor blades of the helicopter. This effect

provides an increase in the lift force. Further rotation of the blades leads to a change in the value of the angle of attack according to an increasing and decreasing function. However, due to the same change in the angle of attack of the blades at the maximum and minimum values, the main rotor aerodynamics process will be stable due to the functions of the swashplate, which allows balancing the excess loads acting on the blades.



**Figure 3. The dependences of the angle of attack (A), lift force (B), relative velocity (C) and von Mises stress (D) on the angle of rotation of the helicopter rotor.**

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The lift force increases with a simultaneous equal increase in the values of the angles of attack of the rotor blades of the helicopter. The maximum value of the lift force was determined when the main rotor rotates 90 degrees around its axis. Further, the value of the lift force is halved due to changes in the angles of attack in the range of 15 degrees. The lift force with a negative value leads to a downward deflection of the rotor blades. For a full revolution of the helicopter rotor, this phenomenon was observed on the blades, but the deflection is minimal.

The relative velocity is calculated as a function that includes variable and constant parameters, such as the angular velocity of the rotor, the distance from the center and the forward speed of the helicopter. The relative velocity varies by a certain amplitude in a small numerical range. In this case, negative values of the relative velocity were determined for the swashplate.

Stresses in the material are caused by vibrations of the helicopter rotor blades. It is noted that an abrupt change in the von Mises stress to the maximum values occurs when the azimuthal position of the rotor blade of the helicopter is from 0 to 270 degrees. In the last 90 degrees of rotation of the main rotor, the blades are almost equally deformed.

## Conclusion

Based on the analysis of the results of numerical modeling of the aerodynamic characteristics of the rotor blades of the helicopter, the following conclusions can be drawn:

1. It is determined that in order to prevent the occurrence of significant vibrations and variable loads, the rotor blades, depending on the maneuver performed by the helicopter, can deviate up or down by the certain angle. When the main rotor performs a half-turn around its axis, the blades are subjected to a slightly lower load than when the rotor is fully turned.

2. Checking the eigenfrequencies of the blades at a higher rotational speed of the helicopter rotor showed the absence of significant cyclic loads leading to resonance.

3. The interrelation of some aerodynamic characteristics of the blades for one revolution of the helicopter rotor was presented. It is noted that the greatest lift force is provided by the blades having at the same time the angle of attack of 9.5 degrees. However, the maximum lift force creates the maximum load on the rotor blades of the helicopter, which proves the dependence of von Mises stress of the blade material on the angle of rotation of the helicopter rotor.

## References:

1. McCormick, B. W. (2003). *Helicopters. Encyclopedia of Physical Science and Technology* (Third Edition), 309-320.
2. Prouty, R. W. (1995). *Helicopter performance, stability, and control*.
3. Johnson, W. (2012). *Helicopter theory*. Courier Corporation.
4. Seddon, J., & Newman, S. (2011). *Basic Helicopter Aerodynamics*. John Wiley and Sons, p. 216.
5. Braverman, A., & Weintrub, A. (2014). *Helicopter Dynamics*.
6. Tishchenko, M., Nekrasov, A., & Radin, A. (2014). *Helicopters*. The choice of parameters in the design.
7. Wu, B. (2013). *Chapter 5 - Application to a 3D Helicopter Model*. In Shanghai Jiao Tong University Press Aerospace Series, Reliability Analysis of Dynamic Systems, Academic Press, 119-139.
8. Liu, Z. (2002). *The stability analysis of the coupled system consists of helicopter engine control system, rotor and drive train*. Helicopter Technique.
9. Zhang, Y. (2003). *Research of computing method for helicopter required power*. Helicopter Technique.
10. Djaksbaev, V. A., & Novikov, A. A. (2007). Research of mutual influence helicopter carrying screw and wing of the helicopter. *The Civil Aviation High Technologies*, №111, 74-76.

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JIF = 1.500

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SJIF (Morocco) = 7.184

ICV (Poland) = 6.630  
PIF (India) = 1.940  
IBI (India) = 4.260  
OAJI (USA) = 0.350

SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

## International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2023 Issue: 07 Volume: 123

Published: 23.07.2023 <http://T-Science.org>

Issue

Article



Shakhnoza Khushmurodova

Samarkand state university

Associate Professor,

[xushmurodova.shahnoza@yahoo.com](mailto:xushmurodova.shahnoza@yahoo.com)

## ADVANTAGES OF BEING BILINGUAL IN TERMS OF COGNITIVE DEVELOPMENT

**Abstract:** Starting with an exploration of cognitive development and language acquisition, the article highlights how bilingualism induces neuroplastic changes in the brain, leading to strengthened neural connections and cognitive advantages. Metalinguistic awareness, characterized by the ability to think about language as a system, is found to be enhanced in bilingual individuals. They exhibit advanced communication skills, adaptability in their communication strategies, and heightened sensitivity to nonverbal cues and contextual information. Bilingualism also promotes metacognitive awareness and strategic thinking in communication. The article highlights the manifold benefits of bilingualism for cognitive development, metalinguistic awareness, and communicative skills. By embracing bilingualism in educational settings and language policies, language development can be enhanced, ultimately promoting effective communication and intercultural exchange.

**Key words:** Bilingualism, cognitive development, metalinguistic awareness, communicative skills, language policy.

**Language:** English

**Citation:** Khushmurodova, Sh. (2023). Advantages of being bilingual in terms of cognitive development. *ISJ Theoretical & Applied Science*, 07 (123), 238-242.

**Soi:** <http://s-o-i.org/1.1/TAS-07-123-27> **Doi:**  <https://dx.doi.org/10.15863/TAS.2023.07.123.27>

**Scopus ASCC:** 1203.

### Introduction

The process of language development in children is captivating and multifaceted, as it forms the basis for their cognitive growth, metalinguistic awareness, and communication skills. Learning language is a significant milestone in a child's development, shaping their ability to express thoughts, comprehend others, and navigate the world. Researchers, educators, and parents are all interested in understanding the factors that contribute to optimal language development.

Cognitive development plays a crucial role in acquiring language. As children learn to understand and use language, they engage in complex cognitive processes such as memory, attention, and problem-solving. These cognitive abilities support language acquisition by helping children process linguistic input, store and recall vocabulary, and construct meaningful sentences. Therefore, investigating the relationship between cognitive development and

language acquisition is essential for understanding how children learn language.

Metalinguistic awareness is another important aspect of language development. It involves the ability to think about and reflect on language as a system, including understanding language rules, manipulating linguistic elements, and using language creatively. Metalinguistic awareness is crucial for literacy development as it allows children to analyze and manipulate language structures when reading and writing. Developing metalinguistic awareness has implications for enhancing overall language proficiency and literacy skills in children.

Considering the significance of cognitive development, metalinguistic awareness, and communicative skills in language development, this literature review article aims to critically examine the research conducted in these areas. The review will be based on Cenoz's (2003) comprehensive critical review, which provides valuable insights into the positive effects of language learning on cognitive

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development, metalinguistic awareness, and communicative skills. By exploring Cenoz's findings and potential explanations, we can gain a deeper understanding of the relationship between bilingualism and these important aspects of language development. This review will contribute to the existing knowledge and provide valuable insights for researchers, educators, and policymakers working to promote optimal language development in children.

### Cognitive Development

Cognitive development refers to the gradual development of cognitive abilities, which include perception, memory, attention, and problem-solving skills. Language acquisition is closely intertwined with cognitive development because language processing relies on various cognitive processes. When children learn language, they engage in complex mental operations such as storing information in memory, allocating attention, and processing information. Therefore, it is essential to investigate the positive effects of language learning on cognitive development to understand the relationship between language and cognition.

In a critical review by Cenoz (2003), multiple studies have shown the positive impact of bilingualism on cognitive development. A notable study by Bialystok and Martin (2004) examined the influence of bilingualism on executive functions in children. The researchers discovered that bilingual children displayed enhanced executive functions compared to monolingual children. Executive functions encompass cognitive processes involved in goal-directed behaviors, such as inhibitory control, working memory, and cognitive flexibility. Bilingualism has been associated with improvements in these executive functions.

Bilingualism strengthens inhibitory control, contributing to the enhancement of executive functions. Bilingual individuals consistently manage two languages and need to inhibit interference from the non-relevant language when using one language. This frequent practice in inhibitory control helps develop a stronger inhibitory system, resulting in improved cognitive control and attentional focus.

Moreover, bilingual individuals exhibit enhanced cognitive flexibility, another aspect of executive functions. Switching between languages requires mental flexibility and adaptability. The cognitive demand of language switching exercises cognitive flexibility, leading to improvements in this cognitive domain.

Additional studies reviewed by Cenoz (2003) also support the positive effects of bilingualism on cognitive development. For instance, research conducted by Bialystok (1999) demonstrated that bilingual children performed better than monolingual children in tasks involving problem-solving and divergent thinking. These findings suggest that the

cognitive challenges of managing two languages promote cognitive flexibility and enhance problem-solving abilities.

The positive effects of bilingualism on cognitive abilities can be explained by the concept of neuroplasticity. Bilingualism leads to neuroplastic changes in the brain, strengthening neural connections and providing cognitive advantages. The constant use of two languages requires the brain to adapt and efficiently allocate resources, resulting in a more flexible and efficient cognitive system.

Cognitive development is crucial for language acquisition, and research reviewed by Cenoz (2003) suggests that bilingual children exhibit improved executive functions, including inhibitory control and cognitive flexibility. Bilingualism fosters these cognitive advantages by offering regular practice in inhibitory control and demanding cognitive flexibility through language switching. Neuroplasticity also plays a role as bilingualism induces changes in the brain that optimize cognitive functioning. Understanding the relationship between bilingualism, cognitive development, and language acquisition provides valuable insights into the cognitive benefits of being multilingual.

### Metalinguistic awareness

Metalinguistic awareness is the capacity to think about and contemplate language as a system, encompassing comprehension of language rules, manipulation of linguistic components, and the ability to use language creatively. Metalinguistic awareness plays a crucial role in language development and literacy skills as it enables individuals to analyze and manipulate language structures during reading, writing, and communication.

In a critical review by Cenoz (2003), several studies demonstrate the positive effects of bilingualism on metalinguistic awareness. Notably, a study conducted by Bialystok (1999) explored the impact of bilingualism on metalinguistic skills. The results indicated that bilingual children performed better than monolingual children in tasks involving metalinguistic awareness, including phonological awareness, morphological awareness, and syntactic awareness.

The linguistic and cognitive challenges presented by bilingualism contribute to heightened metalinguistic skills. Bilingual individuals navigate two linguistic systems, requiring them to be more attentive to the intricacies and structure of language. The continuous comparison and contrast between two languages result in heightened sensitivity to linguistic elements such as phonemes, morphemes, and syntactic structures.

Furthermore, bilingualism fosters metalinguistic awareness through cross-linguistic influence. Exposure to multiple languages provides opportunities for bilingual individuals to recognize

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similarities and differences between languages, enabling them to engage in deeper reflection on language structures. For instance, bilinguals may notice grammatical or vocabulary contrasts across their languages, which promotes metalinguistic reflection.

Cenoz's (2003) review also emphasizes the role of metalinguistic awareness in promoting biliteracy. The ability to analyze and manipulate language structures contributes to reading comprehension, vocabulary development, and writing skills. Studies reviewed by Cenoz suggest that bilingual children with higher metalinguistic awareness demonstrate improved reading comprehension and writing abilities in both languages. This implies that metalinguistic awareness acquired through bilingualism has transferable benefits across languages.

Moreover, metalinguistic awareness holds great significance in language education. Actively cultivating metalinguistic skills in educational settings can support language learning. Explicit instruction and training focused on metalinguistic awareness can enhance children's proficiency in understanding and using language effectively (Tong et al., 2009). Teachers can foster metalinguistic reflection by encouraging discussions about language structures, exploring wordplay and linguistic puzzles, and analyzing texts for their linguistic features.

The findings from Cenoz's (2003) critical review highlight the positive impact of bilingualism on metalinguistic awareness. The linguistic and cognitive challenges presented by bilingualism contribute to heightened metalinguistic skills, enabling individuals to analyze and manipulate language structures more effectively. Cross-linguistic influence and comparisons between languages offer opportunities for metalinguistic reflection. Furthermore, metalinguistic awareness plays a crucial role in biliteracy and language education, facilitating reading comprehension, vocabulary development, and writing skills.

Understanding the beneficial effects of bilingualism on metalinguistic awareness has practical implications for educational practices and language policies. Educators and policymakers can promote metalinguistic awareness through curriculum design and instructional strategies that focus on language reflection and analysis. By nurturing metalinguistic skills, individuals can enhance their proficiency in both languages and develop a deeper understanding of the intricacies of language as a whole.

### Communicative skills

Communicative skills encompass a broad range of abilities that enable individuals to effectively express and comprehend messages through both spoken and written forms. These skills are crucial for successful social interactions, academic achievement,

and overall language development. When considering bilingualism, it is important to explore the positive effects of language learning on communicative skills.

The significance of communicative skills in language development cannot be overstated. Effective communication involves not only linguistic proficiency but also the understanding and utilization of appropriate socio-cultural norms, nonverbal cues, and discourse strategies. Skillful communicators can navigate diverse social contexts, adapt their language use, and accurately convey their intentions and emotions (Tomblin et al., 1997). Understanding the factors that enhance communicative skills is vital for promoting language development in bilingual individuals.

In Cenoz's (2003) review, research is examined that demonstrates the positive effects of bilingualism on communicative skills. For example, Nicoladis and Genesee (1997) investigated the communication strategies employed by bilingual children. The study revealed that bilingual children exhibited advanced communication skills compared to monolingual children. Bilingualism provided them with a repertoire of communication strategies and enhanced their ability to adapt their communication style to different interlocutors and contexts.

The advantages of exposure to diverse linguistic contexts and cultural influences contribute to the development of effective communication in bilingual individuals. Bilingualism exposes individuals to multiple languages and cultural perspectives, expanding their range of communicative abilities (García & Kleifgen, 2010). Bilingual individuals develop sensitivity to language variation and cultural nuances, enabling them to navigate diverse communication situations with ease.

Furthermore, bilingual individuals demonstrate heightened sensitivity to nonverbal cues and contextual information, which enhances their communicative skills. The constant need to interpret and integrate information from multiple sources of input cultivates their ability to effectively utilize nonverbal cues and infer meaning beyond literal language (Grosjean, 2010). This increased awareness of nonverbal communication facilitates successful communication across different languages and cultures.

Additionally, bilingual individuals often possess stronger metacognitive awareness and strategic thinking in communication. They have a deeper comprehension of language as a means of communication and are more skilled at monitoring and adjusting their communication strategies when faced with challenges (Bialystok, 2001). This metacognitive advantage enables them to select appropriate linguistic forms and adapt their communication style to meet the needs of their interlocutors.

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Communicative skills play a vital role in language development, and bilingualism has been shown to have positive effects on these skills. Research examined by Cenoz (2003) suggests that bilingual individuals demonstrate advanced communicative abilities, including effective communication strategies, sensitivity to nonverbal cues, and metacognitive awareness. Exposure to diverse linguistic contexts and cultural influences provides bilingual individuals with advantages in adapting their communication style and navigating various social contexts. Understanding the positive effects of bilingualism on communicative skills has implications for promoting effective communication and intercultural understanding within linguistically diverse communities.

Cenoz's (2003) critical review offers valuable insights into the positive effects of bilingualism on cognitive development, metalinguistic awareness, and communicative skills. The reviewed studies demonstrate that bilingual individuals exhibit enhanced cognitive abilities, including executive functions such as inhibitory control and cognitive flexibility. Bilingualism also fosters metalinguistic awareness, enabling individuals to effectively analyze and manipulate language structures. Furthermore, bilingualism enhances communicative skills, allowing individuals to adapt their communication style, employ diverse communication strategies, and navigate various social contexts.

The findings from Cenoz's review have significant implications for educational practices and language policies. Understanding the cognitive and linguistic advantages of bilingualism can inform curriculum design and instructional strategies that

promote optimal language development. Educators can incorporate metalinguistic awareness training, communication strategies, and cultural awareness into their teaching to support bilingual learners.

The findings presented in this review have implications for language policies, which can recognize and promote bilingualism as a valuable asset in education. By providing opportunities for multilingual education and creating a supportive linguistic environment, cognitive development, metalinguistic awareness, and communicative skills can be enhanced in bilingual individuals.

However, while Cenoz's review highlights the positive effects of bilingualism, further research is needed to investigate the underlying mechanisms and address potential limitations. Future studies can explore the specific cognitive processes and neural mechanisms involved in the observed positive effects. Additionally, investigating the long-term effects of bilingualism on cognitive development, metalinguistic awareness, and communicative skills across different age groups and language combinations would contribute to a comprehensive understanding of bilingualism's impact.

In conclusion, the research reviewed by Cenoz underscores the numerous benefits of bilingualism on cognitive development, metalinguistic awareness, and communicative skills. Embracing bilingualism in educational settings and language policies can lead to improved language development outcomes and intercultural understanding. Further research can continue to unravel the complexities of bilingualism and provide insights into its potential for enhancing language and cognitive abilities.

## References:

1. Vygotsky, L. S. (1962). *Thought and language*. (p.43). Cambridge, MA MIT Press.
2. Bialystok, E. (1986). Factors in the growth of linguistic awareness. *Child Development*, 57(2), 498-510.
3. Cenoz, J. (2003). *The Role of Typology in the Organization of the Multilingual Lexicon. Multimodal literacy*. (p.25). New York: Peter Lang.
4. Bialystok, E., & Martin, M. M. (2004). *Attention and inhibition in bilingual children: Evidence from the dimensional change card sort task*. (p. 29).
5. Miyake, A., Friedman, N. P., Emerson, M. J., Witzki, A. H., Howerter, A., & Wager, N. D. (2000). The Unity and diversity of executive functions and their contributions to complex "frontal lobe" tasks: A latent variable analysis. *Cognitive Psychology*, 41(1), 49-100.
6. Green, D. W., & Abutalebi, J. (2013). Language control in bilinguals: The adaptive control hypothesis. *Journal of Cognitive Psychology*, 25, 515-530.
7. Bialystok, E. (1999). *Cognitive complexity and attentional control in the bilingual mind*. *Child Development*, (p. 636).
8. Grosjean, F. (2010). *Bilingual: Life and reality*. (p.299). Harvard University Press.
9. Bialystok, E. (2001). *Bilingualism in Development: Language, Literacy, and Cognition*. (p.252). Cambridge University Press.

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10. Cummins, J. (2000). *Language, Power, and Pedagogy. Bilingual Children in the Crossfire.* (p.164). Clevedon: Multilingual Matters.
11. Tong, L., et al. (2009). Hydrolase regulates NAD<sup>+</sup> metabolites and modulates cellular redox. *J Biol Chem* 2009, p. 284.
12. Tomblin, J. B., Records, N. L., Buckwalter, P., Zhang, X., Smith, E., & O'Brien, M. (1997). Prevalence of specific language impairment in kindergarten children. *Journal of Speech Language Hearing Research*, 40, p. 1248.
13. Nicoladis, E., & Genesee, F. (1997). Language development in preschool bilingual children. *Journal of Speech-Language Pathology and Audiology*, 21(4), 139.
14. Garcia, O., & Kleifgen, J. A. (2010). *Educating emergent bilinguals: English language learners.* (p.171). New York: Teachers College Press.

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SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

### International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2023 Issue: 07 Volume: 123

Published: 25.07.2023 <http://T-Science.org>

Issue

Article



**Merab Shalamberidze**

Akaki Tsereteli State University

Doctor of Technical Sciences, Professor, Faculty of Technological Engineering,  
Department of Design and Technology, Kutaisi, Georgia

**Zaza Sokhadze**

Akaki Tsereteli State University

Doctor of Mathematic, Professor, Faculty of Natural Sciences,  
Department of Mathematics, Kutaisi, Georgia

## INVESTIGATION OF THE STRENGTH OF POLYMER COMPOSITIONS WITH A LATENT HARDENER FOR THE BOTTOM OF SHOES

**Abstract:** The article presents the results of optimizing polymer compositions for the bottom of shoes with a latent hardener LH-3. Based on the data obtained, it can be said that the selected independent variables  $X_1$  - the amount of hardener and  $X_2$  - the temperature of activation of the latent hardener LH-3 affects the strength of polymer compositions for the bottom of shoes. It has been experimentally proved that the quantitative ratio of the latent hardener and BS rubbers significantly affects the strength of materials for the bottom of shoes, the optimal values of which are achieved at 4-5 wt. h. hardener per 100 wt. h. polymer.

**Key words:** latent hardener, polymeric composite materials, styrene butadiene rubbers.

**Language:** Russian

**Citation:** Shalamberidze, M. M., & Sokhadze, Z. P. (2023). Investigation of the strength of polymer compositions with a latent hardener for the bottom of shoes. *ISJ Theoretical & Applied Science*, 07 (123), 243-246.

**Soi:** <http://s-o-i.org/1.1/TAS-07-123-28> **Doi:**  <https://dx.doi.org/10.15863/TAS.2023.07.123.28>

**Scopus ASCC:** 1508.

### ИССЛЕДОВАНИЕ ПРОЧНОСТИ ПОЛИМЕРНЫХ КОМПОЗИЦИИ С ЛАТЕНТНЫМ ОТВЕРДИТЕЛЕМ ДЛЯ НИЗА ОБУВИ

**Аннотация:** В статье представлены результаты оптимизаций полимерных композиций для низа обуви с латентным отвердителем ЛО-3. На основе полученных данных можно сказать, что подобранные независимые переменные  $X_1$  - количество отвердителя и  $X_2$  - температура активаций латентного отвердителя ЛО-3 влияет на прочность полимерных композиций для низа обуви. Экспериментальным путем доказано, что количественное соотношение латентного отвердителя и БС каучуков существенно влияет на прочность материалов для низа обуви, оптимальные значения которых достигается при 4-5 мас. ч. отвердителя на 100 мас. ч. полимера.

**Ключевые слова:** латентный отвердитель, полимерные композиционные материалы, бутадиен-стирольные каучуки.

#### Введение

Процесс структурирования бутадиен-стирольных каучуков с латентным отвердителем (ЛО-3) и определение прочности полимерных материалов для низа обуви относится к малоизученным.

Изучение объекта исследования позволило определить в качестве выходного параметра прочность полимерных композиций, поскольку этот показатель является основным критерием при создании новых видов полимерных композиций для низа обуви [1-12]. Учитывая технические характеристики латентного отвердителя ЛО-3



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(температуру активации) задачу исследования сформулировали, как поиск оптимального значения следующих факторов: количества отвердителя  $x_1$  и температуру активации  $x_2$ , при которых прочность подошвенных материалов на основе бутадиен-стирольных каучуков была бы максимальной  $y = f(x_1, x_2) \rightarrow \max$ .

### Объекты и методы исследования.

Для решения данной задачи использовали регрессионный анализ в матричной форме. Регрессия – это математическая модель, в которой переменная  $y$  линейно зависит от переменных  $x_1, x_2, \dots, x_n$ . Зависимость факторов от выходного параметра описывается линейным уравнением, который проводится ниже:

$$y = b_0 + b_1x_1 + b_2x_2 + \dots + b_nx_n + e \quad (1)$$

где  $e$  – отклонение и  $b_0, b_1, b_2, \dots, b_n$  коэффициенты регрессии.

Уравнение регрессии проверяется на адекватность, то есть на сколько сбалансирован выходной параметр с факторами. Эффективность уравнения регрессии оценивается разницей данными переменного  $y$  (прочность полимерных материалов) с полученными путем эксперимента (выходного параметра)  $u$  данными  $\hat{y}$  полученными путем вычисления прочности полимерных материалов с помощью уравнении регрессии. Разница между  $u$  и  $\hat{y}$  должна быть минимальна.

Рассмотрим метод регрессионного анализа в матричной форме в общем выде. Введем следующие обозначения:

$$y = \begin{bmatrix} y_1 \\ y_2 \\ \vdots \\ y_n \end{bmatrix}$$

$n$  - мерный столб-матрица, который состоит из независимых наблюдений переменных.

$$x = \begin{bmatrix} 1 & x_{11} & x_{12} & \dots & x_{1n} \\ 1 & x_{21} & x_{22} & \dots & x_{2n} \\ \dots & \dots & \dots & \dots & \dots \\ 1 & x_{n1} & x_{n2} & \dots & x_{nm} \end{bmatrix}$$

$n \times (m+1)$  мерная матрица, в которой каждая  $i$  – строка ( $i = 1, 2, \dots, n$ ) представляет собой  $i$  – наблюдений независимых перемен  $x_1, x_2, \dots, x_n$ , 1 строка соответствует свободному члену уравнений регрессии  $b_0$ .

$$B = \begin{bmatrix} b_0 \\ b_1 \\ \vdots \\ b_m \end{bmatrix}$$

$$X = \begin{bmatrix} 1 & 2 & 120 \\ 1 & 3 & 140 \\ 1 & 4 & 160 \end{bmatrix} \quad Y = \begin{bmatrix} 32 \\ 36 \\ 34 \end{bmatrix}$$

$$X^T = \begin{bmatrix} 1 & 1 & 1 \\ 2 & 3 & 4 \\ 120 & 140 & 160 \end{bmatrix}$$

$(m+1)$  мерный столб-вектор, которые соответствуют свободному члену уравнении регрессии  $b_0$  и коэффициентам  $b_1, b_2, \dots, b_n$ .

$$e = \begin{bmatrix} e_0 \\ e_1 \\ \vdots \\ e_n \end{bmatrix}$$

$n$  - мерный столб-вектор, который показывает величину разниц между результатами полученных независимыми переменными  $y_i$  и результатами полученных с помощью уравнений регрессии  $\hat{y}_i$ , где:

$$\hat{y}_i = b_0 + b_1x_{i1} + b_2x_{i2} + \dots + b_nx_{in} \quad (2)$$

С помощью вышеуказанных обозначении можно написать матричное уравнение:

$$\sum_{i=1}^n e_i^2 = e^T e = (Y - XB) \rightarrow \min \quad (3)$$

где  $-e^T$  является транспонированной матрицы  $e$ , то есть  $e^T = (e_1, e_2, \dots, e_n)$ .

Если выполняется условие минимума, столб-вектор вычислим следующей формулой:

$$B = (X^T X)^{-1} X^T Y \quad (4)$$

где  $-X^T$  трансформированная матрица  $X$ , а  $(X^T X)^{-1}$  является обратной матрицы  $(X^T X)$ .

В ходе эксперимента использовали латентный отвердитель ЛО-3, который представляет собой структурирующий агент - соединение, проявляющее свою активность при температуре 120-160°C. В эксперименте также использовали полимерные композиции на основе БС каучуков следующих марок: СКС-30 и СКС-30 АРКМ. Они представляют собой нерегулярно чередующиеся звенья бутадиена и стирола. Молекулы полимера содержат мономерные звенья бутадиена и стирола, которые беспорядочно расположены в цепи. Химическая активность БС каучуков определяется содержанием и типом двойных связей в бутадиеновых звеньях.

