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Digital Government as Exponential Organization: New Technologies of Communication*

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ABSTRACT

The article explores the exponential transformation of the digital government. Exponential organizations are the common model of management that characterized by the use of the informatized environment, third-party resources and digital platforms to scale processes and create new markets. The digital government is a complex of institutions for structuring social relations and conflicts in a network environment. The coupling of exponential organization and digital government models is realized through the focus on technologies of communication that allow the exchange and integration of surrounding knowledge into the system of management. The article presents the typology of technologies of communication with external and internal communities depending on the type of environment (internal/external) and options of access (inclusive/exclusive). The typology systematizes technologies of communication and demonstrates its capabilities for solving various tasks, including involving new agents in the field of public policy, organizing access to institutions, creating/extracting value, reducing the cost of information exchange between management structures. Technologies of communication allow the government to move to the policy of identifying and interacting with the diversity of the environment. The effects of the introduction of these technologies are evaluated on the example of Estonia. In conclusion, it is possible to consider the digital government as the exponential organization due to the information connectivity of the system, but it is difficult to unambiguously conclude the explosive growth of the value creation/extraction due to the functioning of the state as a non-equilibrium adaptive system.

Keywords: digital government; exponential organization; communication technologies; public services; e-residency; smart-cards; e-voting

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PROBLEM STATEMENT

Among recent technological developments, attention is focused on self-integrating systems, digital agents, physical neural networks, cloud platforms, real-time incident management centers (https://www.gartner.com/smarterwithgartner/3-themes-surface-in-the-2021-hype-cycle-for-emerging-technologies). In this context, organizational innovations become relevant, enabling the use of new technologies for information integration of management systems and interaction with environmental diversity.

One of the most common models are exponential organizations, capable of significantly increasing productivity through access to internal and external information resources. Digital environment favors the emergence and development of exponential organizations, because offers new tools for analyzing and modelling the development of the organization and extends the range of possible third-party resources in the form of big data, community engagement, integration with other platforms. The introduction of platform and cloud solutions also allows for the offsetting of intermediate levels of organization management, further reducing transaction costs.

Exponential organizations are becoming a common model, which can also be extended to the structures of the digital state. From this perspective, the digital state is seen as a platform, into which system are included integrated information systems and omnichannel communication technologies, this reduces operating costs and opens up opportunities for personalized and proactive public services. Taking into account structural characteristics, the state as a complex institution the introduction of technologies of exponential organizations, provides the state with additional instruments of transaction management, formation of institutions, creation of value and income, stimulating civic innovation and improving public sector efficiency — thus, the consequences of exponential transformation may be larger than the creation of an "invisible state", "client-oriented state", "states as services".

Conjugation digital state and exponential organization models raises several issues:

1) the extent to which the characteristics of exponential organizations can be directly transferred to the digital state level;

2) what complex of digital state technologies is formed in accordance with the exponential transformation and the solution of what tasks they are aimed at;

3) what political and socio-economic effects does the introduction of this complex of technologies have on the examples of specific empirical cases.

The article successively addresses the issues listed.

EXPONENTIAL ORGANIZATIONS: TECHNOLOGY TO INCORPORATE THIRD-PARTY RESOURCES INTO THE WORK OF THE ORGANIZATION

A central role for exponential organizations is played by an informational environment that concentrates a variety of data sources and flows. The advantages of exponential organizations include in the ability to generate and absorb data flows, focusing on the quality of information management and by refusing from the bureaucratic machine model to flexible network/platform structures.

Continuous data growth allows exponential organizations to continuously scale processes (which reflects the exponential function used as a metaphor [1]). Examples of such organizations include companies Airbnb, Quirky, Valve, Tangerine etc. These companies combine the growth of market capitalization per employee and a faster product development cycle, which makes it possible to classify them as exponential organizations [2]. In addition, these companies create new markets, so exponential growth is often provided by the "pioneer effect" and early entry into the market before the saturation process begins. Supporting growth and

Table 1

Technologies of exponential organizations

Technologies to maintain stability and control the organization	Technologies of growth and deal with uncertainty
• Interfaces • Dashboards • Experimenting • Autonomy of structural units • Social technologies	• Personnel on request • Internal and external community • Using algorithms • Using third-party assets and resources • Stakeholder involvement

Source: compiled by the author.

faster product development requires the introduction of certain technologies that can be divided into two groups (*table 1*).

Features of exponential organizations can be illustrated by the example of the company Quirky, past way the start-up to one of the market leaders of "smart" houses [3]. Through the digital platform, the company collects consumer ideas about the need for different technologies for automation and improvement of convenience of life, experts then assess their prospects of becoming a real product. If a product was created on the basis of the idea, the name of the proposer is indicated on the package and he gets his part from each sale of the proposed technology. Quirky also has an agreement with Uber to marketing its products, where users can buy Quirky products through the Uber app, and the products will be delivered to the customer without having to pay for the delivery. As an exponential organization, Quirky uses community ideas, pool of experts and technological resources of other companies to reduce development costs and product marketing, actively implementing interfaces and electronic services in management processes to track processes in real time. Analysis of other companies with exponential growth in new markets shows similar technologies [4–7]. Dematerialization of the value creation process and democratization of user/customer access to corporate services are further emphasized [8], which allow exponential organizations to abandon cumbersome management structures.

Thus, an exponential organization as a common management model for organizations of different sizes encompasses two dimensions: aggregation and analysis of data using algorithms and online tools, as well as involving various internal and external communities, resources, services. Information openness and connectivity allow exponential organizations to use a variety of third-party resources, predict market trajectories and create complex products/services in emerging markets, supporting continuous growth.

Exponential organizations are seen as a management model available for adaptation by organizations of different sizes. However, account should be taken, that exponential transformation requires combining the principles of exponential organizations with the established structural characteristics of the most transforming organization. This interface often involves revising and adapting the technologies of exponential organizations to solve their own tasks; therefore, the results of exponential transformation are unique for different types of organizations. The digital state can be considered as a separate type of organization, in view of the multidimensional scope of the State as a complex system of institutions, its exponential transformation is associated with increased information openness and connectivity not only of the management apparatus, but also infrastructure for citizens and business. As a consequence, the exponential transformation of the digital state requires the prior identification of the interface between these types of organizations.

CONJUGATION EXPONENTIAL ORGANIZATION AND DIGITAL STATE MODELS

Transfer of technologies of exponential organizations to the level of the digital state is possible with preliminary identification of features of the state as a system of interconnected institutions. The multiplicity of structural characteristics of the State determines the variety of analytical optics and ways of describing them. In domestic and foreign literature, the digital state is often considered in the context of preserving democratic institutions and procedures in the new technological environment [9–11], this is due to uncertainties in the impact of digital management tools and the need to specify their capabilities. However, for the purposes of this research, it is relevant to consider the digital state in a broader theoretical perspective, taking into account the structural characteristics of the state as a set of institutions. Despite the emergence of some articles on rethinking the theory of the state in the digital environment [12, 13], offering theoretical optics for explaining the logic of digital state actions and the method of applied systematization of digital state technologies remains in demand.

To define the interface between the digital state and the exponential organization, seems promising a combination of political-economic [14–17] and critical [18–20] approaches to the study of the State, with an emphasis on new practices and strategies, especially in the digital State. The State appears to be a consolidated agent of the management, whose tasks include: creation of a system of representation of the management space, expertise of knowledge, decision-making and management of social conflicts, as well as the establishment of institutions/structures to legitimize and protect property rights, create and extract value, share risks and reward public sector investment. Different digital State results — e-government, services and platforms — form a network infrastructure and are conductors for solving these problems in the new technological reality.

Unlike corporations, the state does not consider infrastructure, services, production, communities as external resources. These resources are initially included in the public policy field as objects of management, and the State has higher costs than corporations to create value, build institutions and manage emerging social conflicts. If exponential organizations focus on third-party resources as a way to create/access new markets for explosive growth and scaling, that new technologies of interaction with existing and emerging objects of management are relevant for the digital state, their inclusion in the public interest through appropriate institutional status. Similarities between the digital State and the exponential organizations are linked to policies of engagement and coordination, therefore, the interconnection of these models depends on the allocation of the mechanism through which the implementation of such a policy is available.

Consideration the digital state as an exponential organization is possible in terms of the state's introduction of new technologies of communication with internal and external communities. In this case, communication is understood as interaction, exchange and integration of knowledge into the system of state representation of the space of management to create information connectivity. Communications cover the main operations of the State in the field of research and design of digital data based on their objects of management within the given theoretical optics. The results of such communication are public registers and services, information systems, data exchange platforms that accumulate information and provide a virtual management field. Communication is therefore becoming a means of linking digital state and exponential organization models (*fig. 1*): if for exponential organization of communication — a way to

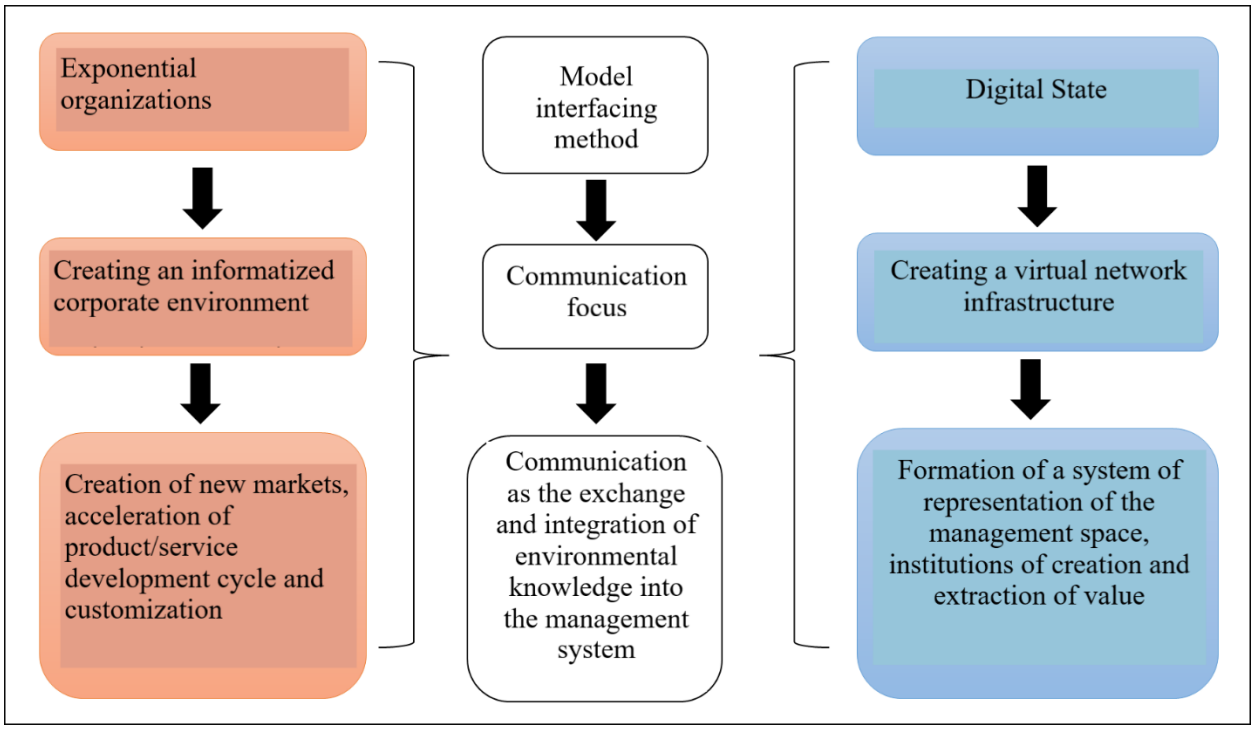

Fig. 1. **Coupling models of exponential organization and digital government**

Source: compiled by the author.

attract third-party resources to accelerate product development and create new markets, then for the digital communication state — tool to consolidate different management information fields into one virtual environment to implement the tasks described above, related to institutional regulation and management of social conflicts. Communication focus allows critical assessment of the generality of the exponential organization model, because the diversity of communications in each individual case makes it possible to analyze the distribution of risks and benefits of technological transformation by the state.

COMMUNICATING THE DIGITAL STATE WITH EXTERNAL AND INTERNAL COMMUNITIES: TYPOLOGY OF TECHNOLOGIES AND CAPABILITIES

The digital state is often described through government service lines and includes three dimensions: "Government-to-Government" (G2G), "Government-to-Business" (G2B), "Government-to-Citizen" (G2C). These directions are not homogeneous and different groups exist in each dimension — public service consumers, therefore, it is possible to talk about the communication of the digital state with different external and internal communities, which are united by common demands and requirements to the state. Communication with these communities means that the digital State receives data to develop policies to provide access to public institutions and services and to engage in decision-making processes.

It is proposed to use parameters such as environment type and access options for typologizing digital state communication technologies with external and internal communities. The type of environment (external/internal) indicates whether the community is initially within or outside the territorial boundaries of the state: in the conditions of the creation of virtual ecosystems, the State is also able to communicate with citizens, and agents

Table 2

Technologies of communication of digital government with external and internal communities

Access options \ Environment type	Internal	External
Exclusive	• Smart-Card Identification (ID-cards) • Electronic cards in the field of education, health, tax administration, etc. • Data embassy	• E-residency • Digital citizenship
Inclusive	• Open data • Inter-agency data exchange platform (X-Road) • Data marketplaces and other formats of collective data management	• Open data • Data marketplaces and other formats of collective data management • Citizen engagement platforms

Source: compiled by the author.

formally stateless, but their status and access to government online resources are different. In this regard, the previously studied phenomenon of digital citizenship [21, 22] is given a formalized status, which are claimed, among others, by representatives of other countries. Access options (exclusive/inclusive) reflect the direction of the engagement policy through data collection and analysis: exclusive communication technologies interact personally and are linked to participate in the process, inclusive implies collective management, information sharing and participation of different actors. Thus, the typology identifies the following communication technologies with external and internal communities (*table 2*).

These technologies are not a simple substitute for analog documents for electronic services and have more significant effects for the state to represent the management field. First, they combine a significant number of online activities available to citizens and organizations, reducing the cost of access to institutions and decision-making. Second, they reflect the local experience of users, allowing for adjustments in the planning and allocation of resources according to the real practices of citizens. Third, using the example of these communication technologies, it is possible to observe the embedding of state institutions into a virtual environment, which expands the space and number of management agents. However, each of the technologies in the table implements these benefits in different ways.

- **ID-cards** are considered as the basic communication technology of the digital state with the internal communities, primarily the citizens. In most cases, smart-cards contain a proof of identity function and the ability to use public services, however, add access to political institutions, including voting, citizen engagement and public participation platforms. The range of functions linked to a smart card varies between countries, but multifunctionality reduces citizens' costs of access to institutions and offsets intermediate levels of government, reducing the distance between the State and the population.
- **Data embassy —** are servers that support a country's critical infrastructure and are under its jurisdiction, but are geographically located in another country. Data Embassy combines basic data registers with personal and departmental data, and is created in the

event that a country cannot govern its own territory as a result of information attacks, natural disasters or military invasion [23]. Data Embassy is exclusive as it contains data linked to specific administrative authorities (court, the I.R.S, etc.) and does not involve collective management and sharing of data with third-party agents. Currently, the data embassy has a limited number of countries (Estonia and Bahrain) due to data retention risks.

• **E-residence** is a new, largely experimental technology of business registration and operation in another country. Technically, electronic residence — a special smart-card confirming the right of foreign organizations to register a company, obtaining banking services and tax obligations in a given country without having to obtain citizenship or residence permits. E-residency is conducive to attracting foreign businesses to emerging markets, as well as transferring knowledge and innovation: IT-professionals, freelancers, business consultants and other service providers are the majority of e-residents [24], which allows you to assign technology to communication with external communities on an exclusive basis. Through e-residency technology, the digital state receives additional sources of innovation and value recovery without having to incur social obligations to citizens. However, as a precondition for the introduction of e-residency, it is possible to indicate the quality and trust of institutions that encourage foreign business to invest in the country.

• **Open data** contain information on the results and resources of the implementation of public policies, thus contributing to increased transparency of the authorities. Open data posting is available in various forms, including relevant sections on ministries' websites and specialized portals, however, it is becoming increasingly common to integrate open data into a single electronic/digital State platform. It should be noted that open data — is a consequence of the quality of institutions and civic engagement, since the publication and use of open data are designed to provide control and opportunity for public expertise, promote civil and commercial projects based on information provided. Accordingly, through open data technologies, the State enables citizens to provide requirements to the system, but at the same time creates a channel for civic self-organization and innovation for the economy.

• **X-Road** integrates information from public registers and databases, providing access to all governance structures and maintaining data privacy. These platforms aim to reduce transaction costs in the exchange of information between agencies, as well as reducing the financial costs of information systems by integrating them. From the point of view of the digital State's communication technology with the internal community, the inter-agency data exchange platform — a way to reduce the asymmetry between models for describing the management field of different structures and services: openness and access to basic registers and information systems implies coherent and proactive government policies.

• **Data marketplace —** is an approach to collective data management that allows citizens to sell or exchange their data for other data or services. Data are now becoming sources of value creation and retrieval, so the introduction of data marketplaces aims to provide equal advantages for use by both commercial organizations and citizens [25]. The task of the digital state is to regulate the activity of market-place platforms, as well as to change the legislation on data. Additionally, the introduction of data marketplaces requires the development of compatible systems for data transfer between different platforms, as well as the transparency of the algorithms used. In the future you can expect the implementation of a whole group of new communication technologies, related to collective data management, including data trusts, common database, etc.

Typologies and descriptions of digital government communication technologies with external and internal communities demonstrate different ways of bringing these communities into the public domain to implement coherent policies. These technologies allow the state to move from a policy of formalization of the management space (keeping it homogeneous) to action of identify and interact with environmental diversity. Also, based on communication technologies, it is possible to expand the virtual management space by including new agents. Given the growth of digital tools of public administration, the typology is open to supplement with new technologies.

In the digital State system, the considered technologies are integrated into a common architecture, therefore, technologies such as X-Road are becoming the basis for other communication technologies: platform are provide compatibility of smart-card identification data, e-residences, e-maps with medical and educational data, and allows agencies to collectively use them to deliver proactive public services, while reducing the cost to citizens of access to public sector institutions and organizations. However, the introduction of all these communications technologies is a complex political process, so far, their holistic set is the exception rather than the rule, although the digitalization projects of most countries indicate it as an expected result. For these reasons, Estonia has been chosen as the empirical material for testing the effects of the introduction of the communications technologies of the digital State, where most of the described technologies have been implemented in the electronic government system.

EFFECTS OF INTRODUCTION OF NEW COMMUNICATION TECHNOLOGIES: ESTONIAN CASE

Estonia is one of the leaders in the digitalization of public administration, ranking third in the UN e-government development ranking. Detailed studies of the Estonian experience also demonstrate the technological diversity of the country's digital government architecture, allowing to increase the number of accessible publics online-services [26–28]. However, it is necessary to analyze the Estonian experience in order not to simply describe the nomenclature of current technologies, but also identify the effects of their implementation to determine the reality of the exponential transformation of the digital state (*table 3*).

It is important to assess, first of all, the effects of the following technologies:

- Smart-card identification, inter-departmental data exchange platform and its impact on access to public services and political institutions;
- E-residence and its impact on the diversity of management agents and cost recovery.

99% of Estonian citizens currently have a smart card. Combined with an interdepartmental data exchange platform, the ID-card increases the number of online services available for citizens and businesses, at the same time now all public services are available in online-form on the state portal. It also improves the quality of interaction between citizens and the public sector as a whole: with the introduction of electronic signature technology, the citizen saves an average of 5 working days per year. In addition, the compatibility of State information systems and the multifunctionality of the smart-card allow the provision of public services in a proactive mode without recourse to citizens — thus, public services have the same model of field and resource management. For example, the registration of a newborn child automatically leads to the provision of childcare benefits, and the tax register data determine to which bank account the funds should be transferred.

Smart-card identification is also used to access political institutions, the main one being elections. Since 2005 e-voting via

Table 3

Technologies of communication in structure of Estonian e-government

Technology	Implementation year	Functionality
Smart-card identification and electronic voting	2002 (smart-card) 2005 (e-voiting)	• identity ID • electronic signature • access to public services • e-voiting • registration of a company and submission of tax returns • access to health and education data • cross-border data exchange with Finland (from 2017)
E-residence	2014	• company registration • obtaining banking services • supply tax returns • digital signature and electronic workflow
Interdepartmental data exchange platform	2001 (X-Road)	• data exchange between public authorities and services due to the compatibility of information systems • common access to databases and registers
State portal — eesti.ee	2003	obtaining e-government services
Data embassy	2018	• contains 10 databases required by the State for the provision of public services in the event that the country cannot be governed • Estonian embassy is located in Luxembourg
Open data	2011 2018 (new open data portal)	• publishing of data on demography, socio-economic and scientific-technological development, legislation, infrastructure and public administration

Source: compiled by the author.

smart card is available for local and national elections in Estonia, as well as for elections to the European Parliament. *Fig. 2* shows the share of online voters in the total number of voters in the Estonian parliamentary elections, with an overall turnout of over 60% for all elections under consideration. Among other institutions, smart-card access to public discussion services should also be highlighted.

Estonia also became the first country, which introduced an e-residence to attract foreign business: together with tax incentives for the technology business in Estonia, the e-residence can be considered as a channel for technology transfer and additional value creation with minimal costs for the state. Among the countries leading in the number of electronic residents of Estonia, are allocated Finland (6 118 thous. people), Russia (6 019 thous. people), Ukraine (5 240 thous. people), Germany (5 189 thous. people), China (4 173 thous. people), UK (4 154 thous. people). It is also possible to assess the increase in the number of e-residents of Estonia from the introduction of technology to the present (*fig. 3*). At the same time, the growth rate of the number of e-residents has been declining since 2019.

The introduction of e-residency technology shows effects on tax revenues (as a% of GDP), but these effects are mixed (*fig. 4*). On the one hand, the overall share of tax revenue following the introduction of the e-residence is higher than in previous years, however, the

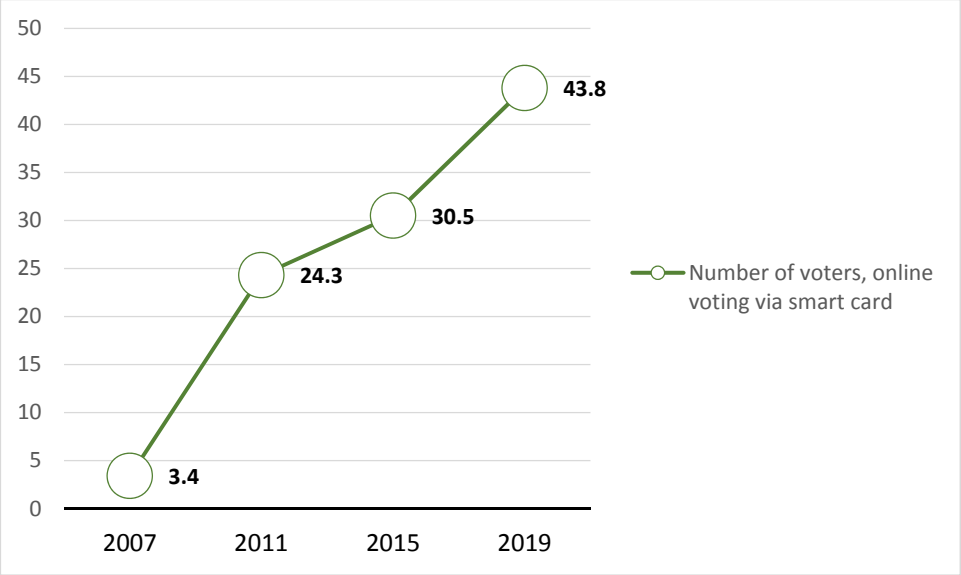

Fig. 2. **Share of voters who voted online via a smart card in parliamentary elections 2007–2019, %**

Source: Data of the State Electoral Office of Estonia, compiled by the author.

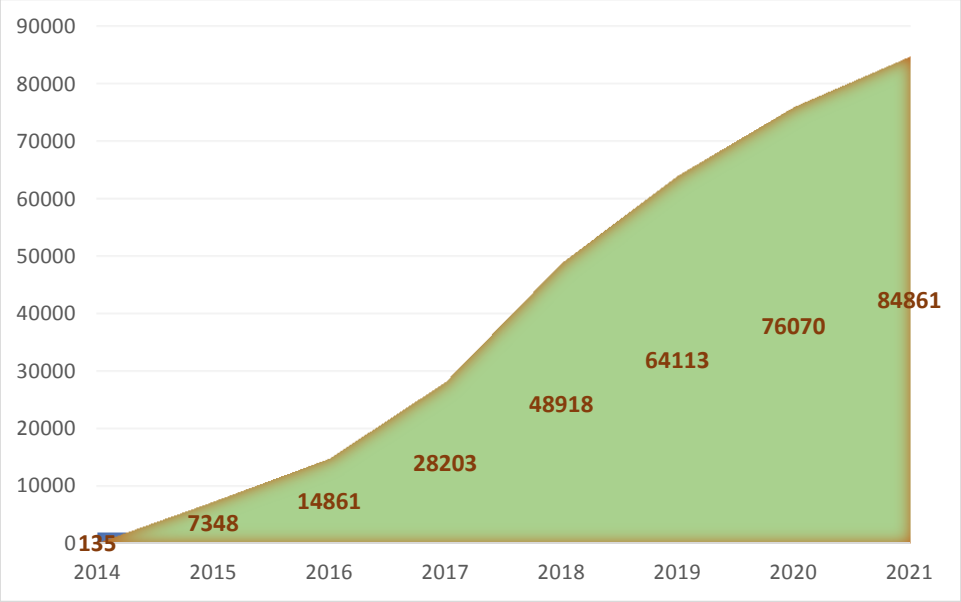

Fig. 3. **Dynamics of growth of electronic residents in Estonia**

Source: data of the e-residency portal of Estonia, compiled by the author.

increase in tax revenues is not constant and does not allow to speak of a clear impact of the technology in case on the recovery of value by the State. This can be explained, firstly, by the small share of e-residents among all taxpayers in Estonia, and, secondly, tax credits in Estonia for the IT-business, which is more than a third of all e-residents (39.4%).

CONCLUSION

A review of the digital State's communications technology with external and internal communities leads to the following conclusions. On the one hand, communication technologies offer an opportunity to create new channels of access to institutions, introduce additional ways of creating

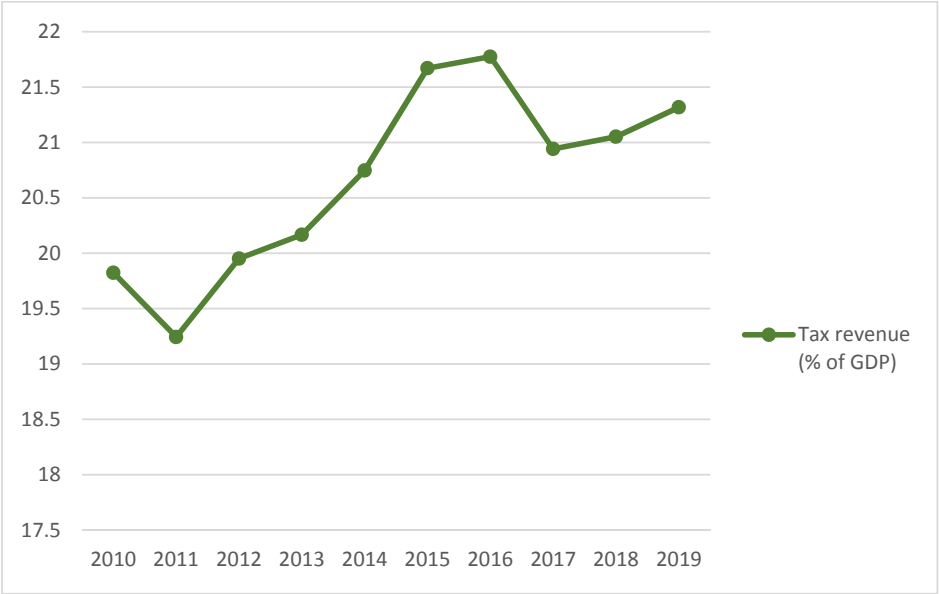

Fig. 4. **Tax revenues, % of GDP**

Source: Data of the World Bank, compiled by the author.

and extracting value, allowing them to characterize as exponential organizations from an information point of view. On the other hand, the results of the introduction of communication technologies do not lead to explosive growth in the extraction of value and the public services offered, due to the complexity of the social environment and the functioning of the State as an unequal system. Maybe, the use of communication technologies in larger economies may have other effects, however, so far, major economies have not adopted such a variety of technologies, limited to individual services and platforms.