### Экспериментальная часть.

Прочность полимерных композиции ( $y$ , МПа) с латентным отвердителем ЛО-3 зависит от следующих факторов:  $x_1$  - количество отвердителя (мас. ч.) и  $x_2$  – температуры активации отвердителя (°C). Величины факторов и выходных параметров представлены ниже:  $y = 32, 34, 36$ ;  $x_1 = 2, 3, 4$ ;  $x_2 = 120, 140, 160$ .

Определим коэффициенты линейной регрессии:

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$$X^T X = \begin{bmatrix} 1 & 1 & 1 \\ 2 & 3 & 4 \\ 120 & 140 & 160 \end{bmatrix} \begin{bmatrix} 1 & 2 & 120 \\ 1 & 3 & 140 \\ 1 & 4 & 160 \end{bmatrix} = \begin{bmatrix} 3 & 9 & 420 \\ 9 & 29 & 1300 \\ 420 & 1300 & 5960 \end{bmatrix}$$

$$X^T Y = \begin{bmatrix} 1 & 1 & 1 \\ 2 & 3 & 4 \\ 120 & 140 & 160 \end{bmatrix} \begin{bmatrix} 32 \\ 36 \\ 34 \end{bmatrix} = \begin{bmatrix} 102 \\ 308 \\ 1432 \end{bmatrix}$$

$$(X^T X)^{-1} = \begin{bmatrix} 3 & 9 & 420 \\ 9 & 29 & 1300 \\ 420 & 1300 & 5960 \end{bmatrix}^{-1}$$

$$|X^T X| = \det(X^T X) = 10346520 - 10668360 = -321840$$

$$(X^T X)^{-1} = \begin{bmatrix} 4,71 & 1,52 & 0,001 \\ 0,49 & -0,49 & -0,0003 \\ 0,001 & -0,003 & -0,00001 \end{bmatrix}$$

$$B = \begin{bmatrix} b_0 \\ b_1 \\ b_2 \end{bmatrix} = (X^T X)^{-1} X^T Y = \begin{bmatrix} 98,77 \\ -0,45 \\ -0,83 \end{bmatrix}$$

$$b_0 = 98,77 \quad b_1 = -0,45 \quad b_2 = -0,88$$

Исходя из значения коэффициентов уравнение регрессий будет иметь следующий вид:

$$Y = 98,77 - 0,45X_1 - 0,88X_2 \quad (5)$$

Если в данное линейное уравнение регрессии вставим значения  $X_1=2$  (количество отвердителя) и  $X_2=120$  (температура активации отвердителя) и сравним с первоначальными значениями эксперимента. Получим, что разница между этими данными  $\hat{y} = -1,73$  незначительны. На основе полученных результатов можно сделать вывод, что подобранные независимые переменные  $X_1$  – количество отвердителя и  $X_2$  – температура активации латентного отвердителя

ЛО-3 влияют на прочность полимерных композиций для низа обуви.

#### Заключение.

Таким образом, найденные оптимальные значения факторов, влияющих на прочность полимерной композиций для низа обуви, были заложены в основу технологии приготовления и применения полимерной смеси на основе бутадиен-стирольных каучуков с латентным отвердителем ЛО-3.

#### References:

- Shalamberidze, M.M., & Polukhina, L.M. (2002). Patent # 2189768. Polimernaya kompozicziya dlya niza obuvi. A 43 V 13/04, S 08 L 9/06. Byul. # 27 of 27.09.2002.
- Dogadkin, B.A., Donczov, A.A., & Shershnev, V.A. (1981). *Khimiya e'lastomerov*. (p.373). Moscow: Khimiya.
- Fridman, M.L. (1992). *V kn. Novoe v reologii polimerov*. Pod redakciej G.V. Vinogradova. (p.296). M.: AN SSSR.
- (1995). Shiga and Futura. *Rubb. Chem. A Techn.* 1995, V. 58, pp. 1-21.
- Paterson, D., & Robard, A. (1978). *Macromolecules*, № 11, pp. 690-697.
- Shalamberidze, M.M. (2023). Investigation of Heat-Protective Properties of a Package of Materials for the Bottom of Shoes. *International Scientific Journal Theoretical & Applied Science*. 2023 № 06 Volume 122, pp. 306-308.
- Shalamberidze, M.M. (2023). Investigation of Polymer Composite Materials with a Latent Hardener a for the Bottom of Shoes. *International Scientific Journal Theoretical & Applied Science*. 2023 № 06 Volume 122, pp. 301-305.
- Shalamberidze, M., Tatvidze, M., & Lomtadze, N. (2016). The development of polymer compositions basedon styrene-butadiene

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- thermoplastic elastomers with a latent curing agent for orthopedic shoes. *Theoretical basiss and innovative approach*. Research articles 8th edition. Technical science, B&M Publishing San-Francisco, 2016. California, USA, pp.255-259. DOI: [http://doi.org/10.15350/L\\_26/8](http://doi.org/10.15350/L_26/8)
9. Shalamberidze, M., & Tatvidze, M. (2015). "Thermal analysis of polymer composite materials for the bottom of orthopedic shoes". *Pressing issues and priorities in development of the scientific and technological complex*. Research articles, 2nd edition. L 17., pp.87-91. B&M Publishing. San-Francisco 2015. California, USA.
  10. Shalamberidze, M. M. (2018). Investigation of the density of the spatial grid of synthetic structured butadiene-styrene rubbers for the bottom of orthopedic footwear. *International Scientific Journal. Theoretical & Applied Science*, 2018, vol. 62, №6, pp.171-175. Philadelphia USA. DOI: <https://dx.doi.org/10.15863/TAS.2018.06.62.31>.
  11. Shalamberidze, M.M., & Sokhadze, Z.P. (2018). Study of composition and optimization of technological factors of the structuring process of butadiene-nitrile polymers with latent hardener. *International Scientific Journal. Theoretical & Applied Science*, 2018, vol. 63, №7, pp.164-169. Philadelphia USA. DOI: <https://dx.doi.org/10.15863/TAS.2018.07.63.26>
  12. Shalamberidze, M. M. (2018). Development of new composite materials based on the synthetic rubbers. *International Scientific Journal. Theoretical & Applied Science*, 2018, vol. 62, №6, pp.166-170. Philadelphia USA. DOI: <https://dx.doi.org/10.15863/TAS.2018.06.62.30>

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SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

## International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2023 Issue: 07 Volume: 123

Published: 25.07.2023 <http://T-Science.org>

Issue

Article



Zayniddin Radjabovich Narmuratov  
Termez State University  
Senior teacher, PhD, Uzbekistan  
[zayniddin.terstu@mail.ru](mailto:zayniddin.terstu@mail.ru)

## CONTRASTIVE ANALYSIS OF IDIOMS RELATED TO EDUCATION AND SCIENCE IN ENGLISH AND UZBEK LANGUAGES

**Abstract:** This article analyzes definitions of lexemes related to education and science in English and Uzbek languages given in explanatory dictionaries are studied, and idioms related to education and science are cross-analyzed. Similarities and differences of meaningful phraseological units of education and science in different systematic languages are analyzed based on examples.

**Key words:** phraseological unit, educational lexeme, science lexeme, linguistic and cultural aspects of phraseological units, teacher's lexicon.

**Language:** English

**Citation:** Narmuratov, Z. R. (2023). Contrastive analysis of idioms related to education and science in English and Uzbek languages. *ISJ Theoretical & Applied Science*, 07 (123), 247-251.

**Soi:** <http://s-o-i.org/1.1/TAS-07-123-29> **Doi:**  <https://dx.doi.org/10.15863/TAS.2023.07.123.29>

**Scopus ASCC:** 1203.

### Introduction

It is difficult to give a detailed definition and description of the concepts of education and science. Therefore, the lexemes of education and science are expressed in different languages based on their lexical fund. In English and Uzbek explanatory dictionaries, the concepts of education and science are explained as follows:

In the two-volume "Explanatory Dictionary of the Uzbek Language" prepared under the editorship of Z.M. Ma'rufov, the lexeme of education is an Arabic word and is explained as follows:

1. The set of knowledge and skills that must be acquired in the fields of science or profession; knowledge Higher education (Our teacher teaches us every day, our mind and strength grow by studying various subjects).

2. Education manners. An uneducated boy (no matter how much Arabboy studied, his mannerisms, speech, and behavior reminded him not of a school-educated person, but of a stroller).

3. Teaching, theory (You broke Ideas in the heat of battle with advanced thinking, created higher education).

In this source, knowledge is Arabic 1. The knowledge acquired by a person through reading,

learning and life experience; knowledge, wisdom (Ibrohimov continued his interrupted speech: - So, brother Urmonjon, my goal is to serve you as much as I can, and then go to Tashkent to study again.). 2 subjects. People of science. (*Ilm – igna bilan quduq qazish.*)[11].

Also, in the "Annotated Dictionary of the Uzbek Language" created under the editorship of A. Madvaliyev, the lexeme of education [is an Arabic word that means to teach, teach, give knowledge; information].

I The process of imparting knowledge and skills is the main means of preparing a person for life and work. Education and upbringing are inseparable twins, and knowledge is their sweet fruit.

II Science is a set of acquired and obtained information and skills in the fields of science or profession; knowledge Primary education. Higher education. Madrasa education. Ilm is an Arabic word meaning knowledge; science; theory.

1. Knowledge gained through study and research, analysis; skill, knowledge. Sharia science. Secular sciences. (Brother Jamalboy, it won't hurt if he reads the modern sciences without losing his religion.)

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2. Work - field of activity related to science; system of knowledge about nature and society; science. Science and craft. Science and enlightenment. Science and art. (Let's open new schools and teach the Qur'an and other subjects, such as geography, history, and mathematics).

3. Knowledge, teaching, skills related to a certain field of work. (Islam barlos is simple, generous, and the father of hunting and bird science.)[10].

### Analysis of Subject Matters

Ingliz tilining mashhur "Macmillan English Dictionary" lug'atiga ko'ra education leksemasi lotin tilidagi *educatiō* so'zidan kelib chiqqan bo'lib, a breeding, a bringing up, (ta'lim, tarbiya) ma'nolarini bildirsa, science so'zi the study and knowledge of physical world (dunyoviy bilimlarni o'rganish), a scientific subject such as chemistry, physics (ilmiy fan, kimyo, fizika kabi)[2].

Although the definitions and explanations given in the above dictionaries about education and science are different, it can be seen that they are related to each other in terms of content and essence. Also, despite the fact that the lexemes of education/tealim and science/ilm are used in different forms based on their lexical fund in English and Uzbek languages, the meaning of these terms is consistent.

The vocabulary of any language consists not only of lexical units, but also of stable word combinations. Fixed compounds with a complex composition, or in other words, phraseological units, are also present in the language, which serve to enrich the vocabulary of the language. A separate field that studies phraseology, like other branches of linguistics, is phraseology (from the Greek word "phrases" - "phrase" - "logos" - "ta'limot").

For this reason, the study of phraseological units is considered one of the important sources of enriching the lexical fund of the Uzbek and English languages. Comprehensive in-depth study of phraseological units is of great importance in revealing the undiscovered aspects of language phraseology. In particular, we tried to comprehensively research Uzbek and English phraseology, that is, to study it from the lexical, semantic-structural and linguistic-cultural aspects. Because phraseology has a wide and comprehensive relationship with other branches of linguistics.

Researchers have been dealing with FBs in Russian linguistics since the 18th century. For example, M.V. Lomonosov, while creating a plan for the dictionary of the Russian literary language, emphasized that, along with words, "folk (Russian) proverbs", "phrases" and "idioms" should find their expression. By the 60s and 80s of the 20th century, phraseology grew rapidly in Uzbek linguistics as well as in foreign linguistics.

Thus, the development of phraseology as a separate science has gone through many stages. In

particular, the history of the development of phraseology can be chronologically divided into three periods:

The first period includes the period from the middle of the 18th century to the 30s of the 20th century. Lomonosov, A.A. Potebnya, F.F. Fortunatov, A.A. It is related to the scientific activity of the Shakhmatovs.

It should be noted that in the first period, phraseology served as an object of lexicography, that is, practical lexicology. During this period, special attention was paid to recording in dictionaries, explaining the etymology of their meanings, and interpreting them.

Second period, E.D. Polivanov, V.V. Vinogradov, S.I. Abakumov, G.K. Damilov, A.I. Yefimov, A. Y. Rozhansky, etc., developed in connection with their scientific activities and included the 30s-50s of the 20th century. This period can also be said to be the period of formation of phraseology as an independent linguistic field.

The third period lasts from the 60s of the 20th century to the present day. This period is characterized by the rapid development of the field of phraseology, the use of various methods in phraseology research, and the development of many phraseology specialists.

By the 60s and 80s of the 20th century, interest in the field of phraseology grew rapidly in foreign literature, including English literature. Until that time, there was no separate work dedicated to phraseology in Western and American linguistics. In general, the term "phraseology" was first used by Charles Bally in his work "Precis de stylistique". The first researcher in the field of phraseology is undoubtedly the Swiss-French linguist Charles Balli. In his works "Essay on Stylistics" (1905) and "French Stylistics" (1909), he included special chapters on word combinations and phraseologisms[1].

In the first work, Charles Bally distinguished four types of word combinations:

1) free compounds (les groupements libres) are compounds used in their own sense;

2) the usual compounds (les groupements usuels) are relatively freely connected compounds, and some changes can be made to their composition

3) phraseological series (les series phraseologiques) in which two or more units combine to express a single meaning, but the order of its components can be changed

4) phraseological units (les unites phraseologiques), which includes units that have completely lost their meaning and have a fixed order of components[1].

In his second book, Balli distinguishes only two types of compounds. In his next work, "French Stylistics", he interpreted common combinations and phraseological lines as a component of free combinations and phraseological units. In general, Charles Bally was one of the first linguists who started

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research in the field of phraseology. Later, many successes were achieved in this field.

Phraseological research in Turkic studies began in the 50s of the 20th century, and until today, the recognized scientific views on the field prove that phraseology is more complicated than it seems and is a field that is classified differently by scientists.

The theoretical issues of Uzbek phraseology were first discussed by Ye.D. studied by Polivanov. He studies the phraseology of Russian and some Eastern languages, and based on this, he gives an opinion on the separation of phraseology as an independent linguistic field.

### Research Methodology

E.D. According to Polivanov, the field of phraseology, which is not newly formed, should be in the same place as syntax is in relation to morphology, in relation to lexicology. He called this new field phraseology or idiomatics[3].

In the researches of A.E. Mamatov, we witness the introduction of the concept of phraseological norm into Uzbek linguistics. True, some observations on the phraseological norm and opinions expressed along the way existed before. For example, Sh.Rakhmatullayev drew attention to the issue of compliance with the phraseological norm in his candidate's thesis. A.E. Mamatov brought out the theoretical and practical problems of the phraseological norm in his work. According to the scientist's conclusion, "Phraseological norm is the use of phraseologisms that are consolidated in speech practice, traditionally consistent, of the same type and of equal value, accepted as acceptable and correct by the language community at a certain time. It is a language phenomenon that is perceived as exemplary[7]"

In the Uzbek language, based on the archisem *tafakkur, fikr, bilim, did, zakovat, zehn, idrok, ilm, miya, mulohaza, intellekt, muhokama, ong, tamg'a, tasavvur, tushuncha, es, xayol, talqin, mushohada* are combined to form a common paradigmatic system at the lexical level. elements. Sh. Iskandarova devoted a separate chapter of her monograph to the analysis of the semantic properties of some stable units (phrasemes) formed on the basis of lexemes with thought archetypes[6].

In the thesis of A. Isayev, the phrasemes formed on the basis of the somatisms "head" and "eye" in the modern Uzbek literary language were studied structurally and semantically, such somatic phrasemes were compared with their alternatives in the Tatar, Turkmen, and Azerbaijani languages[5].

Sh.Usmonova in Uzbek and Turkish somatic phrases for the compound involving the somatisms of the head, eyes, hands, feet (to take away the eyes, to freeze the head) and to the sentence (if the eyes are open, the head is safe ) summarizes lexically-semantically and structurally-grammatically in a comparative aspect[12].

In her research Sh.M. Sultonova studied the origin, semantics and transformation of religious phraseology in the material of Uzbek and Russian languages from a linguistic and cultural point of view[4].

In our view, our great research scientists have conducted intense research on phraseologisms. He made great contributions to the formation of phraseologisms studied in the framework of lexicology as a separate field of linguistics.

The comparative study of the phraseology of different systematic languages seems to be a very important aspect of the anthropocentric paradigm, because it is phraseology that becomes the property of culture, customs, rituals, linguistic consciousness, morality, the uniqueness of the environment, etc. is the most valuable source of information about the stereotypes of the people's mind, which reflect the imagination of a certain nation.

It should be noted that phraseological units are the wealth of the nation, and its sources are the nature, economic system, history, culture, lifestyle, oral creativity, fiction, art, science, customs of the place where this or that nation lives. is closely related to the habit. Phraseological units are language units that reflect all the features of life. At the same time, almost all phraseological units in the lexicon of the language have a linguistic and cultural character. For example English The phraseological unit *to know the way the wind blows* corresponds to the phraseological unit that *yulduzni benarvon uradigan* in Uzbek language. In the same way that the lexeme *know [bilmoq]* is used in the English idiom, we can observe that the lexeme *know* is not used in the Uzbek phraseology. The lexemes used in this place are used based on the lexical fund of each nation and national views. This is a clear proof that there is a difference in the language and culture of the people. As we know, England is a country with the strongest navy in the world, so the place of water in people's life is incomparable. In general, the geographical location also causes the creation of phraseology. The history of the creation of this above-mentioned phrase is related to sailors, and the importance of wind was considered important when sailors went on sea voyages[13]. That is why the idiom *to know the way the wind blows* was created.

The phraseological unit used in the Uzbek language, *Yulduzni benarvon uradigan* has a negative connotation. For example, the master Farang, who beats the stars and even hits the moon, "Mushtum [OTIL. 1 volume 2020: 228]; Togaboy was a devil who was as tight as a belt, as cunning as a fox, as agile as a wolf, and as fierce as a star [S. Abdukakhor. The beginning of life [ Sh. Rahmatullayev. 1978: 267]]. This category of people are such people that no one and nothing can be an obstacle to what they do, and what is possible for them does not happen. It is widely used as a means of speech effect and expressiveness in the style of speech and artistic works.

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### Analysis and results

English phrase *teacher's pet* (Disney's Teacher's Pet). *The idiom teacher's pet was first seen in print around 1890, though it's safe to assume that it was an epithet hurled around the schoolyard for many years before entering mainstream English*[14] [ushbu idioma dastlab 1890 yillarda turli xil nashrlarda paydo bo'lgan bo'lsada, u maktablarda bundan oldinroq qo'llanila boshlangan]. Ingliz tilida ushbu idioma o'qituvchining suyakli o'quvchisi mazmunida qo'llaniladi. Ushbu mazmuni quyidagi misollarda ham kuzatishimiz mumkin:

#### Examples

1. *You are a teacher's pet all right and your only aim is to stay in his/her good books.* [Siz o'qituvchining suyakli o'quvchisiz va sizning yagona maqsadingiz uning eng suyakli o'quvchisi bo'lib qolish.] – (**The Hindu**).

2. *"I loved school," said Renee, a self-described teacher's pet.* [Men maktabni yaxshi ko'rardim", dedi o'zini o'qituvchining suyakli o'quvchisi deb atagan Renee] – (**The Buffalo News**).

3. *Leaders vie with each other to be teacher's pet*[15][Rahbarlar o'qituvchining suyakli o'quvchilari bo'lish uchun bir-biri bilan kurashadilar] – (**The Sydney Morning Herald**).

We can find out that in the English linguistic culture, the expression "teacher's pet" expresses the meaning of the teacher's man, which is also expressed in the examples given above. Pet means pet in English. Let's look at the meanings of the lexeme pet given in the explanatory dictionary. According to the famous online dictionary of the English language "Oxford Advanced Learner's Dictionary", 1. *an animal, a bird, etc. that you have at home for pleasure, rather than one that is kept for work or food:*

- Do you have any pets?
- a pet dog/hamster
- a family pet
- exotic pets
- pet food
- Being a responsible pet owner means caring

for your pet.

- a pet shop (= where animals are sold as pets)
- Keeping pigs as pets has become extremely popular.

2. (usually disapproving) a person who is given special attention by somebody, especially in a way that seems unfair to other people (SYNONYM **favourite**);

- She's the **teacher's pet**.

3. British English, informal) used when speaking to somebody to show kind feelings or to be friendly;

- *What's wrong, pet?*

▪ *Be a pet (= be kind) and post this letter for me* [16].

The lexeme *pet* is considered to be a multi-meaning word, based on the analysis of its meanings explained in the above dictionary, the second meaning given in it is male [*erkatay*], favorite [*sevimli*] meaning is used in this teacher's pet idiom. In the English linguistic culture, this idiom comes in the context of the teacher's male student and means that the teacher has a high level of attention and affection for the student. This phrase is popular among the English people, and today many films, songs, and shows have been made about it.

Based on the above, we can conclude that phraseologisms can be called true ethnocultural units. Studying such ethnocultural units and, on this basis, becoming aware of a certain national culture and mentality is one of our main goals arising from the study of phraseologisms in linguistic and cultural studies. Especially, on the basis of studying phraseology in a comparative and comparative aspect, it is easy to determine the peculiarities or, on the contrary, commonalities between peoples and mentalities. Today, there is a large amount of work on this aspect in linguistic and cultural studies.

In general, the study of phraseological units opens up new opportunities for Uzbek linguistics, in particular, the science of linguocultural science, and causes the expansion of the vocabulary of the language.

### References:

1. Bally, Ch. (1905). *Precis de stylistique*. (p.320). Geneve.
2. (2007). *Macmillan English dictionary for advanced learners second edition*. M. Shovel. (p.472). London: Macmillan Publisher.
3. Maxmaraimova, Sh. (2021). *Hozirgi o'zbek tili leksikologiyasi. O'quv qo'llanma*, (p.380). Toshkent: Firdavs-Shoh nashriyoti.
4. Sultonova, Sh.M. (2022). *Diniy frazeologizmlar transformatsiyasi: semantik va lingvomadaniy aspektlar*. Filol.fan. d-ri.diss, (p.67). Toshkent.
5. Isaev, A.I. (1977). *Somaticheskie frazeologizmy uzbekskogo jazyka*. Avtoref. diss. kand. filol. nauk. (pp.4-20). Tashkent.
6. Iskandarova, Sh. (2007). *Til sistemasiga majdon asosida jondashuv*. (pp.114-120). Toshkent: «Fan».

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7. Mamatov, A.Je. (1991). *Xozirgi zamon yzbek tilida leksik va frazeologik norma muammolari*, (p.276). Tashkent: Fan.
8. Radzhabov, Ja. (1979). *K mezh#jazykovej jekvivalentnosti somaticheskikh frazeologizmov (na materiale russkogo i uzbekskogo jazykov)*. Voprosy frazeologii (sbornik nauchnyh trudov). Vypusk XIV. (pp.177-182). Samarkand: SamGU.
9. Radzhabov, Ja. (1980). *Frazeologicheskie ediniy s somatizmom «noga» v russkom i uzbekskom jazykah*. *Voprosy frazeologii* (sbornik nauchnyh trudov). Vypusk HV. - Samarkand: SamGU, pp.92-98.
10. (n.d.). *Yzbek tilining izoxli lugati, Toshkent, Yzbekiston millij jenciklopedijasi*. (pp.27-195). Retrieved from [www.ziyouz.com/kutubhonasi](http://www.ziyouz.com/kutubhonasi)
11. (1981). *Yzbek tilining izoxli lugati. Ikki tomli*. Z.M.Ma#rufov taxriri ostida, (p.323). Moscow: Russkij jazyk, T.1.
12. Usmonova, Sh.R. (1991). *Yzbek va turk tillarida somatik frazeologizmlar*. Filol. fanlari nomzodi. diss. p.218.
13. (n.d.). Retrieved from <https://www.phrases.org.uk/meanings/222050.html>
14. (n.d.). Retrieved from <https://grammarist.com/idiom/teachers-pet/>
15. (n.d.). Retrieved from <https://grammarist.com/idiom/teachers-pet/>
16. (n.d.). Retrieved from [https://www.oxfordlearnersdictionaries.com/definition/english/pet\\_1](https://www.oxfordlearnersdictionaries.com/definition/english/pet_1)



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SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

## International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2023 Issue: 07 Volume: 123

Published: 25.07.2023 <http://T-Science.org>

Issue

Article



Otakhon Erkinovich Khamzayev

Termiz State University

Teacher

[hamzayevotaxon@gmail.com](mailto:hamzayevotaxon@gmail.com)

## INVESTIGATION OF APHORISMS IN LINGUISTICS

**Abstract:** This article theoretically analyzes the researches of world, English and Uzbek linguists who conducted scientific research on wise words in linguistics. At the same time, the formation of aphorisms, history of study, stages of development and thematic groups were analyzed.

**Key words:** paremiological units, wise words, aphorism, thematic group of aphorisms, linguistic features of aphorisms, proverb.

**Language:** English

**Citation:** Khamzayev, O. E. (2023). Investigation of aphorisms in linguistics. *ISJ Theoretical & Applied Science*, 07 (123), 252-256.

**Soi:** <http://s-o-i.org/1.1/TAS-07-123-30> **Doi:**  <https://dx.doi.org/10.15863/TAS.2023.07.123.30>

**Scopus ASCC:** 1203.

### Introduction

Aphorisms serve to combine many aspects of linguistics, ethnolinguistics, sociolinguistics, pragmatolinguistics and other disciplines in the study of various aspects of linguistics. Today, the research conducted in this field serves as a basis for studying them from all sides.

In world linguistics, the object of research of params is focused on aphorisms, which are studied linguistically by many schools of linguistics. In the study of aphorisms, attention is paid to their emergence as a product of human thinking, their place in the development of intercultural communication together with factors such as humanity, patriotism, and kindness. Based on this, it is important to study the linguistic nature of aphorisms on a comparative basis.

Aphorisms are short words with a specific form, units with the deepest meaning and expressiveness. In short, an aphorism is a purposeful and intelligent thought in which the message reaches its highest level. The word "aphorism" (aphoriskós) is translated from Greek as "definition". This term was first used by the great Greek scientist, the physician of Hippocrates[27].