At the moment it can be concluded that the digital state is an exponential organization in the technological aspect in terms of the use of communication technologies with external and internal communities to expand the management space, to create information saturation for policies on access to institutions, to reduce the cost of sharing information between departments and services. In the medium term you can expect to grow a variety of communication technologies depending on the type of environment and access options, as States increasingly adopt digital identity technologies, digital agents and duplicates, integrated information systems and platforms [29].

However, the digital State is not characterized by explosive growth in value recovery after the introduction of communication technologies, what is suggested by the exponent as a metaphor on the examples of corporations and start-ups. This can be explained by the fact that corporations have introduced disruptive innovations and created new markets, as a result, use the effects of early entry into the market and grow exponentially until the saturation period of the market, as they operate in a linear system. The state, including the digital one, functions in a system with positive feedback, in which exponential growth is not possible. At the same time, it is possible to allocate additional directions of search for exponential dynamics in the effects of the digital state policy: rate of diffusion of selected online-services and digital tools to the population, growth rate of online resources and services, speed of providing access to online resources.

Accordingly, further research on ways to conceptualize the digital state, taking

into account the analyzed communication technologies and the understanding of the digital state as an adaptive system are relevant.

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Energetics of Arab Countries in the Light of the Green Economy Challenges

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ABSTRACT

Renewable/alternative energy sources (RES), which are often referred to as "green energy" and are intended to create a new generation base, are now the object of close attention in almost all countries of the world. The growing effect of the use of these sources is noted in Europe, the USA, China, India and in a few other countries, but with varying degrees of success. The Arab region does not remain aloof from this direction, although, for obvious reasons, it is more committed to hydrocarbons and conventional energy than others. But persistent conservatism in relation to fossil fuels is inherent not only in Arab society. Even countries that do not have vast oil and gas fields find it difficult to part with traditional energy sources. And yet, the Arab world receives a very serious competitor in the form of green energy, which in the future will have to win back its niche in electricity generation in the Arab part of the international economic space in a rather tough confrontation. Against this background, the alleged rivalry in the Arab region still looks more nominative than real and does not cause much concern in the Arab East, which is now experiencing much more complex political and socio-economic problems.

Keywords: arab countries; renewable/alternative energy sources; green economy; solar and wind energy; nuclear power station; hydrogen energy; hydropower

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EMERGENCE OF GREEN ECONOMY CHALLENGES AND MODERNITY

The idea of global modernization of production assets, socio-economic relations and environmental support of this highly spatial process (which proved to be extremely topical over time) was born as a response to the dangerous challenges of different etiology. They have emerged as the aftermath of serious causes that have provoked imbalances, contradictions and conflicts in the most sensitive points of socio-economic growth of various States and were originally built as hotbeds. Then they began to merge into a whole phenomenon, until they were actualized so that they evolved indeed (of course, in one way or another) into a clear threat to all humankind.

The need to take measures against the spread of extremely negative manifestations of economic and other forms of activity of different genesis is now being pointed out by multiple warning signs, which indicated, above all, the increasing pressure on natural resources. Pressure is exerted on them by excessive consumption and the wide use of techniques and methods of work, inherent in an industrial technological order, which today is becoming increasingly hostile to wildlife.

This model, however, continues to exist, despite the fact that the material carriers of industrial ideology in the world's scientific literature are often seen as leaving. But warnings about the dangers of such order are quite loud today in the advanced industrial states, the potential of which allows, one

way or another, to stop particularly acute undesirable consequences in areas of critical contact between the interests of man and nature. This moment, however, should not be exaggerated, as here there is also no full balance, and global change affects the leaders of the industrial world, forcing them to participate actively in efforts to defuse environmental issues.

Therefore, the whole topic, in the big scheme of things, continues to be an undisputed maxim. The situation is such that the paradigm shift of development occurs not at once, but has a length in time and space, occupying for a relatively long period. After all, the previously intensively accumulated economic potential of the morally obsolete extractive and processing industries is now gradually receding only in industrialized states, providing free space for the material and technical base of the future technological order. In developing countries, including the Arab ones, the inertia of the past continues to accumulate, which remains dominant.

Under such circumstances, it is unlikely that in the foreseeable future (5–10 years) the global process of modernization will be able to become universal, in terms of the accumulation of quantitative and qualitative indicators. Most probably, another kind of development is more likely, in which this process will gradually evolve from sporadic to frontal, extending to developing countries, which currently operate mainly in the mode of "catching-up development" and still stay rather far away from approving new and latest achievements of science and technology.

Against this background, the degradation of various components of the ecosphere and biosphere is becoming increasingly visible and aggressive so, that there is no doubt that, how advancement is being made in global processes under the influence of antagonism between human and natural factors.

Environmental degradation observed in some niches and becoming persistent is the result of many causes, but the main generators of threats to a balanced regime of interaction between nature and human communities have become at least three. The first is the growth of demographic indicators, very rapidly increasing since the second half of the last century, which, in turn, put the survival of human society on the global agenda in the context of the enormous impact of the anthropogenic factor on the condition and internal dynamics of the environment. The second represents accumulation of negative "charge" generated by "black" industry in all its manifestations, so as a result, the wildlife has approached a critical threshold. The third one is manifested in atmospheric anomalies that threaten the normal functioning of human capital, and reproduction in the agricultural sector, especially in areas most prone to heat or freshwater scarcity.

There are other reasons that contribute to the destabilization of conditions, necessary to maintain the environment already at the local level, and varying in their impact on the natural environment. Some, for example, spread to relatively small areas of water, as happens from time to time with "red tides" in the Persian Gulf area, when living organisms die from lack of oxygen due to the growth of microscopic algae. Others have wider impacts on land, with long-term impacts associated with the rapid movement of thousands of tons of sand by wind, and as a result, large agricultural areas in a number of Arab countries are taken out of circulation.

It is clear that reliable funds have not yet been found to relieve painful trends on a global and local scale. There is no panacea for natural disasters, which are increasingly showing their strength in different parts of the world. No State or society can be protected from severe shocks due to natural disasters, which are capable of inflicting hard-to-recover damage on the material production, physical assets and population of any country.

Besides natural phenomena, arising spontaneously and unregulated, there are phenomena of a different order. The role of

the anthropogenic factor mentioned above is common knowledge. It acts no less stringent than natural, due to the well-established nature of modern production forces with a hydrocarbon component, and cannot be instantaneously supplanted to the far periphery of the modern interests of human society.

Even States with advanced technological capabilities, although more advanced than others, now have significant assets in the industry, running on oil, gas and its derivatives. Therefore, their aspiration to new energy sources is relevant, as they consume huge masses of fossil fuel and other minerals, which habitat hazards are already beginning lessened, but not eliminated in all manifestations.

This is likely to explain the emergence of the green growth theory in the Western countries, which is directly related to the appeal to cleaner energy sources, the invention of innovative materials with predetermined properties and implementation of more knowledge-intensive and less costly ways of interacting with natural potential in the economy and elsewhere in order to provide at the same time the most gentle attitude to the outside world and the environment.

MODERN ARAB SOCIETY AND GREEN GROWTH

Understood that without a change in the energy base, the transition to new technology model and green growth is unlikely. In any case, it is unlikely that this growth will be as dynamic even for industrialized nations, which relatively quickly managed in the mid-1970s to switch to energy-saving technologies, caused by, as is known, sharp increase of soaring hydrocarbon prices (that followed the fourth Arab-Israeli war) and nationalization by Arab oil-exporting countries of extractive industries in their countries. Then through difficult negotiations between OPEC and the International Energy Agency, by improving the elements of the productive forces of the industrial stage, the urgent measures taken by the Western States to save energy, etc., developed countries have generally managed to tackle the problem of energy costs and have even established a framework for their post-industrial development.

As a result of optimization of liquid hydrocarbon use, the environmental situation in the West has improved significantly, which raised hopes for the invention of new, non-standard approaches and technologies, which are now being implemented, of course, with varying degrees of success, in green economy concepts. Some of these developments can be seen quite clearly in the advanced economies, which are very active in promoting the latest technologies in some sectors of their economic activity.

In the Arab region, this process is not yet very visible, even if the Arab monarchies of the Persian Gulf are consider initiating with some success, rather bold experiments, which could serve as a basis for further development of new economic models, based on innovations in agricultural technology and tools, that used to reformat the production machinery of this group of Arab States. But their example is extraordinary, because they have so-called excessive financial savings, allowing them to maneuver capital simultaneously in agriculture, industry and tools, which other Arab countries lack, even those that also produce oil and gas.

Movement in the green corridor in the Arab region depends on many factors, the combination of which is different even for those of its countries that have roughly the same development parameters, characteristics of the economic structure, views on modernization, depth of participation in the globalization processes etc. All this creates individuality in approaches to decisions that determine their future well-being. This means that there will be a widening gap between the countries of the Arab region in the move towards green technologies, and the survivors of the recent Arab Spring, a number

of countries, were accompanied by devastating civil wars. And their more fortunate neighbors, that survived the Arab Spring without extra economic losses and maintained production, while establishing new economic assets and supporting sustained economic growth in these difficult circumstances. For the other Arab countries with average level of development (e.g., Syria) and even more so for the poorest ones (e.g., Yemen, Sudan, or Somalia), losses are proving to be a huge problem today. Before developing the subtle and expensive technologies of green growth, such states will have to focus their efforts on bridging the gap even from their decades-long Arab neighbors, because on this and, according to some estimates, for an even greater period, they have been set back in their social and economic development by the dramatic events of their recent history, and only then can they get opportunity to catch up with the far ahead neighbors in the region.

Unlike the hard-to-calculate Arab losses (due to the events of the Arab Spring and then the attack of the Islamic terrorists) a related group States (mostly from the Arabian Peninsula) were able to achieve notable success in the initial introduction of innovative industrial and agrarian technologies. It is clear that even in this advanced group of countries in the Arab region, technological advances are still not beyond the scope of pilot projects, which, of course, operate, but are difficult to take root in the long-standing reality of a number of countries. This happens for many reasons, from the difficulty of mastering the latest technologies to the shortage of qualified personnel and from management problems to pricing policy and so on.

It is no wonder, therefore, that indicators of Green Economy has remained relatively unchanged throughout the Arab region over the past 10–15 years, staying at about 1% of the world (corresponding figure for the USA — 6%, China — 5%, the EU — 11%). This is in contrast to the fact that the Arab region loses 95 billion dollars annually due to environmental degradation [1]. If these funds could be mobilized by the Arab countries to create, at least, the basic pillars of green growth, they would significantly raise their authority in this area.

The Arab Governments are well aware that the achievement of sustainable socio-economic development and green growth depends on the effectiveness of investment and the national economy as a whole, the quality of human potential and the ability to mobilize creative energies in it, inculcating culture and scientific knowledge, introducing modern skills and competencies, increasing productivity and competitiveness of the economy as a whole. However, these theoretical considerations have not been adequately addressed in Arab society, staying in a situation, which have traditionally impeded economic and social progress in the region allowing economic stall, problems with quality management at different levels, "wild" globalization, and corruption, etc.

Meanwhile, everything related to the ecology and the problem of the survival of society in a fragile ecosphere, remains a contentious issue for a number of Arab countries, especially those in armed conflict. These circumstances are equally painful in terms of resolving both socio-economic and natural problems. Both require huge financial investments to modernize productive forces and prevent further habitat decline, not only by improving the environment itself, but also by introducing modern "clean" technologies, capable to guarantee the safety of Arab society as a whole.

This aspect has assumed considerable importance precisely at the current stage of development of the Arab region, because it had suffered that time severe damage to agricultural land and desert areas, which, in their natural fragility, are very sensitive to mechanical impacts from the movement of heavy military equipment, carpet bombing,

when partially or completely lost already not very abundant greenery, freshwater sources, coastal marine waters, etc.

In these circumstances it becomes clear that just borrowing and copying pioneer processes, emerging among the leaders of the industrial world are unlikely to create such a stimulus in the Arab region, that would help it confidently enter the area of modern innovative green practices, relying only on its own strength, which also has serious traditional and inertial potential. It is clear that the latter could not help but affect the social and economic order of the entire Arab society. With such a background, the society has for decades (since the first wave of energy and raw materials crisis in the early 1970s), been accustomed to the situation when some countries (mainly large oil and gas exporters) use their revenues from the export of hydrocarbon raw materials to secure the basis of their financial well-being and successful economic development, while the others (e.g., Egypt, Syria, Tunisia) consider them as a significant part of their national budget incomes.

ARAB REGION: TRADITIONAL AND GREEN ENERGY

For objective reasons of world development, Arab region became one of the important units that intertwining the global processes in the world economy, that closely related to the increasing importance of energy, growing role of the Arab countries in the world fuel and energy complex, as well as its enormous impact on their industrial system of productive forces and transformation of socio-economic structures. It maintains its position today as the world's main fuel tank. Almost 50% of proven and up to half of projected liquid fuel resources in the Arab countries are focused, as well as nearly a quarter of the world's natural gas reserves, with the lowest extraction costs due to the unusually high natural returns of these minerals. Even with the forced exploitation of shale oil and gas, Arab countries still produce almost one third of the world's oil production and about half of the world's oil exports.[1]

However, modern trends towards green habitats and environmental protection based on a qualitatively new state of the productive forces are introducing the world in an era of profound changes in technics, technology, economy and other spheres. Signs of these shifts are visible not only in the newest green ways of production, but also in contradictions, created by traditional energy, which, while remaining one of the pillars of modern economic growth, at the same time has the status of the most "dirty" production agent, harmful to the environment and undermining biodiversity. This problem is extremely relevant to the entire Arab region, and especially to the part of the Persian Gulf region that is overburdened with mining infrastructure and exists as a complex of nature-hazardous industries related to the industrial extraction and processing of hydrocarbon raw materials, whose harmful properties are further exacerbated by adverse climatic conditions.

Attention to alternative sources of energy for the new generation base is now being given in practically all Arab countries, and not only in the Persian Gulf area, but also in Morocco, Egypt, Tunisia, Jordan, etc., where new realities meet understanding, although they take root not without difficulties. After all, the Arab space is not uniform, and the countries are markedly differentiated by a set of indicators, including energy supply, composition of generation capacities and energy policy tasks.

In recent years, however, many Arab countries have seen a marked increase in green economy activity, that, in the future, could help to defuse the current situation, which is really threatening the very viability of the region. From this point of view, it repeats the world dynamic, although with some differences. So, 51% of electricity in

[1] Calculated at: BP Statistical Review of World Energy 2020.

the world from renewable energy comes from wind, while almost 25% is produced by solar equipment[2]. Meanwhile the Arab countries have focused on solar power, that irradiates the Arab region excessively, with the potential to generate green energy and use it to replace chemically harmful fuels.

The Arabian monarchies are at the forefront of the process of acquiring solar and wind energy, oil and gas-related financial well-being remains the mainstay of socio-economic progress. The transition to solar and wind power successfully falls on their desire to radically modify their economic model, without, of course, losing the image of the energy storage of the world. It is therefore clear that the latest green technologies are attractive to this group of Arab countries, on the one hand, highly dependent on oil and gas sales and on the other, not interested in depleting their reserves. Because they understand that, the demand for natural hydrocarbons will be sustained in the world in any case, then not in the form of fuel, but as raw materials for petrochemical and oil refineries.

SOLAR AND WIND ENERGY IN ARAB COUNTRIES: HOPES AND PROBLEMS

The above considerations have led Arab countries to adopt in 2013 The Pan-Arab Strategy for the Development of Renewable Energy by 2010–2030, that was to be a road map by which they would be able to bring together all the countries of the region in three strategic directions, the main of which aims at development of alternative energy that could provide two others, including maintenance of environmental viability and prevention of contamination of groundwater and terrestrial freshwater sources.[2]

As planned by 2030, absolute leaders in terms of installed capacity are expected to be Algiers — 5 thous. MW, Kuwait — 9.3 thous. MW, Dubai — 5 thous. MW, Morocco — 4.6 thous. MW, Tunis — 1.5 thous. MW, Jordan — 0.9 thous. MW. Saudi Arabia, really, has set a peak of 2040 with 41 thous. MW which is the height, staying apparently beyond the reach of all other countries. Against this background, the figures for Syria is modest and represented by 3.3 thous. MW to 2030, especially given the decade-long war with ISIS (banned in Russia terrorist organization), depletion of the country's resources and the need for extensive reconstruction. The same applies to Libya (1.2 thous. MW), Sudan (1.1 thous. MW), which are not socio-economic and politically successful States, and are "the face of daunting challenges". Iraq's relatively low performance is also questionable — 0.3 thous. MW, Yemen — 0.1 thous. MW, Palestine and Mauritania — less 0.1 thous. MW, in which the situation remains very difficult, and sometimes crisis.[3]

Understandably, the figures reflected inflated goals, which were established at the very beginning of the Arab Spring and the subsequent catastrophe for a number of countries. However, to date, there is no indication that any adjustments have been made. However, if something like this happens tomorrow, then even minimal upward changes in the above road map are unlikely to be fully realized, because these countries are constantly having trouble in filling their budgets, and obtaining foreign aid is irregular and problematic.

In addition, the enthusiasm of most Arab countries for the development of solar and wind power has waned as technological and financial problems arise and become tangible for them during the real development of renewable energy. So, firstly, the fact that, for example, the capacities for obtaining solar energy are relatively small, can be perceived as a serious limiter (the average solar power plant is about 20 times smaller than the

[2] Pan Arab Strategy for Development of Renewable Energy Applications 2010–2030.

[3] Pan Arab Renewable Energy Strategy 2030. Roadmap of Actions for Implementation/IREMA; 2014.

average TPP). Secondly, solar panels occupy large areas with low efficiency (CPA) (1 sq. km of solar "farm" on average for a year produces electricity, the amount of which is equivalent to the use of only 1 million barrels of oil, i.e. 158.7 thous. tons of oil) [3].

And therefore, they unable to meet the energy needs of large energy-intensive industries (what is, for example, typical for Arabian monarchies, Algeria, Egypt or Iraq), and also "occupy" too large territories from the so-called small countries (for example, Kuwait, Qatar, Bahrain, Jordan, Lebanon or Djibouti), that simply cannot afford "luxury" to allocate tens, or even hundreds of square kilometers of their territory for solar panels.

It has also been experimentally found that the energy efficiency of solar panels decreases by 0.45% with each additional degree of heating from sunlight (the optimum heating temperature of the solar panel is 25°C) and may lose up to 10% at temperatures above 40°C. In this case, special cooling equipment is required, which, in turn, consumes some of the electricity generated by these panels, which reduces their efficiency by another 0.6%.[4]

Remind that in most Arab countries, especially those located on the Arabian Peninsula, even in the winter months, the daily temperature rarely drops lower 25°C, and in summer, even in the shadows, often comes 45–48 °C and is annually accompanied by winds "khamsin" (from the Arabic word "fifty"). This wind blows from the rocky Arabian deserts for 50 days, lifting thousands of tons of minute sandy dust containing massive amounts of silicon particles, which damage the working surfaces of solar panels, clogged in microscopic gaps of mechanisms, as well as requiring daily and labor-intensive cleaning of the working surfaces of these panels. Given that it is only cost-effective to use the latter on an industrial scale if they are installed in large areas, such operations require significant additional costs.

It is not surprising, therefore, that today's boom in solar energy in the Arab region says more of intentions than of the Arab transition to this new energy source. It seems obvious that in 10–15 years the solar energy in the region will not be able to compete with the traditional energy source. It is more realistic to assume that it may increase its share in total electricity generation in the region a little, but only as a complement to the existing fuel capacity, not to displace the latter from its positions.

Less attention has been paid in the Arab countries to the development of wind energy, whose share of total electricity generation in the region has been steady at less than 0.1% and even has a certain downward trend. The reasons for this are many, but the main ones include, for example, the high cost and low efficiency of the production of this type of energy. Thus, installation of one well in an oil or gas field or the construction of two wind turbines costs about the same, but if the latter produce only 0.7 barrels of oil per hour (in energy equivalent), a field of even relatively expensive shale gas gives 10 barrels per hour. In addition, if it costs 0.5 dollars to store 1 barrel of oil or its equivalent in natural gas, that storage of energy from windmills in batteries costs 200 dollars.[5]

In addition, the above-mentioned "khamsins" lead to accelerated wear of windmill mechanisms/, and the burning sun causes overheating of the power lines, making them less profitable. Another major barrier to the use of wind turbines, particularly in the small Arab States, is that infrasound noise that they produce during their work negatively affects the health of people, and therefore it is prohibited to install them near population centers.[6]

[4] Institut de la Francophonie pour le Développement durable. La Planification énergétique sectorielle; 2020.

[5] Vesti. Finance. 25.09.2019.

[6] "UNIDO in Russia" Bulletin. 2020;(4).

For these and a number of other reasons, wind power is gaining a niche in the overall energy mix of the Arab region with a high degree of uncertainty, despite the fact that the total wind balance of the region is considered to be one of the largest in the world, thanks above all to Egypt, Morocco and Tunisia, which are world leaders in the potential of wind energy [4].

Another reason why the introduction of solar and wind power is rather slow, not only in the Arab region but also in many other countries of the world, are long payback periods, equal to 6 years on average for solar and 1 year for wind. But, if we take into account the need to install additional systems on them to stabilize generation and compensate for drawdowns (lack of sunlight at night or calm, etc.), then these periods increase for solar power plants up to 16 years, and for wind power plants — up to 6 years (for comparison: a power plant operating on natural gas pays off in 2 weeks of continuous operation, on coal — in 2 months, hydroelectric power plants — in 2–3 years)

DO THE ARAB COUNTRIES HAVE A "HYDROGEN FUTURE"?

Given the problems of solar and wind energy, Arab countries past few years placed expectations on hydrogen, which, due to its high reactivity, is easily bonded to other elements, and therefore occurs almost everywhere on Earth. Although hydrogen is not yet considered a renewable energy source, it can be a practical energy host. Thus, it allows eliminating the main shortcomings of renewable energies, i.e. dependence of the latter on external conditions and their inability to store energy. In addition, environmental protection is considered the main argument for the introduction of hydrogen into modern energy, since only water vapor is emitted to the atmosphere at the sites of the energy use of hydrogen produced by hydrolysis. In addition, hydrogen can be used for direct electric current generation by fuel elements.

Despite these positive aspects of the introduction of hydrogen (which is also 2.57 times the calorific value of methane), using of the latter deters its use in a compressed or liquid state, exceptional ability to penetrate the structure of various materials (causing them to crack, which creates additional requirements to the conditions for its safe storage), and cost of obtaining.[7] The ability of hydrogen atoms to penetrate any micro fracture is extremely dangerous, as it explodes at the slightest contact with air, and therefore the risk in any accident is extremely high, which limits its use as a substitute for gasoline in internal combustion engines, gas turbines and heating systems. Transporting hydrogen through conventional trunk pipelines is also impossible because of its ability to destroy their walls.

Its limitations in large-scale use of hydrogen bring up-to-date scientific and technological progress: currently 96% of hydrogen is derived from fossil fuels (methane is the most suitable raw material) and only 4% obtained from water electrolysis.[8] As a result, hydrogen (other than hydrolysis) is not yet able to solve the climate problem because it requires the extraction and processing of natural gas, why 5.5 tons of greenhouse gas are emitted to the atmosphere to produce only 1 ton of hydrogen from methane, which should be captured and recycled of in some way. For example, by injection into geological formations, which increases the cost of hydrogen-based energy by 20–40%.[9]

However, as mentioned above, hydrogen is convenient to use as a reservoir of excess energy produced by all known types of its generation. This is the reason why the rich Arab countries (especially the Arabian monarchies) are interested in investments in hydrogen experiments, currently underway

[7] URL: cyberleninka.ru/arlicle/n/vodorod-kak-dobavka-v-toplivo/viewe

[8] URL: proatom.ru/modules.php?name=News&file=article&sid=9770

[9] URL: gasprom.ru/press/news/report/2020/pure=hydrogen/

mainly with hydrogen fuel elements in industrialized States, in the hope (if such experiments succeed) of benefiting from them.

OTHER TYPES OF ARAB ENERGY

Arab countries have not ignored their attention to nuclear energy, the advantages of which lie in the huge energy intensity of uranium raw materials, potential for reuse after regeneration and the absence of a greenhouse effect. Of course, there are serious concerns about this type of energy in the Arab region because of the tragedies in Chernobyl and Fukushima.

The first Arab country to attempt to establish a nuclear power plant was Libya, which, as early as 1977, concluded an agreement with the USSR to construct and equip a Nuclear Research Centre in Tadjoura, where the Soviet reactor with highly enriched uranium of 10 MW was delivered, and then became operational in 1981. Libya also negotiated the construction of two nuclear power plants with the Soviet Union, but unsuccessfully, because of US and UK sanctions, feared that Libya would use Soviet technology to build nuclear weapons.[10]

In 2009, with the assistance of South Korea, work on the construction of a nuclear power plant began in the UAE, equipped with four power units with third generation reactors, each with a capacity of 1,400 MW. The first power unit was launched in April 2021. The UAE authorities plan that after the commissioning of all power units, this NPP will be able to provide at least 25% of the country's electricity needs.[11]

In November 2015, the governments of Egypt and Russia signed an agreement on the construction of a NPP, equipped with the four power units with capacities of 1200 MW each with generation reactors "3+". Planned construction deadlines end was 2028, then were moved to 2030 due to disruptions caused by coronavirus.[12]

While nuclear power in the Arab region is still in its early stages of development, hydropower has been developing there for a long time, and today its share in the general Arab generation is 4.5–4.6%.[13] However, this figure is almost entirely the result of the work of such large hydropower stations as the Aswan High Dam in Egypt and the Euphrates in Syria, built with the assistance of the USSR. Other Nile or Euphrates and Tigris HPP projects since the mid-1980s are blocked by the contradictions between Egypt, Ethiopia and the Sudan over the distribution of the Nile water, as well as the disagreement between Turkey, Syria and Iraq, which are not yet in a position to agree on the distribution of the river waters of the Euphrates and the Tigris. Therefore, the contribution of hydropower to the green economy of the Arab region as a whole is not increasing, but even tends to decline in relative terms.

THE FUTURE OF GREEN ARAB ENERGY

It should be noted that the energy market in the Arab region remains heterogeneous in terms of organization to date, depth and breadth of reform and structuring of its segments, established priorities and the degree of State intervention in governance processes. The same applies to the RES market, especially as their proportion is still very low. In other words, alternative electricity generation in the Arab countries has yet to become a stand-alone industry and operates under conditions determined by the conventional energy market.

In a number of Arab States, the conventional electricity market is fully liberalized. Others are in an extended privatization process. Third limit themselves to partial deregulation, leaving the function

[10] URL: tvzvezda.ru/news/201709200924–89gw.htm

[11] URL: news.myseldon.com/ru/news/index/248648603

[12] URL: news/myseldon.com/ru/news/index/257563844

[13] IRENA. International Renewable Energy Agency. League of the Arab States. Overview of Development.

of electricity producer, but freeing from the obligation to maintain distribution networks and do transport energy. Of all the Arab countries, in fact, only Morocco legislates private generation based on renewable energy. In Abu Dhabi and Dubai, despite their very vigorous promotion of green energy projects, the issue of making its producers "independent" is still under consideration. It seems appropriate, however, to believe that expansion of the alternative energy "niche" will eventually lead the Arab countries to the need to give this market a clearer organizational form.