Hippocrates, a Greek scientist who lived in the 5th century BC, wrote a treatise on aphorisms in medicine. Today, most people know such thoughts:

*Hayot - bu qisqa makon, san'at abadiydir, Yomonlik qilma - abadiy qo'rquvda bo'lmaysan.*

It was mentioned above that aphorisms have appeared since ancient times, they first sprouted in Greek philosophy. Written words of wisdom appeared for the first time in the book "Avesta", which appeared on the territory of our motherland. There is a significant contribution of the representatives of Shark's classic literature to the collection of wise words. The charm of wise words is clearly visible in the moral and educational treatises of Kaikovus "Qabusnama", "Gulistan" of Sa'diy Shirazy, "Mahbub ul-kulub" of Alisher Navoi. The fact that these works have become the spiritual property of mankind and are read with appreciation until now is a vivid example of this. Shark's wisdom has become a spiritual treasure of the peoples of the world, constantly moving from works to works, from regions to regions[17].

Allama Abulqasim Mahmud Az-Zamakhshari, who was born in Khorezm in the Middle Ages, wrote in his treatise "Nozik iboralar": "A fool does not know the taste of wisdom, just as a foolish person does not know the smell of a flower." At first glance, this idea blows the mind of the first person who hears it. The flavor of the wisdom spoken by Allama is hidden in the scent of that flower. Good feelings become wisdom. It is said that there is hope that the listener will recover from the flu and smell the flower again the next day.

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The book "The World in a Phrase: A Brief History of the Aphorism" by G. James defines it as follows: *An aphorism (from Greek ἀφορισμός: aphorismos, denoting 'delimitation', 'distinction', and 'definition') is a concise, terse, laconic, or memorable expression of a general truth or principle. Aphorisms are often handed down by tradition from generation to generation. The concept is generally distinct from those of an adage, brocard, chiasmus, epigram, maxim (legal or philosophical), principle, proverb, and saying; although some of these concepts may be construed as types of aphorism*[3]. (Aforizm (yunoncha ἄφοροσμος: aforismos – chegaralash, ajratish va belgilashni bildiradi) umumiy haqiqat yoki tamoyilning ixcham, qisqa, ixcham yoki esda qolarli ifodasidir. Aforizmlar ko'pincha an'anaga ko'ra avloddan-avlodga o'tadi. **Aforizm** (yunoncha ἄφοροσμος: aforismos – chegaralash, ajratish va belgilashni bildiradi) umumiy haqiqat yoki tamoyilning ixcham, qisqa, ixcham yoki esda qolarli ifodasidir. Aforizmlar ko'pincha an'anaga ko'ra avloddan-avlodga o'tadi. Tushuncha odatda maqol, brokard, chiazmus, epigramma, maksim (huquqiy yoki falsafiy), tamoyil, maqol va maqollardan farq qiladi; Garchi bu tushunchalarning ba'zilar aforizm turlari sifatida talqin qilinishi mumkin).

### Analysis of Subject Matters

According to the online dictionary of the English language: *An aphorism is a brief saying or phrase that expresses an opinion or makes a statement of wisdom without the flowery language of a proverb. Aphorism comes from a Greek word meaning "definition." The term was first coined by Hippocrates in a work appropriately titled Aphorisms. Aphorisms are often used to teach a lesson while speaking in plain terms. For example, "A bad penny always turns up" is an aphorism for the fact that bad people or things are bound to turn up in life. We just have to deal with them when they do* (**Aforizm** maqolning gulli tilisiz fikr bildiruvchi yoki hikmatli fikr bildiruvchi qisqa gap yoki iboradir. Aforizm **yunoncha** so'zdan olingan bo'lib, "**ta'rif**" degan ma'noni anglatadi. Bu atama birinchi marta **Gippokrat** tomonidan tegishli "Aforizmlar" nomli asarida kiritilgan. Aforizmlar ko'pincha oddiy so'zlar bilan aytganda dars o'tish uchun ishlatiladi. Masalan, "Yomon tiyin har doim paydo bo'ladi" - bu hayotda yomon odamlar yoki narsalar paydo bo'lishining aforizmidir. Biz faqat ular bilan muomala qilishimiz kerak).

T. Coar's book "The Aphorisms of Hippocrates: With a Translation Into Latin and English" collected the aphorisms spoken by Hippocrates and translated them into Latin and English. The aphorisms described by Hippocrates were related to various topics. However, the aphorisms spoken by him at first were related to medicine, about three thousand aphorisms are collected in this book[6].

In the book "Book of Aphorisms" by the famous philosopher and poet Robert Macnish, a wise word is defined as a wise saying that encourages wise people to do good, the author of which is clear. Also, about three thousand aphorisms are collected in this book [4].

The book "The viking book of aphorisms" created by Auden and Louis Kronenberger contains about five thousand aphorisms on themes such as homeland, family, kindness, friendship, and goodness[2].

The well-known paremiologist Archer Taylor defines aphorism as a type of proverb. The author divides proverbs into literary and folk types, and studies aphorisms as literary proverbs (proverbs that are recognized by the nation, the people, and are reflected in dictionaries and collections are literary proverbs)[5].

**In our opinion**, aphorisms are short and profoundly meaningful words of wisdom, made up of words, once spoken by great scholars, poets, and famous scientists, businessmen, and sports masters of our time and paremia is an aphorism that originated from within the people. For example, proverbs are used for small didactic stories, and aphorisms are used for wise words found in the works of great creators, scientists, party and state figures, or belonging to such persons in terms of their creation, but actively used in our language.

In the dissertation of Y.S. Konovalova "Фразеологизмы, паремии и афоризмы как средство объективации возрастных концептов в англоамериканской языковой картине мира" the content structure of "Youth/Old age" concepts expressed by phraseological, paremic and aphoristic units is analyzed by complex quantitative, etymological, semantic-cognitive, emotive-valuable, structural-cognitive, metaphorical and linguocultural characteristics are revealed[13].

T.V. Sazbandyan's dissertation "Функции афоризмов в структуре и динамике познавательной деятельности человека" aims to reveal the meaning of aphorisms in the structure and dynamics of human cognitive activity.

To reveal the general epistemological essence of folk aphorisms in human cognitive activity; five - to determine the specific features of aphorisms in knowing different areas of human life, - to analyze the criteria for using aphorisms in knowledge activities, - to determine the cognitive effectiveness of aphorisms in the structure and dynamics of human mental activity[18].

T.M. Кизларгулнинг "Русские антиномичные афоризмы: рече-языковые аспекты конфликтности и парадоксальности" dissertatsiyasida antinomiyaга asoslangan rus aforizmlarini aniqlab, tavsiflash va tavsiflash orqali bu birliklarning paradoksini keltirib chiqaradigan xususiyatlari o'rganadi[12].

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E.Yu.Niktovenko's dissertation "Семантика конфликтодержающих паремий и афоризмов в лингвокогнитивном и лингвокультурном аспектах (на материале русского и английского языков)" cognitively expressed conflict as a linguistic unit with a special linguocultural status due to the bright reflection of linguistic synthesis in Russian and English proverbs and aphorisms. its semantics is comprehensively studied and its linguistic and cultural features are analyzed.

It is known that aphorisms differ from proverbs in that they belong to one person and express his views on life or a certain sphere. And proverbs are general, they do not belong to one person and reflect the life and philosophical views of an entire people.

### Research Methodology

In the dissertation of V.V. Eremenko "Языковая объективация ценностного компонента концепта *marriage* в афоризмах американских и британских авторов (сравнительно-сопоставительный аспект)" he studies the ethno-characteristics of the concept of the relationship of value to the marriage union in the worldview of representatives of British and American language culture in aphorisms[8].

In Y.V. Zemlyanskaya's dissertation "Структурно-семантические и функциональные особенности стилевой интертекстуальности в англоязычном афоризме", considering the theoretical aspects of intertextuality in order to distinguish between the concepts of "text" and "discourse", the corpus of aphoristic texts including prototexts, the classification of prototexts whose elements are updated in aphoristic texts, which helps to actualize the stylistic function defines the range of linguistic signals of prototexts. Also, revealing the status of the category of intertextuality in relation to the aphoristic text, the features of its impact on the formation of meaning are determined. At the same time, the formation mechanism of the content of the aphoristic text is revealed through the implementation of intertextual connections[10].

In the book "Hikmatli so'zlar aforizmlar va maqollar" by M. Fazilov, about three thousand five hundred aphorisms are divided into different thematic groups and analyzed [26].

According to T. Mirzayev and B. Sarimsakov's collection "O'zbek xalq maqollari", aphorisms are used in the works of great creators, scientists, party and state figures, or wise words that belong to such persons in terms of their creation, but are actively used in our language[24].

Sh. Tojiboyev, R. Egamberdiyev's collection "Ilm hikmati" contains wise words about science and about one thousand two hundred aphorisms[11].

According to the information given in Z.D. Toshpolatov's candidate's thesis entitled "Aforizmlarning janr xususiyatlari va badiiyati",

aphorism initially expressed conclusions about medical views, signs and symptoms of various diseases directly in the form of aphorisms in the form of concise, meaningful, meaningful judgments. Later, this term began to be widely used by thinkers engaged in philosophy and science[22].

**In our view**, Aphorism is a wise sentence with a deep meaning, clear and concise form, whose author is known. The fewer words in an aphorism, the more expressive and sharp it is. Unlike folk proverbs, the author of aphorisms is always clear. Folk proverbs are also called folk aphorisms in a broad sense".

According to the "Annotated Dictionary of the Uzbek Language", aphorism [r<Greek] is a deep, meaningful, short, concise, phrase, wise word. According to the Online Etymological Dictionary of the English Language: an aphorism (Gr. *aphorismós* *aphorismos*, "to divide") is a spoken word expressed in a concise and memorable form that expresses a general truth, principle, or keen observation[28].

In Sh. Nosirov's book "Aphorisms" he included more than five hundred wise words that came to him during his career.

More than five thousand proverbs and aphorisms are collected in S. Zorayeva's book entitled *Landscapes of Reality*.

In the book of M. Saidov and Z. Tohirov called "Komillik o'g'itlari", education, talent, education, skill, person, teacher, knowledge, science, craft, family, relative, clan, neighborhood, neighbor, friend, enemy, mind, heart, more than a thousand wise words and proverbs related to the thematic sphere such as country have been collected[19].

In Z.R.Narmuratov's dissertation entitled "Ingliz va o'zbek tillarida "ta'lim", "ilm" kontseptlariga oid paremalarning lingvomadaniy tadqiqi" in English and Uzbek languages, with a deep study of paremiological units, by determining the theoretical basis of the research, analyzing the differences and similarities of proverbs, sayings, and aphorisms with the concepts of education and science in English and Uzbek languages from a linguistic point of view, determining the place of the language in the national and linguistic landscape of the world. linguistic and cultural value and status are justified. Also, the similarities and differences of the aphorism as a paremiological unit from other paremiological units are revealed[14].

### Analysis and results

N. Tashkulova's book "Hikmat va maqollarda odob mevasi" contains more than a hundred proverbs and more than two hundred aphorisms[21].

The book "Hikmatlar shodasi" compiled by A.Raimov and N.Raimova contains more than ten thousand wise words of Uzbek, English, world scientists and poets[17].

The book "Ta'lim, ilm hikmatlari" created by Z.Narmuratov and M.Safarmurodova contains

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hadiths, proverbs, wise thoughts of great geniuses, scholars and writers about education and science[15].

M.Akbarov's book "**Nemis mutafakkirlarining hikmatlari aforizm**" contains about two thousand wise words of German scientists, thinkers, writers[1].

The great poet and thinker Alisher Navoi's book "**Ibratli hikoyatlar va xislatli hikmatlar**" describes aphorisms as necklaces of wisdom [7].

Created by A. Abduvakhitov, M. Kuronov, K. Kuronboyev and others "**Yagonasan, muhaddas vatanim, sevgi va sadoqatim senga baxshida, go'zal o'zbekistonim!**" In the book entitled Islam Abduganiyevich Karimov, the first president of the Republic of Uzbekistan, the words of the first president of the Republic of Uzbekistan, exhorting the motherland and patriotism, forming high human qualities such as love for the motherland, kindness,

mutual respect, and wise words such as "Let the Motherland be free and prosperous from us, You are great and holy, an independent Motherland" are collected.

**To sum up**, In world, English and Uzbek linguistics, the problems of parameology and paremiology have been studied by linguists as much as possible. However, it is necessary to carry out research on the improvement of the semantic-structural, linguistic-cultural approach to the problem of researching aphorisms with the concept of profession and profession on a comparative-comparison basis, and to divide them into mini-groups based on the theory of the field, and on the basis of a cross-sectional plan, the wisdom written by English and Uzbek thinkers, scientists and scholars analysis determines the relevance of the chosen topic.

## References:

1. Akbarov, M. (2017). *Nemis mutafakkirlarining hikmatlari aforizm [Matn]: aforizm*. (p.224). Toshkent: "O'zbekiston".
2. Auden, & Louis, K. (1981). *The viking book of aphorisms*. (p.417). London: The Viking Press.
3. Geary, J. (2005). *The World in a Phrase: A Brief History of the Aphorism*. (p.240). New York: Bloomsbury.
4. Robert, M. (1834). *Book of aphorisms*. (p.8). Glasgow, W.R. McPhun.
5. Taylor, A. (1975). *Selected Writings on proverbs*. (p.130). Helsinki: Suomalainen Tiedeakatemia.
6. Thomas, C. (1982). "*The Aphorisms of Hippocrates: With a Translation Into Latin and English*". (p.314). New York.
7. Alisher, N. (2016). *Ibratli xikoyatlar va hislatli xikmatlar.Sano-standart nashrijoti*, (p.519). Toshkent.
8. Eremenko, A.V. (2012). *Jazykovaja Ob#ektivacija Cenostpogo Komponenta Koncepta Marriage v Aforizmah Amerikanskih I Britanskix Avtorov (Sravnitel'no-Sopostavitel'nyj Aspekt)*: diss. kand. filol. nauk, (p.221). Vladivostok.
9. Zhÿraev, S. (2015). *Xakikat manzaralari. 100 mumtoz fajlasuf*. (p.400). Toshkent: Jangi asr avlodii.
10. Zemljanskaja, E.V. (2004). *Strukturno-semanticheskie i funkcionálne osobennosti stilevoj intertekstual'nosti v anglojazychnom aforizme*: diss. kand. filol.nauk, (p.209). Sankt-Peterburg.
11. (2018). *Ilm xikmatlari ( Ilm xakidagi xadis, makol va xikmatli sÿzlar tÿplami) Tuzuvchilar: Sh.Tozhiboev, R.Egamberdiev*. (p.76). Toshkent: Navrÿz.
12. Kizlargul', T.M. (2007). *Russkie antinomichnye aforizmy: reche-jazykovye aspekty konfliktnosti i paradoksal'nosti*": diss. doktor filologicheskix nauk, (p.415). Krasnodar.
13. Konovalova, Jy.S. (2011). *Frazeologizmy, paremi i aforizmy kak sredstvo ob#ektivacii vozrastnyx konceptov v angloamerikanskoj jazykovoj kartine mira*: diss. kand. filol. nauk, (p.321).Voronezh.
14. Narmuratov, Z.R. (2022). *Ingliz va ÷zbek tillarida ta#lim va ilm konceptlariga oid paremalarning lingvomadaniy tadkiki*. Filol.fanlari falsafa doktori diss. (p.129). Termez.
15. Narmuratov, R., & Safarmuratova, M. (2022). *Ta#lim, ilm xikmatlari. Termiz davlat universiteti, NMM nashrijoti*. (p.89). Termiz.
16. Niktovenko, E.Jy. (2015). *Semantika konfliktsovdzhashhih paremiy i aforizmov v lingvokognitivnom i lingvokul'turnom aspektah (na materiale russkogo i anglijskogo jazykov)*: diss. kand. filol. nauk. (p.185). Na'chik.
17. Raimov, A., & Raimova, N. (2013). "*Xikmatlar shodasi*". (p.400). Toshkent: "÷zbekiston".
18. Sazbandjanning, T.V. (2008). *Funkcii aforizmov v strukture i dinamike poznavatel'noj dejatel'nosti cheloveka*. diss. .kand. filol. nauk, (p.143). Moskva.
19. Saidov, M.H., & Toxirov, Z.T. (2003). *Komillik ÷gitalari*. (p.96). Toshkent: Mollija nashrijoti.

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**ICV (Poland) = 6.630**  
**PIF (India) = 1.940**  
**IBI (India) = 4.260**  
**OAJI (USA) = 0.350**

20. Sarimsokov, B., & Xotamov, N. (1979). *Adabijotshunoslik terminlarining ruscha - yzbekcha izoxli lugati*. (p.37). Toshkent: Y'kituvchi.
21. Toshkulov, N. (2017). "Xikmat va makollarda odob mevasi". (p.48). Toshkent, Adabijot uchkuni.
22. Toshp'ylatov, Z.D. (2006). *Aforizmlarning zhanr hususiyatlari va badiijati*. Filol. fanlari nomzodi diss. (p.3). Toshkent.
23. Tursunov, H. (2014). "Francuzcha-yzbekcha aforizmlar lugati". (p.45). Namangan.
24. (1988). *Y'zbek halk makollari: [2tomlik]. Mas'ul mu'arrirlar: T.Mirzaev, B.Sarimsokov*. Tom 2, (p.14). Toshkent: Fan.
25. (2014). *Y'zbekiston Respublikasi Prezidenta xuzuridagi davlat boshkaruvi akademijasi; Respublika ma'naviyat tarzibot markazi; Millij zoja va mafkura ilmiy-amaliy markazi*, (p.160). Toshkent: "Ma'naviyat".
26. (1967). *Xikmatli syzlar, aforizmlar. Tuzuvchi: M.Fozilov*, (p.191). Toshkent: Y'zbekiston.
27. (n.d.). Retrieved from <https://antiaim.ru/uz/sad/interesting-thoughts-of-famous-people-clever-idea/>
28. (n.d.). Retrieved from [www.wikimedia.org/wikipedia/commons/d/d2/Aphorism](http://www.wikimedia.org/wikipedia/commons/d/d2/Aphorism)

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SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

## International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2023 Issue: 07 Volume: 123

Published: 27.07.2023 <http://T-Science.org>

Issue

Article



**Ikromzhon Usmonovich Rakhmonov**  
TSTU  
assoc., Head of the department Power Supply

**Bakhriddin Berdi ugli Kholikhmatov**  
TSTU  
ass. of the Department of Power Supply  
[xolixmatov.b22@mail.ru](mailto:xolixmatov.b22@mail.ru)

## ANALYSIS OF STRESS ASYMMETRY IN STEELMAKING

**Abstract:** This article analyzes the stress asymmetry in steelmaking using a distribution histogram and a density graph. The aim of the study was to identify potential asymmetric features in the stress data and assess their impact on steel production.

**Key words:** production, steel, analysis.

**Language:** Russian

**Citation:** Rakhmonov, I. U., & Kholikhmatov, B. B. (2023). Analysis of stress asymmetry in steelmaking. *ISJ Theoretical & Applied Science*, 07 (123), 257-260.

**Soi:** <http://s-o-i.org/1.1/TAS-07-123-31> **Doi:**  <https://dx.doi.org/10.15863/TAS.2023.07.123.31>

**Scopus ASCC:** 2200.

### АНАЛИЗ НЕСИММЕТРИИ НАПРЯЖЕНИЯ В СТАЛЕПЛАВИЛЬНОМ ПРОИЗВОДСТВЕ

**Аннотация:** В данной статье проведен анализ асимметрии напряжения в сталеплавильном производстве с использованием гистограммы распределения и графика плотности. Целью исследования было выявить потенциальные асимметричные особенности в данных о напряжении и оценить их влияние на производство стали.

**Ключевые слова:** производство, сталь, анализ.

### Введение

Сталеплавильное производство является одной из ключевых отраслей промышленности, обеспечивая основной материал для множества применений, от строительства до автомобильной промышленности. Однако, в процессе обработки стали возникают различные технические проблемы, которые могут существенно повлиять на качество и прочность материала. Одной из таких проблем является несимметрия напряжения в стальных заготовках.

Несимметрия напряжения в сталеплавильном производстве возникает из-за различных факторов, таких как неравномерное нагревание, неравномерное охлаждение и механические воздействия в процессе обработки. Неравномерное распределение температуры в плавильной печи и неоднородное охлаждение

заготовок после плавки могут привести к асимметричному распределению напряжения внутри материала. Также, механические силы, применяемые на стальные заготовки в процессе обработки, могут вызвать несимметрию напряжения и деформации.

Оценка несимметрии напряжения имеет важное значение для обеспечения стабильного и надежного производства высококачественной стали. Для этого применяется коэффициент асимметрии, который рассчитывается на основе среднего значения, медианы и стандартного отклонения данных о напряжении. Этот коэффициент позволяет определить степень несимметрии в распределении напряжения и оценить ее влияние на свойства стали.

**Причины асимметрии напряжения.** Асимметрия напряжения может возникать из-за

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различных факторов в сталеплавильном производстве. Некоторые из основных причин включают [1,2]:

- Неравномерное нагревание: Неравномерное распределение температуры в плавильной печи может привести к асимметрии напряжения в заготовке.
- Неравномерное охлаждение: Неравномерное охлаждение заготовки после плавления может также вызвать асимметрию напряжения.
- Механические напряжения: Применение механических сил или неоднородное давление на

заготовку в процессе обработки может вызвать асимметричное распределение напряжения.

Одним из распространенных методов для оценки асимметрии напряжения является вычисление коэффициента асимметрии. Для этого можно использовать формулу:

$$k_{as} = \frac{3 \cdot (\mu - median)}{\sigma}$$

где:  $k_{as}$  - коэффициент асимметрии;  $\mu$  - среднее значение;  $\sigma$  - стандартное отклонение.

Для наглядной визуализации асимметрии напряжения, давайте построим гистограмму и график плотности распределения.

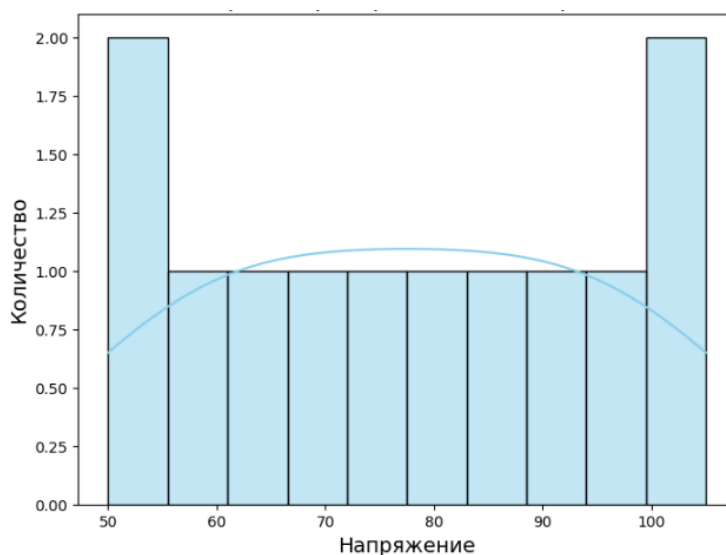


Рис. 1. Гистограмма распределения напряжения

В рисунке 1 «количество» относится к количеству значений в каждом интервале на гистограмме (рис. 1). Гистограмма представляет распределение значений напряжения в определенных интервалах, и «количество» указывает, сколько значений из данных находятся в каждом интервале. Таким образом, это отражает частоту (количество раз) встречаемости значений напряжения в соответствующих интервалах. Гистограмма помогает визуализировать распределение значений напряжения, что может

быть полезным при анализе асимметрии. Если распределение значений на гистограмме имеет смещение влево или вправо, это может указывать на несимметрию в данных о напряжении. На гистограмме можно заметить, например, вышеупомянутую несимметрию, когда длинный хвост графика находится либо слева, либо справа от основной «горы» графика. В этом случае у нас возникает подозрение на несимметрию в данных о напряжении.

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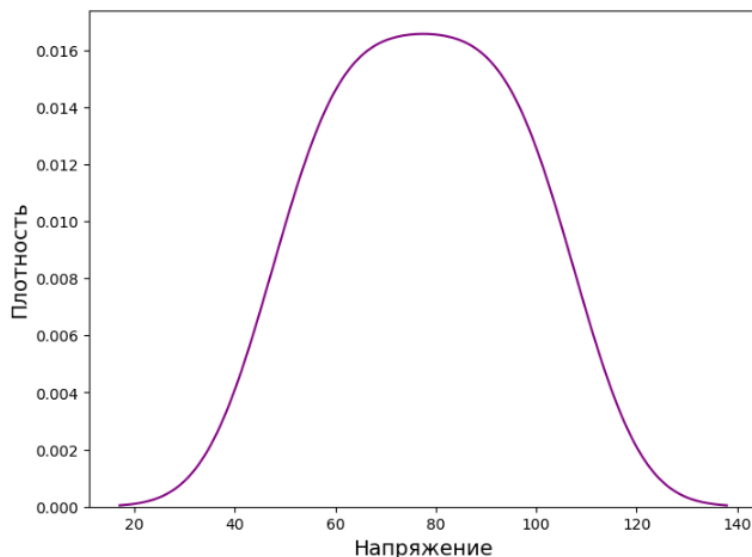


Рис. 2. Гистограмма распределения напряжения

График плотности распределения дополняет гистограмму, позволяя нам увидеть более гладкую функцию, представляющую плотность вероятности в различных точках диапазона значений напряжения (рис. 2). Это позволяет нам еще более подробно рассмотреть форму распределения и выявить несимметричные особенности. Вместе с вычисленным коэффициентом несимметрии, эти графики и данные помогают нам понять, есть ли несимметрия в распределении напряжения в сталеплавильном производстве, и позволяют провести анализ и оптимизацию процессов для обеспечения высокого качества стали и безопасности производства.

**Последствия несимметрии напряжения.** Несимметрия напряжения может привести к ряду неблагоприятных последствий в сталеплавильном производстве:

- Неравномерное распределение напряжения может вызвать деформации и трещины в стальных заготовках, что снижает их механическую прочность.
- Несимметричные напряжения могут привести к неоднородным свойствам стали, что делает ее использование в критических приложениях небезопасным.
- Несимметрия напряжения может увеличить процент отбраковки, что негативно сказывается на эффективности производства.

**Предотвращение несимметрии напряжения.** Для предотвращения асимметрии напряжения и улучшения качества стали рекомендуются следующие меры:

- Регулярное и точное контролирование температуры во время плавки и охлаждения помогает снизить несимметрию напряжения.
- Использование современных технологий и оптимизация процессов сталеплавильного

производства способствуют уменьшению напряжений.

- Компьютерное моделирование и численные методы позволяют предсказать и оптимизировать напряжения в стальных заготовках.
- Регулярный контроль качества стали с помощью неразрушающего тестирования и металлографии помогает выявить несимметричные дефекты.

### Заключение.

В данной статье был проведен анализ асимметрии напряжения в сталеплавильном производстве с использованием гистограммы распределения и графика плотности. Целью исследования было выявить потенциальные асимметричные особенности в данных о напряжении и оценить их влияние на производство стали. Путем анализа гистограммы было выяснено, как часто различные значения напряжения встречаются в данных, и обнаружены возможные асимметричные паттерны. График плотности дополнил эту информацию, предоставив более гладкое представление о распределении вероятности значений напряжения [3].

При анализе результатов было обращено внимание на возможные последствия асимметрии напряжения, такие как деформации, трещины и неравномерные свойства стали, что может повлиять на ее качество и безопасность. Предложены методы предотвращения асимметрии, включая точное контролирование температуры, оптимизацию процессов и регулярный контроль качества стали с использованием современных методов и технологий. Важно отметить, что успешное предотвращение асимметрии напряжения и



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оптимизация производства стали имеют большое значение для обеспечения стабильного и надежного производства высококачественной стали, что способствует прогрессу и развитию

промышленности в целом. Дополнительные исследования и улучшения в этой области могут привести к еще более эффективным и безопасным методам производства стали в будущем.

## References:

1. Smith, J. K., & Johnson, R. L. (2018). Analysis of Stress Asymmetry in Steel Production. *Journal of Metallurgical Engineering*, 45(3), 189-202.
2. Li, W., Chen, H., & Wang, S. (2019). Investigation of Mechanical Stresses in Steel Casting. *Materials Science and Engineering*, 72, 128-137.
3. (2017). *International Standards Organization. (ISO). ISO 10863: Guidelines for Stress Analysis in Metallurgical Processes*. Geneva: ISO.
4. Xolixmatov, B. B., Kodirov, Zh. U., & Rakhimzhonov, Zh. S. (2022). Application of thyristor voltage stabilizers at metallurgical enterprises. *ISJ Theoretical & Applied Science*, 06 (110), 289-292. SoI: <http://s-o-i.org/1.1/TAS-06-110-49> DoI: <https://dx.doi.org/10.15863/TAS.2022.06.110.49>.
5. Holikhmatov, B. B., Rasulov, A. N., & Karimov, R. Ch. (2017). Issledovanie ferrezonansnyh stabilizatorov toka v sistemah jelectrosnabzhenija. *Nauka i sovremennoe obshhestvo: vzaimodejstvie i razvitie*, 2017, T. 2, № 1(4), pp. 83-86, EDN YRZPZF.
6. Rakhmonov, I. U., Kurbonov, N.N., & Kholikhmatov, B. B. (2022). Development of software for forecasting rational energy consumption at industrial enterprises. *Problemy Nauki*. 2022. №7 (176).
7. Kholikhmatov, B.B., Samiev, Sh.S., Erejepov, M.T., & Nematov, L.A. (2023). *Modelling of laboratory work in the science "Fundamentals of power supply" using an educational simulator based on a programmed logic controller*. E3S Web of Conferences 384. 2023. RR, 01032, 1-3. Retrieved from <https://doi.org/10.1051/e3sconf/202338401032>
8. Rakhmonov, I.U., & Kholikhmatov, B.B. (2022). *Application of artificial intelligence methods in modeling power consumption of industrial enterprises*. «Jelectrotehnika, jelectromehanika, jelectrotehnologijalar va jelectrotehnika materiallari» mavzusidagi Respublika ilmiy-tehnika anzhumani. Andizhon shaxri 23 dekabr` 2022 jil. (pp.153-159).
9. Altunin, B. Jy., Karnavskij, I. A., & Kralin, A. A. (2012). Imitacionnaja model` sistemy upravlenija statkom dlja simmetrirovaniya setevyh tokov. *Trudy NGTU im. R. E. Alekseeva*. 2012. №4 (97).
10. Lakomov, I. V., & Pomogaev, Jy. M. (2019). *Vlijanie pokazatelej kachestva jelektrojenergii na rabotu jelektrooborudovanija*. Jenergojeffektivnost` i jenergosberezhenie v sovremennom proizvodstve i obshhestve : Materialy mezhdunarodnoj nauchno-prakticheskoy konferencii, Voronezh, 06-07 iunja 2019 goda / Pod obshej redakciej V.A. Gulevskogo. Tom Chast` I, Voronezh: Voronezhskij gosudarstvennyj agrarnyj universitet im. Imperatora Petra I, 2019, pp. 106-112, EDN DSWXYA.

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SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

## International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2023 Issue: 07 Volume: 123

Published: 29.07.2023 <http://T-Science.org>

Issue

Article



S. U. Zhanatauov

Noncommercial joint-stock company «Kazakh national agrarian research university»

Academician of International Academy

of Theoretical and Applied Sciences (USA),

Candidate of physics and mathematical sciences,

Department «Information technologies and automatization», Professor,

Kazakhstan

[sapagtu@mail.ru](mailto:sapagtu@mail.ru)

## COGNITIVE MODEL: THE RE-SHRREDERIZATION OF EUROPE

**Abstract:** The article develops a model of the phenomenon: European purchases of Russian oil and gas, opinions about the benefits of which contradict opinions about the dangers of such supplies for Europe. A cognitive model of cognition has been developed for the well-known general model of a political phenomenon: the repeated "schroederization" of Europe. The model abstracts 3 real situations: a cold winter, a reduction in LNG supplies, a jump in energy prices, and 6 factors influencing them. New model meanings of all y-factors are obtained, in which the weights of z-factors reflect their relative strengths of influence on the y-factor (Table 1). The factor  $z_2$  (its meaning( $z_2$ )="protracted armed conflict in Ukraine" negatively affects the y-factor  $y_1$  (meaning( $y_1$ )="cold winter") with the force  $c^2_{21}=(-0.04232)^2$ , the y-factor  $y_2$  new\_mean( $y_2$ )="reduction in LNG supplies..." - with a huge force  $c^2_{22}=0.7073^2$ , by the y-factor  $y_3$  new\_mean( $y_3$ )="jump in energy prices" - with a force  $c^2_{23}=0.0751^2$ . Every multi-meaning equation is constructed from a multidimensional mathematical model, where numerical parameters, variables, and connection functions have already been introduced that correspond to the real properties of real multidimensional objects of different types. The type of objects, their properties is reflected in the meanings of the properties of objects. The sums of meanings of properties (z-variables) of an object can form a new meaning (y-variable) or not. In a multidimensional mathematical model, variables are divided into 2 types: z-variables with known names-meanings meaning( $z_1$ ), ..., meaning( $z_n$ ) and y-variables with unknown names-senses meaning( $y_1$ ), ..., meaning( $y_l$ ), where  $l < n$ . The number  $l$  depends on the number of variances  $disp(y_1)=\lambda_1$ ,  $disp(y_2)=\lambda_2, \dots, disp(y_l)=\lambda_l$  exceeding the variance (=1) of z-variables  $disp(z_1)=\dots=disp(z_n)=1$ . Here they rely on the rule: the variance of the sum of variables is greater than the variance of each variable. Initial measurements have been made (model-digitized properties of objects, situations) in such studies of the unmeasurable will make it possible to plan further new studies.

**Key words:** multisense equation with known and unknown semantic variables, Cognitive Model of Europe's Re-Schröderization.

**Language:** Russian

**Citation:** Zhanatauov, S. U. (2023). Cognitive model: the re-shredderization of Europe. *ISJ Theoretical & Applied Science*, 07 (123), 261-278.

**Soi:** <http://s-o-i.org/1.1/TAS-07-123-32> **Doi:**  <https://dx.doi.org/10.15863/TAS.2023.07.123.32>

**Scopus ASCC:** 2604.

## КОГНИТИВНАЯ МОДЕЛЬ: ПОВТОРНАЯ «ШРЕДЕРИЗАЦИЯ» ЕВРОПЫ

**Аннотация:** В статье разработана модель явления: закупки Европой российской нефти и газа, мнения о пользе которых противоречат мнениям о вреде таких поставок для Европы. Разработана когнитивная модель познания для известной совесной модели политического явления: повторная "шредеризации" Европы. Модель абстрагирует 3 реальные ситуации: холодная зима, сокращение поставок СПГ, скачок цен на энергоресурсы и влияющие на них 6 факторов. Получены новые модельные смыслы всех y-факторов, в которых веса z-факторов отражают их относительные силы воздействия на y-фактор (Таблица 1). Фактор  $z_2$  (его смысл( $z_2$ )="затянувшийся вооруженный конфликт в Украине" отрицательно влияет на y-

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фактор  $y_1$  (смысл( $y_1$ )=«холодная зима») с силой  $c^2_{21}=(-0.0423)^2$ , на  $y$ -фактор  $y_2$  новый\_смысл( $y_2$ )=«сокращение поставок СПГ....» - с огромной силой  $c^2_{22}=0.7073^2$ , на  $y$ -фактор  $y_3$  новый\_смысл( $y_3$ )=«скачок цен на энергоресурсы» - с силой  $c^2_{23}=0.0751^2$ . Каждое многосмысловое уравнение конструируется из многомерной математической модели, где уже введены числовые параметры, переменные, функции связи, соответствующие реальным свойствам реальных многомерных объектов разных типов. Тип объектов, их свойств отражается в смыслах свойств объектов. Суммы смыслов свойств ( $z$ -переменные) объекта могут образовать новый смысл ( $y$ -переменную) или нет. В многомерной математической модели переменные делятся на 2 вида:  $z$ -переменные с известными именами-смыслами  $\text{смысл}(z_1), \dots, \text{смысл}(z_n)$  и  $y$ -переменные с неизвестными именами-смыслами  $\text{смысл}(y_1), \dots, \text{смысл}(y_\ell)$ , где  $\ell < n$ . Количество  $\ell$  зависит от количества дисперсий  $\text{disp}(y_1)=\lambda_1, \text{disp}(y_2)=\lambda_2, \dots, \text{disp}(y_\ell)=\lambda_\ell$ , превышающих дисперсию ( $=1$ )  $z$ -переменных  $\text{disp}(z_1)=\dots=\text{disp}(z_n)=1$ . Здесь опираются на правило: дисперсия суммы переменных больше дисперсии каждой переменной. Прделаны начальные измерения (модельно оцифрованные свойства объектов, ситуаций) в таких исследованиях неизмеряемого позволят планировать далее новые исследования.

**Ключевые слова:** многосмысловое уравнение с известными и неизвестными семантическими переменными, Когнитивная Модель Повторной «Шредеризации» Европы.

### Введение

В последнее время появились противоречивые мнения о пользе закупок Европой российской нефти и газа. Одни считают эти поставки вредными для Европы. Другие – лоббируют политику российско-германских энергетических связей. «Россия способствует разложению Европы: появились даже такие понятия, как «шредеризация» или «берлусконизация»<sup>1</sup>. А бывший канцлер Германии Герхард Шредер, его сторонники и крупный бизнес Германии активно призывают за укрепление российско-германских энергетических связей через энергетические компании. Здесь мы применим познающую модель и «проверим алгеброй истину». Выясним кто прав и насколько прав. Проверим алгеброй политику повторной «шредеризации». Необходима формализация рассматриваемой ситуации, чтобы применить научный объективный метод. Любая наука, в том числе - когнитивный компьютеринг [1], начинается лишь там, где начинаются измерения. Верно и обратное: если где-то что-то начинают измерять, это уже научная инженерия, а не искусство или политика. Введем смыслы неизмеряемым смыслам в виде поясняющих фраз. Поставим в соответствие реальным ситуациям, свойствам математические параметры, переменные: как независимые, так и зависимые между собой. Будем использовать формулы, имеющие смысл, не будем рассматривать те формулы, которые не имеют смысл в рассматриваемом аспекте. При переходе от реального (обязательно присутствующего в словесной модели) к абстрактному происходит фиксация соответствия между реальными объектами, их свойствами и абстрактными числовыми параметрами, переменными,

функциями связи свойств между собой. Эти функции ограничивают области определения аргументов и одна из них требует нахождения таких значений особо выделенных переменных, при которых целевая функция достигает экстремального значения (или заданного значения). Изобретение функций указанных 2-х типов в неизученных ситуациях, где реальные свойства объектов не могут измеряться приборами, а обсуждаются специалистами словесно, придавая их свойствам «значения, назначенные» в шкале наименований, в бинарной шкале, в порядковой шкале или просто классифицируются на виды, типы, классы. Эти шкалы теряют информацию о свойствах объектов на этапе первичных измерений, теряются извлекаемые из данных знания – познание неизвестного об объектах, скрытого знания о свойствах объектов невозможно. Математические параметры, переменные, функции должны иметь [1-3] и имеют свои содержательные смыслы, часть которых соответствуют реальным объектам, ситуациям. Имеются математические параметры, переменные, функции, присущие применяемой математической модели. При традиционном моделировании предполагается наличие измеряемых или косвенно измеряемых свойств (с их именами-смыслами) многомерных объектов. Наличие ясных имен-смыслов соответствует способам измерения свойств, приборам их измерения, возможно новое повторение измерительных экспериментов. Мы рассматриваем малоизученное: реальные объекты, ситуации, явления с неизмеряемыми значениями свойств. К таким свойствам относятся чувства, эмоции индивидов, предпочтения избирателей [2], покупателей, факторы имиджа страны [3], используемые политологами [4]. В

<sup>1</sup> <https://novayagazeta.ru/articles/2012/03/04/48628-britanskie-uchenye-vyvasnili-pochemu-zagnivaet-zapad>

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когнитивном компьютеринге [1] разработаны многие модели познания [4-13]. Познание (когниция) - совокупность процессов, процедур и методов приобретения знаний о явлениях и закономерностях действительности. Знание - изученная и усвоенная информация, необходимая для выполнения действий в рамках профессиональной задачи. Познание это непрерывный процесс, заключающийся в углублении, расширении и совершенствовании знаний, при этом приобретает навык - способность применять знания и умения. Мы применяем виды моделей: словесная, символическая, математическая, смысловая, поведенческая и когнитивная [11]. Они пошагово дополняют знания (в т.ч. цифровые) к исходным неформализованным знаниям, адекватным реальным объектам, их свойствам. Содержательные смыслы - различны, соответствуют своей предметной области. Наша ситуация отличается от моделей, приложений, результатов, изложенных в обзоре (познающего) компьютеринга. Исследуем показатели, относящиеся к объектам, ситуациям, явлениям из различных предметных областей, включая политологические явления [2,3]. Проведем глубокий, интеллектуальный, познающий анализ, расширены познания об неизмеряемых свойствах объектов словесных моделей.

### Исходные данные

Исходными данными является словесная модель повторной "шредеризации" Европы. Словесная модель имеет зависимые по смыслу показатели, имеющие 6 смыслов<sup>1</sup>:

1) активные выступления бывшего канцлера Германии Герхарда Шредера за укрепление российско-германских энергетических связей, так как создал все условия для реализации трубопроводного проекта "Северный поток-1" (смысл( $z_1$ )).

2) затянувшийся вооруженный конфликт в Украине (смысл( $z_2$ ));

3) лоббисты политики "шредеризации" Европы в интересах государственных или клептократии (смысл( $z_3$ )).

4) налаженные (западноевропейскими энергетическими компаниями) прочные личные и деловые связи с советской, а затем и с российской газовой отраслью (смысл( $z_4$ ));

5) Западная Европа (с учетом факторов 2,3,4) начинает требовать возобновления поставок газа из России (смысл( $z_5$ ));

6) высокие цены на энергоресурсы (смысл( $z_6$ )).

Эти разнородные по содержанию смыслов показатели зависят от 3-х факторов, независимых друг от друга<sup>1</sup>:

1) холодная зима

2) сокращение поставок СПГ;  
3) скачок цен на энергоресурсы (критические сырьевые материалы).

Словесная модель повторной "шредеризации" Европы выделяет эти факторы в качестве «управляемых» политиками «в интересах Европы». Открыто озвучивают именно эти смыслы, легко воспринимаемые как «внизу», так и «наверху». В верхах приводят неоспоримые доводы в пользу приоритетности этих 3-х факторов, а остальные 6 показателей должны зависеть (подчиняться) от хотя бы одного управляющего фактора.

Смыслы  $y$ -переменных ( $y_1, y_2, y_3$ ) зафиксированы словесной моделью повторной "шредеризации" Европы:

- имя-смысл( $y_1$ )=« холодная зима»;

- имя-смысл( $y_2$ )=« сокращение поставок СПГ»;

- имя-смысл( $y_3$ )=« скачок цен на энерго ресурсы».

Постановка задачи: построить познающую модель (извлечь скрытые знания и информацию), дополняющую исходные данные.

### Применяемая система многосмысловых уравнений

Многосмысловое уравнение [15] конструируется из многомерной математической модели [16], где уже введены числовые параметры, переменные, функции связи, соответствующие реальным свойствам реальных многомерных объектов разных типов. Тип объектов, их свойств отражается в смыслах свойств объектов [17]. Суммы смыслов свойств ( $z$ -переменных) объекта могут образовать новый смысл ( $y$ -переменную) или нет [18]. В многомерной математической модели переменные делятся на 2 вида:  $z$ -переменные с известными именами-смыслами  $\text{смысл}(z_1), \dots, \text{смысл}(z_n)$  и  $y$ -переменные с неизвестными именами-смыслами  $\text{смысл}(y_1), \dots, \text{смысл}(y_\ell)$ , где  $\ell < n$ . Количество  $\ell$  зависит от количества дисперсий  $\text{disp}(y_1)=\lambda_1, \text{disp}(y_2)=\lambda_2, \dots, \text{disp}(y_\ell)=\lambda_\ell$ , превышающих дисперсию (=1)  $z$ -переменных  $\text{disp}(z_1)=\dots=\text{disp}(z_n)=1$ . Здесь опираются на правило: дисперсия суммы переменных больше дисперсии каждой переменной.

В соответствии с значениями  $\lambda_1, \lambda_2, \lambda_3$  из пары смоделированных матриц ( $C_{66}, \Lambda_{66}$ ) проставляются числовые параметры  $c_{11}, \dots, c_{66}$  в 3 уравнения системы много смысловых уравнений:

$$\begin{aligned} \text{смысл}(y_1) &= \text{смысл}(z_1) * c_{11} \oplus \text{смысл}(z_2) * c_{21} \oplus \\ &\text{смысл}(z_3) * c_{31} \oplus \text{смысл}(z_4) * c_{41} \oplus \text{смысл}(z_5) * c_{51} \oplus \\ &\text{смысл}(z_6) * c_{61}; \end{aligned}$$

$$\begin{aligned} \text{смысл}(y_2) &= \text{смысл}(z_1) * c_{12} \oplus \text{смысл}(z_2) * c_{22} \oplus \\ &\text{смысл}(z_3) * c_{32} \oplus \text{смысл}(z_4) * c_{42} \oplus \text{смысл}(z_5) * c_{52} \oplus \\ &\text{смысл}(z_6) * c_{62}; \end{aligned}$$

$$\text{смысл}(y_3) = \text{смысл}(z_1) * c_{13} \oplus \text{смысл}(z_2) * c_{23} \oplus$$

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смысл( $z_3$ ) \*  $c_{33}$  ⊕ смысл( $z_4$ ) \*  $c_{43}$  ⊕ смысл( $z_5$ ) \*  $c_{53}$  ⊕  
смысл( $z_6$ ) \*  $c_{63}$ .

После удаления слагаемых с «весами»  $c_{ij}$ , величины которых не удовлетворяют критерию быть индикатором скрытых знаний [18-19], количество слагаемых в уравнениях с неизвестными новыми смыслами смысл( $y_1$ ), смысл( $y_2$ ), смысл( $y_3$ ) сократится. И система многосмысловых уравнений будет содержать меньшее число известных смыслов. Более «короткие» суммы смыслов легче осмысливать для конструирования 3-х фраз для 3-х новых смыслов (новых семантических переменных) новый\_смысл( $y_1$ ), новый\_смысл( $y_2$ ), новый\_смысл( $y_3$ ), существенно дополняющих исходные смыслы (исходные семантические переменные) смысл( $y_1$ ), смысл( $y_2$ ), смысл( $y_3$ ). Метод сложного преобразования исходных семантических переменных в новые семантические переменные называется когнитивной моделью повторной "шредеризации" Европы.

Требуемые фразы, дающие смыслы неизвестным  $\ell$  смыслам у-переменных, можно сконструировать, если смоделировать:

а) пару матриц собственной структуры ( $\Lambda_{nn}, C_{nn}$ );

б) матрицы значений некоррелированных изменчивостей  $Y_{mn}$ , коррелированных изменчивостей (отклонений от 0)  $Z_{mn}$ , соответствующих своим системам многосмысловых уравнений с известными и неизвестными семантическими (смысловыми) переменными.

Новые моделируемые 2 матрицы в нашей модели обладают свойствами: ортонормированная матрица  $C_{nn}$  собственных векторов  $c_j = (c_{1j}, c_{2j}, \dots, c_{nj})^T$ , расположенных по столбцам матрицы  $C_{nn} = [c_1 | c_2 | \dots | c_n]$  согласована со своим спектром  $\Lambda_{nn}$  корреляционной матрицы  $R_{nn} = (1/m) Z_{mn}^T Z_{mn}$ ,  $\Lambda_{nn} = \text{diag}(\lambda_1, \dots, \lambda_n)$  таким образом, что выполняются равенства  $R_{nn} C_{nn} = C_{nn} \Lambda_{nn}$ ,  $C^T C = C C^T = I_{nn}$ ,  $\text{diag}(R_{nn}) = (1, \dots, 1)$ ,  $\text{tr}(R_{nn}) = 1 + 1 + \dots + 1 = \text{tr}(\Lambda_{nn}) = \lambda_1 + \dots + \lambda_n = n$ ,  $\lambda_1 \geq \dots \geq \lambda_n \geq 0$ . В решаемой ниже Оптимизационной Задаче ( $I_{66}, I_{66}$ )  $\Rightarrow (C_{66}, \Lambda_{66})$  целевой функция  $\lambda_1 + \dots + \lambda_n$  равна  $n=6$  при изменяемых значениях элементов матриц  $C_{66}, \Lambda_{66}$ , ограничения:  $\text{diag}(R_{nn}) = (1, \dots, 1)$ ,  $C_{66}^T C_{66} = C_{66} C_{66}^T = I_{66}$ , Матрицы  $U_{mn}$  и  $Y_{mn}$  такие, что  $(1/m) U_{mn}^T U_{mn} = I_{mn}$ ,  $Y_{mn} = Z_{mn} C_{nn}$ ,  $C_{nn} = (1/m) Z_{mn}^T Y_{mn}$ , в матрице  $Y_{mn}$  элементы  $j$ -го столбца  $y_{1j}, y_{2j}, \dots, y_{mj}$  ( $j$ -ая у-переменная,  $j=1, \dots, n$ ) имеют среднее арифметическое, равное нулю:  $(1/m)(y_{1j} + y_{2j} + \dots + y_{mj}) = 0$ , и дисперсию равную  $\lambda_j$ :  $(1/m)(y_{1j}^2 + y_{2j}^2 + \dots + y_{mj}^2) = \lambda_j$ , сумма дисперсий равна  $n$ :  $\lambda_1 + \dots + \lambda_n = n$ . Матрицы  $Z_{mn}, Y_{mn} = Z_{mn} C_{nn}$ , интерпретируются как многомерные выборки. Стандартизованные коррелированные  $z$ -переменные являются многомерными данными,

объединенных в матрицу  $Z_{mn}$ , в которой элементы  $j$ -го столбца  $z_{1j}, z_{2j}, \dots, z_{mj}$  ( $j$ -ая переменная,  $j=1, \dots, n$ ) имеют среднее арифметическое равно нулю:  $(1/m)(z_{1j} + z_{2j} + \dots + z_{mj}) = 0$ , и дисперсию равную 1:  $(1/m)(z_{1j}^2 + z_{2j}^2 + \dots + z_{mj}^2) = 1$ , сумма дисперсий равна  $n$ . Элементы матрицы  $C_{nn}$  интерпретируются как индикаторы знаний [20]. Матрица  $Y_{mn} = Z_{mn} C_{nn}$ , в которой элементы  $j$ -го столбца  $y_{1j}, y_{2j}, \dots, y_{mj}$  ( $j$ -ая у-переменная,  $j=1, \dots, n$ ) имеют среднее арифметическое равно нулю:  $(1/m)(y_{1j} + y_{2j} + \dots + y_{mj}) = 0$ , и дисперсию равную  $\lambda_j$ :  $(1/m)(y_{1j}^2 + y_{2j}^2 + \dots + y_{mj}^2) = \lambda_j$ , сумма дисперсий равна  $n$ :  $\lambda_1 + \dots + \lambda_n = n$ . Матрица  $Y_{mn} = Z_{mn} C_{nn}$ , интерпретируется как многомерная выборка. Стандартизованные коррелированные  $z$ -переменные – данные, объединенные в матрицу  $Z_{mn}$ , в которой элементы  $j$ -го столбца  $z_{1j}, z_{2j}, \dots, z_{mj}$  ( $j$ -ая переменная,  $j=1, \dots, n$ ) имеют среднее арифметическое равно нулю:  $(1/m)(z_{1j} + z_{2j} + \dots + z_{mj}) = 0$  и дисперсию, равную 1:  $(1/m)(z_{1j}^2 + z_{2j}^2 + \dots + z_{mj}^2) = 1$ , сумма дисперсий равна  $n$ . Матрица  $Z_{mn}$  интерпретируется как многомерная выборка.

### Применяемые вычислительные модели

Применяемые вычислительные модели [20-24] соответствуют 2 шагам решаемых задач:

а) моделирование пары матриц ( $C_{66}, \Lambda_{66}$ ): матрицы собственных чисел  $\Lambda_{66}$ , такой, что выполняется условие:  $R_{66} C_{66} = (C_{66} \Lambda_{66})$ ,  $R_{66} C_{66} = (C_{66} \Lambda_{66})$ .  $\Lambda_{66} = \text{diag}(3.0024, 1.0423, 1.0423, 0.9, 0.01, 0.01)$ ;

б) моделирование матрицы собственных векторов  $C_{66}$  и собственных чисел  $\Lambda_{66}$ , таких, что выполняется условие:  $R_{66} C_{66} = (C_{66} \Lambda_{66})$ ;

г) разработка многосмысловых уравнений с известными и неизвестными семантическими переменными [5-6];

д) моделирование новых матриц  $Y_{m6}, Z_{m6}$ , соответствующих своим системам многосмысловым уравнениям с известными и неизвестными семантическими (смысловыми) переменными [6-12].

### Когнитивная модель повторной "шредеризации" Европы

Поставим в соответствие 3 реальным ситуациям: холодная зима, сокращение поставок СПГ и скачок цен на энергоресурсы, 3 переменные у-переменные. Шесть  $z$ -переменные: активное выступление бывшего канцлера Германии Герхарда Шредера политические, требования, прочные личные и деловые связи, затянувшийся вооруженный конфликт в Украине, будучи объединены в ту или иную комбинацию смыслов, образуют 3 новых смысла 3-х у-переменных новый\_смысл( $y_1$ ), новый\_смысл( $y_2$ ), новый\_смысл( $y_3$ ), фразы которых выражают новые знания, дополняющие знания из исходного знания  $\text{смысл}(y_1) \cup \text{смысл}(y_2) \cup \text{смысл}(y_3)$ .