It is understandable that the Arab region is reasonably well endowed with a more than sufficient range of renewable energies and has ample opportunities to use them for its socio-economic development. Positive momentum for green energy upturn is the state interest in such projects, the availability of credit in Arab and international banks, the gradual reduction of prices for green technologies. The emergence of local medium- and small-scale entrepreneurs and investors is now providing an additional stimulus, who have started to deal with simple technical tasks, for example, installation and maintenance of home solar panels, construction of simple single-source power grids with the prospect of embedding them in a more integrated cycle, etc.[14]

But can't discount counter-constraints, for example, limited access to microfinance, government's unwillingness to work with small and medium-sized energy businesses, adverse impact of oil prices on the competitiveness of renewable energy, low market demand to recent, etc. In the Arab countries the lack of long-term marketing plans for the promotion of green energy products is an urgent problem on domestic, commercial and industrial markets and insufficient government support for green energy in its fight against conventional competition [5].

It is clear that the development of the energy green component of the Arab energy cannot be uniform in all directions. It is also clear that major oil exporters and some relatively advanced economies will be closer to the final destination in other Arab countries (Egypt, Algeria, Morocco), who have made the difficult transition to a market economy in previous decades and operates with defined flawed. Nevertheless, such countries had a chance to start diversifying their energy systems.

Other, less prosperous, Arab countries are unlikely to meet the green energy targets, because it is unlikely that the severe social and economic problems of the present and future stages of development will be overcome within a short historical time-frame, improve macroeconomic efficiency, implement structural economic reforms, laying the groundwork for the transition to innovative energy technologies.

Other obstacles stand in the way of reformatting the Arab energy sector, for example, a general heightened internal political turbulence, capable, as the events of the Arab Spring have shown, of escalate into violent political and armed conflicts at any moment. If something like this were to happen in the foreseeable future, it would be further proof that the Arab region is not yet able to break away from fragmentation, and each member country develops according to its internal algorithms, which, for historical, economic, social and other reasons, are difficult to defies rational regulation.

Against this background, the development of new types of generation can hardly be considered by the Arab countries as an absolute measure of their socio-economic development. Rather, it is the next task, at least in the initial stages of transforming the national energy sector. Naturally, these countries attach great importance

[14] Pan Arab Strategy for the Development of Renewable Energy Applications 2010–2030. The Secretariat of the Arab Ministerial Council for Electricity.

to borrowing the most advanced green technologies from abroad. But the main challenges for them are not simply to mechanically transpose imported gains to local, highly specific conditions, and adapt them to the environment. Because as interesting as it may seem for the Arab countries, implementation of green energy principles and such technologies, at the current level of scientific and technological progress, have not yet been able to solve the problems of socio-economic development and environmental conservation, facing the Arab States.

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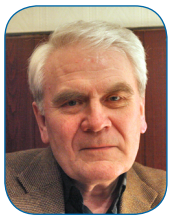

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Ecological Public Policy of Russia and Latin America (On the Example of Ecuador, Mexico, Brazil)

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ABSTRACT

The article describes the main characteristics of the state environmental policy and their impact on political processes in Russia and a few Latin American countries. Through the prism of comparative analysis, the relationship between a person and his environment is considered through the mediation of ideological constructions and power relations, which help to display the existing contradictions between the culture and the natural environment of the countries in question. Thus, the author identified and analysed in this paper, for each of the countries their specific "development pattern" and presented possible scenarios in the field of environmental policy.

Keywords: ecology; public policy; ecological development; extractivism; eco-territorial progress; buen vivir

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INTRODUCTION: ENVIRONMENTAL PANORAMA OF LATIN AMERICA

In Latin America, as in the world, environmental problems are characterized by all natural resources: land, forest, freshwater, coastal and coastal ecosystems, atmospheric air.

Latin American region — one of the world's first land-use areas. About 47% of the land is still forested, but this figure is declining rapidly due to the expansion of agricultural land. Over half a century (1961–2011) the area of agricultural land in Latin America has grown significantly, reaching 741 million hectares.[1]

The rapid growth of arable land has led to serious problems in the region: Latin America suffers from reduced land for agriculture, urban expansion, soil erosion and an increased number of forest fires.

Previously, forest fires were mainly of natural origin and are now mostly caused by human factors. Expansion of agriculture, wood extraction with development of small-scale agricultural production — major reason of deforestation.

Soil degradation (physical, chemical and biological) is reflected in reduced vegetation cover, reduced fertility, soil and water pollution and, as a consequence, reduced yields. The main reasons of degradation are water erosion, intensive use of agrochemicals and deforestation.[2]

Land degradation is also linked to poverty and the lack of equitable distribution of natural resources: poor have less access to land and water. In areas with high levels of poverty there are many lands unsuitable for agricultural use. Forecasts also indicate that between 5 and

[1] URL: http:// https://www.fao.org/americas/prioridades/suelo-agua/es/

[2] URL: http://www.fao.org/3/t2351s/T2351S 08.htm

6% of Latin America's land area could change biomes as a result of climate change by the end of the century [1].

The Latin American region is rich in renewable water resources, accounting for more than 30% of the world's reserves. 30% of water intakes in Latin America are groundwater [2]. The hydrological balance is changing as a result of deforestation, land-use development, reductionof vegetation cover, overexploitation of aquifers and drainage of natural water bodies.

Agriculture uses the most water in the region — 70% of all water intakes. Next are household uses (20%) and industry (10%). Tropical glaciers in the Andes account for more than 80% of the freshwater available to grass-roots populations and ecosystems in the semi-arid tropical regions of Latin America. They are melting at an accelerated rate due to climate change [3].

There are two main water-related problems in the region: reduced availability and quality of water. The decrease in water quantity (quantitative degradation) occurs when the water balance changes and more water is used than is available. Loss of quality (pollution) occurs when water is less useful and its properties are damaged by the environment and its organisms. This situation is mainly due to the insufficient degree or non-existent water purification and the uncontrolled use of chemical fertilizers. Pollution of water by the extractive industry also leads to reduced water quality.[3] In addition, artificial canals, dams and active urban development are causing changes in aquatic ecosystems.[4]

Air pollution — is another acute environmental problem affecting the Latin American region. This is due to high rates of urbanization, population and industry growth and the ever-increasing number of cars.

More than 80% of the population of Latin America and the Caribbean[5] lives in urban areas. Population growth also affects the environment, not only through the consumption and use of natural resources, but also indirectly, for example, through violent conflicts over limited resources.

Thus, global climate change has a negative impact on the Latin American region, given its socio-economic and environmental vulnerabilities. A combination of anthropogenic factors could push some regional social and environmental systems beyond critical points and lead to a sharp reduction in biodiversity [4].

ENVIRONMENTAL CONSERVATION PROGRAMMES: THE EXPERIENCE OF MEXICO, ECUADOR, BRAZIL AND RUSSIA

Faced with serious environmental problems, Latin American countries have begun to implement various mechanisms for the management and sustainable development of natural resources. All the countries under review were parties to international environmental treaties and were actively implementing climate projects.

In Brazil, for example, in the 1980s the institutional framework for the preservation of the Amazon began to be defined. One of them was the National Environmental Policy. In the 1990s, the environmental theme in country became relevant in the context of the United Nations Conference on Environment and Development in Rio de Janeiro in June 1992. At the same time, Brazil established the first mining reserves and began the process of demarcation of indigenous territories, allowing to slow the progress of agricultural boundaries and urbanization of local forests. In addition, the National Biodiversity Programme was adopted in 1994.

In the 2000s, Brazil launched one of the world's most innovative and important biodiversity conservation projects called "Arpa" for the sustainable development of the Amazon region. And in 2010, Brazil again hosted the UN conference "Rio+20".

Over the past three decades, Brazil has made great progress on the biodiversity

[3] URL: http://www.fao.org/americas/prioridades/suelo-agua/es

[4] See ibid.

[5] URL: https://www.elobservador.com.uy/nota/america-latina-es-la-region-mas-urbanizada-del-mundo-en-desarrollo-20171116500

agenda. In 2021, the project started GEF-Pró-Espécies, the purpose of which — conservation of endangered species. The project consists of four components: conservation of endangered species; control and prevention of illegal hunting, fishing, illegal harvesting of plants, combating plant and animal smuggling; preventing and early detection of invasive alien species and responding rapidly to these situations; coordination, monitoring and communication.[6]

The project is funded by the Global Environment Facility (GEF) with the participation of the Federal Government, states and municipalities. It is planned to operate in at least 13 states, covering a total of 9 million hectares. Duration of project GEF Pro-Espécies — 4 years.[7]

In the past few years, the Ministry of the Environment of Ecuador has also undertaken a number of important initiatives. These include, it's about, forestry incentive programmes, water treatment programmes, as well as initiatives to manage solid waste through environmental education and elimination open dumping sites throughout the country.

Mention should also be made of the programme Socio Bosque, which aims to improve social and environmental mechanisms aimed at strengthening the financial sustainability of the green economy. The concept Buen Vivir[8] are played an important role as a new model for equitable and balanced development. Both programmes saved 1 670 000 hectares of forest in Ecuador in 2020.[9]

Mexico is also actively implementing conservation and conservation programmes. In 2018, at the initiative of President Andrés Manuel López Obrador, the project was presented Sembrando Vida, aimed to combat land degradation and deforestation. The Government intends to plant 3 400 000 trees, paying villagers who plant trees. According to the Mexican authorities, such an initiative not only preserves the country's territory from deforestation, but also contributes to food security, as it is predominantly fruit trees that are planted.[10]

In the context of programmes and initiatives to preserve the environment and strengthen sustainable development, the ratification by Mexico of the Escasu Agreement in 2021 is particularly noteworthy. This is the first agreement in Latin America and the Caribbean to guarantee public participation, access to information and justice in environmental matters.[11] Latin America — the region where environmental defenders are currently most killed, so the ratification of the Escasu Agreement (Ecuador also ratified it) shows an awareness of the importance of environmental problems, expands the rights and capacity of citizens in the field of environmental protection.

Russia, like the Latin American countries mentioned above, has long been a full participant in the process of establishing the sustainable development agenda. In 1996, the concept of transition to sustainable development was adopted,[12] which included a number of decisions of a socio-economic nature and proposals for maintaining a favourable environment and natural resource potential to meet the needs of present and future generations.

[6] Brasil lanza un proyecto para proteger especies amenazadas de extinción. URL: https://www.wwf.org.br/?65584/Brasil-lanza-un-proyecto-para-proteger-especies-amenazadas-de-extincin

[7] See ibid.

[8] Buen Vivir — the intellectual movement that emerged in the Andean region in the late 20th — early 21st century, based on the ethical principles and knowledge of the indigenous peoples of Latin America. The main postulates of Buen Vivir criticize existing Western models of society development.

[9] Ecuador alcanza acuerdos de cooperación ambiental. URL: https://www.ambiente.gob.ec/ecuador-alcanza-acuerdos-de-cooperacion-ambiental/

[10] URL: https://www.gob.mx/sembrandovida

[11] México ratifica el acuerdo de Escazú que entrará en vigor 22 de abril. URL: https://www.efe.com/efe/america/mexico/mexico-ratifica-el-acuerdo-de-escazu-que-entrara-en-vigor-22-abril/50000545–4447235

[12] Decree of the President of the Russian Federation on the concept of transition of the Russian Federation to sustainable development. URL: https://docs.cntd.ru/document/9017665

The main feature of Russian initiatives for the preservation of the environment is that they are integrated into national projects, written both in federal documents and in the development strategies of the Russian regions. At present, Russia is a party to approximately 100 international agreements in the field of environmental protection. The most effective international cooperation is developing in improving the system of specially protected natural areas.[13]

In early November 2020, Russian President Vladimir Putin signed a Decree on the reduction of greenhouse gas emissions in order to implement the Russian Federation's obligations under the Paris Agreement. President's Decree instructs the Russian government to reduce greenhouse gas emissions to 70% of 1990 level by 2030.[14]

Thus, introducing programmes and initiatives to preserve the environment at the level of public policy, Russia and Latin America focus primarily on decoupling dependence of economic growth from the use of natural resources through the sustainable management of ecosystems and the search for alternative solutions.

However, despite all efforts, these countries have some difficulties in implementing initiatives to preserve the environment. This is primarily due to economic and political factors that directly influence the decision-making of the State in the field of environmental policy.

Some achievements in the field of environmental protection are "eroded" due to the implementation of the policy of extractivism — approach, involves the extraction of minerals and the overexploitation of natural resources by both the State and large businesses.

A number of large infrastructure mega-projects in Russia and Latin America threaten the environment, reduce biodiversity and causes serious social and environmental conflicts. In the final analysis, the implementation of these projects shows that environmental problems are not yet a priority for Governments. This is also demonstrated by the number of cases described below.

MEXICO

Currently, the Mexican government is focusing on attracting foreign investment and creating new jobs to rebuild the economy damaged by COVID-19. It should be noted that prior to the pandemic, public policy did not address the environmental crisis. According to Mexican biologist Victor Toledo, the environmental crisis has been going on for several years.[15]

The best proof of this — before the pandemic, the entire environmental budget was reduced. Over the past five years, Mexico has experienced a sharp decline in its budget for environmental protection: while in 2015 the entire environmental sector totaled 67 976 million pesos (3 billion USD), in 2020 this figure decreased to 29 869 million pesos (1.5 billion USD).[16] The COVID-19 pandemic has further affected the agency's budget reduction. Ministry of Environment and Natural Resources (SEMARNAT), and National Commission for Protected Natural Areas (CONANP), National Forestry Commission (CONAFOR) and Federal Prosecutors General for the Environment (PROFEPA) worked with minimal financial resources. This resulted in agencies not being able to fully perform their functions, including monitoring to fight environmental crime.

In addition, SEMARNAT became the agency that most often changed its leaders: in two years it had three. And the resignation of one of the ministers of SEMARNAT was due to

[13] Russia in international environmental conventions and agreements. URL: https://geographyofrussia.com/rossiya-v-mezhdunarodnyx-prirodooxrannyx-konvenciyax-i-soglasheniyax/

[14] Putin requested to reduce greenhouse gas emissions. URL: https://www.kommersant.ru/doc/4559047

[15] La democracia directa y participativa es la solución a la crisis ambiental y civilizatoria. URL: https://unamglobal.unam.mx/la-democracia-directa-y-participativa-es-la-solucion-a-la-crisis-ambiental-y-civilizatoria-victor-toledo/

[16] Presupuesto ambiental sufre descalabro de 37 por ciento. URL: https://www.excelsior.com.mx/nacional/presupuesto-ambiental-sufre-descalabro-de-37-por-ciento/1349656

his desire to prohibit a number of herbicides, which caused the Ministry to conflict with the powerful agrarian lobby and mining business, which are traditionally strong in Mexico.

In Mexico, after the rise of Andrés Manuel López Obrador, intensive promotion of mega-projects of the refinery "Dos Bocas" and "Tren Maya" began (project with an investment of 6,294 billion dollars for the construction of about 1 554 km of railway in five southeastern states: Chiapas, Tabasco, Campeche, Yucatán and Quintana-Roo). Construction of refinery "Dos Bocas" in the lowlands of Tabasco is a cause for concern for several reasons. Environmental impacts of mega-projects already affecting coastal lagoons and mangroves. "Tren Maya" and refinery — not the only large-scale projects promoted by the federal government. There is also the project "Integral Morelos", which is developed since 2012 and envisages the construction of two natural gas power plants; gas pipeline that crosses three states: Tlaxcala, Puebla and Morelos; and also — aqueduct to extract water from the Cuautla River in Morelos. In addition, resources are provided for the upgrading of coal, diesel, gas and oil power plants.

It should be noted that 91% of the energy produced in Mexico comes from hydrocarbons, and the country will have to reduce this number and increase its energy supply from renewable sources. Among the commitments, adopted by Mexico and enshrined in the General Act on Climate Change,— reduce greenhouse gas emissions by 50% of the 2000 level by 2050, and zero deforestation by 2030.[17]

Deforestation and illegal logging — are another serious problem in Mexico. According to research by the University of Maryland published by the Global Forest Watch, from 2002 to 2020 country lost 662 thousand hectares of primary forest.[18] One of the main causes of deforestation — expansion of avocado plantations and other commercial crops (such as African palm or soybean). In addition, illegal logging has become part of the criminal business. At least half of the timber sold in the country is illegal and controlled by drug-related groups. This fact out of work community forestry enterprises.

In Mexico community forestry enterprises (CFE) have their origin in ejido, or agrarian communities, are social organizations that own forest lands on a common basis, and have different levels of production integration and produce wood for commercial purposes. In terms of governance and business, many community forestry enterprises in Mexico have not been successful due to the imposition of public forest conservation programmes and inadequate models of integration into the market economy. Of the 584 forestry communities in Mexico, only a few have proven to be competitive.

According to industry media Mongabay, before the COVID-19 pandemic, community forestry enterprises created about 160 000 jobs across the country,[19] and there is still no official data on how many of them were lost. Meanwhile, communities that produce legal timber must fight not only the presence of organized crime and impunity, but also with excessive bureaucratic paperwork and the absence of policies and budgets aimed at strengthening the forestry sector.

Thus, the process of deforestation in Mexico not only affects the environment but also provokes serious social and environmental conflicts. In this sense, environmental problems should be understood as social problems that affect the most vulnerable groups, first of all, indigenous peoples whose way of life is inevitably destroyed by environmental problems.

Mexico is among the four most dangerous countries (after Philippines, Colombia and Brazil) for environmentalists, according to a

[17] Compromisos de mitigación y adaptación ante el cambio climático para el periodo 2020–2030. URL: https://www.gob.mx/cms/uploads/attachment/file/162974/2015_indc_esp.pdf

[18] URL: https://gfw.global/3Hr3tjX

[19] Los desafíos ambientales de México en el 2021. URL: https://es.mongabay.com/2021/01/desafios-ambientales-mexico-2021-acuerdo-de-escazu-nuevas-leyes-bosques-clima/

report submitted by Global Witness in July 2020. 18 environmentalists and defender of territories were killed in 2019.[20] So far, Mexico has not solved the problem homicides based of ecologically. Moreover, Mexican President López Obrador is inclined to blame the NCB, who are involved in environmental and human rights issues by opposing mega-projects and self-serving help indigenous people to counter legal construction, thus destabilizing situation the region. According to the President, non-governmental organizations opposed to the construction "Tren Maya", receive foreign funding of more than 13 billion dollars.[21]

Government action shows that Mexican public environmental policy still exists in the extractive paradigm[22] and directs efforts to increase the use of natural resources without paying due attention to environmental issues. This course is generally contrary to the climate agenda and the implementation of international commitments.

ECUADOR

In the four years of Lenin Moreno, the Ministry of Environment was significantly weakened: six ministers were replaced, the Ministry itself merged with the Secretariat for Water Resources, and the budget of both institutions was significantly reduced, and the Joint Agency underwent large-scale cuts: almost 400 employees were laid off in 2020 alone.[23]

The serious crisis, was exacerbated by the coronavirus pandemic, come on top by Ecuador's traditional environmental problems: alarming proportions of deforestation and environmental conflicts with indigenous peoples.

Severe deforestation of the Ecuadorian rainforest has not received sufficient attention for several decades. Forest loss has been a serious problem in Ecuador for almost three decades. According to a number of studies, in the past 26 years the country has lost more than 2 million hectares of tropical forest, accounting for about 7.8% of the total area of Ecuador.[24] According to experts, this was due to the deepening of extractivism as the basis of the Ecuadorian economic model.[25]

The disappearance of the rainforest in Ecuador would not only mean the loss of one of the most biologically diverse places in the world, but also thousands of unique plant species on the planet. Their loss can change entire ecosystems. Researchers from the LaForeT project found that people living in or near tropical forests were forced to convert certain forest areas into agricultural areas (including areas under monoculture). The need for survival and exploitation of rich natural resources has led to the loss of enormous amounts of vegetation in Ecuador.[26]

Deforestation does not only have environmental consequences. In countries such as Ecuador, this phenomenon has serious consequences for the lives of people who (especially representatives of indigenous

[20] Defender el mañana. URL: https://www.globalwitness.org/es/defending-tomorrow-es/

[21] Fundaciones extranjeras financian oposición al Tren Maya, acusa AMLO. URL: https://www.proceso.com.mx/nacional/2020/8/28/fundaciones-extranjeras-financian-oposicion-al-tren-maya-acusa-amlo-248452.html

[22] Ecuadorian economist A. Acosta by this term meant activities, associated with extracting large quantities of natural resources that are not processed (or are only processed to a limited extent). According to the Acosta concept, extractivism is not limited to minerals or oil, it is also present in agriculture, forestry and even fisheries.

[23] 398 personas fueron desvinculadas del Ministerio del Ambiente y Agua; guardaparques rechazan la medida. https://www.elcomercio.com/tendencias/ambiente/personas-desvinculadas-ministerio-ambiente-ecuador.html

[24] Estudio señala que Ecuador registró la pérdida más alta de bosque en la Amazonía durante el año 2020. URL: https://www.elcomercio.com/tendencias/ambiente/estudio-ecuador-perdida-bosque-amazonia.html

[25] Doménica Montaño. Nuevo estudio: en los últimos 26 años Ecuador ha perdido más de 2 millones de hectáreas de bosque. URL: https://es.mongabay.com/2021/03/nuevo-estudio-en-los-ultimos-26-anos-ecuador-ha-perdido-mas-de-2-millones-de-hectareas-de-bosque/

[26] Deforestación en paisajes forestales tropicales en Ecuador. URL: http://inabio.biodiversidad.gob.ec/wp-content/uploads/2021/01/LAFORET_WEB.pdf, p. 31.

peoples) may be left without the resources necessary for survival.

In the country since 2017 there is an Organic Environmental Code that regulates environmental legislation, including forest management. In practice, however, practically not being implemented.

Another vivid illustration of Ecuador's environmental problems, — this is the situation with the Yasuni National Park in the Ecuadorian Amazon. This region, where biodiversity levels are highest, was until recently the "last hope" for eco-activists.

Initiative Yasuní-ITT (Ishpingo-Tambococha-Tiputini) consisted in refusing oil production, the reserves of which were in the park, while preserving the Yasuni ecosystem. In 2007, former President Rafael Correa launched such an initiative. Compensation from the international community in the amount of 3.6 billion dollars,[27] — this money was to be invested in renewable energy, biodiversity protection and preservation of 44 protected areas. Through this project, which was linked to the overall concept Buen Vivir, Ecuador planned to arrive at a post-extractive model of society and, as a result, improve the standard of living of Ecuadorians. However, in 2013, the plan was cancelled by the Correa Government on the grounds that the international community had not paid Ecuador with sufficient compensation.

Several eco-activist groups emerged in response to Yasuni's environmental threat. One of them, Yasunidos, planned to hold a referendum on the issue, for which activists had to collect signatures of at least 5% of the electorate. If successful, the referendum would be the question is that — whether to stop oil production in Yasuni National Park forever.

780 000 signatures collected in April 2014. However, a few weeks later, the National Electoral Council confirmed only 360 000 of them, which was not enough to make the Yasuni issue to public discussion. Therefore, President Correa announced that he will continue oil production at Yasuni.[28]

Second stage of the disputed project Ishpingo-Tambococha-Tiputini (ITT), started in 2016, provoked fierce criticism from conservationists and civil society organizations. At Tambokocha-2, Petroamazonas company planned to build four platforms and drill nearly 100 drilling. The company insisted that it would do so discreetly by concentrating drilling on a small area, burying pipes and taking precautions against oil spills. However, environmental groups have argued that zero impact on such a biologically sensitive area cannot be guaranteed. They insisted that threats to the ecosystem would not only continue, but would increase.[29]

In October 2020, the Constitutional Court of Ecuador accepted an extraordinary claim for the protection of the collective "Yasunidos", the main purpose of which is to preserve the oil reserves at Yasuni. But no decision has yet been made.

It should be noted that in Ecuador, the court sometimes sided with human rights defenders, eco-activists and the public. Thus, in 2021, in the town of Cuenca in the southern highlands of Ecuador, 80% of the population voted in a referendum to ban mining activities in water recharge areas of the Tomebamba, Tarki, Yanankai, Machangara and Norkai rivers. These five rivers are the largest in the city and its surroundings, and are important because they supply water to the population of Cuenca.[30]

The victory in the referendum is a serious precedent that guarantees the human rights to water protected by the Ecuadorian Constitution (but not always enforceable), and

[27] ¿Por qué fracasó la iniciativa Yasuní-ITT? URL: http://ibdigital.uib.es/greenstone/collect/cd2/index/assoc/ocud0016.dir/ocud0016.pdf

[28] El president de Ecuador defiende la explotación de petroleo en la Amazonía. URL: https://www.lavanguardia.com/politica/20141107/54419022169/correa-defiende-extraer-petroleo-en-la-amazonia-y-dice-afectacion-sera-minima.html

[29] Yasunidos pide que no se explote el campo Ishipingo. URL: https://www.eltelegrafo.com.ec/noticias/politica/3/yasunidos-pide-que-no-se-explote-el-campo-ishpingo

[30] Voters backed prohibition on mining in Ecuador city of Cuenca, mayor says. URL: https://www.reuters.com/article/ecuador-mining-idUSL1N 2KE 2C 3

demonstrates a marked tendency to place the rights of nature above the economic benefits of overexploitation of natural resources in the country.

In some cases, judgements have been handed down in favour of nature, which, according to the Ecuadorian Constitution, is also a subject of law. However, the results of the presidential election in 2021 show that the general course to strengthen extractivism will continue. Another alternative to stimulate ecuadorian economy by Guillermo Lasso — the representative of the right-wing forces who came to power — has no power.

For example, during the presidential campaign, Lasso repeatedly stated that Ecuador could not afford to keep oil and mining resources underground without using them in any way.[31] According to him, mining and oil are important factors of economic growth, and therefore, oil and mining exploitation needs to be expanded. Lasso mentioned advanced technologies to minimize environmental damage. However, given the fact that extractive activities are in principle not possible without a negative impact on the environment, it is highly probable that during the presidency of G. Lasso "respect for the environment" will remain on paper rather than move into a practical plane.

BRAZIL

Brazil, after the Eco-92 International Conference, became one of the main actors in the fight against climate change and banned the cutting of tropical forests in the Amazon, now likely to implement anti-environmental policies.

Jair Bolsonaro's government reduces the country's environmental budget. The budget for the Ministry of Environment and its agencies decreased by almost a quarter in 2021 compared to the same period last year and now make 2 billion reais (365.3 billion dollars).[32] Of particular note is the fact that the decision was taken just one day after the Climate Summit, where the President of Brazil promised to double environmental spending. Such stringent budgetary constraints could significantly paralyse work of environmental institutions.

In addition to reductions in agency budgets, who deal with environmental issues, as in the case of Ecuador and Mexico mentioned above, Brazil did not avoid major staffing changes in environmental organizations. The situation with "militarization of staff" at the Brazilian Institute of Environment is particularly indicative (IBAMA): from there, specialists (ecologists, scientists, sociologists) directly involved in environmental problems were dismissed, and in their place (in violation of a number of legal requirements for employment) are appointed military personnel without appropriate qualifications.[33]

The Bolsonaro government has also virtually paralysed the forest service, transferred them to command of Ministry of Agriculture, headed by the Agribusiness Lobby. The anti-environmental trend of Brazilian public policy is not only demonstrated by the organizational changes in the institutions related to environmental protection, but data from the National Institute for Space Research (INPE), which collects data on forest reduction since 2015. According to the organization, deforestation in the Amazon increased by 42.5% in 2021 compared with 2020.[34]

The loss of forests is compounded by the spread of wildfires of non-target origin in the region. For the whole 2020 in the Brazilian

[31] Ecuador: Lasso, Correa y los límites del extractivismo. URL: https://www.politicaexterior.com/ecuador-lasso-correa-y-los-limites-del-extractivismo/

[32] Um dia após promessa na Cúpula do Clima, Bolsonaro corta verba para meio ambiente. URL: https://www1.folha.uol.com.br/mundo/2021/04/um-dia-apos-promessa-na-cupula-do-clima-bolsonaro-corta-verba-para-meio-ambiente.shtml

[33] Servidores do IBAMA protestam contra nomeações de militares por Salles. URL: https://istoe.com.br/servidores-do-ibama-protestam-contra-nomeacoes-de-militares-por-salles/

[34] La Amazonía brasileña bate su récord histórico de deforestación en abril tras perder más de 580 km de la selva. URL: https://www.rtve.es/noticias/20210507/amazonia-brasilena-bate-su-record-deforestacion-abril/2089127.shtml

Amazon there were 103 161 registered fires, which is 15.6% more than in 2019[35] and is the highest since 2017.