## Impact Factor:

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Фраза, выражающая извлекаемое знание, конструируется из чтения формулы  $c_{kj} = \text{сог}(z_k, y_j)$ , преобразованной в другой вид смыслового уравнения:  $\text{новый\_смысл}(y_j) = \text{смысл}(z_k * c_{kj} + \dots)$ . Смысловое уравнение вида  $\text{новый\_смысл}(y_j) = \text{смысл}(z_k * c_{kj} + \dots)$  соответствует формульной единице вида  $y_j = z_k * c_{kj} + \dots$  с числовыми переменными  $y_j$ ,  $z_k$  и с постоянным весомым параметром  $c_{kj}$ . Для  $i$ -го интервала времени формульная единица имеет вид:  $y_{ij} = z_{ik} * c_{kj} + \dots$  входящее в смысловое уравнение:  $\text{новый\_смысл}(y_{ij}) = \text{смысл}(z_{ik} * c_{kj} + \dots)$ . Интеллектуальный анализ дает фразу, учитывающую интерпретацию умножения 2-х чисел: весомый «вес»  $c_{kj} = \text{сог}(z_k, y_j)$  как коэффициент корреляции между  $j$ -ой  $y$ -переменной и  $k$ -ой  $z$ -переменной (с изменчивостью  $z_k$ ) умножается на «вес» (имеющий весомый «вес»)  $c_{kj}$   $k$ -ой  $z$ -переменной с весомым смыслом  $\text{смысл}(z_k)$ . Сумма произведений смыслов изменчивостей  $z$ -переменных на число - вес  $z$ -переменной дает смысловое равенство, правая часть которого сконструирована одной фразой, дающей смысловое решение смыслового уравнения. Число смысловых уравнений равно 3. Три фразы из решенных корректно 3-х смысловых уравнений составляет суть извлеченного знания. Наше знание - изученная и усвоенная информация, необходимая для познания неизвестного явления «повторной "шредеризации" Европы». Допускается невесомый «вес» слагаемого, но при условии: суммарная фраза конструируется без когнитивного диссонанса. Например, в статье [9] фраза смысла с «весом»  $c = 0.0006$  входила в фразу суммарного смысла  $y$ -переменной. Смысловое уравнение:  $\text{новый\_смысл}(y_{ij}) = \text{смысл}(z_{ik} * c_{kj} + \dots)$  имеет одну неизвестную семантическую переменную  $\text{новый\_смысл}(y_{ij})$  и несколько известных весомых семантических переменных из множества  $\{\text{смысл}(z_1), \dots, \text{смысл}(z_n)\}$  смыслом  $z$ -переменных с весомыми смыслами. Так как количество новых смыслов для  $y$ -переменных равно 3, то имеем систему многосмысловых уравнений с известными и неизвестными семантическими переменными. Смысл неизвестной семантической переменной  $\text{новый\_смысл}(y_{ij})$  равен сумме неизвестных смыслов. Суммарная фраза смысла той или иной суммы смыслов ( $\oplus$ )  $z$ -переменной «равна» смыслу  $y$ -переменной. Смысл  $y$ -переменной конструируется в виде фразы, передающей смыслы всех слагаемых фраз. Каждая слагаемая фраза равна смыслу одной  $z$ -переменной. Суммарный смысл конструируется без когнитивного диссонанса.

Рассмотрим смысл переменной  $y_1$ . Прежний ее политологический смысл из словесной модели

повторной "шредеризации" Европы передается в виде семантической переменной  $\text{смысл}(y_1) = \text{«холодная зима»}$ . Дополним ее смысл новыми словами. Сконструируем новую фразу, зависящую от смыслов неизвестного подмножества смыслов из множества 9 смысловых переменных. Новая фраза включает извлекаемые знания из математической модели, точно соответствующей когнитивной (познающей) модели. Заданный в словесной модели повторной "шредеризации" Европы смысл изменяется на: «Из-за «холодной зимы» ( $y_1$ ) растет давление лоббистов политики "шредеризации" Европы ( $\text{смысл}(z_3)$ ), опирающихся на «активные выступления бывшего канцлера Германии Герхарда Шредера за укрепление российско-германских энергетических связей ( $\text{смысл}(z_1)$ ), а компании (из-за потери рынков во время затянувшегося войны в Украине ( $\text{смысл}(z_2)$ ) и из-за высоких цен на энергоресурсы ( $\text{смысл}(z_6)$ )) стремятся возобновить налаженные прочные личные и деловые связи ( $z_4$ ) с российской газовой отраслью».

Этот смысл переменной  $y_1$  (с учетом отрицательного «веса»  $c_{21} = (-0.0423)$ ) кратко формулируется так:  $\text{новый\_смысл}(y_1) = \text{«растущее многостороннее давление (из-за холодной зимы) компаний и лоббистов политики "шредеризации" Европы»}$ . Знак «веса»  $c_{21} = (-0.0423)$  фактора «война в Украине ( $\text{смысл}(z_2)$ )» противоположен знакам всех других  $z$ -факторов. Его величина мала, чтобы существенно влиять на динамику кривой « $y_1$ ». Динамика формульной единицы  $z_{i2} * c_{21}$  сильно изменчива, но не меняет динамику переменной  $y_1$ . Соответствующая этому новому смыслу смысловые слагаемые формируют  $\text{новый\_смысл}(y_1) = \text{смысл}(z_1) * 0.8038 \oplus \text{смысл}(z_2) * (-0.0423) \oplus \text{смысл}(z_3) * 0.1964 \oplus \text{смысл}(z_4) * 0.5509 \oplus \text{смысл}(z_6) * 0.1000$  когнитивно суммируемы, а числовая переменная  $y_1$  имеет формулу вида  $y_1 = z_1 * 0.8038 + z_2 * (-0.0423) + z_3 * 0.1964 + z_4 * 0.5509 + z_6 * 0.1000$ , используемую для нахождения  $Y_{m6} = Z_{m6} C_{66}$  и приемлемых «весов»  $c_{ij}$  для фразы для нового модельного смысла семантической переменной  $\text{новый\_смысл}(y_1)$ . Рисунок 6 правильно и похоже на реальность отражает взаимную динамику 5  $z$ -переменных и зависящую от них динамику  $y$ -переменной  $y_1$ . У всех кривых медленный растущий тренд. В соответствии с их новыми смыслами о холодной зиме.

Рассмотрим смыслы 6  $z$ -факторов, формирующие новый смысл  $y$  переменной  $y_1$ . Прежний ее политологический смысл передается в виде семантической переменной  $\text{смысл}(y_3) = \text{«скачок цен на энергоресурсы»}$ . Дополним ее смысл новыми словами, принадлежащими смыслом 6  $z$ -переменных. Новая фраза конструируется из 6 смыслов 6  $z$ -

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переменных с разными положительными весовыми и малыми «веса». Новый смысл переменной  $u_3$  равен когнитивной сумме смыслов 6 смыслов z-переменных:

новый\_смысл( $y_3$ )=смысл( $z_1$ )\*0.0086⊕  
смысл( $z_2$ )\*0.0751⊕смысл( $z_3$ )\*0.9404⊕  
смысл( $z_4$ )\*0.30⊕смысл( $z_5$ )\*0.10⊕смысл( $z_6$ )\*0.10.  
Здесь видно как различатся «веса» у смыслов ключевых слов фразы. Акценты в фразе делаются в соответствии с «веса»: 0.9404, 0.30, 0.10, 0.10

Строим сложную фразу. «Из-за затянувшегося вооруженного конфликта в Украине ( $c^2_{23}=0.0751^2$ ), из-за очень высоких цен на рынке (с большой силой  $c^2_{63}=0.9404^2$ ) на энергоресурсы, связанные с газовой отраслью компании (с силой  $c^2_{43}=0.3^2$ ), в связи с выступлениями Г. Шредера (с силой  $c^2_{13}=0.0086^2$ ), лоббисты политики "шредеризации" Европы (с силой  $c^2_{33}=0.3^2$ ) и страны Западной Европы (с силой  $c^2_{53}=0.1^2$ ) официально действуют в соответствии с «скачком (смысл( $y_3$ )) высоких цен (с силой  $c^2_{63}=0.1^2$ ) на энергоресурсы» (смысл( $y_3$ )=следствие,  $disp(y_3)=1$ ). Сумма действующих сил равна 1(100%):  $c^2_{23}+c^2_{63}+c^2_{43}+c^2_{13}+c^2_{33}+c^2_{53}=0.0751^2+0.9404^2+0.3^2+0.0086^2+0.3^2+0.1^2=1$ . Очень изобретательно (с «весом»  $c_{33}=0.9404$ ) возобновляют прежние связи (смысл( $z_3$ )). В новом модельном смысле отражены относительные силы воздействия одного z-фактора (из политических, финансовых, корпоративных) на u-фактор « $u_3$ » (на финансовый «скачок цен на энергоресурсы»).

В фразах выделено отличие цен: «высокие

цены на рынке...» и «официальный скачок цен на энергоресурсы». Новый\_смысл( $y_3$ )=«Из-за «холодной зимы» растет давление лоббистов политики "шредеризации" Европы, опирающихся на «активные выступления бывшего канцлера Германии Герхарда Шредера за укрепление российско-германских энергетических связей, а компании (из-за потери рынков во время затянувшегося войны в Украине стремятся возобновить налаженные прочные личные и деловые связи с российской газовой отраслью». Рисунок 7 правильно и похоже на реальность отражает взаимную динамику 4-х z- переменных и зависящую от них динамику u-переменной  $u_3$ . У всех кривых медленный растущий тренд, а их изменчивости сильнее выражены, чем изменчивости у 4-х z- переменных, влияющих на u-переменной  $u_1$ . В соответствии с их новыми смыслами о скачках цен на энергоресурсы, являющиеся критическими сырьевыми материалами.

Когнитивная Модель заменила исходный набор индикаторов  $c_{51}=0, c_{61}=0.1, c_{12}=0, c_{52}=0.3, c_{43}=0.3, c_{53}=0.1, c_{63}=0.1$  (из 7 штук) на новый набор индикаторов из 13 штук: ( $c_{11}, c_{21}, c_{31}, c_{41}, c_{61}$ ), ( $c_{22}, c_{52}$ ), ( $c_{13}, c_{23}, c_{33}, c_{43}, c_{53}, c_{63}$ ). Этим модель поправила мозаику индикаторов в модели повторной "шредеризации" Европы и добавила новые знания путем извлечения скрытых знний о повторной "шредеризации" Европы.

**Таблица 1. Новые модельные смыслы u-факторов, в которых веса z-факторов отражают их относительные силы воздействия на u-фактор**

№	Зависимые z-факторы для независимого от других, но управляемого государством u-фактора	Заметные силы влияния зависимых z-факторов на дисперсию u-фактора $disp(\lambda)$
1	«Из-за «холодной зимы» (смысл( $y_1$ )=«холодная зима») растет давление лоббистов политики "шредеризации" Европы (смысл( $z_3$ )=«лоббисты политики "шредеризации" Европы в интересах государственных или клептократии»), опирающихся на «активные выступления бывшего канцлера Германии Герхарда Шредера за укрепление российско-германских энергетических связей (смысл ( $z_1$ )=«активные выступления бывшего канцлера Германии Герхарда Шредера за укрепление российско-германских энергетических связей...»), а компании (из-за потери рынков во время затянувшейся войны в Украине (смысл( $z_2$ )=«затянувшийся вооруженный конфликт в Украине») и из-за высоких цен на энергоресурсы (смысл( $z_6$ )=«высокие цены на энергоресурсы») стремятся возобновить налаженные прочные личные и деловые связи (смысл( $z_4$ ) =«налаженные	новый_смысл( $y_1$ )=«Из-за «холодной зимы» (смысл( $y_1$ )=«холодная зима») растет давление лоббистов политики "шредеризации" Европы (с силой $c_{31}=0.1964$ в интересах государственных или клептократии»), опирающихся на «активные выступления бывшего канцлера Германии Герхарда Шредера за укрепление российско-германских энергетических связей (с силой $c^2_{13}=0.0086^2$ ) за укрепление российско-германских энергетических связей, а компании (из-за потери рынков во время затянувшейся войны в Украине (с силой $c^2_{21}=-0.0423^2$ ) и из-за высоких цен на энергоресурсы (с силой $c^2_{61}=0.1000^2$ ) стремятся возобновить налаженные прочные личные и деловые связи (с силой



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	компаниями связи с российской газовой отраслью») $c^2_{41}=0.5509^2$ ). Краткая фраза: «растущее многостороннее давление (из-за холодной зимы) компаний и лоббистов политики "шредеризации" Европы».
2	новый_смысл ( $y_2$ )=«сокращение поставок СПГ из-за «затянувшегося вооруженного конфликта в Украине (смысл( $z_2$ )=«затянувшийся вооруженный конфликт в Украине»), а Западная Европа начинает требовать возобновления поставок газа из России(смысл( $z_5$ )=«Западная Европа начинает требовать возобновления поставок газа из России») $c^2_{22}=0.7073^2$ , когда Западная Европа начинает требовать возобновления поставок газа из России (с силой $c^2_{52}=0.7069^2$
3	«Из-за затянувшегося вооруженного конфликта в Украине (смысл( $z_2$ )=«затянувшийся вооруженный конфликт в Украине»), из-за очень высоких цен на рынке (смысл( $z_6$ )=«высокие цены на энергоресурсы») энергоресурсов, связанные с газовой отраслью компании (смысл( $z_4$ )=«налаженные компаниями связи с российской газовой отраслью»), с выступлениями Г. Шредера (смысл( $z_1$ )=«активные выступления Герхарда Шредера»), лоббисты политики "шредеризации" Европы (смысл( $z_3$ )=«лоббисты политики "шредеризации" Европы») и страны Западной Европы (смысл( $z_5$ )=«Западная Европа начинает требовать возобновления поставок газа из России») официально действуют в соответствии с «скачком (смысл( $y_3$ ) высоких цен («высокие цены на энергоресурсы») на энергоресурсы» (смысл( $y_3$ )=«скачок цен на энергоресурсы», является следствием небольшой дисперсии: $disp(y_3)=1$ )), означающей стабильность проявлений сил факторов при повторной "шредеризации" Европы» $c^2_{23}=0.0751^2$ ), из-за очень высоких цен на рынке (с большой силой $c^2_{63}=0.9404^2$ ) на энергоресурсы, связанные с газовой отраслью компании (с силой $c^2_{43}=0.3^2$ ), с выступлениями Г. Шредера (с силой $c^2_{13}=0.0086^2$ ), лоббисты политики "шредеризации" Европы (с силой $c^2_{33}=0.3^2$ ) и страны Западной Европы (с силой $c^2_{53}=0.1^2$ ) официально действуют в соответствии с «скачком (смысл( $y_3$ ) высоких цен («высокие цены на энергоресурсы»), является следствием влияния разных значений 6 сил проявлений факторов при повторной "шредеризации" Европы».

**Моделирование новых матриц  $Y^{(t)}_{m6}, Z^{(t)}_{m6}$  для системы многосмысловых уравнений**

Далее моделируются матрицы значений  $y$ -изменчивостей  $Y_{m6}$ ,  $z$ -изменчивостей  $Z_{m6}$ , соответствующих своим системам многосмысловым уравнениям с известными и неизвестными семантическими (смысловыми) переменными [1-8]. При моделировании  $Y_{m6}$  моделируется (после преобразования матрицы  $V^0_{m6}=\{v^0_{ij}\}$  значений равномерно распределенных на интервале [-1;1] случайных чисел (Таблица 3)  $v^0_{ij}, i=1,\dots,24; j=1,\dots,6$ ) случайная декоррелированная выборка (Таблица 4)– матрица

$U_{m6}: (1/m)U^T_{m6}U_{m6}=I_{66}, Y_{m6}=U_{m6}\Lambda^{1/2}_{66} (1/m)Y^T_{m6} Y_{m6}=\Lambda_{66}$ , а матрица  $Z_{m6}=Y_{m6}C^T_{66}$ , где  $(\Lambda_{66}, C_{66})$  – пара ранее смоделированных при решении Оптимизационной Задачи:  $(I_{66}, I_{66}) \Rightarrow (\Lambda_{66}, C_{66})$  с заданной мозаикой индикаторов матриц. У пары матриц  $(I_{66}, I_{66})$  разные смыслы (смысл( $I_{66}$ )  $\neq$  смысл( $I_{66}$ )). Существует бесконечное множество пар модельных матриц  $(Z^{(t)}_{m6}, Y^{(t)}_{m6}), t=1,\dots,\infty$ . Визуализация динамик кривых  $(z_1, z_2, z_3, z_4, z_5, z_6, y_1), (z_2, z_5, y_2) (z_1, z_2, z_3, z_4, z_5, z_6, y_3)$  изложена ниже.

**Таблица 2. Матрица  $C_{66}=\{c_{ij}=\text{corr}(z_i, y_j)\}$  ( $z, y$ )-корреляций}**

meaning(z1)	<b>0.8038</b>	0.0000	0.0086	0.4612	0.0149	0.3754	1.0000
meaning(z2)	-0.0423	<b>0.7073</b>	0.0751	0.4009	0.5758	-0.0045	1.0000
meaning(z3)	0.1964	-0.0005	<b>0.9404</b>	-0.0001	0.2778	0.0009	1.0000
meaning(z4)	<b>0.5509</b>	0.0004	<b>0.3000</b>	0.7787	0.0093	-0.0031	1.0000

<b>Impact Factor:</b>	<b>ISRA (India) = 6.317</b>	<b>SIS (USA) = 0.912</b>	<b>ICV (Poland) = 6.630</b>
	<b>ISI (Dubai, UAE) = 1.582</b>	<b>ПИИЦ (Russia) = 3.939</b>	<b>PIF (India) = 1.940</b>
	<b>GIF (Australia) = 0.564</b>	<b>ESJI (KZ) = 8.771</b>	<b>IBI (India) = 4.260</b>
	<b>JIF = 1.500</b>	<b>SJIF (Morocco) = 7.184</b>	<b>OAJI (USA) = 0.350</b>

meaning(z5)	0.0000	<b>0.7069</b>	<b>0.1000</b>	0.1397	0.6861	0.0018	1.0000
meaning(z6)	<b>0.1000</b>	0.0000	<b>0.1000</b>	-0.0266	0.3467	0.9269	1.0000
	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	6.0000
	meaningy1	meaningy2	meaningy3	meaningy4	meaningy5	meaningy6	

Таблица 3. Матрица значений равномерно распределенных на интервале [-1;1] случайных чисел  $V_{m6}^0$

1	0.4153	-0.0031	-0.2706	0.5291	-0.122	0.212
2	-0.4157	0.4195	0.3991	-0.0528	0.2234	0.4559
3	0.4391	0.3163	-0.209	0.0698	-0.2877	0.361
4	-0.1815	0.2217	-0.0517	-0.0754	0.1705	0.139
5	0.0106	0.1689	0.5175	-0.0925	0.4159	0.0042
6	-0.4454	0.2689	-0.0248	-0.0653	0.2985	-0.3108
7	-0.2016	0.4818	-0.4672	-0.1129	0.2248	-0.2117
8	-0.3923	0.4632	-0.0564	-0.1505	0.1108	-0.1553
9	0.2909	-0.2137	-0.2972	0.4286	-0.2603	-0.4661
10	-0.1665	0.1743	-0.0114	-0.2489	-0.2131	0.0069
11	0.1836	0.0617	0.2848	-0.1422	-0.3144	-0.2446
12	-0.0855	-0.0542	-0.3371	0.5521	-0.2418	0.3916
13	0.3617	-0.4337	0.4243	-0.2025	0.2381	-0.4315
14	-0.4305	-0.3032	-0.049	0.044	-0.25	0.4622
15	0.2639	-0.2264	-0.0155	-0.1981	-0.3412	-0.0014
16	-0.0342	-0.416	0.0614	-0.3152	0.1163	-0.2557
17	0.2651	-0.2509	0.1952	0.2436	-0.0433	-0.3956
18	-0.4096	-0.296	0.1516	-0.1624	0.0423	0.0626
19	0.3667	0.293	0.0018	0.1086	0.3143	0.179
20	-0.3312	-0.3143	0.1729	0.2387	-0.45	-0.058
21	0.3871	-0.4742	0.1136	0.0723	0.251	-0.462
22	0.2317	0.4684	-0.3655	-0.2224	0.1476	0.2571
23	0.1118	0.0823	-0.3681	-0.148	-0.4048	0.3077
24	-0.2335	-0.4345	0.2014	-0.0977	0.3751	0.1536
mean	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
st dev	0.0940	0.1015	0.0688	0.0556	0.0715	0.0857

Таблица 4. Матрица u-изменчивостей  $U_{m6}$

1	-0.0753	-1.4592	-0.8444	-0.3103	-1.891	0.1565
2	-1.4876	-0.3995	-1.5016	0.5034	1.4749	1.4069
3	-0.4276	0.99	-1.0459	-0.6687	-1.515	0.9307
4	0.3262	-0.2727	-0.0349	-0.1504	0.5567	0.7931
5	-1.1462	-0.3869	-1.5404	-0.7521	1.4405	-0.171
6	-0.2366	-1.0086	1.6758	-0.4315	1.3654	0.407
7	0.9407	-0.5151	2.0519	-1.2983	0.383	1.1299
8	-0.7467	-0.0539	1.4893	-0.4703	1.0535	0.9897
9	-0.4308	-1.0532	1.6182	-0.3817	-1.6051	-1.0674

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	<b>GIF (Australia) = 0.564</b>	<b>ESJI (KZ) = 8.771</b>	<b>IBI (India) = 4.260</b>
	<b>JIF = 1.500</b>	<b>SJIF (Morocco) = 7.184</b>	<b>OAJI (USA) = 0.350</b>

10	-0.4778	1.4147	0.7091	0.2451	0.2609	0.5107
11	-2.0352	1.6883	0.1925	-0.283	-0.0897	-0.6105
12	0.0852	-1.7832	-0.1608	1.2109	-1.5167	0.8055
13	0.1784	0.597	-0.7452	-0.7659	0.6713	-2.0809
14	0.795	0.0181	-0.3319	2.4002	-0.1121	0.5402
15	0.2931	1.9021	-0.1514	0.2731	-0.7514	-0.5732
16	1.5806	0.8021	0.4519	0.2299	0.6814	-1.1289
17	-1.1418	-0.6389	0.1514	-0.3553	-0.4112	-1.439
18	0.71	0.1255	0.1252	1.4077	0.9721	-0.2243
19	0.0627	-0.7447	-1.5179	-1.4843	-0.2047	0.452
20	-1.6132	-0.1524	0.7723	2.0163	-0.3001	-0.5178
21	0.8686	-0.6922	-0.1162	-0.8229	-0.0846	-1.9744
22	1.3308	0.7492	-0.351	-1.4676	-0.3156	1.3572
23	0.8631	1.6694	0.174	0.387	-1.1819	0.8687
24	1.7844	-0.7958	-1.0699	0.9685	1.1195	-0.5608
mean	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
st.dev	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Таблица 5. Матрица у–изменчивостей  $Y_{m6}$

№	y1	y2	y3	y4	y5	y6
1	-0,2386	0,4284	-1,8327	0,5010	0,0321	-0,0643
2	-1,5037	0,1322	-0,8649	1,7690	-0,0950	0,0752
3	2,3121	-0,5818	1,2071	-0,1654	-0,2055	-0,0270
4	0,7477	-0,3094	0,3644	1,1279	0,0256	0,1988
5	-2,2487	0,9907	-1,3285	0,9105	0,0496	-0,0152
6	-0,9180	2,1002	0,0836	-0,8021	-0,0919	-0,1277
7	1,4435	0,8794	1,5572	-0,7148	0,1130	-0,0750
8	-0,5658	-0,6662	0,5070	0,1298	0,2313	0,0539
9	0,7473	-0,8356	-2,3867	-1,2882	-0,0427	-0,0405
10	-0,1103	-0,6119	0,4275	-1,3908	-0,0236	0,1855
11	-0,3595	-1,6593	-0,8872	-0,0416	-0,1291	0,0628
12	0,1238	1,8972	-0,2234	1,4390	-0,0795	0,0628
13	-0,7188	0,2329	-0,1951	-0,9960	0,1253	-0,0330
14	1,2888	-0,0248	0,6514	-0,2245	-0,0510	0,1033
15	-5,0691	-0,0984	0,3001	-1,2279	-0,0470	0,0326
16	1,1697	-0,5597	-0,7322	-1,4448	0,1093	-0,0322
17	3,9944	0,4052	-1,1593	-0,2814	-0,0042	-0,0126
18	-0,3495	-0,2919	1,6062	0,6937	-0,0287	-0,1904
19	1,0409	0,7704	0,2275	1,1165	0,1528	-0,0546
20	-1,0526	-2,4784	0,8387	1,0627	-0,0421	-0,1770
21	0,3991	1,1695	1,4126	-0,5523	-0,0595	0,1370
22	-1,8132	0,5079	0,4125	-0,7826	-0,0305	-0,0566
23	-0,2658	-1,1346	0,3349	0,7899	0,1390	0,0819
24	1,9463	-0,2622	-0,3208	0,3724	-0,0478	-0,0878
mean	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000

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st ev	3,0024	1,0423	1,0423	0,9000	0,0100	0,0100
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Таблица 6. Матрица z-изменчивостей  $Z_{m6}$

№	z1	z2	z3	z4	z5	z6
1	-0,2442	-1,3390	-0,8883	-0,5612	-1,3086	-0,1426
2	-1,8071	-0,0198	-1,9054	-1,5051	-0,2735	-0,2422
3	-0,8631	0,3244	-1,1909	-1,2230	0,4148	-0,1306
4	0,4183	-0,2486	0,0927	0,1894	-0,1817	0,1494
5	-1,9407	-0,5163	-1,8277	-2,1179	-0,4365	-0,3033
6	-0,4871	-0,6679	1,5657	-0,0296	-0,5191	0,2257
7	0,8008	-0,7543	2,2992	0,5668	-0,3066	0,5224
8	-1,1939	0,0112	1,2048	-0,6019	0,1236	0,1624
9	-0,7954	-0,8416	1,3622	-0,1978	-0,7544	-0,0544
10	-0,5323	1,2180	0,5254	-0,0572	1,1424	0,0399
11	-2,9769	1,2692	-0,5089	-2,0893	1,1930	-0,3856
12	0,6748	-0,9337	-0,1674	0,9240	-1,2460	-0,0094
13	-0,1698	0,1097	-0,6359	-0,6222	0,2991	-0,1957
14	2,1733	0,8339	-0,0516	2,4273	0,2880	0,0908
15	0,5034	1,4007	-0,0666	0,4340	1,3399	-0,0505
16	2,2620	0,6254	0,9894	1,8153	0,7012	0,2334
17	-1,7973	-0,5244	-0,2539	-1,3040	-0,5203	-0,3211
18	1,5974	0,6387	0,3882	1,7548	0,3555	0,1139
19	-0,5576	-1,2335	-1,4411	-1,5009	-0,9014	-0,0727
20	-1,3763	0,8146	0,1850	0,1872	0,2142	-0,3088
21	0,7736	-0,8881	0,1812	0,1854	-0,6253	-0,0268
22	1,2574	-0,1586	0,1064	0,0769	0,2891	0,3457
23	1,4025	1,2340	0,4274	1,1602	1,1911	0,1973
24	2,8782	-0,3541	-0,3897	2,0889	-0,4784	0,1629
mean	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
st ev	2,1287	0,6795	1,0371	1,5468	0,5520	0,0508