The anti-environmental trend is due to the fact that Bolsonaro promotes a policy of productive use of the Amazon. During his presidential campaign, he promised that he would open the region to commercial development, including large-scale mining and agricultural development.

In doing so, the Brazilian authorities ignore the fact that the Amazon region is a protected land for indigenous peoples. For the Brazilian Government, indigenous people — these are primarily people who simply occupy 13–14% of the mineral and resource-rich land and other resources, but produce nothing. Their territories, на on which they live, should therefore be used more rationally.

In February 2020 Bolsonaro presented a bill,[36] which would permit exploration mineral resources projects on indigenous Amazonian reserves (now prohibited by law). To promote agribusiness in these territories, Bolsonaru also plans to get out from ILO Convention N 169, which protects indigenous peoples and their lands.

The President of Brazil says that "Brazil shouldn't nothing of the world with regard to the preservation of the environment"[37] and changed the environmental licensing procedure to facilitate construction on indigenous lands. Several new major infrastructure projects were announced, including the construction of a dam on the Trombetas River, the bridge over the Amazon and the 500 km extension of the road that will cross the tropical forest from the Amazon to the border with Suriname. The increasing number of infrastructure projects in protected areas and the attempt to commercialize the Amazon for the economic exploitation of the region are fraught with an explosive increase in environmental conflicts and social tensions.

The authorities' anti-environmental policies have already provoked conflicts between illegal miners and farmers and indigenous peoples. In April 2021, garimpeiro began fighting in Roraima (gold miners) and the Yanomami Indians, in whose territory there are large gold mines.[38] Although legal gold mining on these lands is not possible due to their current protected status, the areas are difficult to access and are insufficiently controlled by the Government, which encourages the miners to engage in criminal activities for them.

All of the above leads to the conclusion that, since Jair Bolsonaro took office as president in early 2019, Brazil has begun the actual dismantling of public policy, aimed to environmental conservation for strong economic growth.

Given the current anti-environmental trend in Brazilian public policy, social and environmental conflicts in the region are likely to worsen further, and the country itself risks becoming the final "environmental outsider".

RUSSIA

The situation with the environmental agenda in Russia, at first glance, unlike the Latin American case, more positive, increased funding for environmental initiatives.

According to the Russian President, by 2024 the country will increase the amount of funds for environmental protection by 50% and will direct about 1 trillion rubles to this sector[39]

[35] La Amazonía brasileña perdió más de 8 mil km2 de selva en 2020. URL: https://www.portalambiental.com.mx/impacto-ambiental/20210114/la-amazonia-brasilena-perdio-mas-de-8-mil-km2-de-selva-en-2020

[36] Bolsonaro cumple sus promesas sobre la Amazonía y los indigenas de Brasil temen un "etnocidio". URL: https://www.nytimes.com/es/2020/04/19/espanol/america-latina/bolsonaro-brasil-amazonia-indigena.html

[37] Brasil renuncia al liderazgo global bajo el gobierno de Bolsonaro. URL: https://dialogochino.net/es/clima-y-energia-es/27469-brasil-renuncia-al-liderazgo-global-bajo-el-gobierno-de-bolsonaro/

[38] Mineração e garimpo disputam área maior do que a Bélgica dentro da Terra Indígena Yanomami. URL: https://brasil.elpais.com/brasil/2021–06–22/mineracao-e-garimpo-disputam-area-maior-do-que-a-belgica-dentro-da-terra-indigena-yanomami.html

[39] Putin: Russia to spend 1 trillion rubles on solving environmental problems on environmental protection for 50% for 1 trillion rubles. URL: https://rg.ru/2020/09/23/putin-rossiia-potratit-1-trln-rublej-na-reshenie-ekologicheskih-problem.html

(13065 billion dollars). These funds will be used for infrastructure development, solid waste management, air pollution reduction, water treatment and fight of deforestation.

Early in 2009, Moscow adopted a climate doctrine, which for the first time recognized the human responsibility for the global warming process. Russian authorities recognize the seriousness of the problem of climate change,[40] although, until recently, they shared the view of sceptics who denied that human activities had any impact on climate change.

In 2019, Russia became a full member of the Paris Agreement (PA) on climate, which demonstrates the change in the attitude of the Russian authorities to this problem. Russia is among the world's largest emitters of greenhouse gases,[41] which results in increased attention to its State environmental policy by the international community.

Obligations under the PA will require a fundamental transformation of the Russian economy, as a significant part of emissions is accounted for by the energy sector.[42] Therefore, the Russian authorities have already approved[43] thermal power plant modernization programme, and a draft law on State regulation of greenhouse gas emissions is under discussion at the legislative level,— the aim is to establish an inventory system. Consideration is also being given to introducing a fee for carbon dioxide emissions above a fixed rate and a quota trading system. As part of the PA's obligation, Russia is undertaking to reduce greenhouse gas emissions by 25–30% of 1990 levels by 2030. To date, this obligation has been fulfilled, but it should be noted that low emissions — a consequence of the decline in production in the country after the collapse of the USSR.

In addition to climate change, the main challenges facing Russia in terms of environmental conservation — effects of environmental disasters and waste treatment.

Over the past few years, our country has faced several environmental disasters that have forced the authorities to take urgent measures. The largest in Russia (and the largest in the Arctic) was the leak from PP-3 JSC "NTEK" (is owned by "Nornikel") in 2020 about 21 thous. tons of diesel fuel. Despite the statement of "Nornikel" that the situation is under control, and the obligation to send (as payment of a fine) 150 billion rubles[44] for cleaning and remediation of the affected area, the cost of remediation will be disproportionately higher. Irreparable damage to Arctic ecosystems is almost impossible to repair due to climatic conditions of the area where the spill occurred.

Environmental disasters such as the one in Norilsk show that Russia, like the Latin American states considered earlier, practices an extractive paradigm. Natural resources and infrastructure are exploited without the necessary modernization of the latter and without enhanced State control, while economic gain is given priority.

This model of State environmental policy leads to an increase in social and environmental conflicts when disaffected citizens resort to protests. According to Institute for the Economy of Growth, named after P.A. Stolypin, the environmental situation in Russia is worse than in other developed and developing countries.

Russia ranked 52nd in the ranking of countries by state of environment (along with Cuba, Panama and Venezuela).[45] One of the key

[40] «Russia feels threatened»: Putin told about the fight against climate change. URL: https://www.gazeta.ru/politics/2021/06/04_a_13620800.shtml

[41] Russia's climate agenda: responding to international challenges. RMC, Moscow, 2021. P. 17. URL: http://www.dipacademy.ru/documents/2267/2021_1_%D0%94%D0%BE%D0%BA%D0%BB%D0%B0%D0%B4_%D0%9A%D0%BB%D0%B8%D0%BC%D0%B0%D1%82_%D0%A6%D0%A1%D0%A0_%D0%90%D0%A6_%D0%A0%D0%AD%D0%90_%D0%A1%D0%A6.pdf

[42] URL: http://ac.gov.ru/files/publication/a/17409.pdf

[43] URL: https://minenergo.gov.ru/node/13784

[44] URL: https://www.kommersant.ru/doc/4406560

[45] Household waste management systems of different countries: recipes for Russia. URL: https://stolypin.institute/wp-content/uploads/2019/10/sistemy-utilizatsii-othodov-raznyh-stran-25–09–2019.pdf C. 18.

problems that aggravate the environmental situation — is the lack of waste management.

In 2017 in Russia there was a "garbage crisis" when large-scale protests against polygons and landfills were organized in Moscow, the Moscow region and other parts of the country. One of the most notable was the protest of the residents of the village of Shies near Arkhangelsk. There, according to the original intention of the authorities, the garbage was to be transported from Moscow, which was no longer able to cope with its own waste.

Protests of residents had the right effect, and in 2018 Russian President Vladimir Putin approved the national project "Ecology", which sets the target of recycling 36% of solid household waste (SHW) to 2024.[46] According to Greenpeace, currently in Russia about 70 million tons of waste is generated annually, of which about 4% is processed, burned — 2%.[47]

However, environmentalists criticize government measures to implement green projects, including the government's plans to build 30 incineration plants. According to the head of the toxicology department of Greenpeace in Russia Alexey Kiselev, use of outdated waste incineration technologies instead of recycling will have a negative impact on the environment.[48]

Decision-making in the field of environmental protection is also affected by the virtual absence of a single environmental movement in Russia and ecological NGOs. The latter are often recognized in Russia by foreign agents and cannot contribute to the creation of large ecological projects, limited to solving local problems such as the elimination of landfills, the fight against point built-up, the clearing of parks and forests. Lack of expertise and wide discussion of environmental problems with the public also keeps Russia in "the grip" of extractivism and significantly hinders the process of transition to a different model of social and economic development.

SCIENTIFIC AND THEORETICAL BASIS

With regard to the factors that have a direct impact on the social and environmental development of Mexico, Ecuador, Brazil and Russia, we could not to mention the theoretical conceptual framework for the environmental development of these countries.

Attempts to build a system ecological theory — "basis" in Russia in the late XIX — early XX's century are connected, first of all, with the name V.I. Vernadsky and the concept of the noosphere. Vernadsky considered the noosphere as an objective process, the outcome of human development, a new state of the biosphere. It is the sphere of the interaction of nature and society, within which intelligent human activity becomes the primary determinant of development [5]. Vernadsky's thoughts developed by academician N. Moiseev, but he believed that intelligent human activity could not make the world process manageable [6]. Moiseev argued that people have no right to interfere in "environmental affairs", and once this "active non-interference" is achieved, peace will come to "co-evolution" and balance of nature and society.

However, this concept remains at the level of philosophical reasoning in Russia and has not been included in the Russian social and ecological discourse.

In Latin America, the concept buen vivir has gained wide acceptance in recent years. This theory is closely related to the world view of the indigenous peoples of the region and focuses on — the relationship between man and nature. At the same time, the category of "human" occupies no central place, unlike the European (and Russian) anthropocentrism. In various forms, the concept of buen vivir is considered by individual researchers and intellectuals as an alternative to social and

[46] Energetic recycling: how to turn waste into energy. URL: https://rostec.ru/news/energichnaya-utilizatsiya-kak-prevratit-otkhody-v-energiyu/

[47] Greenpeace. What to do with garbage in Russia? URL: https://greenpeace.ru/wp-content/uploads/2019/10/report-RUSSIA-GARBAGE.pdf C.2.

[48] Why is burning waste not the answer? URL: https://greenpeace.ru/expert-opinions/2021/03/03/pochemu-szhiganie-othodov-jeto-ne-vyhod/

ecological development in Mexico. In particular, one of the forms of the concept buen vivir can be called the concept of communism of Victor Toledo, who appreciates the experience of the Zapatista movement, practising such a form,[49] and concept "k'anel" Mexican philosopher of Indian Origin — Manuel Bolom [7], circulated also in Brazil [8].

It should be emphasized that the scientific and theoretical "basis", connected with the environmental agenda and concept buen vivir, was most clearly manifested in Ecuador. Thus, the government of Rafael Correa in the early 2000s adopted the concept Sumak Kawsay (a decent life), which was formed in the late 1990s and promoted by Ecuadorian intellectuals of Indian origin Alfredo and Carlos Viteri Gualinga [9].

Uruguayan researcher Eduardo Gudinas, analyzing the key category of Sumak Kawsay, believes that there is a different interpretation of the processes of development of society and there is no traditional Western interpretation of the concepts of "progress" and "development" [10]. The concept redefines the roles of man and nature. In the concept of Sumak Kawsay man is no longer the center of the universe, nature becomes the same subject of law as man.

Another form of buen vivir (Sumak Kawsay) in Ecuador was the concept of the leader of the Kichwa indigenous people, José Gualinga living in Ecuadorian Amazon, which is called Kawsak Sacha (trans. Kichwa — living forest).[50] In fact, is a biodiversity initiative, which is based on three aspects: community life, fertile land and the treatment of the Amazon Forest as a living entity deserving of all care and respect as a subject of law. As part of this initiative, the Kichwa people manage to effectively conserve and manage 135 thous. hectares of Amazon Forest through zoning. Kawsak Sacha created protected areas, hunting and fishing zones, as well as populated areas.

The concept of buen vivir and its derivatives, broadly understood as a critique of development, associated with endless economic growth, as an alternative to social development, which should take into account the experience of indigenous peoples successfully and harmoniously coexisting with the natural environment and relinquishing the key role of human beings in that system, have already managed to form a kind of discourse in the environmental agenda of Latin America. Russia does not have such a broad scientific basis on this issue. This situation may be explained by the less developed scientific school in the field of social and political ecology than in the countries of Latin America. However, with the growth of ecological consciousness in Russia, a similar direction of social and ecological thought may be formed. However, it is premature to talk about its inclusion in political life.

CONCLUSION

Analyzing individual cases of environmental public policy in Mexico, Ecuador, Brazil and Russia, it is possible to conclude that all the countries under consideration, regardless of the political situation, cultural paradigm and scientific and theoretical foundation of social and ecological thought, currently implement the extractive model.

Results of extractivism — large amounts of non-renewable natural resources used and social conflicts in areas where they are practised. The appeal to extractivism today is related to the economic culture of the regions as a whole, where governments view the territories as resources with cheap labor, without considering the destruction of ecosystems.

This approach is currently driven by the severe economic crisis caused by the COVID-19. Governments plan to restart the economy and promote mining and natural resource exploitation for economic growth.

[49] La Comunalidad, tercera vía de transformación social: Víctor Toledo. URL: https://lacoperacha.org.mx/comunalidad-tercera-via-victor-toledo/

[50] A Different Vision of "Doing Conservation:" The Kawsak Sacha of the Kichwa People of Sarayaku, Ecuador. URL: https://wrm.org.uy/articles-from-the-wrm-bulletin/section1/a-different-vision-of-doing-conservation-the-kawsak-sacha-of-the-kichwa-people-of-sarayaku-ecuador/

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The Evolution of Economic Relations Between the USA and Canada: The Interdependence of the Two Economies

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ABSTRACT

The paper presents the results of the study of the evolution of economic relations between the United States and Canada, since 1989. The agreements regulating the economic relations of these countries among themselves and with other trading partners. An economic and statistical study of Canada's exports to Latin America and the Caribbean and imports from them was carried out. Both Canada and the United States have become leaders in creating an open and free space based on the principles of multilateral trade. The main characteristics of the free trade zone are mutual concessions in terms of access to markets for services and goods; discipline in terms of trade restrictions; the use of dispute settlement mechanisms. Nevertheless, some researchers question the effectiveness of this trading system. US President Joe Biden promises to take measures to intensify bilateral cooperation, but Canadians are concerned about his decision to cancel the Keystone XL pipeline project. The commitment of the American president to the policy of "buying American" also causes some unrest. The above determines the relevance of considering the issue related to economic cooperation between the United States and Canada in modern conditions. The following research methods were used in the work: the normative method and the method of political analysis.

Keywords: United States of America; Canada; Latin American countries; economic relations; international trade; development trends; integration; NAFTA; announcement of the YUMSK; sustainable economic development

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INTRODUCTION

Trade relations between Canada and USA were regulated by various documents: Free Trade Agreement of 1989, North American Free Trade Agreement (NAFTA) (signed on 17 December 1992; Entered into force on 1 January 1994), and from 1 July 2020 — announcement of the USMCA. Each subsequent agreement differed from the previous one, necessitating the development of new regulations and rules to solve actual problems. Moreover, developments have shown that even developed associations are not protected by new precedents.

ECONOMIC INTEGRATION

Concept of integrated model proposed by A. M. Libman and B. A. Heifetz [1], was of particular interest in the current context. Typology of this model of economic integration balances the power of the players, acting as a driver of the integration process, economic policy adjustments and the degree of trade liberalization are not considered. The authors typologized disintegration and proposed stagnant, shock, conflict, divergent models.

According to some researchers, in the current context, the dominant model of intergovernmental agreements, i. e. a key driver of integration, are national authorities. Traditional political cooperation between peoples and political motivation plays an important role in this process. The main manifestations of centrifugal tendencies are: Weak financial policies, disagreement in the budgeting of individual regions, gaps in the social and economic well-being of States parties, concentration of resources in individual territories, conflicts of interests at national and supranational levels, decision of some countries to leave the union, fragmentation of economic space, change of course of regional economic complexes towards countries not included in the association.

Later, A. M. Libman proposed an integration classification according to the criteria of realization of the goals. According to the researcher, the intensity and depth of the potential impact of a particular group on international trade can be indicated by this concept,— as before, such associations cannot determine factors of production and freedom of movement of goods.

ECONOMIC COOPERATION BETWEEN THE USA, CANADA AND LATIN AMERICA

Researching economic cooperation between Canada and the USA, it should be emphasized that in the early 21st century Latin America has become an important player in the world economy and politics. The region seeks to forge strong political and economic relations with new partners within and outside the hemisphere. Canada is a promising potential partner for the Latin American region, also interested in diversifying the economy and strengthening investment and trade relations.

Trade between regions gained momentum for 26 years. Some aspects of the Latin American-Canadian relationship have already been the subject of special research. A significant contribution to the development of the topic have made E. G. Komkova, P. McKen, L. McDonald, P. Heidrich [2]. These researchers studied selected aspects of Canadian-Latin American relations, but no in-depth analysis of trade relations, changes in the composition of exports and imports has yet been undertaken. Scientists reviewed the economic and trade relations of Latin America and Canada, but did not form a holistic view of the evolution of these relations in the new century, showing only some stories and problems of individual countries.

For a better understanding the development of trade with Latin America, it is necessary to identify the general trends in the formation of Canadian trade relations in the new century: over the past two decades, the country has slowly built up its export capacity and new trading relations.

Table 1

Latin American countries with the largest share of Canadian exports

Importer	Canada's exports in the Latin and Caribbean regions			
	Number of exports in 2019, (thous. USD)	Trade balance in 2019, (thous. USD)	Export volume growth in 2015–2019, %	Total import growth in partner states price in 2015–2019, %
World	446 562 311	–6 594 914	3	5
Latin America and the Caribbean regions	11 476 350	–29 344 144	–	–
Mexico	5 516 060	–22 301 667	2	5
Brazil	1 698 667	–2 369 443	0	3
Colombia	705 199	78 350	6	–
Chile	656 031	–583 672	5	5
Peru	579 122	–2 118 142	–3	4
Cuba	289 785	–140 369	–5	–5
Ecuador	289 277	122 247	5	2
Argentina	215 077	–469 092	–2	–2

Source: [3].

Table 2

The size of Canadian exports to Latin America by year, thousand dollars

Year	2013	2014	2015	2016	2017	2018	2019
Volume	13157600	12899559	11596089	11130888	1148443	12666540	11476350

Source: [3].

Since the establishment of NAFTA, Mexico has been Canada's main and practically sole trading partner in the region. But in recent years, the share of exports to Mexico is less than half of all exports to the region (*table 1*).

Canada is gradually entering new markets in the region, with there were no trade relations until recently. Overall, exports are steadily increasing in all countries and remain stable without explicit downward or upward trend (*table 2*).

Taking into account the available data, it is possible to identify the main categories in the structure of exports:

1. High-value resources, mechanisms, machines, automobiles, high-tech goods for manufacturing. Canada has a higher level of technological development than most Latin American countries. Therefore, high-tech products and specialized equipment produced in Canada are in high demand in the Latin American region.

2. Food products and organic products used in their production (meat, nuts, fruits, crops). Some products in this category require specific conditions and high-tech production methods. Factory production of many goods in the category provides lowers prices and increases their competitiveness.

Separately, it is necessary to mention the export of fuel and its processed products, the share of exports of which, despite the high performance, in the last 2–3 years has fell almost halved.

In addition to exports of goods, Canada continues to increase exports of services. In contrast trade in goods, trade in services covers the sale of services, electronic and intellectual resources, access to ideas and technologies. This type of export is characterized by stable annual growth throughout the region.

The most dynamically developing direction of imports are precious metals and stones. In the last 2–3 years, the volume of imports from the region has doubled (almost returning to the pre-crisis level). Despite the decline in many imports due to the COVID-19 pandemic, imports of precious stones and metals are only increasing. In addition, the region imports raw materials and parts from high-tech industries, selected outputs from these industries, minerals, inorganic chemicals, as well as vegetables, fruits, coffee, tea, alcohol.

It is especially worth mentioning the high rate of import of furniture produced on the territory of the region. With the strengthening of relationships similar to service exports, the volume of service imports increases (only the directions differ) (*table 3*).

Despite the region's growing interest in exports from Canada, the balance between exports and imports is highly skewed towards the latter (about 3:1).

Canada has invested a significant part of the capital to assist and development of the Latin American region. Social and development assistance programmes for the region are being implemented at the level of different Canadian offices in Latin America. They relate to areas such as migration, education, health, environmental improvement and protection status of the natural environment. In addition to direct assistance and government programmes, part is provided through international organizations and non-governmental foundations. However, such support acts and projects open the way to advancing Canada's interests in the development of mining sector and related industries. The increasing import of precious metals suggests that this investment in Canada is meeting expectations.

It follows from the above that today one should not expect a jump-up of the volume of trade relations. In addition, fluctuations in exports and imports have generally been small in recent years. At the same time, there are industries that receive additional development, but the growth of individual industries is "compensated" by losses in others.

The volume of trade turnover is quite stable, and today there are hardly any factors that can influence this trend. The constraints on trade balance growth are difficult logistics, Canada's expensive currency, protectionist policies by Canada and the USA, and are unlikely to be overcome anytime soon.

PROSPECTS FOR THE DEVELOPMENT OF TRADE RELATIONS

At present, the development of economic and trade relations between Canada and Latin America is almost entirely in Canada's interest, who wants to get a quick return on their investment in the region. Latin America appreciates working with Ottawa in key areas, taking advantage of Canada's industrial and social investments. No improvement in economic relations between regions to be expected in the near future: Latin America's political instability, strong impact of the pandemic and crisis — main factors, which determine development of Canadian-Latin American relations. Canada sees the region as a promising area of development due to the saturation of economic relations and growing political tensions with other partners. Main market outlets (China, USA and Europe) already established and have little potential to develop trade with Canada. The Latin American region, by contrast, has unlimited opportunities and prospects for new players.

Table 3

The size of Latin American imports in Canada by year and main industries, thousand dollars

Commodity		Canada's imports from Latin America and the Caribbean				
Code	Name	2016	2017	2018	2019	2020
	Total imports by year	36 822 790	40 214 726	41 373 712	40 820 494	35 823 447
87	Vehicles other than railway or tram rolling stock, as well as parts and accessories thereof	7 706 658	9 324 454	9 157 904	8662 189	6 235 918
85	Electrical equipment and parts thereof; sound recording and reproduction devices	5 332 578	5 391 366	5 542 088	5 381 028	4 560 904
84	Machines, mechanical devices, nuclear reactors, boilers; parts thereof	4 194 607	4 420 029	4 838 710	5 046 617	4 294 318
71	Natural or cultivated pearls, precious and semi-precious stones, precious metals, clad metals	3 967 880	3365.145	2 839 118	4095.366	5 092 103

Source: Data on international trade and market access. URL: https://www.wto.org.

The rapid growth of integration groups in the world is due to the expectation of positive results from integration. Among them: attracting more investment, increasing trade, increasing product competitiveness, increasing global influence. Integration has already achieved great results in the EU and North America (largely thanks to NAFTA). However, some difficulties necessitated a new agreement with the USMCA.

USA, CANADA, MEXICO

Canada and Mexico are important partners for the USA. Americans want to live in a prosperous, stable region with neighboring democratic countries that share their views. The US-Mexico partnership is the most important in the region. Foreign and domestic policies are interconnected because of common threats to security, dynamic trade relations and geographical proximity. Mexico — it is the second largest export market of the USA. Mexico was the largest trading partner of the US, beating of Canada and China as at 2020. For several years, Mexico has been the main export market for all American states along a common border of 2 thous. miles (about 3 thous. km). US companies supply more goods and services to Mexico than to China, India, Russia and Brazil combined.

Canada, Mexico, and the USA have helped transform North America into a successful, economically prosperous region and free trade area [4]. GDP of three USMCA-partner countries is higher than that of all 27 EU-member states. The huge trade turnover of the past 20 years has stimulated the economic growth of the region. Mexico and the United States produce and sell agricultural products, plastics, automobiles, textiles, industrial

intermediate goods for the American aerospace sector, equipment, etc. Daily cross the border goods and services of 1.7 billion USD. Many experts discussing trade policy are often ignored that 6 million jobs in the US are directly linked to Mexican companies,— this underscores the importance of Mexico to the American economy

For several decades, the US and Canada, as free-market countries, have together topped the annual rankings of the Index of Economic Freedom (The Heritage Foundation). Economic freedom is the foundation of dynamic, transparent and free market systems, on which it is based on the economically significant partnership between the two allies, and is much more significant during COVID-19, than ever before.

Canada and the US have the longest non-military border — 5 525 miles (about 9 thous. km). Close ties is related between the people of these countries. Several million cross-border interactions between companies and individuals occur annually. Naturally, the two governments also cooperate with each other on the most important issues of security, economy and politics. Canada's relationship with the US is based on common principles and interests: in particular, both countries have membership in the intelligence alliance Five Eyes, as NATO members, they continue to cooperate in the development and security of the Arctic to confront China and the Russian Federation.

Common interests and values strengthen the US-Canada alliance. In today's difficult environment, the two States have long learned to benefit from extensive bilateral economic dialogue with dynamic growth of entrepreneurship and creation of millions of jobs in each country. Mutually beneficial bilateral investment and trade relations are established and maintained between them.

Scientists have made important contributions to the research of international economic integration, in particular NAFTA [5]. But the research of foreign trade should continue. It is also appropriate to continue to study intraregional flows after the conclusion of the agreement. Special attention should be given to analysing trade in agricultural products according to its characteristics, relevance of food security issues, and the fact that member-countries are important producers and suppliers of such products. A research of the peculiarities of the agreements concluded between Canada and the USA may serve as an example for other countries to sign trade agreements at the regional level in the future

NAFTA has had a positive impact on different areas in all member countries. On 30 November2018, a new agreement was concluded between Canada, the United States and Mexico — USMCA. Among its innovations are several sections on current trade opportunities and issues [6]. The USA can enter into modern trade agreements with major customers and its neighbors. Technological advances could also be included in trade. The USMCA agreement contains sections on exchange rate, macroeconomic policy, development of digital commerce, participation of medium and small businesses in foreign economic activity, anti-corruption. The Agreement pays particular attention to trade policies for agricultural products, wages in the engineering industry, respect for the rights of indigenous peoples, cooperation in the fields of culture, energy, automobile trade, agriculture, intellectual property, environment, and in the field of dispute settlement.

The USMCA agreement must be reviewed at least once every 6 years after entry into force. The revision will ensure that it remains relevant and effective for North American workers, and help to ensure stability for enterprises and producers, and to solve problems before they develop into something serious. The term of the Agreement is — 16 years. After review, the parties may extend the Agreement for an additional period. Many developments on various issues (including

trade policy) can be traced through the integration of different trading blocs. It should be noted that, although NAFTA countries have some differences in their level of economic development (sometimes very significant), positive effects have occurred in all partner countries, i.e. not only in Canada and the USA, but in Mexico also.

Each country that concluded the Agreement had its own objectives. For example, the USA goal was to diversify its growing market: ensuring of free movement of goods and services, protection of intellectual property rights, combining new technologies and investments with the natural resources of Mexico and Canada, as well as their cheap labour. All this would increase USA competitiveness. The goal of Canada was to join the production of knowledge-intensive products, increase revenues and ensure stable access to the Mexican market. Each country sought to increase its exports and investment inflows. However, some goals differed depending on the risks and benefits of partners.

Economic and trade relations between countries have always been, and will continue to be, a major factor in the development of the North American economic sector. In this regard, I. Fergusson and M. Villarreal note that it is difficult to measure the overall economic impact of NAFTA, as investment and trade are affected by many factors — currency fluctuations, inflation, and economic growth. Nevertheless, even with its negative aspects, NAFTA plays an important role in integration for North America [7]. For 4 years, a clear organizational structure for the implementation of the Agreement was formed, and the main trends that led to its conclusion are not only reflected in free trade, but also in the extension of NAFTA key principles to other areas of the North American economy. At the same time, it is difficult to disagree with M. Lyzun, who claims that the main objectives of regional integration of any format are: addressing of barriers to the free movement of labour and capital, expansion of mutual trade, scientific and industrial cooperation leading to faster economic growth, sustainable and balanced economic development [3]. Thus, the analysis of foreign trade is an important indicator of integration.

CONCLUSION

Given the importance of the agricultural sector, it has should be noted, that the USA has a large share of agricultural exports. Mexico's share of the group's total exports and imports is increasing, both for all commodities and for agricultural exports. The trade balance of NAFTA, and in particular of the USA, was consistently negative for all products, while Canada and Mexico have experienced several years of positive surpluses. Mexico had the highest coverage ratio values for exports/imports.

Intraregional trade is important for each of the participating countries, for example, its share in the USA exceeds one-third of total trade, while in Canada and Mexico it accounts for 74.7 and 80.7%, respectively. The main trade flows are mainly US-Canada and US-Mexico, and, although the difference in volume from the Canada-Mexico focus area has begun to decrease, it remains significant. In addition, trade in agricultural products between the US and Mexico is increased.

In this way, trade relations among member States are developing and their intensification is being given special attention with taking into account of new requirements.

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Digital Banking: Modern Finance Paradigm Shifting

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ABSTRACT

The article presents author's view on the current problems facing the banking system of the Russian Federation as part of the transition to digital banking services, especially aggravated due to the massive using of remote channels of interaction caused by the restrictions of the pandemic period. The author analyses the current problems of financial sector due to increased criminal cyber attacks and offers his recommendations to counter these crimes. There is evidence of the needs to revise the concepts and strategies of the development of banks in connection with digitalization, to improve approaches to information security. Finally, the author concluded that a key element in the process of digitalization of banking activities is information security, and the soundness of banking institutions can be ensured only by the joint efforts of the state, banks, and their customers.

Keywords: digitalization; financial sector; banking; digital finance; information security

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INTRODUCTION

It is now a time digital banking (DB) — this is a trend, of whom speak banking institutions, representatives of IT-companies, experts and officials. Is digital banking really the future: i.e. will be able to digital banking displace from the market traditional banking structures, transfer them into a "niche" position? And what are the main threats that digitalization can bring to the banking sector?

The digital revolution contributed to the development of digital technologies in the financial sector, including banking — Digital banking. These trends, together with the urbanization of the economically active population, have led primarily to an acceleration of the pace of human life and a change in the psychology of the mass customer, which no longer sees traditional banks with their conservative branches, bursts, and often leisurely service as something acceptable to him personally. Fortunately, technology and service providers have emerged, which allow you to carry out all the basic operations required by banks' clients at a distance at a time that is convenient for the client, and not during the strictly allotted hours of banking branches and branches. Banks have started to take advantage of these new features by developing and offering mobile applications to their partners, contractors and customers, improved remote servicing systems and internet-banking. Having a smartphone or tablet and installing a mobile app on it, any customer can make a transfer, pay bills, check the balance, order a new plastic card or lock the old, even open an account and make a deposit. Therefore, the functionalities of bank branches as universal financial hubs, where clients could conduct all kinds of financial transactions, go into the past.

Banking industry is changing rapidly. Two years ago, more than half of the customers

were ready to switch banks if their local branch closes. Currently, the number of expressions of such sentiment has decreased to less than 1/5 of the total number of clients.[1]

Currently, the bank and banking network functional review — is one of the most important tasks of banking institutions. The owners and top management of banking institutions should move in the direction of modern trends, so the old view of bank branches and affiliates as places is unacceptable now, in which funds are moved between the bank and the client. Previously, the growth of the banking network, especially in the regions, spoke about the scale of the banking business, there were the concepts of "key region", "region of the bank's presence". Now the situation has changed.

CHANGING THE ROLE OF BANK BRANCHES

At present, there is no need for a physical presence of banking units in different regions of the country, can limited to a small representation of bank staff who would be functionally responsible for technical support and advice to clients. Banks are now abandoning such representation, moving customer support and interaction with clientele into virtual space, sometimes offering first bots or virtual assistants that can solve the most simple and standard problems. In the US, for example, banks have closed about a third of their branches nationwide in the last five years, that significantly (almost half) reduced transaction costs and had little impact on the number of clients engaged.[2] As for Russia, according to the author, the minimum costs of opening a branch of the bank will cost 15 million rub., and annual maintenance, with a minimum number of staff, will require about 10 million rub.

Therefore, banks, reducing branches and developing digital services, have the opportunity to reduce service fees, reduce loan rates, i.e. offer its clients more favourable terms and conditions. This is another advantage offered by digital technology.

Due to the reduced need for a wide banking network, bankers will have to decide what to do with the vacant space. It is premature to talk about complete dismantling of banking networks in the next 15–20 years — still a significant proportion of clients of pre-retirement and retirement age prefer to go to the bank and there by live communication with the bank officer to make a payment or receive cash.

In addition, in any society there are conservative sentiments, gradually being transformed into the category of "national tradition". So, in the USA, the UK, Malaysia and countries — former colonies of the United Kingdom, customers still pay by cheque, which in the banking system of other countries has never been.

Of course, bank branches will continue to exist in the future, although in some countries (e.g. Switzerland) they will become analogous to elite clubs. It is possible, that will be prioritized functions of financial adviser or private-banking.[3] Branch Bank officers will provide advice on various economic issues, supporting clients throughout their life cycle.

Famous banking expert Dan Raymer also believes that the branches will not disappear. Within the concept of digitalization, banking branches from the main channel of interaction become only one of the means of communication, and in the future will move from the mainstream into a niche, specialized area, will complement other channels of

[1] Accenture. North America Consumer Banking, 2015. North American retail banking product report, 2015. URL: https://www.accenture.com/us-en/~/media/Accenture/Conversion-Assets/Microsites/Documents17/Accenture-2015-North-America-Consumer-Banking-Survey.pdf#zoom=50 (accessed on 12.12.2021).

[2] ABIATEC. URL: www.abiatec.by (accessed on 08.12.2021).

[3] Private-banking — a type of banking service focused on providing a complex of banking and financial services to a wealthy clientele, including a 24-hour personal manager (concierge service). Traditionally carried out in separate specially equipped banking branches.

digital banking business. But the offices will still perform some functions: opening and service of accounts (especially for new clients); counselling (especially on credit and new services) and supporting the bank brand [1].

It should be noted that at present the technology of opening accounts to clients and without their physical presence is improved. Modern software and technical solutions allow to comply with all requirements of the Russian legislation on client identification in the framework of countering the laundering of criminal proceeds and the financing of terrorism, as well as the protection of personal data. Therefore, over time, clients will not need to come to the office to open an account, and the credit card can be ordered through the Internet, and the bank, using its procedures, will check the client and make a decision. The client will receive the PIN-code through the call center and the card will be activated through any ATM of the given bank.

THE MAIN ISSUES IN THE TRANSITION TO DIGITAL BANKING

When reformatting the bank model, its management needs to find answers to the following questions in Digital Banking:

- How many branches does the bank need? Which departments will be built on a self-service system, and which will become consulting centers and sell simple and transactional products?
- How many people do you need in the head office, consulting centers, sales outlets? Maybe it is worth outsourcing some of the functions? What should I do with the employees who are already working? Is there a need to significantly reduce staff or perhaps retrain a number of qualified employees for a new banking profession?
- What are your customer preferences? Is it necessary to reorient the branches to more specialized [branches for Private Banking, Islamic (partner) banking, etc.]?
- What technologies should be used in each department, and how will they be correlated with certain customer groups?
- What other ways of interaction with customers and counterparties should be used by the bank, and how to integrate various technologies, techniques and products into the bank's unified digital systems?

The competitiveness of the bank not only to other financial institutions depends on the correct answer to these questions, but also to various digital companies, gradually but increasingly entering the territory of the banking system.

So, the first property of digital banking — active use of Internet and other digital technologies leading to reformatting of branches, branches of traditional banks — sufficiently significant, but not the main trend of digitalization.

CHANGING THE BANKING PARADIGM

The main thing in the modern processes of transition to digital banking — change of bank behavior when there is a general transformation of the banking paradigm itself. Digital banking means that the bank itself comes to the areas where there are customers. In addition, the digital bank concept assumes that the bank will develop in new areas,— it is in these areas that a financial institution creates special opportunities for different groups of clients. It often offers not only hybrid, transactional products, but also a clear and customer-friendly technology interface with the technical solutions required for this particular category.

Before the era of new technologies, the financial institution declared: "Here I am, here's my product line, here are my customer criteria and conditions,— will be glad to see you as our customers, if you come". Today, in the era of development of virtual systems, the financial institute states that it can determine the location of the client, approximately understood the area of its needs and is ready at any time to provide a range of services for comfortable use.

Within the framework of the new concept of digital services, banking structures, being a kind of virtual intermediaries, are ready to offer all necessary services to the client, not limited to financial operations. At the same time, the bank can create channels of interaction with clients in information services and social networks, in e-business and the Internet of things, in applications to mobile devices, using any virtual space system in which the client may require banking services.

And although it is the technologies of Digital Banking that are the means that gave rise to this new concept in banking, the main thing is that the approach itself has changed.

Digital banking aims to cover all areas of human activity,— financial institutions are active in mobile and social networks, but in other channels the banks are still at the experimental stage. Intensive working at the level of R&D,[4] searching solutions that we believe will be successful.

There are certain opportunities for banks in a new direction called the "Internet of things", where the financial institution needs to find options for embedding in the chain of interaction of customer devices.

DIGITAL BANKING — NEW IN RETAIL OPERATIONS

Digital bank — is a comprehensive business strategy that includes all information channels. We believe it is possible to note that the situation with the transition to digital technologies is changing so rapidly, that banking institutions that have not started the transition process, according to the new concept, will fall so far behind, will not be able to compete with those banking structures that are already being transformed from traditional banks to an ecosystem that provides a set of all virtual services, of which the actual banking operations will be only a small part.

Digital bank — this is the next stage in the evolution of retail banking operations, including mobile payments, online loan systems (including peer-to-peer) and deposits, mobile banking, MPOS,[5] personal financial management (PFM).

Of course, banks need to actively develop and Internet marketing, which will expand the reach of clients, already segregating them into groups based on their needs.

Increased competition in the banking sector, which actively uses digital technologies, has led to special customer demands, especially in terms of speed and convenience of banking operations. Modern customers of a new type — Homo informaticus, people of the generation Z (Next Generation) — there are increased needs and serious opportunities to search for your ideal virtual bank, as these customers want to receive exclusive banking services, selected specifically for them, at any time and it is necessary for them. And this need is quite understandable, as the lifestyle of clients is connected with the Internet environment and virtual space.

It is no longer enough for traditional banks that want to succeed in the transition to a new digital banking platform simply to have an official Internet site and some kind of bank application for mobile systems Android and iOS. Such systems, responsible for consumer loyalty and supporting the sales mechanism, firstly, there are all without exception medium-sized and large financial structures, and secondly, do not give enough significant increase in the customer base, because they are not unique products. Therefore, in today's conditions of increasing competition, both in the banking business and online space, banks need to develop a new unique concept of building information infrastructure and competently present it to the market.

Currently, most credit institutions manage classically formatted multi-level processes

[4] R&D — Research&Development — the direction responsible for analyzing and determining the ways of development of the business structure.

[5] MPOS — mobile points of sale — compact device, which is connected to a smartphone or tablet computer trading terminal.

with special supervision. But these processes in the modern environment allow to retain some of the conservative customers, rather than attract new ones with special needs in digital technology. However, even if traditional banks offer only a few digital services (for example, a mobile bank or Internet service using remote access through a personal account), this is no longer enough, as it is not possible to fully construct an integrated digital banking model for a financial institution.

Most experts believe that it is counterproductive to build digital infrastructure without an integrated approach. It is quite difficult for new players to integrate into the existing digital space, and even more — to form their unique digital infrastructure, sufficiently flexible and effectively developing in accordance with the demands and requirements of a new type of customers.

The pioneers of digital banking were global banking empires that started investing in digital strategy earlier than other banks, as well as next-generation banks that immediately built their business strategy as digital banks. It was they who rightly took the top places of the leading digital banks in the ratings of the largest consulting companies.[6]

The leaders of the digital banking market have already managed to ensure that the interaction of the bank and the client is carried out without the participation of bank employees. Other financial institutions have to double and triple their efforts to catch up with their competitors in this area.

In addition, non-bank companies are entering traditional banking services markets (Google, Apple), developing suppliers of new generation financial products: Moven, Knab, Fidor Bank — in the world Marlket; Instabank, Modulbank, Roketbank — in Russian Federation.[7]

RECOMMENDATIONS OF BANKS TO DEVELOPMENT DIGITAL BANKING

In our opinion, the optimal strategy of the bank should be aimed at such customer service, in which all transactions are conducted quickly and conveniently, and requests are processed in real time,— 24/7.

To achieve this, you should synchronize all service channels, clearly focus product offerings on a specific customer, use end-to-end information processing and constantly communicate with customers online.

At the same time, given the rapidly changing situation in the world of digital technologies, it is necessary to provide flexibility in both IT-systems (allows you to quickly make changes, adjust and change services, channels of interaction, banking instruments and products), as well as in the bank's job descriptions and management mechanisms, to respond quickly to a changing environment without delaying decision-making.

To build a comprehensive digital banking system, you should create a standard and uninterrupted customer service mechanism in any comfortable channel. Often the client is equally convenient to get service as through distance technologies (through a dedicated segment on the bank's website or through a mobile application), and in-person format (through a manager in a branch or through an ATM in a shopping mall). At the same time, all channels of interaction with clients should be integrated with each other, as well as the interaction with the API[8] and with core banking system.

Within the Digital-platform special attention should be paid to the coherence of actions, and the possibility for clients to

[6] Internet banking rank. Deloitte, Markswebb Rank & Report, 2016. URL: https://markswebb.ru/report/internet-banking-rank-2016/ (accessed on 16.12.2021).

[7] Diasoft, BIAN: Digital banking as a strategic direction of development of the modern bank. Site of the journal "Banking technologies". URL: http://bosfera.ru/bo/ekspertiza-bian-i-diasoft-digital-banking-kak-strategicheskoe-napravlenie-razvitiya-sovremennogo (accessed on 15.12.2021).

[8] API — Application Programming Interface, programmable interface for applications — software shell, responsible for interoperability of different applications in a common information system.

manage the virtual services provided by banks is provided. For a modern bank customer, it will be important to be able to customize the channels of realization of banking services with other virtual systems: social networks, search systems, etc. Banks can provide such opportunities if they use an open interface that allows them to integrate their service channels into the information systems used by the client.

Bank information system should be flexible, easy to change and customize, quickly change the structure, remove or add software components developed by various manufacturers, upgrade and modify them. Relevant for the development of modern Digital-platforms is the concept "Open API", i.e. an open programmable interface that manages various applications in a common information system. It is the use of such a concept by banks that will allow banking structures to interact quickly and comfortably with customers, to collect and process information about their needs, offering additional services needed precisely for a certain category of customers.

MODERN MAIN TRENDS IN DEVELOPMENT OF DIGITAL BANKING

Digital banking is now becoming a topic of research in various professional communities, as it is at the junction of finance, IT technologies, sales, both retail and corporate. Head of Digital Banking Department of company Global Digital Banking Nabendu Misra highlighted the following current trends in the most sought-after channel of interaction of the tandem "bank-client" — banking applications [2].

Mobile payments, instant pay

The idea that the phone can be used as a payment card originated long ago, almost along with the creation of a smartphone. However, implementation has only recently begun. Special chips began to integrate into a number of Android smartphones in 2013. A gadget with a similar chip could be used as a payment card. Smartphone and tablet operating systems have improved in Android 4.4, — in 2014, technology was proposed to replace the owner of the settlement card (HCE — host card emulation). Almost all applications based on this OS and later versions will allow for contactless calculations. Apple, starting with iPhone 6, equips smartphones with a special chip. The new Apple Pay method, which allows for contactless payments using fingerprints as an identifier, made it easier for banks to design their iPhone apps.

Software that will allow users to pay for purchases contactlessly, tied debit and credit cards, is now in the assets of many companies. It is predicted a massive replacement of plastic payment instruments with virtual (as it is already practiced PayPal). Visa Company also offers online services within the program "Visa Digital Solutions". There is a similar system in Mastercard.

Contactless payment function is in demand with payers, and banks should be included in this direction, otherwise their place will be taken by non-bank companies.

At present, processes of digitalization of banking services of domestic credit and financial institutions are carried out within the framework of additional sanctions of the USA and EU countries, imposed by them in response to the start of the Russian special military operation in Ukraine in February 2022 year. Sanctions and pressure from leading Western states forced to withdraw from the Russian market or stop serving Russian customers by the world's largest IT-companies, as well as payment service corporations. Cessation of service to Russians by companies Apple, PayPal, Western Union, Visa, Mastercard, American Express, disconnection of some Russian banks from the international SWIFT system forced Russian public and private companies to find alternative payment systems, which will

allow Russian customers to make payments inside Russia and serve abroad. Inside Russia, it is recommended to replace ApplePay with SberPay and use interbank QPS (quick payment system). One of the alternatives to Visa, Mastercard can be a joint project to issue an international plastic card of the National Russian payment system "Mir" and the Chinese payment system UnionPay, supported by most Russian banks. Note that the Chinese national payment system is very widespread in the world: 180 states accept its bank card. To date, more than 3 billion UnionPay plastic cards have been issued.[9] Other options are also being considered, taking into account the existing circumstances, in particular the project for the creation of an international payment system, an alternative to the SWIFT system. Given that all the countries of the Middle East, China, India, South Africa, the Eurasian Economic Community countries, as well as a number of Latin American countries support Russia, the success of the creation and operation of such a system seems quite feasible.

Introduction of the principles of computer games in the banking business

This trend is the application of the principles of computer games to various information channels of interaction between the bank and the client, and is the introduction of options such as obtaining points or granting special status for a deposit of a certain level. The main task, which is solved by the bank,— motivation for regular opening of the application, site, group in social networks. Experts believe that, unlike other digital initiatives, these efforts are ineffective, as it is difficult to assign additional points to the customer, however, being financially low-cost, this option of attracting and retaining customers has the right to exist and will be demanded by part of the customer base.

[9] UnionPay. Official website. URL: https://www.unionpayintl.com/ru/ (accessed on 18.04.2022).

Multitasking in one digital banking product

Digital Banking is now becoming a competitive advantage, and financial institutions are working to produce customized digital products to attract customers, but within a single banking application. Thus, one of the most demanded services against the background of the growth of labour migration is the system of remittances. Traditional industry leaders were companies with history: Western Union and Moneygram. However, everything has changed, and now most of the market is occupied by online transfers companies Xendpay, Transfer Wise and Xoom at the expense of the convenience of their services and advantageous tariffs. The financial institution can not only provide in its proprietary application additional functions for mobile devices, such as money transfers, utility payments, currency exchange, but also carry out various advertising companies and market research.

Special products can be offered to customers for money transfers in the territory of individual countries (transfers to CIS countries will be in demand for Russia), replenishment of electronic wallets, transactions with financial instruments, etc.

Multichannel banking — synchronized customer service in offices and in the digital environment

Financial institution, being able to track through its application the search activity of the client, can quickly prepare an individual proposal designed for a specific client or a narrow group of clients. In this case, the proposal can be announced through any communication channel. After face-to-face customer consultation in the branch, the bank staff can prepare the appropriate product and distribute it by calling through call-centers or via push notifications in applications.

Banks need correct and up-to-date information about their existing and potential customers, therefore, they should use the maximum amount of useful information

from social media profiles and analyze what banking products can be offered to them.

Customer location and customer activities

Location of any person, and especially a customer whose phone bank knows, can be tracked through triangulation (search and display of the phone by base stations via GPS or BLE systems[10]). Such information is in demand by companies that can prepare marketing reports, targeting service customers and advertisers to a specific target audience, this allows for a more targeted approach to potential clients, already knowing their basic needs and location. Interesting data on the history of visits to different sites, search queries, movements, as well as any demographic data, such as marital status, family composition, child availability and age, social status. This information, not being personal data under Russian legislation and therefore in the public domain, is actively used by banking structures in marketing activities [3].

So, access to virtual channels for the collection and analysis of any information enhances the capabilities of banking structures, because in this way banks will be able to better understand the needs of their customers, more accurately build different customer profiles, which will give them a competitive advantage and provide commercial success.

But there is another aspect that is important to consider when engaging in digital banking — information security.

INFORMATION SECURITY OF FINANCIAL INSTITUTIONS — KEY ELEMENT OF DIGITAL BANKING

Transition to the concept of Digital Banking implies a special role of Digital and Internet technologies, which carries significant information and commercial risks. The threat of cybercrime is also a major concern.

Cybercrime is recognized as the most serious in terms of material and moral damage, targeting individual banking structures and the financial sector of the country as a whole. Crimes are directed to accounts and information systems of credit and financial institutions, intruders try to steal financial resources from correspondent accounts, including in the system of the Bank of Russia.

At all stages of implementation of digital banking operations — from the development of new software methods and technical solutions to the implementation of banking products to their clients — management of credit institutions should be aware of the risks, especially possible vulnerabilities of information security systems. Some banks think about investment in information security systems only at the initial stages of development of new systems. However, we believe that this approach is not realistic. And our opinion is supported by real-life situations, when criminals find vulnerabilities in information banking systems and commit multimillion-dollar thefts already in the first weeks after the project launch. Only then, convinced of the insecurity and inadequacy of their defenses, do commercial banks have to turn to developers, which with their successful experience in establishing reliable security systems, can provide banks with comprehensive and continuous information protection.

In an era of rapid development of information technologies, which allow business entities to expand the range of their operations, to reach more clients and therefore profit more, information security issues become key. It is by how much attention banks pay to the construction and improvement of information protection systems; it is possible to judge the maturity of business. The seriousness of the approach to early identification of potential threats and timely response to these threats to banking

[10] BLE (*bluetooth low energy*) — Bluetooth with low power consumption, which is based, inter alia, on the Apple iBeacon technology. This is a way to locate the user with an accuracy of 10 meters, while sparing the battery of the device.

information systems is determined by the stage at which the information security service is involved in all banking processes. Note that at present modern large financial structures already have the ability to successfully solve the problems of information protection, using their full-time specialists.

At the same time, it should be noted that in the field of information security there are two important categories: threat (potential risk of cyber-attack) and attack (direct attack on the information system for the purpose of stealing confidential information and/or money). In the event that potential threats are not considered, unprotected information systems will be attacked, resulting in serious, and sometimes catastrophic financial losses. In this case, it is often the client who bears most of the loss, because he is the least protected, although connected with banks through remote systems of service. Therefore, it is advisable for banks to start with the protection of the client, providing him with a reliable information security system.

The situation with cybercrimes against banks and their clients remains tense, both in Russia and around the world. Association of Russian Regional Banks reported that in the Q4 of 2015, cybercriminals kidnapped from banks — members of the Association — amount exceeding 1.5 billion rubles [4]. In 2016, at least 8 major cyber-attacks on information systems of banking structures were recorded in Russia. Only timely joint actions of employees of information protection of commercial banks and regulator allowed to reduce the real damage from 5 billion rubles to 300 billion rubles.[11] But cyberattacks are also possible on the protected systems of the Central Bank of the Russian Federation. In July 2018 cybercriminals with the help of virus malware managed to gain access to the automated workplace of the Bank of Russia client without authorization and steal 58 million rubles from a correspondent account, by assigning them to plastic cards of clients in 22 largest Russian banks. Within several hours, most of the funds were cashed [5]. Massive transition of banks to online customer service in 2020–2022, caused by the spread of the coronavirus pandemic, significantly worsened the situation in the field of virtual crimes against banking structures. According to expert assessment of specialists of Sber, the losses of the banking system of Russia from cyberattacks amount to about 600 billion rubles per year.[12]

Cybercriminals continue to improve their knowledge and skills, gradually gaining specialization in narrow areas. Thus, the specialists, who are ready to scan the organizational and technological components of the information system of banks and discover all potential vulnerabilities, have become particularly in demand lately. Based on the data obtained, cybercriminals are ready to provide their recommendations on the optimal hacking of banking systems and concealment of criminal activities. Such "expert" recommendations have already become the subject of active sales, including, at the level of States, not to mention criminal associations [6].

The number of crimes of theft of money from bank accounts increased intermittently using social engineering and neuro-linguistic programming, when criminals, having received part of the personal data of the bank's customer by telephone communication, are force him to report card data, gain access to the client's account or office and remotely steal money from bank accounts. However, given the overall scale of thefts, which reached hundreds of billions of rubles in a year, the banks are joining efforts to create systems to counteract such crimes (including active operational and preventive activities involving law enforcement agencies), create

[11] ARinteg. Current solutions for information security. 2016. Proceedings of the X International Conference. "Bank cards: practice and transformation", 14–15.04.2016 r. Moscow; 2016.

[12] Sberbank. Official website. URL: https://www.sberbank.com/common/img/uploaded/files/info/ir_presentation _march_2019_rus.pdf (accessed on 18.01.2022).

special units and create detailed instructions for customers [7].

Despite the active work of banking structures together with the Bank of Russia in the field of counteracting virtual crime, the situation in the field of information bank security remains not only dangerous, but is approaching a critical level. Currently, cybercriminals, united in organized groups, direct their efforts to attacks of the banking system, especially — the information system of the Bank of Russia. Not only client accounts but also correspondent bank accounts are threatened. This is a systemic threat!

An additional threat is posed by former employees of banks who had access to internal confidential information, relating to information security mechanisms and procedures, retention and withdrawal of funds. Such specialists become more in connection with the planned work of the Central Bank of the Russian Federation to improve the banking system, as a result, many banks lose their licenses, and, accordingly, the employees of these banks — work. It is obvious that, knowing information about the internal banking IT-infrastructure, intruders become owners of virtually unlimited opportunities: here and central ABS — Automatic bank system (storing all client account data), and automated workstation of Bank of Russia customer — AWS of a BoR (enable the transfer of financial resources from one account to another), and SWIFT system interface (for interaction with foreign banks).

One of the most vulnerable places remains AWS of a BoR, because the software for all AWS of a BoR is the same, and work with it is strictly regulated by the Bank of Russia. This attracts cybercriminals, as they study systems, choose the bank with the least security, select the methodology of hacking, attack this bank, access the funds in the correspondent account and transfer them to several other banks. Then, perhaps, the intruders "split" the funds on smaller amounts, distribute them into card accounts of retail customers and cash out. This is one of the possible schemes of cyber-attack of criminals from the moment of hacking the information system to getting the money at their disposal. In the framework of countering cybercrime against banks, the Central Bank of the Russian Federation has developed a system of measures for secure work with the AWS of a BoR system [8].

In general, banks can be advised to take three main practical steps to protect this weak link. First, allocate AWS of a BoR in a separate network segment and minimize access to it at the network level. Second, the host of their corporate domain (this is extremely important because domain security is very difficult to maintain). Third, the maximum limit of what happens inside the operating system in the host AWS of a BoR: only authorized software and only pre-authorized processes.

We believe that tightening of control by the regulator, as well as wide informing of IT-specialists of banks about the possibilities of counteraction, engaging law enforcement agencies and bank clients, including retail, and cybercrime prevention can reduce the number and intensity of cybercrime attacks against financial institutions. However, researching the current situation in the field of information security in the Russian banking sector, it is possible to assume that common efforts may in the near future lead to an improvement in the protection of AWS of a Bo R.

But cybercriminals will have many opportunities to realize their intentions in other systems. There are still many vulnerabilities in the SWIFT international interbank transfer system. In addition, the intruders, having access to the automatic banking system (ABS), can falsify payment data, then send it to AWS of a Bo R. In the absence of additional protection systems, special shields between these systems, and given that AWS of a BoR works automatically, the system threat may again arise.

In addition, it should be borne in mind that domestic and international

information channels are interconnected and interdependent, so vulnerability, for example, in one remittance and payment system, a bank's information system may be adversely affected, or unauthorized access to one bank's ATM may lead to illegal debits from clients' accounts in another bank. The variety of available arsenal of virtual attacks reduces the expediency of countering them at the last stage.