**Визуализация знаний о весах, их изменчивостях в холодную зиму, при сокращении поставок СПГ и при скачке высоких цен на энергоресурсы**

Новому смыслу ( $y_3$ )=«ИЗ-за «холодной зимы» ( $\lambda_3=1$ ) растет давление лоббистов политики "шредеризации" Европы ( $c_{33}=0.9404$ ), опирающихся на «активные выступления бывшего канцлера Германии Герхарда Шредера за укрепление российско-германских энергетических связей ( $c_{43}=0.30$ ), а компании (из-за потери рынков во время затянувшегося войны в Украине ( $c_{53}=0.10$ ) стремятся возобновить налаженные прочные личные и деловые связи с российской газовой отраслью ( $c_{63}=0.1$ )» соответствует смысловая формула  $новый\_смысл(y_3)=смысл(z_1)*0.0086\oplus$   $смысл(z_2)*0.0751\oplus$   $смысл(z_3)*0.9404\oplus$   $смысл(z_4)*$

$0.30\oplus$   $смысл(z_5)*0.10\oplus$   $смысл(z_6)*0.10$  и числовая формула  $y_3=z_1*0.0086+z_2*0.0751+z_3*0.9404+z_4*0.30+z_5*0.10+z_6*0.10$ . Элемент  $\lambda_3=1$  из модельного спектра  $\Lambda_{66}=\text{diag}(3.0000, 1.9810, 1.0000, -0.0010, 0.0100, 0.0100)$  показывает 3-кратную стабильность (у-переменной  $y_3$ ):  $3.0000=\text{disp}(y_1)>\text{disp}(y_2)>\text{disp}(y_3)=1.000$ ,  $\text{disp}(y_1)=\lambda_1$ ,  $\text{disp}(y_2)=\lambda_2$ ,  $\text{disp}(y_3)=\lambda_3$ . Самым не стабильным фактором является вера в фактор «лоббисты политики "шредеризации" Европы», входящий в у-фактор ( $y_3$ ) «скачок цен на энергоресурсы»:  $c_{33}=0.9404$ . На у-фактор «скачок цен на энергоресурсы» влияют еще 5 z-факторов ( $z_1, z_2, z_4, z_5, z_6, y_1$ ), включая z-фактор «высокие цены на энергоресурсы». На Рисунке 4 выделена динамика формульной единицы  $z_{12}*c_{21}$ , входящей в у-переменную  $y_1$  с отрицательным «весом»  $\text{corr}(z_2, y_1)=c_{21}=(-0.0423)$ .  $смысл(z_2)=$

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 IBI (India) = 4.260  
 OAJI (USA) = 0.350

«затянувшийся вооруженный конфликт в Украине», смысл( $y_1$ )= «холодная зима». Формульная единица  $\dots + z_{i2} * c_{21} + \dots = y_{i1}$  правдиво отражает реалии из нашей ситуации. При отрицательном «весе»  $\text{corr}(z_2, y_1) = c_{21} = (-0.0423)$  имеем формулу:  $\dots + z_{i2} * (-0.0423) = y_{i1}$ . При положительных значениях ( $z_{i2}$ ,  $y_{i1}$ ) это слагаемое из формулы для  $y$ -переменной  $y_1$

интерпретируется фразой «чем холоднее холодная «зима», тем слабее вооруженный конфликт в Украине». Это знание извлекается только для положительных значениях ( $z_{i2}$ ,  $y_{i1}$ ), наличие которых видно из Таблиц 5 и 6.

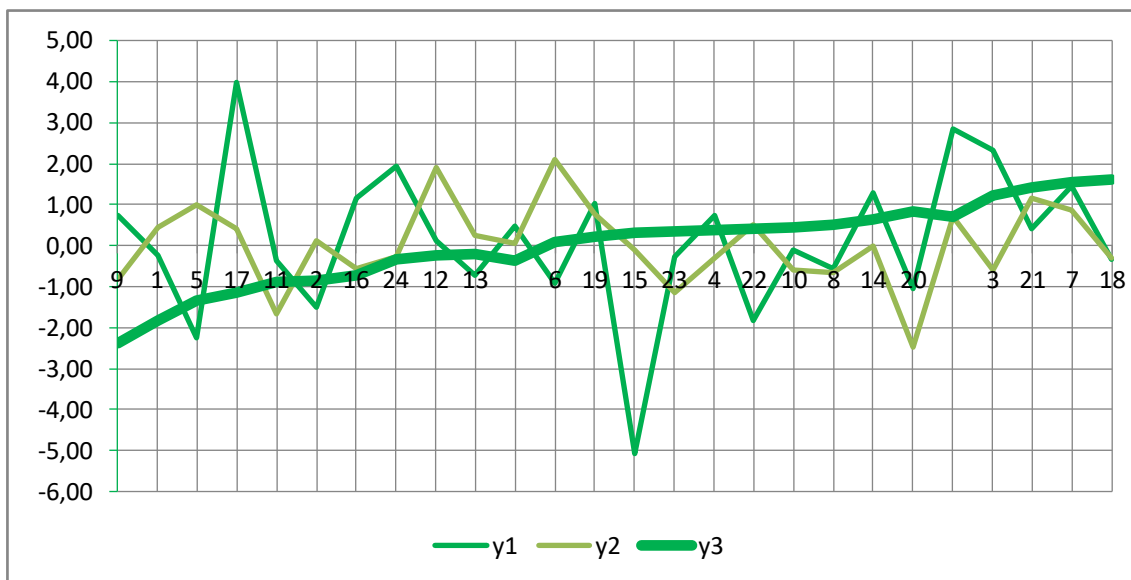


Рисунок 1.

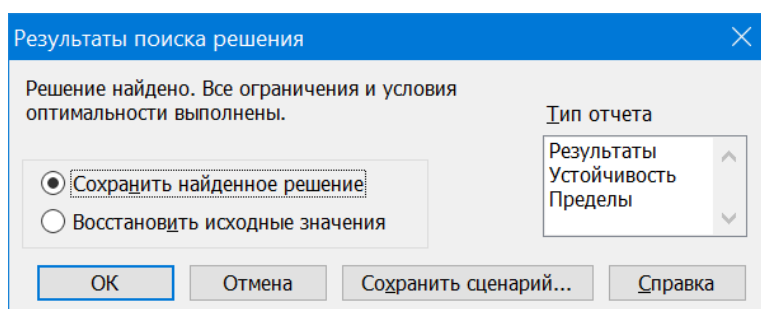
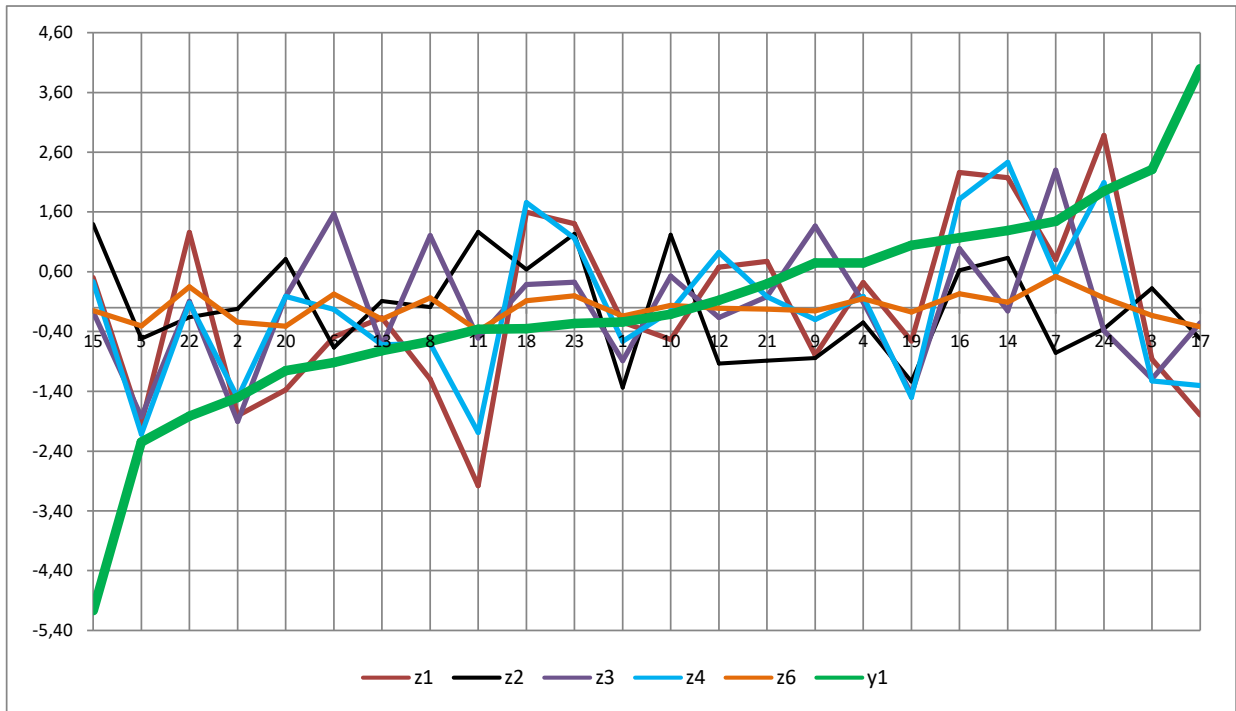


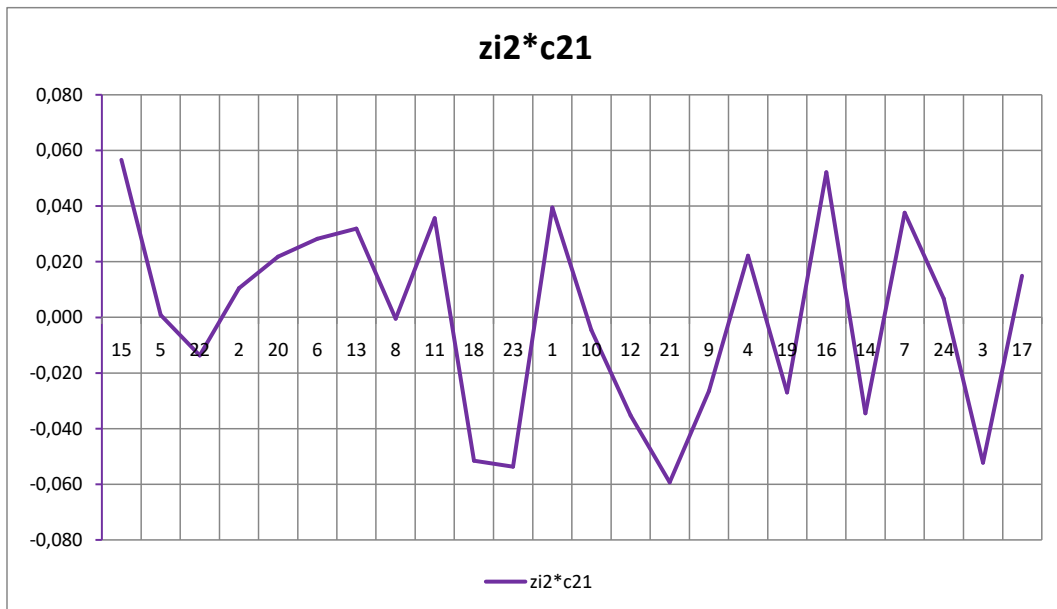
Рисунок 2.

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<b>GIF (Australia)</b> = <b>0.564</b>	<b>ESJI (KZ)</b> = <b>8.771</b>	<b>IBI (India)</b> = <b>4.260</b>
<b>JIF</b> = <b>1.500</b>	<b>SJIF (Morocco)</b> = <b>7.184</b>	<b>OAJI (USA)</b> = <b>0.350</b>



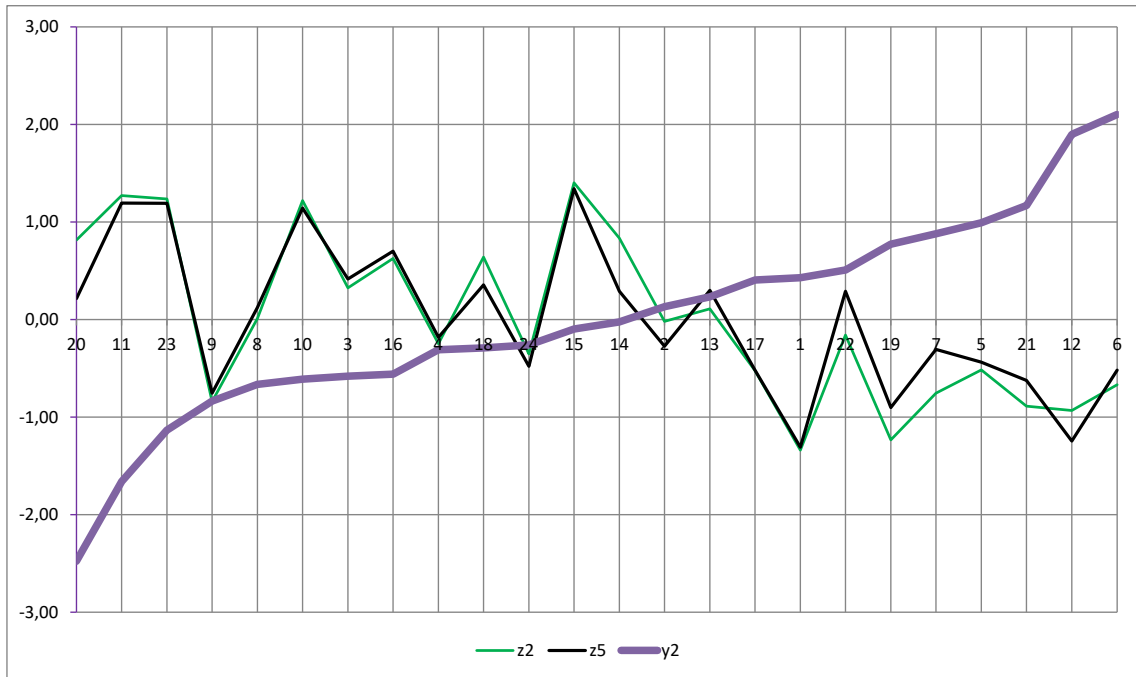
**Рисунок 3.**



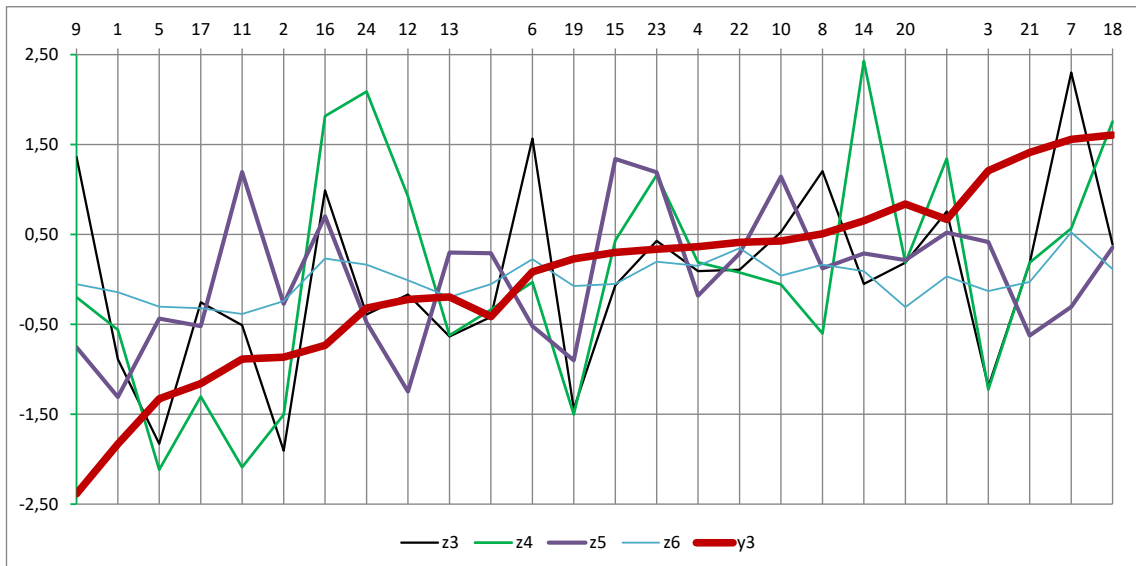
**Рисунок 4.**

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<b>GIF (Australia)</b> = <b>0.564</b>	<b>ESJI (KZ)</b> = <b>8.771</b>	<b>IBI (India)</b> = <b>4.260</b>
<b>JIF</b> = <b>1.500</b>	<b>SJIF (Morocco)</b> = <b>7.184</b>	<b>OAJI (USA)</b> = <b>0.350</b>



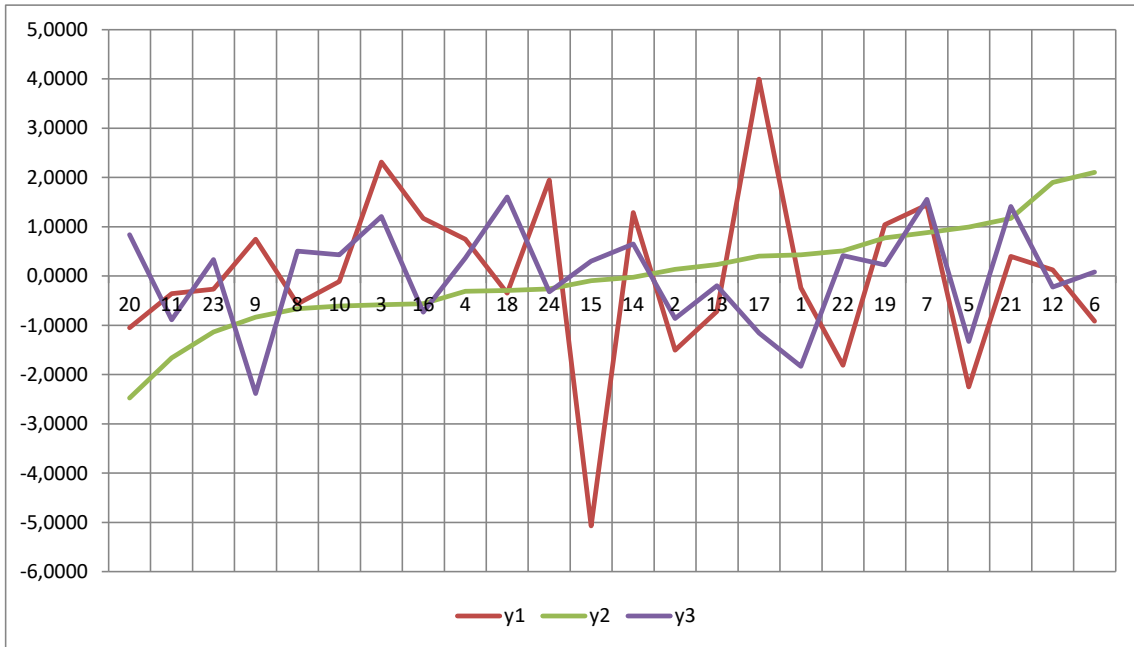
**Рисунок 5.**



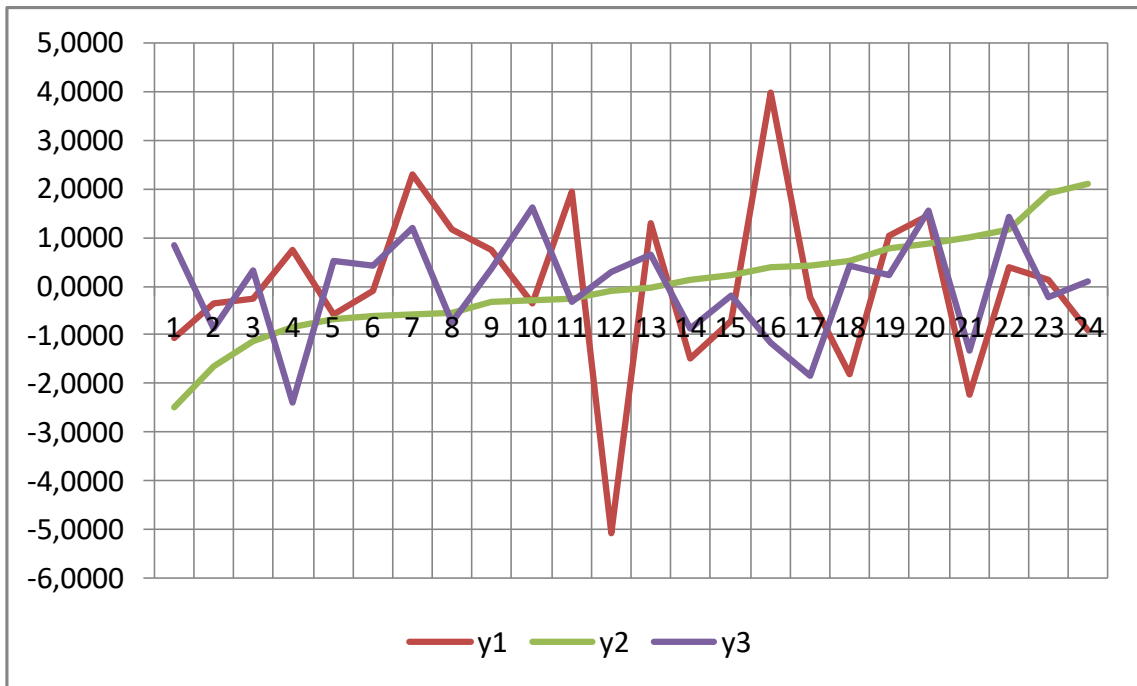
**Рисунок 6.**

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<b>GIF (Australia)</b> = <b>0.564</b>	<b>ESJI (KZ)</b> = <b>8.771</b>	<b>IBI (India)</b> = <b>4.260</b>
<b>JIF</b> = <b>1.500</b>	<b>SJIF (Morocco)</b> = <b>7.184</b>	<b>OAJI (USA)</b> = <b>0.350</b>



**Рисунок 7.**



**Рисунок 8.**



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GIF (Australia) = 0.564	ESJI (KZ) = 8.771	IBI (India) = 4.260
JIF = 1.500	SJIF (Morocco) = 7.184	OAJI (USA) = 0.350

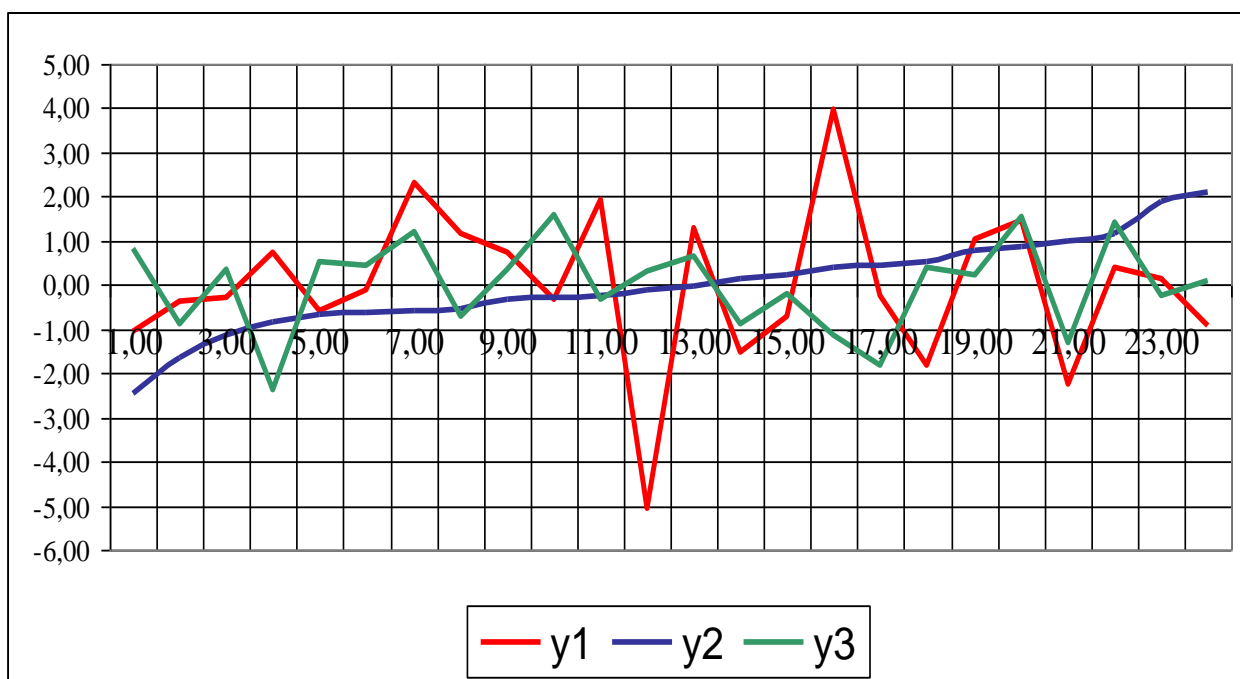


Рисунок 9.