The situation with cyber-attacks in late February 2022 became particularly escalated. Then all automatic systems of Russian state structures, ABS of Russian banks and sites of systemically significant companies were cyber-attacked within the framework of cyberwar deployed against Russia (hybrid war) on the part of highly professional and well-organized hacker groups commissioned by the USA and a number of EU countries in response to the 24 February 2022 Russia's special military operation in Ukraine. International hackers with the task of causing any damage to the information systems of Russian financial and non-financial structures, often direct their efforts to destabilize it is the Russian banking sector, realizing the systemic importance of the banking system for the overall economic situation in Russia.

It is now that the risk of cyber-threats is multiplied in the most difficult conditions, the risks and costs of any failure to build a system to counter cybercrime are increasing. Therefore, in these circumstances, it is so important to address the problem of developing and improving comprehensive measures to counter virtual cybercrime — from physical access control to computer and banking equipment to virtual security systems. The general opinion of the experts is that it is not possible to construct a completely safe system that excludes any unauthorized action [9]. But the challenge is to create such protection, which is technically difficult for criminals to overcome, expensive, long, and, therefore, this makes no practical sense to them.

CONCLUSION

Digital banking, both in the world and in Russia, is at the beginning of development, banks in this business do not have enough experience, first of all, they should start by changing the mentality, in the beginning — at the management, then — at the staff. Financial institutions should at this stage act quickly enough, but thoughtfully, try to take the best of the already active participants in the digital space. It is recommended that legislative constraints be taken into account when introducing new technologies. When attracting customers and tracking their needs we believe it is important to find a "golden middle" between obtrusiveness and perseverance.

The restructuring of the banking system, which envisages the transition to Digital Banking, assumes that the banking service will become more convenient, comfortable, accessible and safe for the client.

Financial institutions as they enter the digitalization process of their business should get closer to the client. Their main functions will change: from creditor and debt collector, banks will transform into financial advisor and assistant [10]. Such metamorphoses will increase the competitiveness of the banking sector, as well as attract new customers, including from the new generation of Homo informaticus.

At the same time, we believe that without the construction of a reliable and multi-circuit information security system, the bank will not be able to protect its financial resources and the funds of clients from cybercrime in the digital space. In addition, countering criminal cyberattacks should take place within the framework of effective cooperation between government authorities, financial institutions and their customers of various categories, including retail. It is the coordination of joint and joint efforts of all these actors, based on the principles of equal access to sensitive information, provide protection and contribute to the development of the domestic

financial sector, including regional segments, which will strengthen the ability to make secure and fast digital transactions.

Digital technologies have not only brought comfort to the clients of financial institutions, but have also changed the way of life of most of them, their needs and mentalities. On this basis, banks are transforming from traditional financial institutions into structures that create new digital business systems to provide services that are only formally linked to the holding's banking core. The example of the largest Russian bank, which left only a part of the previous name — "Sber" and who removed the word "bank", is very significant and determines the leading direction in which all banking institutions, including regional ones, will be transformed. As development progresses, new challenges and vulnerabilities will emerge, but it is — a natural evolution that will determine the development of the Russian financial sector in the coming decades.

While this publication was being prepared, there were events that fundamentally tested the strength of the entire economic structure of the Russian Federation, in particular the core of the economy — the financial sector. But, despite the systematic imposition of unprecedented economic, financial, and political sanctions by the US, the EU, and other countries, as well as the massive withdrawal of a number of significant and leading Western companies from the Russian market, the domestic banking sector has overcome, having suffered relatively small losses, showing the existence of serious immunity to unfriendly actions of external forces, mechanisms to reduce and neutralize external shocks, flexibility in making quick decisions, and demonstrating coordination of joint efforts with State oversight bodies. According to the forecasts of well-known experts, the Russian financial system will be forced to exist under the conditions of Western sanctions for a long time [11]. Therefore, it is necessary to use this false period for the development of their own digital technologies (independent of western payment and settlement systems), strengthening of the national currency, promotion of the digital ruble, training and advanced training of specialists in digital banking technologies and information security. Such a set of measures will allow the progressive development of digital banking services in Russia, ensuring the independence and reliability of the domestic banking system, despite external restrictions and sanctions.

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Premium Car Brands Strategies and Regulator's Actions in Russia (2009–2021)

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ABSTRACT

This article analyses the premium segment of the Russian automotive market from 2009 to 2021 based on data from the Association of European Businesses. The authors conducted a comparative analysis of trends in the Russian automotive market with trends in its premium segment and found significant differences in the market cycles. The analysis of the main periods of the studied market was based on the SV matrix (strength/variety). The article also discusses the main external and internal factors that influenced the competition level in the periods under review. As the main conclusion of the study, it was noted that while in the mass segment of cars, the strength of companies and dominant groups is highly dependent on external factors, then in the premium segment the main driving forces for changing the market situation are the actions of the companies themselves, their competitive strategy, as well as adaptation to current market trends. The article also provides comments on the impact of economic events from February 24, 2022 on the market situation.

Keywords: Russian automotive market; strategic analysis; industry dominance; SV matrix; BMW; Lexus; Infiniti; Mercedes-Benz; Land Rover; Jaguar; Audi; Porsche

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INTRODUCTION

We decided to analyze separately the premium car market, as the development trends of premium market segments often differ from the industry-wide after writing an article about the domination of the Russian automotive market in general [1].

The automotive market is of interest to researchers from different points of view. For example, the authors study the strategies of the largest European automotive TNCs in the internationalization of business in different regions of presence [2]. A number of scientific works are devoted to the analysis of the current state of the car market in the Russian Federation, where factors that influence competition in the automobile market are identified, as well as the main driving forces, influencing on the situation in industry [3]. As part of the research on the analysis of the Russian market, for example, the strategies of German automobile companies are considered (including features of the strategy of BMW Group in the Russian market) [4]. In addition, the Russian market of premium automobile brands was studied in the work of Levina and Pokatovich, where it was noted that it had a more stable dynamic relative to overall market performance, showing less decline, and sometimes growth in its segment, when the overall Russian automotive market was in deep recession (2008 and 2014 year) [5].

A number of articles are devoted to the analysis of strategic behavior of individual concerns: analyze the competitive strategies of BMW Group in the world market [6], it was a case study of changes in the competitive strategies of premium automotive companies, where the authors substantiate, that large investments in new technologies and flexible production systems provide high performance in the premium car segment, and converting from a traditional premium car company to a company, focused on mobility technologies is the key to getting and maintaining a competitive edge in the premium car segment [7].

Current research of trends in the markets of premium goods can be found at consulting companies. For example, McKinsey research was identified global trends, which in the coming years will determine the strategic behavior of players in the premium automotive market, among which the increasing importance of digital channels in interaction with the consumer, the growing influence of companies, providing additional services to auto owners and strengthening the regulation of this market by public authorities.[1] Bain&Company notes the increasing concentration of key players in premium products markets recovering from the 2020 crisis, for example, world premium car sales in 2021 hit the record for 2019, amounting to 551 billion euros. Sales growth in Asia and the shift to more low-emission cars were considered important market trends.[2] Researchers also identify key success factors for automotive premium brands [8].

To describe the market of premium brands we will use the theory of economic dominance (further — TED) [9], which divides companies in any market into three types:

- Alpha — companies whose institutional capacities enable them to take advantage of the market in which they operate;
- Beta — companies with slightly weaker institutional capacity but sufficient to position as niche leaders;
- Gamma — companies that do not have an advantage in the market presence and follow the rules of the game established by the leaders.

The term “alpha-empire” is also singled out [10] — when companies at different levels come together to drawing on the capacities each

[1] McKinsey Center for Future Mobility. The new realities of premium mobility. 2019. URL: https://www.mckinsey.com/~/media/mckinsey/industries/automotive%20and%20assembly/our%20insights/the%20new%20realities%20of%20premium%20mobility/the-new-realities-of-premium-mobility-final.pdf

[2] Bain&Company. From Surging Recovery to Elegant Advance: The Evolving Future of Luxury. URL: https://www.bain.com/insights/from-surging-recovery-to-elegant-advance-the-evolving-future-of-luxury/

other's and operate in various markets. For example, through the Genesis brand, Hyundai has been competing in the premium machine market since 2015.[3] At the same time, Genesis, while far from the leader in the premium segment of Russia, is actively increasing sales, relying on the support of Hyundai.

SV matrix is an effective tool for analyzing changes in the competitive situation in the market [11], allowing to analyze the dynamics of the market situation and changes in the level of domination of key players in the considered markets. To apply this matrix first using the Linda index [12] are the calculation of the presence and size of the dominant group in the market. Then, for each dominating group, its combined market share (CRSV) and t coefficient of differentiation of companies by market share within the group (HTSV, modified Hall-Taydman coefficient) are calculated. The description of the SV matrix was given earlier by the authors [1].

WHAT BRANDS ARE CONSIDERED PREMIUM IN RUSSIA

To analyze the market of premium automotive brands we will use the classification of the analytical agency "Autostat",[4] which as in 2022 allocates 13 premium car brands in Russia:

1. German BMW and Mini (included in BMW Group), Mercedes Benz, Audi и Porsche (included in VW Group).
2. Japanese Lexus (Toyota) and Infiniti (concern AVTOVAZ-RENAULT-NISSAN-MITSUBISHI).
3. American Jeep (STELLANTIS) and Cadillac (GM Group).
4. English Jaguar and Land Rover (together are part of the concern Jaguar Land Rover, owned by Indian Tata Motors).
5. Swedish-Chinese brand Volvo.
6. Korean Genesis (HYUNDAI Group).

Fig.1 shows volumes of sales in dynamics for each of 13 brands for the period 2009–2021(pcs.).

From the *fig.1* seen that BMW and Mercedes-Benz are the alpha leaders (in TED terms) of the Russian premium market. With different results by years, they are followed by Audi и Lexus — beta-companies alpha-empires VW and Toyota. Other brands are rather related to gamma-players in the market.

The market reached its maximum sales level of 205 316 pieces in the 2013 "pre-Olympic" year and remained at the same level for another year. By the end of 2014, there was a strong devaluation of the ruble, as a result of which, according to Rosstat, Russians have traditionally gone to buy large appliances and upgrade cars, trying to keep the depreciating accumulation.[5] Due to the strong exchange rate difference at the end of 2014, many cars were also bought by citizens of Kazakhstan and Belarus.[6]

And although, according to the results of 2021, the market as a whole is still far from the results of 2014, BMW, as the leader in sales, has surpassed the level of 2014, and Mercedes and Lexus were close to pre-crisis values (*fig. 1*).

PREMIUM BRAND MARKET COMPARED TO THE REST OF THE AUTOMOTIVE MARKET

Fig. 2 compares premium and mass segments of the car market by individual automotive brands as a result of 2021. The premium market growth rate is exactly three times higher, and BMW and Mercedes-Benz brand sales are growing faster than the premium market as a whole (9.6 and 10.8%, respectively).

Reasons for the three-digit growth of the Genesis brand are due, on the one hand, to its relatively recent entry into the market (and accordingly, the low base for comparison), and, on the other hand, significant expansion and updating of the model range,[7] active marketing policy to promote the brand and highly

[3] URL: https://www.kolesa.ru/news/proshhaj-bmw-chinovnikov-peresazhivayut-na-korejskie-avtomobili-radi-ekonomii

[4] URL: https://www.autostat.ru/pages/about_company/

[5] URL: https://gks.ru/bgd/regl/b14_102/Main.htm

[6] URL: https://www.interfax-russia.ru/center/news/belorusy-massovo-skupayut-bytovuyu-tehniku-v-smolenskoy-oblasti

[7] URL: https://info-motors.ru/vehicles/cars/genesis/

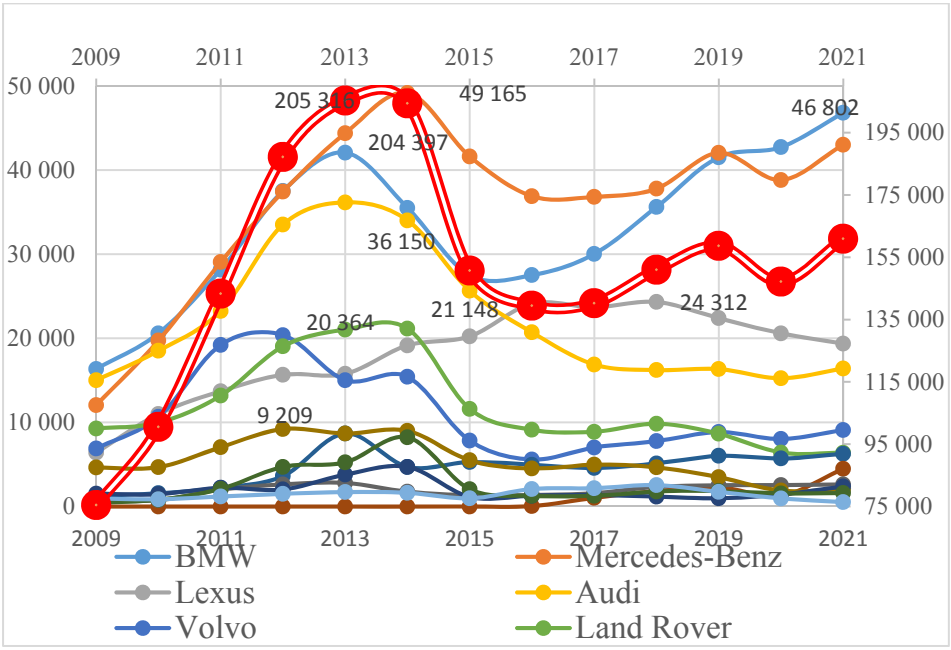

Fig. 1. **Premium car sales in Russia, 2009–2021**

Source: compiled by the authors based on data from AEB. URL: https://aebrus.ru.

Note: the left vertical axis is the sales volume in dynamics for each of the 13 brands for the period 2009–2021. The right vertical axis is the total sales of premium brands by year for this period. The numbers with callouts indicate the maximum values for each row.

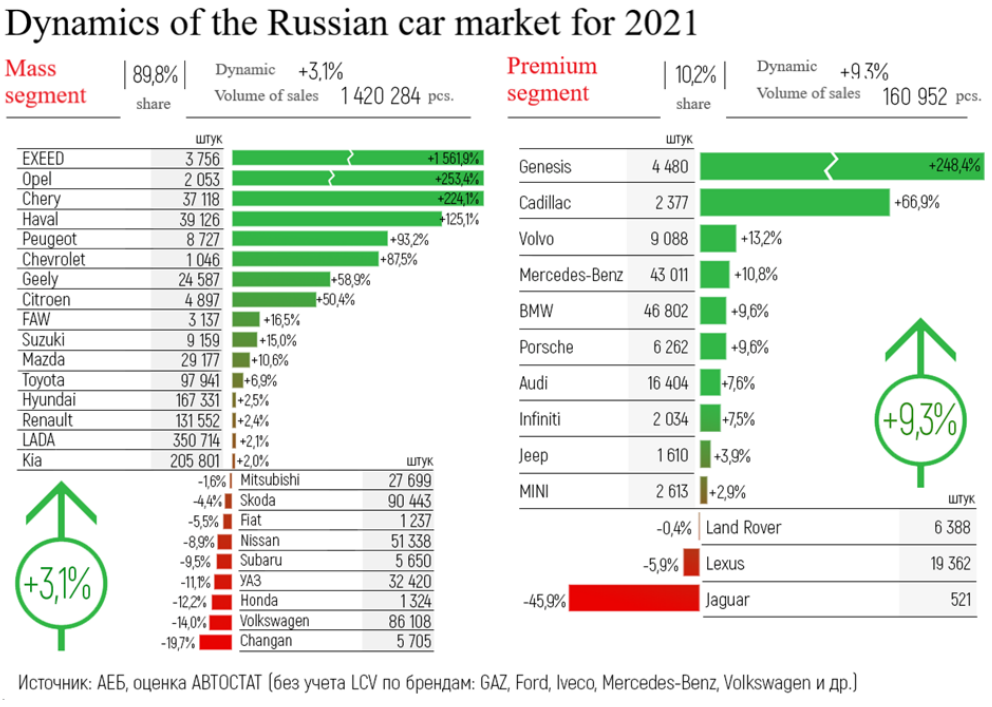

Fig. 2. **Russian automotive market dynamics in 2021**

Source: compiled by the authors based on AEB data, AUTOSTAT estimates (excluding LCV by brands: GAZ, Ford, Iveco, Mercedes-Benz, Volkswagen and others). URL: https://www.autostat.ru/news/50402.

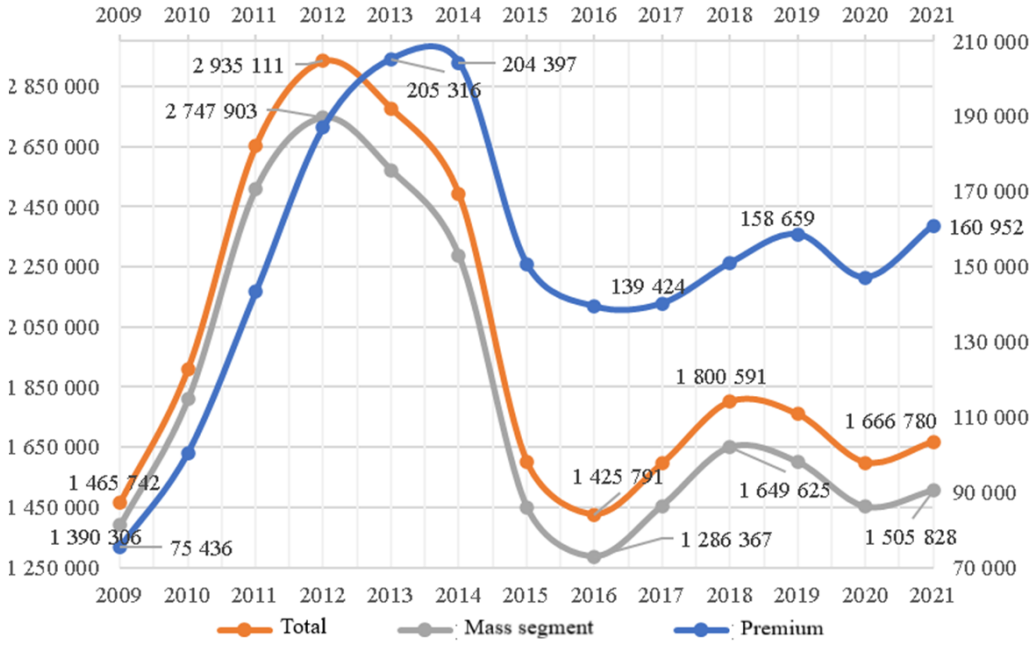

Fig. 3. **Comparison of Russian automotive market dynamics (premium segment, mass segment and total sales), 2021**

Source: complied by the authors based on data from AEB. URL: https://aebrus.ru.

Note: on the left axis, sales of cars in the mass segment and the market as a whole (SUMMA series) are marked, and on the right axis, only premium brands.

competitive ratio of price and quality compared to the historical leaders of the segment.

The growth of the Cadillac brand, besides the low base effect, the expansion of the geographical presence, and the opening of new dealers, management of the Russian branch of the brand explains the successful upgrade of the flagship model: "a key factor, influencing growth, became the launch of the updated flagship Escalade — the most advanced and perfect large SUV (Sport Utility Vehicles) in the history of the model, became the key premiere of this summer".[8]

Also, an important factor during the pandemic was the possibility of distance interaction with clients and the development of online services. To raise the brand's competitiveness, the company offered trade-in programs and low loan rates of 0.1%.[9]

On the *fig. 3* presents a comparison of sales volumes of new cars in general and premium brands in Russia for the period from 2009 to 2021.

As can be seen from fig. 3, the premium segment of cars in the Russian Federation has its own cycle, which sometimes is very different from the whole industry:

- until 2012, both the automotive market as a whole and its premium segment demonstrated a rapid growth: total sales of new cars doubled between 2009 and 2012, and in the premium segment — more than 2.5 times;
- from 2012 to 2016, the mass segment market began to fall, and sales of premium brands, as mentioned above, continued to rise, having reached a maximum in 2013–2014 for the entire period of the crisis under review, and only then began to decline;
- mass market by 2016 has fallen below the level of post-crisis 2009, and premium drift only to the level of 2011, losing only about 30% from the peak of 2013;

[8] URL: https://media.cadillac.com/media/ru/ru/cadillac/news.detail.html/content/Pages/news/ru/ru/2021/cadillac/10–08-sales-results.html

[9] URL: https://www.major-cadillac.ru/news/103/

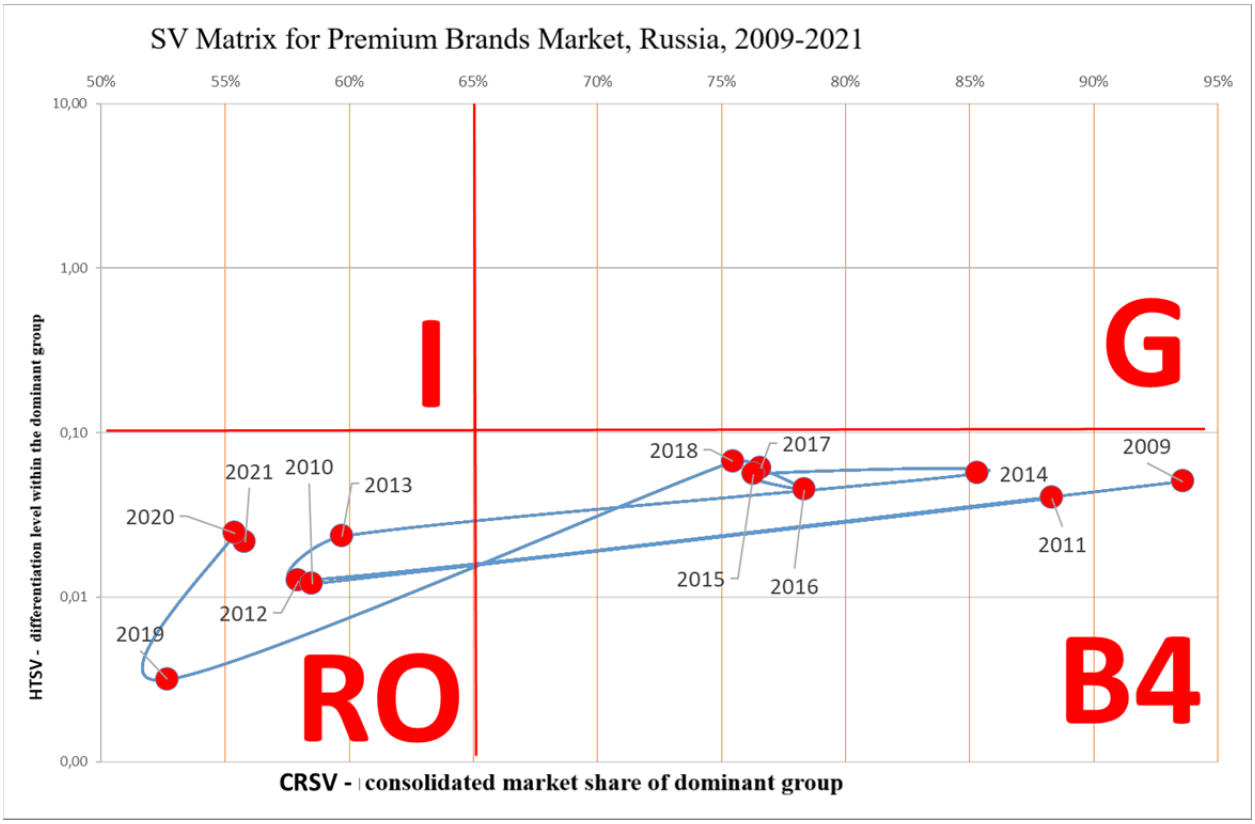

Fig. 4. **Matrix SV for assessing the dominance level for the Russian premium car market, 2009–2021**

Source: compiled by the authors based on data from AEB. URL: https://aebrus.ru.

- since 2016, the automotive market began to recover, including its premium segment, and since 2018, different trends are again visible: the decline in total sales and the growth of the premium segment.

Thus, the decline in sales of premium brands has always been 1–2 years later than in the mass market. Interestingly, the rebound in market growth during the period under review is occurring without such a time lag between these segments.

DOMINATION OF THE PREMIUM AND LUXURY CAR BRAND MARKET IN RUSSIA

Despite the fact that the premium segment consolidated much easier than the mass market was held in crisis periods in the economy, competition within this segment has also changed. *Fig. 4* shows the SV matrix,[10] a *table* provides information about the size of the dominant group for each year (line "Lindh"), CRSV, and HTSV values and detailed market share values for all premium brands considered.

The SV matrix is divided into 4 quadrants:

- **in quadrant G (CRSV > 65%, HTSV > 0,1)** are presented markets, where the combined share of dominant players is more than 65% of the market, but the players are very different (G – from the Russian company Gazprom, illustrating the example of this market);
- **in quadrant B 4 (CRSV > 65%, HTSV < 0,1)** are the markets, where leaders have consolidated their largest share, but all dominant players are roughly equal in size (B 4 — "big four" in the market of audit services, which is an illustration of this quadrant);
- **in quadrant RO — Red Ocean (CRSV < 65%, HTSV < 0,1)** are presented

[10] URL: https://svmatrix.online/ru/Матрица-SV/

Table

Shares of the Russian automotive market of thirteen luxury brands, 2009–2021

Company/Year	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
BMW	29.08%	29.03%	26.17%	23.59%	21.40%	19.73%	18.24%	17.37%	20.49%	20.04%	19.65%	20.47%	21.67%
Mercedes-Benz	26.72%	26.37%	26.50%	25.03%	26.24%	26.46%	27.61%	24.05%	21.61%	20.00%	20.28%	19.62%	15.97%
Lexus	12.03%	13.99%	14.12%	16.10%	16.89%	17.30%	13.42%	9.37%	7.68%	8.36%	9.56%	10.92%	8.48%
Audi	10.19%	10.36%	10.29%	10.74%	12.03%	14.85%	17.02%	16.64%	17.61%	17.90%	16.22%	18.41%	19.90%
Volvo	5.65%	5.45%	5.58%	5.15%	5.00%	4.01%	5.20%	7.54%	7.31%	10.88%	13.40%	10.59%	9.14%
Land Rover	3.97%	4.36%	5.46%	6.52%	6.33%	6.54%	7.70%	10.35%	10.24%	10.17%	9.20%	9.92%	12.30%
Porsche	3.89%	3.88%	3.80%	3.39%	3.26%	3.56%	3.51%	2.30%	4.23%	1.93%	1.54%	1.56%	1.68%
Genesis	2.78%	0.87%	1.43%	1.21%	0.74%	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Mini	1.62%	1.73%	1.59%	1.54%	1.13%	0.98%	0.90%	0.86%	1.36%	1.40%	1.40%	0.75%	0.91%
Infiniti	1.26%	1.29%	2.19%	3.08%	3.54%	3.24%	3.65%	4.39%	4.23%	4.92%	4.91%	4.65%	6.14%
Cadillac	1.48%	0.97%	0.61%	0.78%	0.97%	0.91%	0.76%	2.30%	1.85%	1.08%	1.55%	1.45%	2.03%
Jeep	1.00%	1.05%	1.16%	1.17%	0.91%	0.91%	1.36%	4.02%	2.56%	2.51%	1.46%	0.80%	0.55%
Jaguar	0.32%	0.65%	1.10%	1.68%	1.55%	1.49%	0.64%	0.80%	0.83%	0.80%	0.82%	0.85%	1.24%
Lindh =>	2	2	2	4	4	4	4	6	3	3	6	3	7
CRSV	55.80%	55.40%	52.67%	75.47%	76.57%	78.33%	76.29%	85.32%	59.71%	57.94%	88.31%	58.50%	93.60%
HTSV	0.022	0.025	0.003	0.067	0.061	0.045	0.032	0.057	0.023	0.013	0.040	0.012	0.051
Quadrant	RO	RO	RO	B 4	B 4	B 4	B 4	B 4	RO	RO	B 4	RO	B 4

Source: compiled by the authors based on data from AEB. URL: https://aebrus.ru.

markets, where the dominant companies are comparable in a position, but their combined share is 30–65% of the market. If, as a result of competition, one or more alphas take the market share of other alphas, the market goes to the upper left quadrant "I";

• **in quadrant I (CRSV < 65%, HTSV > 0,1)** fall markets where dominant players are highly differentiated but collectively control 30 to 65% of the market.