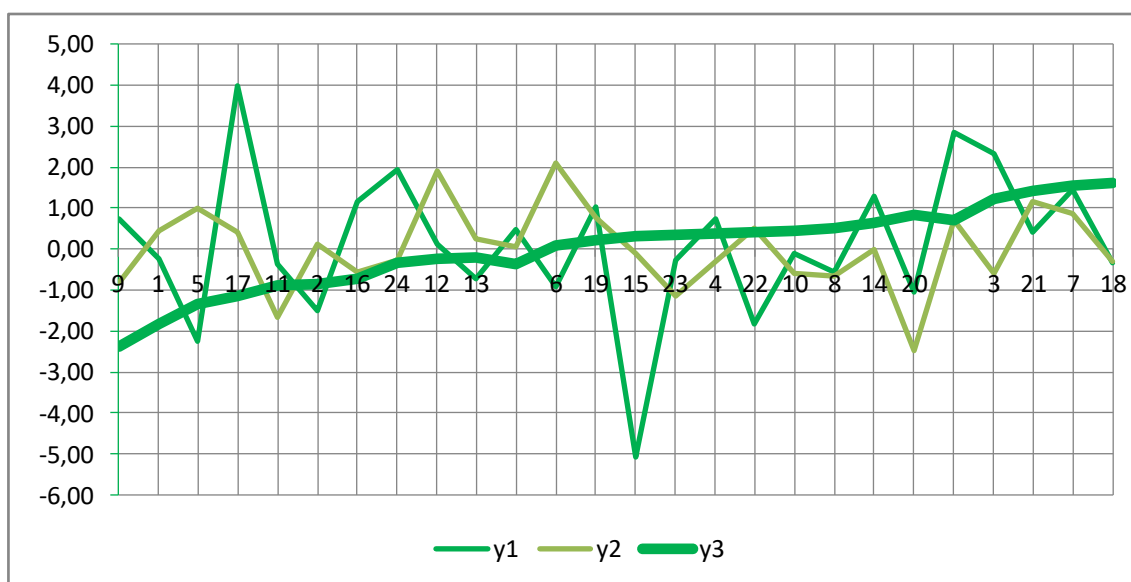


Рисунок 10.

### Заключение

Проверка алгеброй политики повторной «шредеризации» позволила в 2 раза увеличить объем извлеченных скрытых знаний о текущем состоянии стимулов, интересов участников процесса повторной "шредеризации" Европы. Она дала более точный смысловой аспект процесса, определила значения заметных сил влияния исходных неизмеряемых (зависимых z-факторов

на дисперсии у-факторов  $\lambda_1, \lambda_2, \lambda_3$ . Новый набор индикаторов из 13 штук:  $(c_{11}, c_{21}, c_{31}, c_{41}, c_{61}), (c_{22}, c_{52}), (c_{13}, c_{23}, c_{33}, c_{43}, c_{53}, c_{63})$  с разной силой проявляется в дисперсиях зависимых у-факторов. Фактор  $z_2$  (его смысл  $(z_2 = \text{«затянувшийся вооруженный конфликт в Украине»}$ ) отрицательно влияет на у-фактор  $y_1$  (смысл  $(y_1 = \text{«холодная зима»}$ ) с силой  $c_{21}^2 = -0.0423^2$ , на у-фактор  $y_1$  новый\_смысл  $(y_2 = \text{«сокращение поставок»}$

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СПГ....» - с огромной силой  $c^2_{22}=0.7073^2$ , на у-фактор  $u_3$  новый\_смысл( $u_3$ )=«скачок цен на энергоресурсы» - с силой  $c^2_{23}=0.0751^2$ . Суммарный смысл той или иной суммы смыслов z-показателей равен смыслу у-показателя. Смысл у-показателя конструируется в виде фразы, передающей смыслы слагаемых фраз. Каждая слагаемая фраза равна смыслу одного z-показателя. Суммарный смысл конструируется без когнитивного диссонанса. Самым не стабильным фактором является вера в фактор «лоббисты политики "шредеризации" Европы». Он входит в фактор «скачок цен на энергоресурсы»: его «вес» большой и равен  $c_{33}=0.9404$ . На фактор «скачок цен на энергоресурсы» влияют еще 5 z-факторов ( $z_1, z_2, z_4, z_5, z_6, y_1$ ).

Мы познали 3 ситуации при помощи 3-х когнитивных моделей. Модель повторной "шредеризации" Европы абстрагирует 3 реальные ситуации: холодная зима, сокращение поставок СПГ и скачок цен на энергоресурсы. Анализ соотношений этих трех величин дает еще больше знаний об нашем изучаемом явлении. Эти и другие выводы дают обоснования: модель поправляет мозаику индикаторов и добавляет новые скрытые знания путем извлечения их методом решения Оптимизационной Задачи:  $(I_{66}, I_{66}) \Rightarrow (A_{66}, C_{66})$  с заданной мозаикой индикаторов в матрице  $C_{66}$ .

## References:

1. Zhanatauov, S.U. (2021). Cognitive computing: models, calculations, applications, results. *ISJ «Theoretical & Applied Science»*, №5, vol.97, 594-610. [www.t-science.org](http://www.t-science.org)
2. Zhanatauov, S. U.(2022). Cognitive model: Overton window. *ISJ «Theoretical & Applied Science»*. №11, vol.115, 170-189. [www.t-science.org](http://www.t-science.org)
3. Zhanatauov, S. U. (2023). Cognitive model: Anholt hexagon. *ISJ «Theoretical & Applied Science»*. № 6, vol.122, 441-462. [www.t-science.org](http://www.t-science.org)
4. Zhanatauov, S.U. (2020). Measurement of variability of unmeasured indicators of individuals. *ISJ «Theoretical & Applied Science»*. №10, vol.90, 204-217. [www.t-science.org](http://www.t-science.org)
5. Zhanatauov, S.U. (2018). Model of digitalization of indicators of individual consciousness. *Int.Sci.en.Jour. «Theoretical & Applied Science»*, №6(62): 101-110. [www.t-science.org](http://www.t-science.org)
6. Zhanatauov, S.U. (2018). Digitalization of the behavioral model with errors of non-returnable costs. *Int.Sci.en.Jour. «Theoretical & Applied Science»*. №8(64): 101-110. [www.t-science.org](http://www.t-science.org)
7. Zhanatauov, S.U. (2020). Cognitive model of variability in negative breeding indicators. *ISJ «Theoretical & Applied Science»*. №8, vol.88, 117-136. [www.t-science.org](http://www.t-science.org)
8. Zhanatauov, S.U. (2021). Stone-Geary behavioral demand model for addictive communication services. *ISJ «Theoretical & Applied Science»*. №2, vol.94, 316-328. [www.t-science.org](http://www.t-science.org)
9. Zhanatauov, S.U. (2018). A model of calculation of subjective probabilities in business. *ISJ «Theoretical & Applied Science»*. №5(61): 142-156. [www.t-science.org](http://www.t-science.org)
10. Zhanatauov, S.U. (2021). Digital model of the formula of life. *ISJ «Theoretical & Applied Science»*. №8, vol.98, 136-149. [www.t-science.org](http://www.t-science.org)
11. Zhanatauov, S.U. (2019). Cognitive model of the structure of the municipal body on monitoring the moral environment for subsides of human resources. *Int.Sci.en.Jour. «Theoretical & Applied Science»*. № 7(75): 401-418. [www.t-science.org](http://www.t-science.org)
12. Zhanatauov, S. U. (2023). A cognitive model recognizing a farmer's dream *ISJ Theoretical & Applied Science»*, №3, vol.119, 53-61. [www.t-science.org](http://www.t-science.org)
13. Zhanatauov, S.U. (2023). Mathematically calculated reality, supplementing biochemistry of self-purification of the water of rivers and lakes. *ISJ «Theoretical & Applied Science»*. 2023, №1, vol.116, 609-623. [www.t-science.org](http://www.t-science.org)
14. Zhanatauov, S.U. (2023). Verbal, symbolic, mathematical, semantic, behavioral, cognitive models. *ISJ «Theoretical & Applied Science»*. 2022, №9, vol.113, 169-174. [www.t-science.org](http://www.t-science.org)
15. Zhanatauov, S. U. (2021). Modeling the variability of variables in the multidimensional equation of the cognitive meanings of the

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- variables. *ISJ «Theoretical & Applied Science»*. 2021, №1, vol.93, 316-328. [www.t-science.org](http://www.t-science.org)
16. Zhanatauov, S.U. (2020). Transformation of a system of equations into a system of sums of cognitive meaning of variability of individual consciousness indicators. *ISJ «Theoretical & Applied Science»*. 2020, №11, vol. 91, 531-546. [www.t-science.org](http://www.t-science.org)
  17. Zhanatauov, S.U. (2022). Calculation of parts of cognitive information in the formula of biochemical reactions. *ISJ «Theoretical & Applied Science»*. 2022, №4, vol.108, 750-755 [www.t-science.org](http://www.t-science.org)
  18. Zhanatauov, S.U. (2020). Matrices of indicators of recoverable knowledge. *ISJ «Theoretical & Applied Science»*. №3, vol.83, 464-475. [www.t-science.org](http://www.t-science.org)
  19. Zhanatauov, S.U. (2023). Semantic mosaic of indicators of extracted knowledge. *ISJ «Theoretical & Applied Science»*. 2023, №5, vol.121, 101-108. [www.t-science.org](http://www.t-science.org)
  20. Zhanatauov, S.U. (2019). *Obratnaja spektral'naja zadacha*. Tezisy dokladov Mezhdunarodnoj konferencijai «Matematika v prilozhenijah» v chest' 90-letija Sergeja Konstantinovicha Godunova 4-10 avgusta 2019, (p.132). Novosibirsk, Rossija.
  21. Zhanatauov, S.U. (2018). Inverse spectral problem with indicated values of components of the eigenvectors. *ISJ Theoretical & Applied Science*, 2018, vol.67, №11, 358-370. [www.t-science.org](http://www.t-science.org)
  22. Zhanatauov, S.U. (2017). Theorem on the  $\Lambda$ -samples. *International scientific journal «Theoretical & Applied Science»*. № 9, vol. 53, 177-192. [www.T-Science.org](http://www.T-Science.org)
  23. Zhanatauov, S.U. (2019). A matrix of values the coefficients of combinational proportionality. *Int. Scientific Journal Theoretical & Applied Science*. 2019, vol. 71, №3, 401-419. [www.t-science.org](http://www.t-science.org)
  24. Zhanatauov, S.U. (2018). Inverse spectral problem. *ISJ Theoretical & Applied Science*. vol.68, №12, 101-112. [www.t-science.org](http://www.t-science.org)

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### International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2023 Issue: 07 Volume: 123

Published: 30.07.2023 <http://T-Science.org>

Issue



Article



Dooronbek Shamshievich Nuriev  
Kyrgyz National University  
Candidate of Legal Sciences  
Bishkek, Kyrgyz Republic  
[doon.nuriyev@mail.ru](mailto:doon.nuriyev@mail.ru)

## ON VIOLATIONS OF INTERNATIONAL ORDER AND GENERALLY RECOGNIZED WAR

**Abstract:** The article reveals the role of the international community and international organizations in the settlement of armed conflicts, considers the reasons for the emergence of private military companies, the impact of private military companies on armed conflicts, notes the services provided by these companies. In addition, this article touches upon the issues of mercenarism and the definition of a mercenary in international documents. It is said about the measures taken at the international level to combat mercenarism and the existing difficulties in bringing mercenaries to criminal responsibility.

**Key words:** Principles of international law, international documents, private military companies, mercenarism, mercenary, international organizations, armed conflicts.

**Language:** Russian

**Citation:** Nuriev, D. Sh. (2023). On violations of international order and generally recognized war. *ISJ Theoretical & Applied Science*, 07 (123), 279-284.

**Soi:** <http://s-o-i.org/1.1/TAS-07-123-33> **Doi:**  <https://dx.doi.org/10.15863/TAS.2023.07.123.33>

**Scopus ASCC:** 3300.

### О НАРУШЕНИЯХ МЕЖДУНАРОДНОГО ПОРЯДКА И ОБЩЕПРИЗНАННЫХ НОРМ ВЕДЕНИЯ ВОЙНЫ

**Аннотация:** В статье раскрывается роль международного сообщества и международных организаций в урегулировании вооруженных конфликтов, рассмотрены причины появления частных военных компаний, влияние частных военных компаний на вооруженные конфликты, отмечаются услуги, оказываемые данными компаниями. Кроме этого, в данной статье затрагиваются вопросы наемничества и определения понятия наемник в международных документах. Говорится о проводимых на международном уровне мер по борьбе с наемничеством и имеющихся трудностях привлечения наемников к уголовной ответственности.

**Ключевые слова:** Принципы международного права, международные документы, частные военные компании, наемничество, наемник, международные организации, вооруженные конфликты.

#### Введение

В истории человечества войны всегда играли важную роль и были связаны с национальными интересами и государственной независимостью. В современном периоде мир стал свидетелем различных вооруженных конфликтов, как внутри государств, так и между ними. Причины таких конфликтов могут быть разнообразными, включая распределение власти, контроль над ресурсами, национальные и этнические разногласия,

религиозные противоречия и геополитические интересы.

Однако, стоит отметить, что с появлением международных правовых норм и норм международных отношений, понятие войны и ее правовые аспекты стали урегулированы набором международных документов. Одним из ключевых принципов международного права является принцип суверенитета государства, который подразумевает, что каждое независимое

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государство имеет исключительное право управлять своими внутренними делами без внешнего вмешательства. Это право не безгранично, и оно ограничивается другими международными нормами и принципами.

Принцип суверенитета не означает абсолютное право государства развязывать войну и использовать вооруженные силы без ограничений. В международном праве существует концепция права на самооборону, когда государство имеет право на применение силы в случае нападения на него, чтобы защитить свою территорию и население. Однако применение вооруженной силы должно быть пропорциональным и направленным исключительно на защиту.

Также, международное право включает нормы, регулирующие вооруженные конфликты, чтобы ограничить страдания гражданского населения и предотвратить использование чрезмерной силы. Международное гуманитарное право, в частности, устанавливает правила, касающиеся обращения с военнопленными, защиты мирного населения и предотвращения применения запрещенных видов оружия [1].

Определенные формы вооруженных конфликтов, которые не соответствуют традиционному представлению о международных войнах между государствами, могут классифицироваться как операции контртеррористического характера или конфликты низкой интенсивности. Такие конфликты часто включают террористические группы или вооруженные формирования, не являющиеся официальными армиями государств, и могут представлять сложные вызовы для международного права.

В целом, международные правовые документы и нормы направлены на уменьшение насилия и предотвращение необоснованных вооруженных конфликтов. Они стараются сбалансировать право государств на самооборону и суверенитет с необходимостью соблюдения прав человека и мирных норм поведения в мировом сообществе [2, с.55].

В истории армии человек всегда был основным элементом и орудием во всех временах. Вооруженные силы состоят из воюющих и невоюющих. В соответствии с Женевскими конвенциями, воюющие (также называемые комбатантами) — это лица, принимающие активное участие в военных действиях, будь то члены регулярных вооруженных сил или партизанских отрядов. Они могут использовать имеющееся у армии оружие и обычно носят униформу или имеют другие отличительные знаки.

Невоюющие (некомбатанты) — это лица, которые не принимают активного участия в

боевых действиях. К ним относятся медицинский персонал, религиозные деятели, гражданские лица, пленные военные и другие лица, которые не участвуют непосредственно в боевых действиях [3].

В соответствии с Женевскими конвенциями, воюющим, которые были задержаны, должен быть предоставлен статус военнопленного, если они удовлетворяют определенным условиям, таким как:

1. Носить одежду, отличающую их от гражданских лиц.
2. Носить отличительные знаки, идентифицирующие их как военнослужащих.
3. Открыто носить оружие, являющееся частью их вооружения.
4. Вести свои действия в соответствии с военными правилами и законами [4].

Если воюющие были правильно задержаны и удовлетворяют этим условиям, они должны рассматриваться как военнопленные, и им предоставляются соответствующие права и защита в соответствии с международным правом. Это включает обработку в соответствии с определенными нормами и защиту от физического уничтожения.

Правила вооруженных конфликтов и обращения с воюющими и невоюющими урегулированы международным гуманитарным правом, такими как Женевские конвенции. Эти нормы созданы для защиты прав и безопасности людей, участвующих в вооруженных конфликтах, и они должны быть строго соблюдены всеми сторонами вооруженного конфликта. Важно соблюдать эти правила и нормы, чтобы обеспечить защиту прав и достоинства всех участников вооруженных конфликтов и предотвратить гуманитарные катастрофы.

В современном мире наблюдается увеличение роли частных военных компаний и наемников в различных конфликтах. Эти компании, также известные как военные подрядчики или частные военные компании (ЧВК), предоставляют свои услуги государствам, организациям или частным лицам для выполнения различных военных задач. Их деятельность может включать обеспечение вооружения, обучение вооруженных сил, логистическую поддержку и даже активное участие в боевых операциях.

Существует несколько причин, по которым страны могут обращаться к частным военным компаниям:

1. Некоторые страны могут не иметь достаточных финансовых или человеческих ресурсов, чтобы поддерживать мощные и квалифицированные вооруженные силы. Обращение к частным военным компаниям может быть более экономически эффективным решением.

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2. Современные конфликты требуют специализированных знаний и навыков, таких как кибербезопасность, информационная война, дроневедение и т.д. Частные военные компании могут предоставить доступ к этим специалистам.

3. Использование частных военных компаний может позволить государствам вести операции с большей гибкостью и меньшей привязанностью к политическим или международным обязательствам.

4. Некоторые страны могут хотеть участвовать в конфликтах или влиять на события в других регионах, не прибегая к прямому военному вмешательству. Частные военные компании могут быть более подходящим инструментом в таких случаях.

Однако привлечение частных военных компаний также вызывает некоторые вопросы и проблемы:

- Использование частных военных компаний вызывает вопросы о легальности и контроле их деятельности. Некоторые компании могут быть замешаны в нарушениях прав человека и международного права.

- Когда частные военные компании участвуют в конфликтах, возникают вопросы об их ответственности перед международным сообществом и жертвами конфликта.

- Вмешательство частных военных компаний может привести к увеличению уровня насилия и нестабильности в регионе.

Из-за этих проблем возникает необходимость в правовом регулировании деятельности частных военных компаний на международном и национальном уровнях. Это включает разработку законов и норм, которые бы обеспечивали прозрачность и отчетность деятельности частных военных компаний, а также устанавливали механизмы контроля и соблюдения международного права и прав человека.

Однако, несмотря на сложности и противоречия, связанные с использованием частных военных компаний, их роль в современных конфликтах продолжает привлекать внимание и требует дальнейшего обсуждения и регулирования [5, с.63-67].

Частные военные компании предоставляют различные военные услуги и имеют разные направления деятельности:

- Компании, предоставляющие военные услуги. Эти компании специализируются на оказании профессиональных военных услуг. Они могут предоставлять услуги найма и обучения наемников, участвовать в военных операциях и миссиях по заказу государств или других организаций. Их клиентами могут быть правительства, частные лица или организации, и их деятельность обычно регулируется международными и национальными правовыми

рамками.

- Компании, осуществляющие военные логистические операции. Эти компании специализируются на предоставлении логистической поддержки военным операциям или миссиям. Это может включать поставку вооружения, оборудования, пищи, медицинской помощи и других ресурсов, необходимых для проведения военных действий. Они обычно работают по контрактам с вооруженными силами или государственными агентствами.

- Компании, предоставляющие консалтинговые услуги в военной сфере. Эти компании предоставляют консультационные услуги в области безопасности, обороны и вооруженных сил. Они могут заниматься разработкой стратегий, обучением персонала, анализом уязвимостей и другими консультационными задачами, связанными с военной сферой. Как правило, они работают с клиентами, которые нуждаются в профессиональных советах по вопросам безопасности и обороны.

- Военные охранные компании. Эти компании специализируются на предоставлении услуг по охране и защите. Они могут работать в различных сферах, включая личную охрану, охрану объектов, конвоирование грузов и другие задачи, связанные с обеспечением безопасности клиентов. Военные охранные компании обычно имеют обученный и опытный персонал, который может оперативно реагировать на угрозы и обеспечивать безопасность в различных условиях.

Важно отметить, что деятельность частных военных компаний может вызывать этические и правовые вопросы, и регулирование их деятельности может различаться в разных странах. Неконтролируемое использование частных военных компаний может представлять угрозу для мира и безопасности, и поэтому обычно страны и международные организации стремятся создать строгие правила и ограничения для их деятельности.

Говоря о наемничестве, следует отметить, что оно представляет собой явление, когда бывшие военнослужащие или опытные военные специалисты принимают участие в вооруженных конфликтах за деньги, не являясь частью регулярных вооруженных сил. Это довольно сложная и многогранная проблема, которая имеет как позитивные, так и негативные аспекты.

Позитивные аспекты наемничества:

- Наемники, как правило, обладают большим опытом вооруженных столкновений и тактическими навыками, которые могут быть ценными в некоторых ситуациях.

- Наемнические отряды могут быть легче мобилизованы и более гибкими в действиях, чем регулярные вооруженные силы, что позволяет

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использовать их в различных ситуациях и местах.

- Некоторые правительства нанимают наемников для поддержки своих интересов за пределами своей страны без прямого привлечения своих регулярных вооруженных сил.

Негативные аспекты наемничества:

- Наемничество запрещено международным правом, и наемники не имеют тех же правовых статусов или защиты, что и военные. Их деятельность может противоречить международным нормам и нормам вооруженных конфликтов.

- Наемники могут ускользнуть от ответственности за возможные нарушения прав человека или военных преступлений, так как часто их сложно привлечь к ответственности.

- Участие наемников может усугубить конфликт, так как они могут служить в различных сторонах конфликта и не всегда действовать в интересах решения конфликта мирным путем.

- Наемники часто оказываются в опасных ситуациях и могут стать мишенями для различных вооруженных групп.

Кроме того, наемничество может иметь различные социально-экономические и политические последствия, включая разрушение государственных структур, влияние на международные отношения и повышение напряженности в регионах с вооруженными конфликтами.

Стремление бывших военнослужащих найти применение своим навыкам и заработать высокую зарплату может быть понятным, но важно учитывать законность и последствия их действий, чтобы обеспечить мир и стабильность в мировом сообществе. Ответственное взаимодействие между государствами и уважение международного права играют важную роль в предотвращении негативных последствий наемничества.

Существует проблема отсутствия эффективных международных мер по регулированию и предотвращению действий наемников. Следует обратить внимание на следующие ключевые моменты:

1. Наемники — это лица, которые сами по себе не связаны с вооруженными силами какого-либо государства, но предоставляют свои услуги определенным группам или организациям за деньги. Отмечается, что они не только участвуют в вооруженных столкновениях, но и занимаются различными незаконными действиями, такими как террористические операции, контрабанда оружия и наркотиков, а также давление на политических противников.

2. Деятельность наемников часто приводит к разрушительным последствиям, так как они применяют жестокость и насилие без должного соблюдения международного права.

3. На данный момент международное право не предоставляет достаточных механизмов и рычагов воздействия для эффективного регулирования и противодействия деятельности наемников.

4. Гагская Конвенция, содержащая некоторые нормы, направленные на предупреждение данного явления, запрещая, например, открытие вербовочных центров на территории нейтральных государств. Однако, данные нормы не обладают достаточной силой для эффективного регулирования и пресечения деятельности наемников.

Вопросы наемничества и его определения рассматривались на международном уровне, и важные шаги были предприняты для признания ее преступным деянием. Дополнительный протокол к Женевским конвенциям (Дополнительный протокол I) был принят 8 июня 1977 года и содержал определение наемника, а также устанавливал запрет на их использование в вооруженных конфликтах [6].

Согласно этому протоколу, наемником считается лицо, которое:

- Специально завербовано на территории воюющей стороны или в нейтральных государствах;

- Участвует в вооруженном конфликте;

- Мотивацией для участия в вооруженном конфликте является желание получить личную денежную выгоду, и это вознаграждение существенно превышает жалование, которое получает непосредственный участник военных действий;

- Не является гражданином ни одной из воюющих сторон и официально не находится в структуре вооруженных сил воюющих сторон.

Признание наемничества преступным деянием было сделано, чтобы предотвратить его использование и защитить международный порядок. Использование наемников может привести к серьезным нарушениям прав человека, повышенному насилию и разрушениям во время вооруженных конфликтов, а также усложнить урегулирование и мирное сосуществование народов.

Международные организации, такие как Организация африканского единства [7] и Организация Объединенных Наций, активно работают над поддержанием этого запрета и предотвращением использования наемников в вооруженных конфликтах, а также над урегулированием ситуаций, когда подобные деяния могут возникать [8].

Конвенция ООН о запрещении вербовки, использования, финансирования и обучения наемников вступила в действие в 2001 году [9]. Данная конвенция запрещает привлечение наемников и устанавливает ответственность за

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участие в военных действиях без статуса военнопленного. Она также призывает страны-члены ООН воздержаться от использования нерегулярных сил и негосударственных вооруженных формирований, включая наемников, во время вооруженных конфликтов.

Основная идея этих международных документов заключается в том, чтобы ограничить использование наемников, которые могут быть независимыми от национальных интересов и подрывать стабильность и безопасность страны, в которой они действуют. Наемники, как правило, участвуют в вооруженных конфликтах за деньги или по иным причинам, не связанным с идеологическими или национальными убеждениями. Это может привести к потенциальным нарушениям прав человека и международного гуманитарного права, поскольку они не всегда придерживаются тех же стандартов, что и регулярные вооруженные силы.

Конвенция и Декларация являются важными шагами в борьбе с проблемой наемничества и поддерживают принципы международного права и уважение суверенитета государств. Однако, стоит отметить, что реализация этих принципов может быть сложной, так как мир не лишен конфликтов и ситуаций, когда наемники продолжают играть недобросовестную роль на политических аренах различных стран. Это может требовать дальнейших усилий и сотрудничества между странами для пресечения использования наемников и поддержания международной безопасности и стабильности.

Привлечение наемников к юридической ответственности может быть сложной задачей, особенно в условиях военных действий. Нахождение и привлечение наемников к уголовной ответственности сталкивается с рядом препятствий:

1. Каждая страна может иметь свое определение наемничества, и оно может различаться от международных норм. Это создает сложности при преследовании наемников, участвующих в конфликтах за границей или в странах, где уголовное преследование наемников может быть не таким же строгим.

2. Наемники обычно работают в условиях повышенной секретности и могут использовать псевдонимы или иные методы, чтобы скрыть свою личность. Это делает их выявление и привлечение к ответственности более сложным.

3. В условиях конфликтов сбор доказательств может быть сложным из-за нарушения общественного порядка, разрушения инфраструктуры и трудности доступа к информации и свидетелям.

4. Во время активных вооруженных конфликтов приоритетными обычно являются ведение военных операций и обеспечение

безопасности гражданского населения. Поэтому привлечение наемников к уголовной ответственности может оказаться на заднем плане из-за неотложных потребностей в борьбе с конфликтом.

5. В определенных случаях, когда государства привлекают наемников, это может быть сделано с учетом своих национальных интересов. Это может создавать политические препятствия для привлечения наемников к ответственности.

Несмотря на эти сложности, на международном уровне есть усилия по борьбе с наемничеством и привлечению наемников к суду, особенно в случаях явных и серьезных нарушений международного права и прав человека. Однако решение подобных вопросов часто требует согласованных усилий международного сообщества, политической воли и соблюдения международных правовых норм.

В современном мире сфера военных технологий и систем стремительно развивается. Государства и армии стремятся адаптировать свои вооруженные силы к усложненным военным условиям. Гибкие и сетевые структуры вооружений могут обеспечивать более эффективное управление и реагирование на различные угрозы и вызовы.