As seen in *fig. 4*, from 2009 to 2021 the market moved within quadrants B 4 (natural oligopoly) and RO (red ocean) of the SV matrix. The following periods can be provided from the point of view of changes in levels of market dominance:

• **2009–2012 years. "Post-Crisis Recovery".** After the global crisis of the end of 2008, the Russian automotive industry was also feverish. During this period, there were sharp changes in the number of players in the dominant group, with the market for premium cars growing quite quickly: from 70 thous. cars in 2009 to 190 thous.— in 2012.

In 2009 in the dominant group in the first and until last time hit Infiniti — luxury brand of Nissan concern, originally created for the North American market. Despite the high quality of both cars and service, the car has not yet found its permanent niche in the market,[11] and its share has been constantly decreasing throughout the study period.

In this period were still strong in the Russian market positions Volvo and Land Rover. In 2009 Land Rover reached a maximum of 12.3% of the Russian market, but in the future, despite numerous attempts and ambitious statements,[12] the brand share was only declining.

The maximum share of the Russian market Volvo was observed in 2011–13.4%. Later, Volvo return to the dominant group in 2014, but after the ruble devaluation in January 2015 raised prices by 20–30% (that will hit the volume of sales hard[13]), and there will be no more among the alpha companies of the Russian market.

• **2012–2014 years. "First stabilization of the premium market".** By 2014, the market had stabilized in the B 4 quadrant. And in 2012–2013 in the dominant group was the "Big German Three" (BMW, Mercedes-Benz, and Audi), and, had it not been for the well-known events of 2014, she would surely have held her own position, but in 2014, the dominant group included three more brands — Lexus, Volvo and Land Rover, as in 2011. The sharp increase in demand in 2014 was due to expectations of buyers (savings depreciation, rising prices, including for imported cars due to the fall of the ruble, etc.).

Even a luxury tax introduced in January 2014,[14] did not stop the customer buzz. If you look at *fig. 1*, you can see that in 2014 the leading premium brands had different results: Mercedes-Benz, Lexus, and Land Rover kept sales figures, and BMW and Infiniti fell seriously. This is most likely due to the physical shortage of cars, as the salons were almost empty in December 2014, and the last cars sold without any discounts.

• **2015–2018 years. "Four leaders for four years".** From 2015 to 2018, four companies dominated the Russian premium market: BMW, Mercedes-Benz, Audi, and Lexus, occupying about three-quarters of the market. After the recession of 2014 in 2015–2018, sales of premium cars were about the same — 140–150 thous. cars per year. The market remained strong in quadrant B 4 (natural oligopoly), with CRSV fluctuating in the 75–78% range.

In July 2014, to support domestic automakers, the Russian government imposed a ban on government procurement of automobile equipment that is not produced in Russia. The car to be acquired has since

[11] URL: https://fb.ru/article/358427/infiniti-strana-proizvoditel-kto-vyipuskaet-avtomobili-pod-brendom-infiniti

[12] URL: https://www.forbes.ru/forbeslife/360597–10-let-jaguar-land-rover-kak-indusy-spasli-avtomobilnoe-nasledie-britanii

[13] URL: https://www.kommersant.ru/doc/2718234

[14] URL: https://www.garant.ru/news/485339/

had to have a certain level of localization: at least 30%. In addition, the government has promised to increase the required localization level to 60–70% by 2018. This has not affected all premium brands: in Kaliningrad at the enterprise "Autotor" were going with a sufficient level of localization representative sedans BMW, prestigious Audi A6 and A8 models were produced in Kaluga, but for the companies Mercedes-Benz, Lexus, and Infiniti it closed access[15] to the public sector.

• **2019–2021 years. "Then there were two".** During this period, the market shifts to the RO quadrant — there remain two dominant players and the shares of the rest fall. It would seem the situation is reminiscent of 2011, but then the dominant players were three with the same CRSV value, and now the same market share is concentrated only in the hands of a pair of German brands: BMW and Mercedes-Benz. It is difficult to determine exactly how this happened, as detailed sales statistics of both brands are closed, but the following assumptions can be made:

• Demand for premium taxi services increased significantly (tariffs "business" and higher in Yandex — only for German premium manufacturers: Mercedes-Benz, BMW, and Audi), for example, in 2019 by 20%[16];

• With the localization of production, Russian government procurement was again available for Mercedes-Benz and BMW, where these brands have always been in high demand. In the Moscow region in 2019 Mercedes factory was launched, which can produce up to 35 thous. cars per year.[17]

In 2019, Mercedes-Benz took a leading position among premium brands and in the corporate sector sold legal entities 14.5 thous. cars. This is about a third of the total sales of Mercedes-Benz in the Russian market. BMW took second place with 13.8 thous., while the rest of the companies had much less corporate sales: Lexus — 4.9 thous., Audi — 4.8 thous. and Land Rover — 3.3 thous.[18] If you subtract corporate sales from the statistics, the two leaders' gap will be much smaller.

Why did Lexus and Audi disappear from the dominant group? It is the Japanese premium brand that is to blame, as Audi in the period of "four leaders" closed the four (see *table*), a Lexus was in third place. But since 2019, Lexus sales have fallen, and BMW and Mercedes-Benz, on the contrary, have increased, as a result, the gap between second and third place has widened so much that Lexus became the leader of the second tier of premium brands, leaving the dominant group. And the market share of Audi decreased as early as 2018, but then almost didn't change until 2021. Truly: "We must run forward, just to stay in the same place. If you want to go somewhere else, then you have to run at least twice as fast!"

The reasons for the decline in Lexus share were quite economic. In 2019, Lexus discontinued sales of the Lexus IS sedan in Russia, so that "Lexus IS competitors offered greater variability and sold much better, for example, BMW 3-Series in half a year bought 2 799 people, Mercedes-Benz C–Class — 2364, and Korean Genesis G70–711".[19] In January 2020, Lexus and Toyota announced the recall of 82 thous. cars produced since 2015, due to technical defects.[20] Overall, Lexus's market share declined by almost a quarter since 2018: from 16 to 12%. In the European market Lexus in 2020 also refuses to sell sedans and focuses on crossovers.[21]

During the pandemic, many car manufacturers experienced a shortage of components and a shortage of cars starting in the second half of 2020, said all dealers of premium cars in Russia.[22] BMW and

[15] URL: https://www.autostat.ru/news/17313/

[16] URL: https://www.gazeta.ru/business/2020/03/02/12986107.shtml?updated

[17] URL: https://www.vedomosti.ru/auto/articles/2019/04/03/798178-mercedes-benz

[18] URL: https://www.gazeta.ru/business/2020/03/02/12986107.shtml

[19] URL: https://motor.ru/news/lexus-is-gone-28–09–2019.htm

[20] URL: https://www.gost.ru//newsRST/redirect/news/1//6624

[21] URL: https://news.drom.ru/Lexus-81153.html

[22] URL: https://www.autonews.ru/news/5ee732e19a79476d0a4eb4be

Mercedes-Benz reacted by restricting car sales, which will affect the level of prices that increased during the pandemic, even when the semiconductor shortage is overcome.[23] Companies are so confident in the loyalty of their customers that they consider creating an artificial deficit an opportunity to strengthen their dominant position. But maybe it's a temporary marketing move to get more orders from buyers.

The state continued to influence the market of premium brands during this period: for example, from 1 July 2020 a ban on the purchase of foreign cars came into force,[24] but sales continued to rise.

And perhaps complete the description of this period by reporting the results of the super-premium brand: "The company Lamborghini said that 2021, which was marked by the crisis of the global automobile industry, became the best in the history of sales: last year's results, taking into account sales worldwide, managed to improve by 13%, in Russia — by 48%". Also, Rolls-Royce announced that in 2021 Russia was among the top three buyers of this brand, Bentley and Porsche sold 11% more cars in the previous year.[25]

HOW THE SITUATION HAS CHANGED SINCE 24 FEBRUARY 2022

According to Rosstat, in January-February 2022 it was recorded a decrease in the volume of automobile production by 7.2% compared to 2021 (even before the imposition of sanctions). From the end of February to early March 2022, the situation in the Russian automobile market began to deteriorate significantly: automobile prices began to rise and production volumes decreased as a result of the sanctions, which caused problems with logistics, lack of components, the decline of the ruble.

The Russian government, on the one hand, took several actions, trying to support the demand for cars (amendments to the Tax Code increasing the minimum threshold of the car price, which is covered by the "luxury tax", from 3 to 10 mln rub.[26]), as well as car manufacturers (possibility not to equip cars system of "ERA GLONASS"[27] in the first half of 2022, deferral of payment of auto recycling fee in 2022), etc. On the other hand, at the moment the state programs of preferential car lending and leasing are not extended.[28]

Now it is difficult to say about the prospects of development of the premium market, as the situation on it is constantly changing, and the premium brands discussed in the article are increasingly announcing the suspension of activities in the Russian Federation.

So, in March 2022, the US government announced a ban on the export of premium cars (before the imposition of sanctions from the United States to the Russian Federation exported Cadillac Escalade, some Jeep models, as well as BMW and Mercedes-Benz American build),[29] and brands such as Lamborghini, Ferrari, and Infiniti, have suspended the delivery of cars to Russia.[30] Since 5 April 2022, Japan imposes a ban on the export of premium cars to the Russian Federation.[31]

If these trends continue, the factors described above will soon lead to radical changes in the structure of the Russian premium car market.

CONCLUSIONS AND RECOMMENDATIONS

In the premium car market in Russia, it was always possible to provide the dominant group, which included two to seven brands. In 2014, as in 2009, immediately after the

[23] URL: https://www.gazeta.ru/auto/2021/09/13_a_13980920.shtml

[24] URL: https://tass.ru/ekonomika/8856597

[25] URL: https://vz.ru/news/2022/1/12/1138468.html

[26] URL: https://www.vedomosti.ru/auto/articles/2022/03/03/911814-nalog-na-roskoshnie-avtomobili

[27] URL: https://www.autostat.ru/news/51110/

[28] URL: https://www.autostat.ru/news/51052/

[29] URL: https://www.autonews.ru/news/622b794e9a794700c31722b9

[30] URL: https://www.kommersant.ru/doc/5251872

[31] URL: https://ria.ru/20220329/yaponiya-1780588409.html

strong crisis, the size of the dominant group increased, then there was a gradual reduction to three, and then to two alpha leaders.

In terms of dominance, the premium car brand market fluctuated between RO and B 4 quadrants from 2009 to 2021, without falling into quadrants I and G of the SV matrix. This indicates a relatively low differentiation between players in the dominant group (the HTSV index did not rise above 0.07). If you look at the CRSV index, you can see that the dominant group companies have always controlled more than 50% of the market, and sometimes this value was significantly higher, indicating a high concentration (see *table*).

The premium car market cycle is different from the industry-wide: the premium car market in crisis continues to grow and falls a year or two after the fall of the common market. The delay was attributable to various factors: on the one hand, consumers of premium products, in an attempt to save the depreciating savings, sent to renew cars, expecting a sharp rise in prices next year. Residents of neighboring countries (Kazakhstan and Belarus) whose incomes are not tied to the ruble, in the context of a sharp fall in the price of premium cars (in 2014 due to the foreign exchange difference this fall was more than twice) also increased demand for premium cars.

In recent years, an important factor in the growth of market leaders (Mercedes-Benz, BMW) can be called the reorientation towards the corporate sales segment: the changing structure of the passenger transport market and the growth of the premium taxi market are now very important trends, then Mercedes-Benz and BMW actively used.

The state as a regulator influences the market by determining access to public procurement, but we have not been able to identify a significant impact on sales due to the relatively small volume of premium brand purchases compared to total sales figures. We also found no evidence that the luxury tax had any impact on the premium car market. The main impact of government measures to support the automotive industry was on the stamps of the mass rather than the premium segment.

Thus, after the study can be made the main conclusion: while in the mass segment of cars, the power of companies and dominant groups is highly dependent on external factors, for example, support to the state (financing programs, public procurement, infrastructure in the form of credit programs, etc.) and the overall dynamics of the automotive market (growth or decline, i.e. the key to success is to build the right relationship with the regulator), in the premium segment the main drivers of the market situation are the actions of the companies themselves, their competitive strategy (price policy, control of the model range, service level and the ability to ensure of demand on time), as well as adaptation to current market trends.

The events of the first quarter of 2022 show that political and economic factors can radically change the structure of the market and significantly reduce the influence of strategic decisions of individual market players.

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Air Quality as a Priority Issue for the New Economy

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ABSTRACT

The article talks about the problem of air pollution. In the world, its economic, social, and environmental aspects are receiving increased attention. This trend is clearly visible in the example of the UN Sustainable Development Goals (SDGs), adopted by all countries of the world in 2015 with a horizon of implementation up to 2030. A significant part of the SDGs is directly or indirectly related to combating air pollution, which will improve the health of the population and life cities, mitigate climate problems, create a new energy sector, implement new technologies, etc. Here we can mention SDG 3 (health), SDG 7 (energy), SDG 8 (economic growth), SDG 9 (industrialization and innovation), SDG 11 (sustainable cities), SDG 13 (climate), SDG 15 (terrestrial ecosystems). In fact, we can talk about the formed "air" priorities in the transition to new economic models, primarily green and low-carbon ones.

Keywords: air quality; public health; pollution damage; low-carbon economy; climate; greenhouse gases; monitoring

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INTRODUCTION

In the global context, there is an increasing trend towards prioritizing human health in addressing air pollution issues. It has much to do with awareness of the significance of socio-economic harm and damage from environmental degradation for quality of life and human development. In addition to health, may be noted a variety of environmental and economic damage, negative externalities, higher economic costs associated with natural resource degradation and pollution. To the thesis "cannot be healthy in a polluted environment" can be applied economic interpretation: "be healthy in a polluted environment is very expensive", because the cost of preventing or treating diseases caused by environmental degradation is high.

Economic valuation of pollution damage is a complex problem, depending, in particular, on the correct monitoring and determination of the environmentally dependent proportion of the population's health. Global and national researches show that the majority of damage is caused by air pollution, and less damage from water and waste.

According to UN agencies, air pollution is the most important environmental contributor to the global disease burden, every year leading to the premature death of millions of people and large economic losses. Monetary valuation of global welfare losses due to this pollution is estimated at 5.1 trillion dollars (or 6.6% global product). Nine out of ten city residents breathe polluted air, i.e. air does not conform with requirements of the World Health Organization. Air quality has deteriorated since 2010, with more than 50% of the world's population breathing (shorturl.at/ovBO6, shorturl.at/irvyD) [1].

The World Bank estimates air pollution losses in Europe and Central Asia account for 5.1% of GDP, with a maximum of 7.5% in East and South Asia (http://hdl.handle.net/10986/25013).

The country's unsustainable export-commodity model of the economy is causing enormous social, environmental and economic losses, occurring, in particular, of high environmental pollution and detrimental harmful to public health. According to WHO estimates, in Russia can prematurely die due to air pollution up to 100 thous. people. (https://ourworldindata.org/grapher/number-of-deaths-by-risk-factor?country=~RUS). The President of the Russian Federation cited a dramatic figure of losses from environmental degradation: "In a number of directions, the pressure on nature has reached critical values. As a result, the annual economic damage reaches up to 6% of GDP, and, given the health effects — up to 15%" (http://kremlin.ru/events/president/news/53602). Taking into account that in 2010 the economic development of the country and its regions was about 1–2% of GDP/GRP, the need to radically change the socio-economic model of development, the identification of new priorities is obvious. A transition to a green economy and its different types is needed: low carbon, circular (closed cycle economy), blue, bioeconomy. This economic transformation is increasingly evident in the world, especially in relation to climate policy.

In Russia, air quality improvement can contribute to solving important socio-economic problems facing the country, in particular in the field of national projects in the fields of environment, health, demography, housing and urban environment. Addressing these challenges is also consistent with the growing role of the ESG priorities of organizations in the environmental and social fields of economic activity.

In the economic context, air pollution is closely linked to arising social damage, health damage and increased costs of protection, reduced productivity, external costs, necessity for significant investment in emissions monitoring and even more significant — emission reductions.

Reports by UN international organizations, World Bank, OECD, researches by foreign scientists give much attention to air emissions and air pollution.

According to OECD estimates, global economic losses due to premature mortality due to air pollution of fine-dispersed suspended particulate matter (PM) and ground-level ozone (O_3), exceed 1.7 trillion USD per year, which corresponds to about 3.5% of global GDP. Russian losses are estimated at 12.5% of GDP — the highest rate among OECD and BRICS countries [2].

World Bank estimates are even higher: PM air pollution causes losses in 2019, equivalent to 6.1% of global GDP for 93 billion days of living with disease and 6.4 million premature deaths (http://hdl.handle.net/10986/36501). For comparison, by December 2021, the COVID-19 pandemic claimed 5.2 million lives (https://coronavirus.jhu.edu/map.html).

Country analyses of economic losses from air pollution show high economic losses for both developed and developing countries. Damage to health due to air pollution from fossil fuel combustion alone for Russia is estimated at 4.1% of GDP [3].

Panel data research of 195 countries found that Russia (together with China, India, USA, Germany and Japan) — among the countries with the highest rates of economic loss due to premature mortality, effects-related PM2.5 and ozone. Russia's total losses by 2017 are estimated at 237 billion USD (in 2010 prices) [4].

Many works by foreign authors focused on address the problem with air pollution. Analysis of the results of regional air pollution abatement programmes shows positive economic effects. Implementation of the Air Pollution Prevention and Control Action Plan in Beijing 2014–2017 resulted in a significant improvement in the quality of life in the region, mainly due to lower health costs for residents. The positive economic impact of the five-year programme is estimated at 4% of GRP [5]. The focus of the program was on PM, which, according to another research, makes the most significant contribution to air quality in major Chinese cities [6].

Conclusions on the causal relationship between the content of fine-dispersed airborne particles and the productivity of labour on these EU countries data. Increase of PM2.5 concentration per 1 micrograms/m^3 in air leads to decrease of real GDP by 0.8% due to reduced labor efficiency [7]. The results are the basis for the conclusions that strict air quality management is justified at least to increase productivity.

Combating atmospheric pollution contributes to reducing emissions of CO_2, methane and other greenhouse gases, helping to cope with climate change. 29 October 2021 The Government of the Russian Federation was accepted "Strategy of socio-economic development of the Russian Federation with low greenhouse gas emissions until 2050", and President of the Russian Federation declared his intention to achieve carbon neutrality to 2060.

In 2020–2021, almost all countries with developed economies declared a transition to carbon neutrality by 2050–2060, which means radical structural and technological transformation to construction a new low-carbon economy.

Special attention is given to the economic effects of air pollution in the context of countries' climate policies. Reduced greenhouse gas emissions correlate with reduced concentrations of other pollutants in the air (PM, SO_2, NO_x, volatile organic matter, etc.). The net positive effect of reducing the concentration of harmful substances in the air as a result of limiting greenhouse gas emissions is estimated at +0.5% of GDP for India and +1.5% GDP for China to 2050 year. For developed economies, this collateral effect is somewhat lower [8, 9].

In domestic scientific literature has experience in economic valuation of environmental and air pollution losses. The works of S. N. Bobylev, O. E. Medvedeva, G. E. Mekush, E. A. Ryumina, S. V. Solovyeva, A. S. Tulupov, G. A. Fomenko are devoted to these issues [10–14]. According to E. A. Ryumina estimates, the damage caused by emissions from industrial sources ranges from 4% of GRP in low-development regions to 17% of GRP in high-development regions [15].

AIR QUALITY TRENDS

After the 1998–1999 crisis, in country was a significant rise in total emissions of pollutants into the air, however, in 2005–2014 there was a rapid fall. This is a positive trend, indicating a decrease in many indicators of pollution intensity and decoupling effects. The changes were the result of structural and technological changes and timely environmental and economic decisions in the economy. However, in a context of stagnating of the economy after 2014, this indicator is increasing due to mobile sources, mainly by road transport, while emissions from stationary sources have stabilized somewhat.

Pollution is strongly influenced by the lag in the technological base of the economy — depreciation of a significant part of physical capital and fixed assets, their high age.

Pollutant emissions are unevenly distributed throughout the Russian Federation. Most of them are concentrated in cities and near industrial centres. Therefore, it is very important for the country to take into account the regional factor in pollution issues. In 2020, air pollution was high and very high in 34 cities in the Russian Federation (15% of all cities of the country). These cities have 9.6 million peoples (9% of the urban population). For a year in 133 cities (53% of cities with observations) had average concentrations of substances exceeding 1 MPL. They have a population of 102.9 million people (*fig. 1*).

Every year in the country is compiled a list of cities which includes urban areas with very high levels of air pollution, for which the integrated Atmospheric Pollution Index (API) is equal to or higher than 14. Among them: Norilsk, Novokuznetsk, Irkutsk, Krasnoyarsk, Nizhny Tagil, Chita, etc.

Transport, mainly by road, contributes significantly to total emissions. This problem

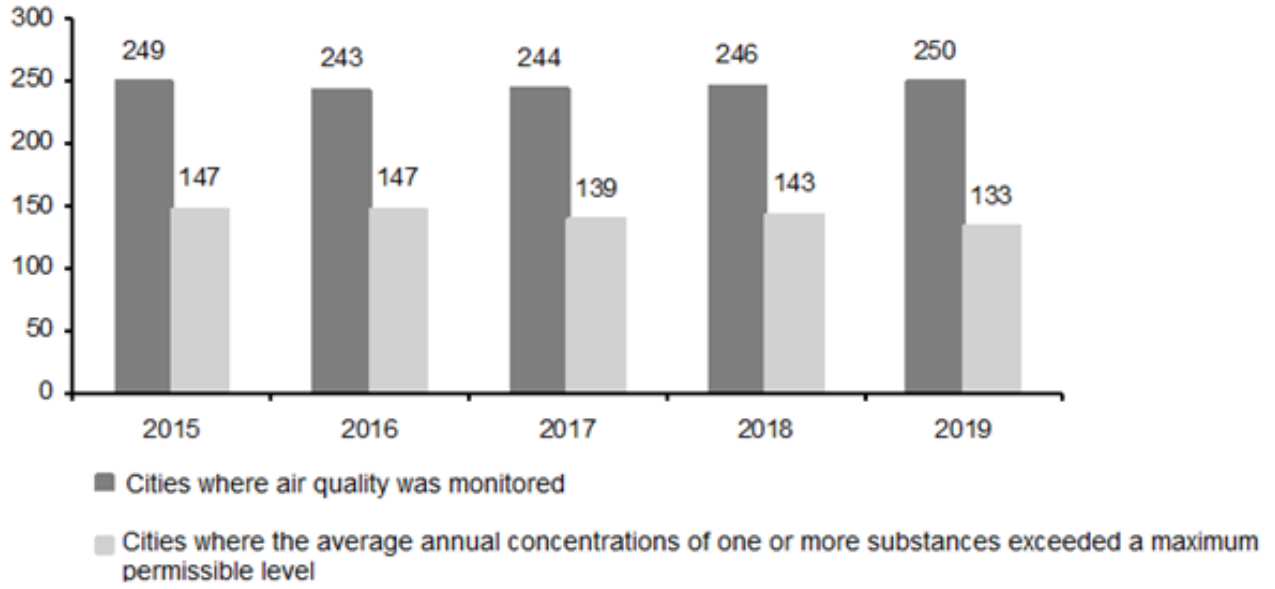

Fig. 1. **Cities suffering excess of the annual maximum permissible level of pollutants in the atmosphere, number of cities**

Source: Environmental Protection in Russia. Moscow: Rosstat; 2020.

particularly affects large cities where vehicle emissions may exceed 90% of total pollution (https://ac.gov.ru/files/publication/a/23713.pdf).

There is a significant regional variation in the distribution of air pollution by city. Currently, the urban population of the Siberian (55% of the population) and the Far East (25% of the population) of the federal districts suffers most from poor air quality. This situation contributes to the outflow of residents of these regions. The best environmental situation in the cities of the North-West and Volga federal districts.

There are many gaps and contradictions in air pollution statistics. In 2014, there was a significant relaxation of air quality standards, which led to a one-time reduction in the number of cities with high levels of pollution — from 123 in 2013 year to 51 in 2014 year. This softening has caused a mixed reaction of medical and epidemiologists. Since 2019, data on emissions from road and rail transport have been submitted by Rosstat taking into account the requirements of the Customs Union and OECD for environmental classes, quality and fuel types. As a result, emissions from mobile sources decreased almost on three times. However, correction of statistics is needed for comparability of data from different years and emissions.

AIR POLLUTION ECONOMICS

Macroeconomic and regional estimates of health damage relative to GDP and GRP were obtained in Russia in the early 2000s in the framework of the project of the Ministry of Nature, the World Bank and the Faculty of Economics of Lomonosov Moscow State University [16]. Based on health risk assessment methods, widely used in the world, health costs were calculated, resulting from air and water pollution in Russia, including morbidity and mortality factors. The model "EcoSense" developed at Stuttgart University was used in Russia for the regional assessment of damage to health from environmental pollution. It was used to assess damage (harm) from air pollution. Calculations based on this model showed that harm to health for environmental reasons can reach 8–10% of

GRP, in particular for the Ural regions and the Kemerovo Oblast.

More detailed calculations based on health damage data from selected air pollutants have recently become possible. Thus, the authors' calculations are based on researches by the British Department for Environment, Food and Rural Affairs (DEFRA) on pollutants NO_x, SO_2, NH_3, PM2.5 and PM10 show that valuation of air pollution damage in 2019 in Russia is in the range of 1.9–4.9% of GDP (2123–5415 billion rubles) (*table 1*). Indicators of statistical life cost (CLC) and purchasing power parities (PPP) for rubles were used for calculations.

Large-scale expansion of the monitoring network in the country is important to identify air pollution indicators and volumes. This will improve the identification of possible directions of pollution control and prevention of damage to public health [17]. Currently there are 619 posts in the Russian Hydrometeorology network, which is about 30% of the required level according to GOST 17.2.3.01–86 (Nature conservation. Atmosphere). It is estimated that the number of monitoring points in cities should be increased to 2 089, plus 7 947 to be installed in enterprises. Thus, the total number of points should reach 10 026, which will require 19.3 billion rubles taking into account the use of modern small-scale and economical monitoring posts, the trend of which is widely used in the world. This amount is summarized of monitoring costs in cities (3.2 billion rubles) and enterprises (16.1 billion rubles). It is obvious that even at the lower limit of the annual damage to the health of the population from air pollution (2,123 billion rubles), the cost estimate of 19.3 billion rubles for monitoring throughout the country is not significant (less than 1% of annual damage). The same conclusion can be made when comparing the planned costs of the federal project "Clean Air", which is implementation of measures to improve air quality in 2018–2024–500 billion rubles in only 12 cities.

It is very important to include estimates of air pollution damage in macroeconomic indicators. Modern traditional macroeconomic indicators (GDP, GNP, production, consumption, etc.) do not adequately address social and environmental realities and need to be adjusted or replaced to accommodate the transition to sustainable development. Aphoristic this problem was reflected in the title of the book by two Nobel Prize winners, D. Stiglitz and A. Sen in "Mismeasuring our lives: why GDP doesn't add up" [18]. One of the main conclusions of the book is the need to shift the focus of the system of indicators from the measurement of production to the measurement of well-being; while the measurement of well-being must be seen in the context of sustainable development.

Currently, in the field of economic assessment of health damage, there are private indicators related to individual pollutants, various economic standards, specific damage. For example, the World Bank estimates health damage for selected countries from dangerous emissions of fine-dispersed suspended particulate matter PM2.5, which, according to medical opinion, is an extremely dangerous air pollutant (https://data.world/worldbank/world-development-indicators). For the European and Central Asian group (as classified by the Bank), the rate is 19 micrograms/m^3. Russia has less PM2.5 in air — 17 micrograms/m^3, in general, the economic valuation of this value is very significant — 0.4% gross national income. In 2021 WHO had strengthened and reduced the average annual impact rate to PM2.5 from 10 to 5 micrograms/m^3.