Однако использование частных военных компаний вызывает определенные вопросы и риски. Такие компании, будучи коммерческими структурами, могут руководствоваться своими коммерческими интересами и не всегда учитывать национальные или международные нормы, что может привести к потенциальным негативным последствиям.

В связи с этим, правовое регулирование частных военных компаний становится важным вопросом для обеспечения их ответственного и законного поведения. Правила и законы могут обеспечить прозрачность и установление стандартов для деятельности таких компаний, что поможет предотвратить наемническую и преступную деятельность, а также защитить права и безопасность всех сторон, вовлеченных в конфликты, в которых они участвуют.

Международное сообщество также может играть важную роль в регулировании деятельности частных военных компаний, так как их операции могут пересекать границы и затрагивать интересы различных государств. Координация между государствами и обмен информацией может помочь предотвратить потенциальные конфликты и недопустимое поведение.

Таким образом, современные технологии и изменения в сфере вооружений требуют новых подходов к организации и управлению вооруженными силами. Использование частных



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военных компаний может представлять собой эффективный инструмент для решения определенных задач, но это также требует соответствующего правового регулирования и

контроля для предотвращения негативных последствий и нарушений международного права.

## References:

1. Kotlyarov, I.I. (2009). *International humanitarian law*. (p.304). Moscow: Yurlitinform.
2. Djobekova, A.M., Nuriev, D.Sh., Sayakova, M.K., Kenzhebek kyzy, M., Kokoeva, A.M., & Shevchenko, A.V. (2022). Criminalization of Acts Impacting Human Security as a Result of the System of International Relations. *Pakistan Journal of Criminology*. 2022. Vol.14, No4, pp.53-68.
3. (1949). *The Geneva Convention of August 12, 1949 on the Treatment of Prisoners of War*. Retrieved from [https://www.un.org/ru/documents/decl\\_conv/conventions/geneva\\_prisoners.shtml](https://www.un.org/ru/documents/decl_conv/conventions/geneva_prisoners.shtml)
4. (1907). *Convention on the Laws and Customs of Land Warfare, October 18, 1907*. Retrieved from <https://www.icrc.org/ru/doc/resources/documents/misc/hague-convention-iv-181007.htm>
5. Cameron, L. (2006). Private military companies: their status under international humanitarian law and the impact of IHL on the regulation of their activities. *International Journal of the Red Cross*, 2006, Vol.88, pp.63-67.
6. (2013). *The Additional Protocol to the Geneva Conventions (Additional Protocol I) was adopted on June 8, 1977*. Retrieved from [https://www.icrc.org/ru/doc/assets/files/2013/ap\\_i\\_rus.pdf](https://www.icrc.org/ru/doc/assets/files/2013/ap_i_rus.pdf)
7. Mazov, S.V. (n.d.). *Organization of African Unity*. Retrieved from [https://old.bigenc.ru/world\\_history/text/268320](https://old.bigenc.ru/world_history/text/268320)
8. (1989). *International Convention for the Suppression of the Recruitment, Use, Financing and Training of Mercenaries of December 4, 1989*. Retrieved from [https://www.un.org/ru/documents/decl\\_conv/conventions/mercen.shtml](https://www.un.org/ru/documents/decl_conv/conventions/mercen.shtml)
9. Grishaeva, L.E. (2007). *Russia and the UN: history and modernity*. (p.502). Moscow.

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SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

### International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2023 Issue: 07 Volume: 123

Published: 30.07.2023 <http://T-Science.org>

Issue

Article



**Arzygul Mamayunusovna Dzhorobekova**  
National Academy of Science Kyrgyz Republic  
Doctor of Law, Professor  
Kyrgyz Republic

**Dooronbek Shamshievich Nuriev**  
Kyrgyz National University  
Candidate of Legal Sciences  
Kyrgyz Republic  
[doonuriyev@mail.ru](mailto:doonuriyev@mail.ru)

## INTERNATIONAL LEGAL UNDERSTANDING OF PEACE AS THE HIGHEST VALUE

**Abstract:** The article says that the idea of peace as the highest value embodies the desire to build peaceful relations, cooperation and respect for human rights at the global and national level. It is at the heart of various international efforts and organizations aimed at resolving conflicts and creating an enabling environment for the prosperity of all peoples. It is noted that common values and principles can serve as the basis for creating international solidarity, trust and cooperation between states. The main principles of the peaceful resolution of conflicts, respect for international law and respect for human rights, which contribute to stability and harmony at the global and national levels, are considered.

**Key words:** The concept of peace, intranational peace, peaceful relations, international cooperation, international solidarity, the right to peace and security.

**Language:** Russian

**Citation:** Dzhorobekova, A. M., & Nuriev, D. Sh. (2023). International legal understanding of peace as the highest value. *ISJ Theoretical & Applied Science*, 07 (123), 285-291.

**Soi:** <http://s-o-i.org/1.1/TAS-07-123-34> **Doi:**  <https://dx.doi.org/10.15863/TAS.2023.07.123.34>

**Scopus ASCC:** 3300.

### МЕЖДУНАРОДНО-ПРАВОВОЕ ПОНИМАНИЕ МИРА КАК ВЫСШЕЙ ЦЕННОСТИ

**Аннотация:** В статье говорится о том, что идея мира как высшей ценности олицетворяет желание строить мирные отношения, сотрудничество и уважение к правам человека на мировом и национальном уровне. Она находится в основе различных международных усилий и организаций, направленных на урегулирование конфликтов и создание благоприятной среды для процветания всех народов. Отмечается, что единые ценности и принципы могут служить основой для создания международной солидарности, доверия и сотрудничества между государствами. Рассматриваются основные принципы мирного разрешения конфликтов, соблюдения международного права и уважения прав человека, которые содействуют стабильности и согласию на глобальном и национальном уровнях.

**Ключевые слова:** Концепция мира, внутринациональный мир, мирные отношения, международное сотрудничество, международная солидарность, право мира и безопасности.

#### Введение

С формированием международного права и развитием внутригосударственного права появилась концепция мира как высшей ценности,

рассматриваемая в военно-политическом (геополитическом) измерении. Эта концепция основывается на стремлении обеспечить мирное сосуществование государств и предотвратить

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возникновение конфликтов и войн.

Необходимо указать, что выделяют две научные категории подобного мира:

1. **Международный мир.** Это состояние относительной стабильности и отсутствия острых военных конфликтов между государствами на мировой арене. Международный мир предполагает, что государства находятся в состоянии сотрудничества, взаимодействия и диалога для разрешения разногласий. Основой международного мира является международное право, дипломатические отношения и механизмы международной безопасности.

2. **Внутринациональный мир.** Эта категория относится к состоянию стабильности и отсутствию вооруженных конфликтов и насилия внутри отдельных государств. Он связан с укреплением внутрисоциального порядка, соблюдением прав человека, справедливостью, социальной стабильностью и политическим участием населения.

Обе эти категории тесно взаимосвязаны и важны для обеспечения глобальной стабильности и мира. Международные отношения и взаимодействия между государствами способствуют уменьшению вероятности вооруженных конфликтов и поддержанию мира на мировой арене, в то время как укрепление внутрисоциальных институтов и соблюдение прав и свобод граждан помогает предотвращать насилие внутри страны [1].

Идея мира как высшей ценности олицетворяет желание строить мирные отношения, сотрудничество и уважение к правам человека на мировом и национальном уровне. Она находится в основе различных международных усилий и организаций, направленных на урегулирование конфликтов и создание благоприятной среды для процветания всех народов.

Единые ценности и принципы могут служить основой для создания международной солидарности, доверия и сотрудничества между государствами. Когда эти ценности начинают размываться или сталкиваются с конфликтующими интересами, возникают потенциальные проблемы:

- Если государства или регионы имеют различные стратегические интересы или ценности, это может привести к геополитическим напряжениям и даже вооруженным столкновениям.

- Различия в религиозных или культурных ценностях могут стать источниками конфликтов и международных войн, особенно если группы людей начинают чувствовать себя угнетенными или недооцененными.

- Конкуренция за доступ к ресурсам, рынкам и экономическому лидерству может

спровоцировать международные конфликты.

- Различия в политических и идеологических убеждениях могут привести к международным столкновениям, особенно если страны пытаются экспортировать свои идеологии на мировую арену.

- Конфликты, основанные на этнических различиях или стремлении к национальной независимости, могут разжигать войны как между государствами, так и внутри них.

Для предотвращения и урегулирования международных конфликтов важно поощрять дипломатические усилия, международное сотрудничество и укрепление международных организаций, таких как Организация Объединенных Наций. Также необходимо поддерживать и развивать международные нормы и правила, чтобы способствовать мирному разрешению конфликтов и сотрудничеству на глобальном уровне [2].

Категория внутринационального мира относится к состоянию внутри страны и описывает отсутствие вооруженных конфликтов и согласие между политически ориентированными группировками. Это означает, что в стране отсутствуют масштабные гражданские войны, общенациональные вооруженные столкновения и локальные конфликты с применением оружия.

Категория внутринационального мира обычно характеризуется устойчивым и мирным функционированием общества, где различные политические силы и социальные группы способны решать свои разногласия и конфликты путем диалога, переговоров и соблюдения правовых норм. Это важное условие для стабильности и развития страны, так как отсутствие массовых вооруженных столкновений и внутренних конфликтов позволяет государству сосредоточить свои усилия на экономическом и социальном развитии, обеспечивая благополучие для своих граждан [3].

Соблюдение категории внутринационального мира является одной из ключевых задач политических лидеров и общества в целом, чтобы предотвратить потенциальные насилие и разрушения, которые могут возникнуть из-за политических, этнических или социальных различий. Конструктивный диалог и уважение прав человека играют важную роль в укреплении этой категории и способствуют устойчивому развитию государства.

Нарушение внутринационального мира означает, что внутренние структуры и механизмы управления в стране неспособны обеспечить стабильность и безопасность общества. Это может привести к возникновению хаоса, конфликтов и вражды между различными группировками, а в крайних случаях – к началу гражданской войны, то есть вооруженного конфликта внутри страны.

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Причины нарушения внутринационального мира могут быть разнообразными, такими как политические разногласия, этнические и религиозные конфликты, социальные и экономические противоречия, несогласие с правительством и его политикой, а также вмешательство сторонних сил. Недостаточная стабильность в стране может привести к разрушению инфраструктуры, гибели множества людей, беженству, экономическому упадку и гуманитарным кризисам.

Важно отметить, что поддержание внутринационального мира является одной из основных задач правительства и общества в целом. Диалог, согласие, уважение прав и свобод всех граждан, а также разрешение конфликтов путем мирных средств – все это необходимо для обеспечения стабильности и безопасности внутри страны.

Важно обратить внимание на следующие ключевые моменты основных аспектов мира в международно-правовом и геополитическом измерении:

➤ Взаимодействие и взаимоотношения между различными суверенными государствами и их альянсами на мировой арене. В этом контексте важно отметить, что эти отношения обычно строятся на основе внешнеполитических стратегий и внутренних интересов стран.

➤ Отношения между различными этническими, культурными или национальными группами населения и государствами. Здесь важно учитывать взаимодействие национальных интересов, права национальных меньшинств, а также защиту прав человека и меньшинств. В этой связи, любую модель развития необходимо рассмотреть и проверить на возможность приложения, с учетом национальных особенностей и специфики развития государства[4].

➤ Отношения внутри конкретного государства. Внутренние отношения включают взаимодействие различных политических ориентированных группировок, народов и социальных групп в рамках одного государства. Внутренние конфликты, неравенство, политические противоречия и способы их разрешения также играют существенную роль в обеспечении мира.

➤ При обсуждении мира в международно-правовом и геополитическом измерении, акцент делается на использовании ненасильственных средств для решения различных конфликтов и споров. Важное значение имеет также соблюдение международного права и принятых странами обязательств, чтобы поддерживать стабильность и урегулировать спорные вопросы.

➤ Взаимоотношения между сторонами конфликта осуществляются без применения

организованной вооруженной силы. Вместо этого стремятся использовать дипломатию, переговоры и мирные механизмы разрешения споров.

Это консолидированное представление отражает фундаментальные аспекты поддержания мира как на мировой арене, так и на внутреннем уровне государства. Основные принципы мирного разрешения конфликтов, соблюдения международного права и уважения прав человека содействуют стабильности и согласию на глобальном и национальном уровнях.

Ценности мира можно представлять в различных масштабах распространения:

- Стремления и усилия по достижению мира и гармонии между всеми государствами и народами (нациями) на всей планете. Глобальное сотрудничество, дипломатия, принятие международных соглашений и соблюдение прав международного права имеют решающее значение для обеспечения мира.

- Достижение мира внутри определенного региона, который охватывает группу государств. В этом контексте региональные организации, договоры и соглашения между соседними странами могут играть ключевую роль в урегулировании конфликтов и обеспечении стабильности в конкретной части мира.

- Создание и поддержание мира на территории одного государства. Внутренний мир является основой для стабильности и процветания общества, и здесь важными элементами могут быть права человека, справедливость, гражданские свободы, демократия и уважение разнообразия.

Каждый из этих уровней мира важен для общества и международного сообщества, и усилия на каждом уровне могут взаимодополнять друг друга для достижения глобального благополучия.

Принцип «мир как высшая ценность» не имеет прямого закрепления в отдельных нормах международных правовых актов или национальных законодательств. Однако, этот принцип пронизывает систему других принципов и норм, которые можно найти в различных международных документах и конституциях разных стран. Принцип «мир как высшая ценность» подразумевает, что обеспечение мира и предотвращение конфликтов являются приоритетными задачами для мирового сообщества. Он стоит в основе многих международных усилий, направленных на поддержание мира, безопасности и сотрудничества между нациями.

Этот принцип отражается в Уставе Организации Объединенных Наций (ООН), где всеобщий или международный мир представлен как высшая и приоритетная ценность. Он также встречается в основополагающих международных правовых документах, посвященных правам и

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свободам человека и гражданина, включая Всеобщую декларацию прав человека ООН [5] и Международный пакт о гражданских и политических правах [6]. Преамбула Всеобщей декларации прав человека от 10 декабря 1948 года подчеркивает, что признание достоинства всех членов человеческой семьи и их равных и неотъемлемых прав является основой свободы, справедливости и мира.

Таким образом, хотя принцип «мир как высшая ценность» может не быть прямо закреплен как отдельная норма, его сущность пронизывает основные правовые документы, которые формируют основу международного права и прав человека.

Многие международно-правовые документы, посвященные правам и свободам человека и гражданина, также включают нормы и принципы, связанные с поддержанием, сохранением и защитой мира. Примером таких документов являются Всеобщая декларация прав человека и Международный пакт о гражданских и политических правах. В соответствии со статьей 20 Международного пакта о гражданских и политических правах, пропаганда войны должна быть запрещена законом. Это означает, что государства-участники обязуются принимать меры для предотвращения распространения и поддержки идеологии войны и насилия.

Также важно отметить, что всякое выступление в пользу национальной, расовой или религиозной ненависти, которое может стимулировать дискриминацию, враждебность или насилие, также должно быть запрещено законом. Это направлено на обеспечение того, чтобы права и свободы всех людей были уважаемы и защищены без какой-либо формы ненависти или насилия по причине их национальной, расовой или религиозной принадлежности.

Согласно международным актам, включая Всеобщую декларацию прав человека и Международный пакт о гражданских и политических правах, признается и защищается право на мирные собрания. Это право позволяет людям свободно собираться и выражать свои мнения, идеи и обеспокоенности мирным образом, без насилия или подавления со стороны правительства или других институтов. Кроме того, мир как особая, высшая ценность обозначен в итоговых документах Совещания по безопасности и сотрудничеству в Европе (СБСЕ), состоявшегося в Хельсинки 1 августа 1975 года [7]. Это совещание действительно провозгласило мир как основополагающую ценность и признало важность обеспечения безопасности и сотрудничества между странами для достижения этой цели.

Такие международные нормы и документы

подчеркивают важность соблюдения прав и свобод человека, а также поддержания мира и безопасности во всем мире. Они служат основой для дипломатических и политических усилий стран в сотрудничестве и преодолении конфликтов в интересах общего блага.

Африканская хартия прав человека и прав народов 1981 года была принята Организацией Африканского единства (ныне Африканский союз) и представляет собой важный международно-правовой документ, который устанавливает права человека и права народов на континенте Африки. Одной из значимых особенностей этой хартии является то, что она впервые в международно-правовой практике прямо закрепила право на мир [8]. Это означает, что документ признает мир как высшую ценность и устанавливает, что каждый человек и народ имеет священное и неотъемлемое право жить в мире и безопасности.

Декларация о праве народов на мир, принятая Генеральной Ассамблеей ООН 12 ноября 1984 года, также играет важную роль в подтверждении права всех народов на мир. Этот документ отмечает не только право на мир для каждого индивидуального человека, но и для всех народов мира [9]. Важно заметить, что декларации ООН не обладают обязательной силой, но они имеют важное символическое значение и могут повлиять на развитие международного права и норм.

Обе эти международно-правовые документы подчеркивают важность мира и безопасности для всех людей и народов, а также призывают к солидарности и сотрудничеству между странами и международными организациями для достижения общих целей мира, безопасности и справедливости.

Многие современные конституции признают мир как высшую ценность и уделяют особое внимание обеспечению и защите этой ценности. Упоминание о мире как приоритетной, высшей ценности, часто содержится в преамбулах или первых статьях конституций различных государств, которые выбрали демократический и гуманитарный путь развития. Преамбула в конституции может содержать выражение принципов и идеалов, которые лежат в основе закона, и указывать на стремление обеспечить мир и стабильность в обществе. Первые статьи конституций также могут закреплять основные принципы и ценности государства, включая мир и безопасность.

Обеспечение и защита мира являются важными задачами государственной политики, и они ставятся наравне с другими высшими гуманитарными ценностями, такими как защита прав человека, уважение к правам меньшинств, справедливость, равенство и принципы правового государства. Идея признания мира как высшей

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ценности в конституциях подчеркивает важность мирного разрешения конфликтов, сотрудничества между государствами, уважения суверенитета и территориальной целостности друг друга. Это способствует созданию стабильного и благополучного общества, где граждане могут развиваться и процветать.

Таким образом, упоминание о мире в конституциях государств является отражением стремления к гармоничному и мирному развитию общества, а также обязательством перед высшими гуманитарными принципами, которые направляют действия и решения правительства и граждан.

Вопрос отношения государств к войне является одним из важнейших в мире и может быть закреплен на конституционно-правовом уровне. Отношение государств к войне отражает их политику по признанию и защите права на мир. На практике существует несколько подходов к этому вопросу:

1. Государство имеет абсолютное право решать, когда и как вести войну, без ограничений или разрешений со стороны международных организаций или других государств.

2. Государство признает право на оборону и использование войны только в случае нападения на свою территорию или угрозы для своей безопасности. Также может предусматриваться возможность вступления в оборонительные военные блоки для усиления коллективной безопасности.

3. Государство старается оставаться нейтральным в международных конфликтах и не принимать чью-либо сторону.

4. Государство стремится разрешать все международные споры мирным путем, используя дипломатические и правовые механизмы.

Каждый из этих подходов имеет своих сторонников и противников, которые могут зависеть от исторического контекста, национальных интересов и политических убеждений каждого государства. Определение конкретного подхода к войне в конституции или законах помогает установить основные принципы внешней политики и безопасности государства в отношении вооруженных конфликтов.

Большинство стран имеют определенные государственные органы, которым поручены ключевые функции, связанные с решением вопросов войны и мира, внешней политики и другими важными аспектами управления государством. Обычно такие полномочия закрепляются в конституциях и законах.

• Законодательный орган обычно участвует в принятии решений о войне и мире, утверждает международные договоры о мире, и может обсуждать внешнюю политику. В некоторых странах, например, США, парламент должен

утвердить войну или выделить средства на военные операции.

• Глава государства обычно является верховным командующим вооруженными силами и может объявить чрезвычайное (военное) положение в случае угрозы национальной безопасности.

• Исполнительный орган, как правило, осуществляет миролюбивую внешнюю политику, реализует стратегию государства на международной арене, заключает и ратифицирует международные договоры о мире и сотрудничестве. Также правительство может принимать решения о мирных переговорах и дипломатических отношениях с другими странами.

Важно отметить, что роли и полномочия этих органов могут различаться в разных странах в зависимости от их политической системы и правовых рамок. Например, в парламентских системах, где исполнительная власть зависит от законодательной, решения о войне и мире обычно принимаются парламентом и правительством совместно. В президентских системах, президент может обладать большей самостоятельностью в решении вопросов безопасности и внешней политики.

Укрепление конституционных гарантий безопасности и борьбы с терроризмом стало важным направлением в развитии современного конституционного права во многих странах, особенно после террористических актов, которые произошли в разных частях мира. В некоторых новых конституциях присутствуют специальные разделы, которые посвящены обеспечению национальной безопасности. Эти разделы обычно определяют основные принципы и ценности, которые связаны с обеспечением безопасности национального сообщества. Они могут включать такие аспекты, как права и обязанности граждан в области национальной безопасности, ответственность правительства за обеспечение безопасности и др.

Относительно новым является включение в конституции упоминания о терроризме как о зле и заявлении об отказе от него. Это может быть сделано с целью ясного и однозначного выражения отношения государства к террористическим действиям и подчеркивания их неприемлемости. Подобные положения могут служить также символической функцией, подчеркивая важность борьбы с терроризмом и единство национального сообщества в противостоянии этой угрозе.

Также в конституциях могут быть определены ключевые средства борьбы с терроризмом. Это могут быть меры по усилению правоохранительных органов, контроль за границами, обеспечение информационной

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безопасности, применение специальных антитеррористических законов и др. Целью таких положений является создание законодательной основы для эффективной борьбы с терроризмом и защиты национальной безопасности.

Особое внимание уделяется этим вопросам в европейских странах, так как Европа столкнулась с серьезными террористическими угрозами и атаками в последние десятилетия. Поэтому включение таких положений в конституции может быть рассмотрено как ответ на эти вызовы и усиление мер по борьбе с терроризмом.

Право мира и безопасности человечества действительно становится все более важным в современном мире, и это обусловлено несколькими факторами, которые являются характерными для процесса глобализации и усиления взаимозависимости между странами и народами.

С развитием глобальных коммуникационных средств, терроризма, распространения ядерного оружия, кибератак и других форм угроз безопасности, становится все более явным, что решение этих проблем требует совместных усилий и сотрудничества между нациями.

1. Глобализация способствует тесному экономическому взаимодействию между странами, что может привести к различным формам конфликтов. Неуклонное повышение роли права и безопасности человечества помогает создать стабильную основу для разрешения торговых споров и предотвращения экономических конфликтов.

2. Глобализация делает такие проблемы, как изменение климата, эпидемии, международный терроризм, миграция и беженцы, всеобщими и требующими согласованного международного реагирования. Право мира и безопасности человечества помогает содействовать усилиям по решению этих сложных глобальных проблем.

3. Различные международные организации и соглашения, такие как Организация Объединенных Наций, Международный уголовный суд, Всемирная торговая организация и другие, играют важную роль в обеспечении мира и безопасности в мировом масштабе. Они устанавливают правовые стандарты, способствующие сотрудничеству и решению конфликтов.

4. Глобализация приводит к распространению идей о защите прав человека и утверждению универсальных норм и ценностей. Право мира и безопасности человечества играет ключевую роль в обеспечении соблюдения прав человека и предотвращении нарушений на международном уровне.

Таким образом, в свете этих факторов, придание значимости праву мира и безопасности человечества как отдельной подотрасли является важным шагом для обеспечения стабильности и благополучия в мире. Международное сотрудничество и соблюдение международного права становятся необходимыми, чтобы эффективно решать вызовы и угрозы, с которыми сталкивается современный мир.

## References:

1. Holdorov, O.N. (2017). Formation of non-traditional actors in world politics and international relations. *Vestnik TGUPBP*. 2017. No. 2, pp.138-142.
2. Sygankov, P.A. (1996). *International relations: textbook*. (p.320). Moscow.
3. Dzhorobekova, A.M., Berdaliev, K.Ch., Adambekova, A.D., & Dzhorobekov, Z.M. (2019). Methodological approaches to understanding national security. *Religación. Revista de Ciencias Sociales y Humanidades*. 2019. № 4(16). R.720.
4. Berdaliev, K.Ch., Dzhorobekova, A.M., & Dzhorobekov, Zh.M. (2018). Correlation of the law enforcement function with other functions of the state: mutual influence and interdependence. *Trends in the development of science and education*. 2018. No. 43-1, pp. 9-12.
5. (1948). *Universal Declaration of Human Rights. Adopted by resolution 217 A (III) of the UN General Assembly on December 10, 1948*. Retrieved from [https://www.un.org/ru/documents/decl\\_conv/declarations/declhr.shtml](https://www.un.org/ru/documents/decl_conv/declarations/declhr.shtml)
6. (1966). *International Covenant on Civil and Political Rights. Adopted by General Assembly resolution 2200 A (XXI), December 16, 1966*. Retrieved from [https://www.un.org/ru/documents/decl\\_conv/conventions/pactpol.shtml](https://www.un.org/ru/documents/decl_conv/conventions/pactpol.shtml)
7. Chebanyan, R.A. (1975). Helsinki Final Act 1975: reasons for signing and consequences. *ISOM*. 2017. No. 3-2. <https://cyberleninka.ru/article/n/helsinkskiy-zaklyuchitelnyy-akt-1975-goda-prichiny-podpisaniya-i-posledstviya>

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8. Arsenyuk, A.Yu. (2016). African Charter on Human and Peoples' Rights as a General Standard for the Activities of Sub-Regional Economic Organizations in Africa. *Vestnik nauki i tvorchestva*. 2016. No. 6 (6). [https://cyberleninka.ru/article/n/afrikanskaya-hartiya-prav-cheloveka-i-narodov-kak-obschiy-](https://cyberleninka.ru/article/n/afrikanskaya-hartiya-prav-cheloveka-i-narodov-kak-obschiy-standart-dlya-deyatelnosti-subregionalnyh-ekonomicheskikh-organiztsiy-v-afrike)
9. (1984). *Declaration on the right of peoples to peace*. Adopted by General Assembly resolution 39/11 of 12 November 1984. Retrieved from [https://www.un.org/ru/documents/decl\\_conv/declarations/right\\_to\\_peace.shtml](https://www.un.org/ru/documents/decl_conv/declarations/right_to_peace.shtml)



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SJIF (Morocco)		2.031				5.667			7.184	
ICV (Poland)		6.630								
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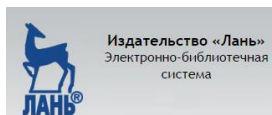
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Signed in print: 30.07.2023. Size 60x84  $\frac{1}{8}$

«Theoretical & Applied Science» (USA, Sweden, KZ)

Scientific publication. The circulation is 90 copies.

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Printed «Theoretical & Applied Science»