The World Bank estimate is likely to be optimistic, since in Russia PM2.5 is monitored in only a few cities. In the country as a whole, the additional mortality due to this type of pollution is estimated by physicians in 68–88 thousand cases a year. Particularly high morbidity due to PM2.5 pollution is observed in Siberia and the Far East, where the fuel balance structure is dominated by thermal

Table 1

Cost estimates of damage from air emissions in Russia (2019)

Pollutant	Damage assessment with CLC, billion rubles	Damage assessment with PPP, billion rubles
Nitrogen oxides NO_x	178.3	454.8
Sulphur dioxide SO_2	232.9	594.1
Ammonia NH_3	7.1	18.0
PM2.5 and PM10	1705	4348
Total, billion rubles (% of GDP)	2123 (1.9% GDP)	5415 (4.9% GDP)

Source: authors' calculations based on Air quality damage cost guidance. DEFRA; 2019. URL: https://www.gov.uk/guidance/air-quality-economic-analysis#damage-costs-approach.

Note: the share of Russia's GDP is calculated based on the 2019 GDP 109,242 RUB bln. URL: https://rosstat.gov.ru/accounts

coal. In Chita, for example, the share of this fuel reaches 95% in the fuel balance. The World Health Organization estimates that in China, people in the metropolis live 5–6 years less than those living in clean areas; coal combustion is primarily responsible for this difference. It can be assumed that Russia's "coal" losses for health account for tens of thousands of years of healthy life.

AIR QUALITY REGULATORY INSTRUMENTS FOR RUSSIAN CITIES

For quality monitoring it is necessary to provide appropriate control equipment about 8 thous. enterprises (at least one monitoring post per significant production platform), as referred above. This is largely due to the implementation of the concept of the best available technologies (BAT) in Russia from 1January 2019, world-wide for the past 20–30 years. This concept has two important criteria: Such technologies minimize environmental impact and are economically accessible. Already identified 300 of the most polluting enterprises, which by 2022 should complete the transition to BAT and obtain comprehensive environmental permits, and by 2024 all industry should adopt these technologies. Such trend sharply increases the requirements for pollution monitoring at enterprises and will require more than 16 billion rubles.

Radical improvements in air monitoring, including satellite monitoring, are required for ecosystems and their services. Russia has huge areas of forests, swamps, steppes, etc., which, because of their assimilative capacity, play a crucial role in ensuring clean air at all levels: local, regional, national, global. Only the regular fires in the forests on the territory of our country, primarily in Siberia and the Far East, cause huge air pollution and increase in the morbidity of the population. Here, first of all, it is necessary to note the huge volumes of fine-dispersed particulate matter PM2.5 and PM10. We can recall the burning swamps in the Moscow region in 2010, that resulted in additional mortality of 11 thous. people (https://www.the-village.ru/city/situation/105137-zhara-i-smog-ubili-11-tysyach-moskvichey-sverh-normy). In 2020, a huge forest area of 9 million hectares was affected by fire (according to some estimates, this figure is low halved) (https://greenpeace.ru/news/ 2021/08/16/2021-god-stal-rekordnym-po-ploshhadi-pozharov/); mega-fires were also observed in 2012, 2016, 2018 and 2019 years (shorturl.at/duAE 6).

The need for adequate air monitoring has been heightened by the pandemic COVID-19.

Air pollution of fine-dispersed particulate matter PM2.5 may be related to the rate of spread of the virus COVID-19 [19]. Results of pilot research by the Harvard School of Public Health on estimating deaths from the disease in human settlements published in 2020, where 90% of the population lives, showed the relationship between mortality from COVID-19 and the concentration of PM2.5 in the air. If the concentration of these particles increases by 1 micrograms/m^3 mortality increases by 15%.

In terms of funding directions is rather problematic the federal project "Clean Air", included in the national project "Ecology", with the selection of priority 12 polluted cities, for which it is expected to spend 500 billion rubles. The selection was based on total emissions but did not take into account ambient air pollution levels and the level of pollution hazards. An important economic principle of "polluter pays" was also violated. Probably only for Chita, where there are no major industrial and energy facilities, federal funding is really needed, and the remaining 11 cities have the largest Russian companies, which are well placed to co-finance environmental projects and monitoring within the framework of public-private partnerships.

Payments for adverse environmental impacts remain an important economic tool for air quality management. The current basic rates for emission ingredients are set by the Government in 2016, followed by the calculation procedure: resolution of the Government of the Russian Federation from 13 September 2016 No. 913 (ed. from 24 January 2020) "On rates of charging for negative impact on the environment and additional rates"; resolution of the Government of the Russian Federation from 03 March 2017 No. 255 (ed. from 17 August 2020) "On calculation and charging for negative impact on the environment" (together with "Rules of calculation and charging for negative impact on the environment"). Adjustment coefficients introduced to stimulate the introduction of BAT: coefficient 0 when switching to BAT, coefficients 25 and 100 — depending on the object category and emission limits achieved: resolution of the Government of the Russian Federation from 31 December 2020 No. 2398 (ed. from 07 October 2021) "On the approval of criteria for the classification of objects with adverse environmental impact to objects I, II, III and IV categories".

The system of payments for negative impact on the environment was established in the Russian Federation in the 1990s to encourage nature conservation and compensation for damage caused by environmental pollution. However, low payments are not sufficient to compensate for losses and stimulate environmental protection. The current payment system performs mainly fiscal functions as a revenue item to the regional budgets.

In 2020, payments for negative environmental impact amounted to 14.5 billion rubles, or 2% of payments for the use of natural resources. Since the significance of the payment for the federal budget is low, it has been transferred to the budgets of the constituent entities of the Russian Federation. The payment for air emissions in 2020 was 2.5 billion rubles (*table 2*).

Payments for a negative impact on the environment reached maximum value in 2015 — about 27 billion rubles and in subsequent years decreased. Receipt of funds as reparation to the environment, stopped in 2020, apparently due to a pandemic (*table 3*).

In general, it should be recognized that the current system of payment for emissions does not serve as a stimulus or fiscal function for the federal budget of the country.

AIR QUALITY MANAGEMENT AND CLIMATE POLICY

Strategy for socio-economic development of the Russian Federation with low greenhouse gas emissions up to 2050, adopted by the Government in October 2021, is an important stage in the implementation of Russia's

Table 2

Payments for negative impact on the environment in the state budget of the Russian Federation, million rubles, 2020

Payments	Consolidated budget of the Russian Federation	from it	
		Federal budget	Consolidated budgets of constituent entities of the Russian Federation
Payments on the use of natural resources	630520	593463	37056
Payment for a negative impact on the environment of which:	14484	0	14484
Payment of air emission	2445	0	2445
Payment of water discharge	2704	0	2704
Payment for accommodation waste	8902	0	8902
Emission payments for associated gas combustion	431	0	431

Source: Consolidated budget of the Russian Federation and budgets of state extra-budgetary funds. 2020. URL: https://roskazna.gov.ru.

Table 3

Payments to the consolidated budget of the Russian Federation for negative impact on the environment, billion rubles

Payment category	2007	2010	2015	2016	2017	2018	2019	2020
Payment for a negative impact on the environment	16.9	20.5	26.8	22.2	14.2	13.1	13.1	14.5
Compensation for damage to the environment	0.09	0.05	1.02	1.86	2.07	1.73	2.30	0.01

Source: On the state and protection of the environment of the Russian Federation in 2020. State report. Mscow: Ministry of Natural Resources of Russia; 2021. (In Russ.). State report "On the state and protection of the environment of the Russian Federation in 2010". Moscow: Ministry of Natural Resources of Russia; 2011.

climate policy and transition to a new, green, low-carbon model of economy ("Strategy of socio-economic development of the Russian Federation with a low level of greenhouse gas emissions until 2050". Approved by the Order of the Government of the Russian Federation from 29 October 2021 No. 3052). Thirty-year planning horizon provides a framework for projection of atmospheric emissions. Two main options for the development of the country's economy are assumed: inertial and intensive. Estimates of

Table 4

Greenhouse gas emissions scenarios in Russia (in million tons of carbon dioxide equivalent, CO_2eg) for the period 2019–2050

Emission changes actor	Inertia scenario	Intensive scenario
Change in emissions, excluding ecosystems including factors of:	+ 464	–356
Growth of GDP	+ 924	+ 924
Electricity	–217	–455
Capture technology CO_2	0	–150
Transport	0	–108
Other sectors	–243	–567
Carbon sequestration of ecosystems	–320	–965
Change in ecosystem emissions	+ 144	–1321

Source: Compiled by the authors based on the data of the project «Strategy of socio-economic development of the Russian Federation with a low level of greenhouse gas emissions until 2050».

Note: Plus sign denotes an increase in emissions; minus sign denotes a decrease in emissions.

greenhouse gas emissions change depending on the contribution of various factors. Most significant factor remains GDP growth — more than 900 million tons CO_2-eq. Compensating factors are the energy efficiency of electricity, transport and other industries, as well as technologies for capturing greenhouse gases. Carbon sequestration by ecosystems is becoming the most important factor.

In inertial scenario, emission reduction CO_2 does not occur, in contrast, emissions are projected to increase by 21.8% from 2050 compared to 2019, excluding ecosystems, including a 43.6% increase in emissions due to GDP growth and a 21.7% decrease in emissions due to energy efficiency measures.

Intensive scenario assumes emission reduction CO_2 by 16.8% from 2050 compared to 2019 excluding ecosystems. GDP growth will offset energy efficiency measures on emissions. The main reduction in emissions — 62.3% by 2050 compared to 2019 — is achieved at the expense of ecosystems (*table 4*).

Dynamics of greenhouse gas emissions in retrospect also demonstrating, that the main factor is the change in production volumes. Analysis of greenhouse gas emissions over the period 1990–2020, especially excluding land use and forestry, the falling trend in 1990–2000 is clearly visible, rising trend in 2000–2008, decline during the global financial crisis 2008–2009, growth in the recovery period 2010–2014 and subsequent stabilization. Accounting for greenhouse gas sequestration in agriculture and forestry reduces emissions but does not change major trends (*fig. 2*).

Extrapolation of the greenhouse gas emission projection from the total input of pollutants into the atmosphere demonstrates the relevance of air quality management measures. Especially the inertial scenario of The Strategy (*table 4*), which shows that technological change alone is not sufficient to offset emissions growth, by increasing GDP and production.

International climate policy includes carbon market management mechanisms:

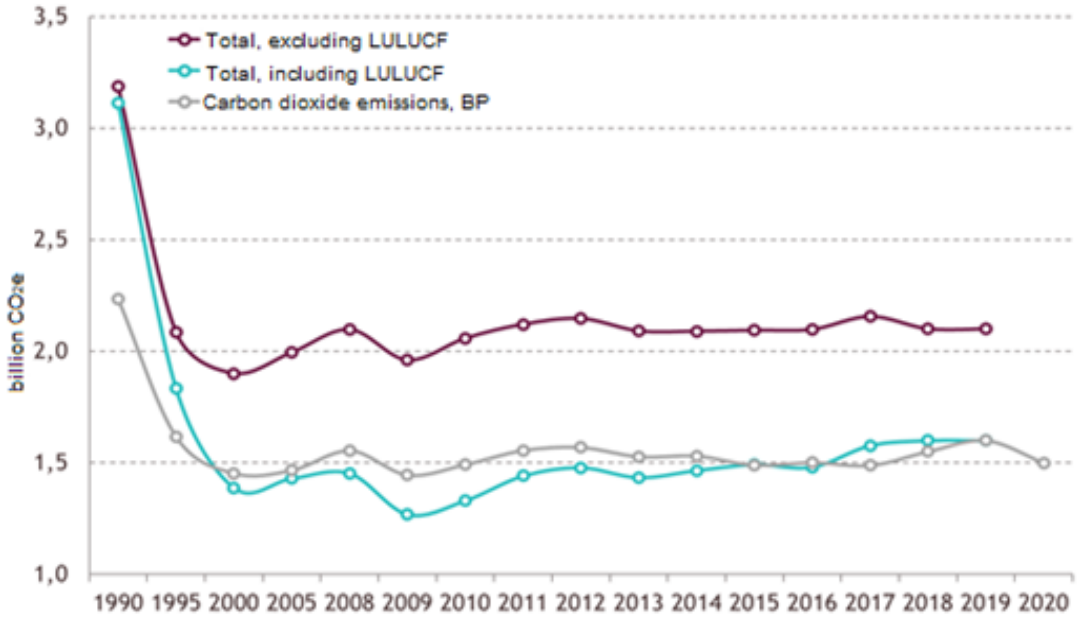

Fig 2. **Emissions of greenhouse gases in Russia for the period 1990–2020. (LULUCF — greenhouse gas emissions and removals associated with land use and forestry)**

Source: compiled by the authors from the online database of Rosstat, BP.

greenhouse gas emission payments, emissions trading system. At the international and national levels are established carbon trading exchanges ETS (Emission trading scheme — greenhouse gas emissions trading scheme).

Climate policy implementation created a market for carbon emissions: первоначально — quasi-market, and now — the real market. The theoretical basis became the work of the Nobel laureate Nordhaus, in which establish social cost of carbon (SCC) as the ultimate social damage from emissions of additional tones CO_2 into the atmosphere. The indicator is determined as a result of modelling the influence of greenhouse gas emissions on economic and geophysical systems. Conservative estimate was 40 dollars/tones CO_2 [20]. Updated calculations using the same model estimated 100 dollars/tones CO_2 and higher taking into account refined damage from climate change [21]. Climate economics is also at its core on research led by N. Stern (2006 r.), in which the economic cost of climate change is estimated at 5% of world GDP [22].

In 2020, 44 countries and 31 regions and cities applied non-zero prices for greenhouse gas emissions ("carbon prices") in the form of a carbon tax or various emissions trading schemes. Carbon prices ranged from 1 to 123 dollars (114 euro) per 1 ton CO_2. More than 75% of price-controlled emissions had a price below 10 dollars (8–9 euro) (http://hdl.handle.net/10986/32419) [23]. In the report of the High-Level Commission on Carbon Pricing (2017) N. Stern and J. Stiglitz recommended an estimate of 40–80 dollars/tones CO_2 in 2020 and 50–100 dollars/tones CO_2 in 2030 in order not to exceed the increase in global temperature by 2 °C [24].

In the new environment, coordination of environmental and climate policies, in particular measures to control atmospheric emissions, is desirable.

Adopted Federal Act of June 2021 "On limiting greenhouse gas emissions", which established the accounting, reporting and inventory of greenhouse gas emissions, a carbon unit as a property right provides the basis for the development of instruments to regulate greenhouse gas emissions into the atmosphere (Federal Act of 02 July 2021 No. 296 "On limiting greenhouse gas emissions").

Because reducing emissions to the atmosphere also reduces greenhouse gas emissions, and environmental protection contributes to the fight against climate change, may introduce a payment for greenhouse gas emissions, supplement or change the current composition of emission payments, optimize the list of controlled substances, enhance the incentive of payments. With 2.1 billion tons of greenhouse gas emissions (2019) establishment of a rate of 1 euro /tones CO_2 (85 rubles/tones CO_2) will generate revenues that are 100% higher than the current air emission fee in the consolidated budget of the Russian Federation.

Improving environmental and climate regulation stimulates the growth of the low-carbon economy. Calibration of economic instruments will contribute to the modernization and restructuring of emission payments, which will reduce administration costs.

CONCLUSION

Russia's commodity export economy is causing high levels of environmental pollution and significant damage to public health. The authors' calculations showed that the cost of air pollution damage could be as high as 5% of GDP.

Russia's stated orientation to transition to a low-carbon economy in 2021, achieving carbon neutrality and reducing greenhouse gas emissions requires a radical transformation of the unsustainable pattern, which has shown itself in stabilizing greenhouse emissions for 2000–2020. The world has essentially two carbon management mechanisms: greenhouse gas emission payments and emissions trading system. Russia will also have to incorporate the "price of carbon" directly or indirectly into economic decision-making.

The analysis showed that the existing air quality management presented by the system of payments for adverse environmental effects, does not create incentives to reduce emissions of pollutants into the atmosphere. In order to achieve a comprehensive and balanced management of air quality, it is necessary to carry out technological modernization, improve statistical support and significantly expand the monitoring network.

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S.N. Bobylev — development of the general concept of the article.
S.V. Solovyov — analysis of Russian research.
M. Astapkovich — nalysis of foreign studies.

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Changing the Model of Servicing Corporate Customers by Banks

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ABSTRACT

The author examines the peculiarities of the work of banks, the regulatory and competitive pressure on which has increased significantly in the last 10 years, that negatively affects their profitability of their activities. The purpose of the study is to find the optimal model for the interaction of universal banks with corporate clients, which provide most of their income and profits. The theoretical and methodological basis of the study was the scientific works of foreign scientists and experts on improving the efficiency of banks' services to corporate customers. Methods of qualitative and quantitative analysis of scientific publications, analytical materials of well-known consulting organizations, and statistical data were used. As a result of the study, the author concludes that in a significantly more complicated and unstable macroeconomic environment, it is expedient and beneficial for banks and companies to reconsider the nature of cooperation and proposes a new model for servicing corporate clients by banks, in which each party will deepen its specialization.

Keywords: efficiency; business model; creation of additional value; comprehensive service

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INTRODUCTION

Strengthening the reliability of banks, through which funds flows, that are absolutely necessary for the healthy functioning of the economy, is a priority for regulators of national and global banking systems. Sustainability of banks is achieved by increasing their capital adequacy, increasing reserves to cover possible loan losses, creating liquidity buffers, strengthening the awareness of their customers and combating fraud in banking transactions. All these activities require additional costs. At the same time, new digital players are trying to take part of business from traditional banks, offering customers banking services that are cheaper, more convenient and faster performed. As a result, the banks' strategic base for profit generation is reducing, which makes us wonder how to expand it.

ON THE CURRENT STATUS OF THE BANKING INDUSTRY

Following the 2008–2009 financial crisis, banks significantly strengthened their capital base under pressure from regulators, create liquidity buffers and reserves for possible loan losses, which allowed the most profound phase of the current economic crisis to be successfully completed. Global average for the banking industry Tier 1 capital adequacy in relation to risk-weighted assets in 2021 stood at 11%, which is lower than the 12.5% in 2019, but significantly above the standard Basel III — 4.5%. Within 15 years until 2020, the global banking industry has managed to increase revenues from 3 to 5.5 trillion USD and profit from 0.8 to 1.5 trillion USD, however, failed to achieve a return on bank capital above its value for the shareholders of credit institutions (about 12%): the actual return on capital invested in banks

in the world averaged in 2019–8.9%, which is approximately the same rate for the last 10 years, and is expected to recover to the pre-crisis level closer to 2024 after decline in 2021 [1].

True, the largest American and European banks (as well as the Russian Sberbank) benefited from the economic recovery that began in the second half of 2020, and their profit for 12 months to July 2021 were the highest in history, as for example at JP Morgan, Goldman Sachs and Morgan Stanley, and the biggest ones over the past decade at UBS, Barclays and Deutsche Bank.[1] This is not typical for the entire banking industry and rather reflects the ability of major credit institutions to attract and retain private and corporate clients with a wide range of services, to support them with loans and activities in the capital markets, because such clients concentrated their operations in the most reliable credit institutions as they wanted to avoid the risks of working with smaller banks. All this affected the capitalization of the entire banking industry, which by Q2 in 2021 has almost returned to pre-crisis indicators,[2] and return of bank shares for 15 months to the end of May 2021 globally amounted to 12%, but it cannot compare with the return on investment in companies of most other industries, which ranged from 20 to 55% in this period [2].

There are three intra-industry factors that affect the competitiveness of credit institutions in terms of return on capital relative to other sectors of the economy:

- strengthening and expansion of regulated banking activities and regulatory efforts to increase competition in the market for certain banking services (first of all, retail), involving non-bank organizations for consumer benefit, which leads to higher costs for banks and at the same time encourages banks to improve their operations;
- emergence of digital banks not burdened with multiple branches, as well as fintech and large technology companies, which, using modern technological solutions and means of communication, try to provide services mainly in the retail banking and small business segments (often — in a very narrow range of services in those areas where traditional banks are not prepared to compete with them by price, speed and convenience);
- preservation by traditional banks of outdated business models and in-house technological solutions, orientation on banking products, rather than on customer satisfaction by solving their problems with bank's assistance.

Regulators' position on tightening requirements for banks in terms of capital adequacy and lending objects, and parallel provision of opportunities for non-financial entities to conduct certain banking transactions, have encouraged many customers to seek non-bank funding for their activities. So, according to PwC, over the past 10 years with the total amount of funding mobilized annually from 69 to 79 trillion USD, share of bank loans fell from 52% to 48%,[3] i.e. has stagnated in absolute values. However, the introduction in 2022 of new risk calculation standards Basel IV for all active balance sheets may require additional capital injections by banks and affect traditional banking models of lending to customers, since only to maintain the current return on capital will it be necessary to increase gross return by 7.5% [3].

Of course, the banks are not inactive in improving their profitability: while in 2010 cost-to-revenue ratio in the industry was 67%[4] globally, then in 2019 it improved to 54.4%. But this is not the limit: costs of banks, working on digital format only, may be 70% lower than traditional lending institutions [1]. When

[1] Global Banks $ 170 Billion Haul Marks Most Profitable Year Ever. Bloomberg, August 03, 2021. URL: https://www.bloomberg.com/news/articles/2021–08–03/global-banks-170-billion-haul-marks-most-profitable-year-ever

[2] URL: https://www.statista.com/statistics/265135/market-capitalization-of-the-banking-sector-worldwide/

[3] Securing your tomorrow, today. The future of financial services. Pw C. 2020:27.

[4] Tightened belts loosen due to income crisis. The Banker. July 06, 2010. URL: https://www.thebanker.com/Banker-Data/Banker-Rankings/Tightened-belts-loosen-due-to-income-crisis

analyzing bank income, it should be noted that the share of bank commission earnings in the world is gradually decreasing. For example, the commission revenue share of the 700 largest global banks by capitalization in the world declined from 45 to 37% of total revenues between 2006 and 2020 (including net interest income) [3]. Banks develop commission income possibilities, but, obviously, part of such income, especially in payment transactions, increasingly goes to digital competitors (the work of only non-bank organizations contributed to its decline in banks by about 20% over the past 4 years [4]), whose activity is encouraged by regulators, while income growth in other segments is insufficient. At the same time, ever new restrictions imposed by regulators on bank credit products reduce the prospects for bank credit expansion and the growth of the corresponding interest income, although the basis for it in terms of increasing capital has already been created.

These circumstances, which are changing the banking environment, lead to the conclusion that banks need to adapt their business models to new conditions and find other ways to create value in the intermediary activities that banks are engaged in to meet the goals of their customers (lenders and borrowers). In addition, it must be taken into account that with growing capital, even stable returns reduce the return on this capital. As a result, it turns out that, while strengthening the stability of banking institutions in the face of economic crises, and without a change in the business model, banks will not be able to match the return on investment, which companies in other industries offer (or approach to), and, consequently, they will find it increasingly difficult to attract new capital, thus reducing their reliability as a key characteristic of one of the pillars of the market economy.

ON THE ATTRACTIVENESS OF CORPORATE BANKING

According to McKinsey, of the global banking industry's total revenue of 5.5 trillion USD in 2019, retail operations have brought 1949 billion USD, banking support of corporations (corporate and commercial banking) — 1653 billion USD, payment operations — 788 billion USD, state and asset management — 739 billion USD and capital market operations — 390 billion USD [1]. These segments differ significantly in profitability: cost-to-income ratio in the retail business in 2019 was 62% (data for Europe only) [5], in the corporate banking sector — 45–49%, in the investment sector — 62% [6]. From the point of view of generating profit per unit of income, the attractiveness of corporate banking is obvious compared to retail banking, in which margins are higher, but the risks and expenses of traditional banks for maintaining branches are also higher: the first creates 876 billion USD of additional value, and the second — 740 billion USD. And if the corporate segment of banks is combined with the investment segment (since it takes into account servicing large companies along with services in the capital markets), then comprehensive business servicing brings banks 1024 billion USD of added value (author's calculations). In the payment business, which is one of the most competitive segments of banking activity, more than 70% of revenue comes from the retail segment (author's calculations based on [7]).

Thus, complex servicing of corporations is not only the largest segment of banks by revenues, but also the most profitable. However, there is very strong pressure from regulators on the banking sector (to ensure the reliability of the banking system as one of the key structural elements of the economy of any country, and because the banks servicing business attract deposits of the population), as well as from digital competitors who are trying to infiltrate not only the retail operations of banks.

At the same time, priorities of corporate banking clients are changing, financial departments of which are increasingly focusing on performance analysis and development proposals to improve efficiency and competitiveness of its own companies.

The work of payment and credit provision of corporation's acitivity and the respective risk management, which in itself does not create added value for companies, does not provide qualitative differences in goods and services, which companies offer on the market, but requires a decent cost to finance (on average about 1% of revenue). Therefore they see it now as a by-product of their core business, not determining their competitive position in the market. It may therefore be appropriate for companies to outsource this work to professionals in the field, which are credit organizations, if the latter are ready and able to provide companies with the appropriate service [8].

Obviously, that banks should be interested in strengthening linkages with their corporate customers, if this gives them a chance to earn more, since credit institutions for the most part are still far from achieving a return on capital above its value to shareholders. In this regard, it may be useful to consider opportunities, which banks have to develop the revenue base in this segment to help improve their overall profitability.

It should be noted, that engaging digital competitors in retail banking operations, an important advantage of which is the lower price of the respective service, makes traditional banks compete with each other on this indicator, that, reduces their overall income pool from retail activities, if they do not come up with new sources of income in this field of activity or find new opportunities in business servicing. The corporate business of traditional banks is not yet under such pressure from digital competitors in terms of lending (except of SME), but in provision of payment and risk management services, fintech and large technology companies are making serious efforts to obtain a share of commission income from this business, which traditionally belonged to the banks. For example, in total revenue from financing global trade in 46 billion USD in 2019 share of payments on an open account (without participation of bank in documentary confirmation of delivery) amounted to 46%,[5] of which non-bank financing already accounted for 38%, with the expected increase over the next five years to 50%.[6] That is why, and taking into account the above circumstances, banks need to take steps to increase interaction with corporate clients in order to strengthen their franchise with them, preserve and further increase their revenues and profits by reaching a new level of relationships that will allow this group of clients to focus more on their own development, managing, but not engaging in the operational management of payment and credit operations and related risks, services for which can be provided by outsourcing banks.

THEORIES OF RELATIONSHIPS BETWEEN BANKS AND CORPORATE CLIENTS

This conclusion makes to consider the existing theoretical substantiation of the relationship between banks and corporate customers in order to better understand how they fit into the changed circumstances of banks' activities and companies' priorities.

First of all, it should be noted, that the role of banks in society is determined by their ability to securely hold temporarily free funds of legal entities and individuals and to credit those who have a temporary shortage of cash resources. To be able to store money and pay interests for its use, banks must find sources of revenue, such as payment fees and other risk-free services provided to customers, as well as interests on loans and other income from the bank's risky operations. Thus, value creation for the bank consists in the art of risk management and in ensuring efficient standard payment operations by improving internal processes.

In the role of a lender, the main task of the bank is to assess the risk of non-return of

[5] 2020 ICC Global Survey on Trade Finance. International Chamber of Commerce. July 2020:126.

[6] How corporate banks can ride the disruptive. E&Y. August 31, 2020. URL: https://www.ey.com/en_gl/banking-capital-markets/how-corporate-banks-can-ride-the-disruptive-wave-of-global-trade

money by the borrower, to establish such loan conditions under which it will be advantageous for the borrower to repay the loan and pay all interests on it, that creates the basis for making a profit and increasing the value for the bank. The effectiveness of credit work largely determines the bank's reliability and creates the prerequisites for strengthening the base of its liabilities, attracting more funds in the form of account balances and deposits. On the other hand, the very offer of products and services demanded by the market does not create a competitive advantage for the bank, because there are many other providers of the same service on the market. It is important how the bank ensures the realization of the client's goals through access to its products. Moreover, the client does not care what kind of product the bank has, the main thing is that the bank's service on competitive terms lead the client to his goal. Thus, the bank's main objective is not product development and its cross selling, but achievement of the client's goal with the help of the bank's payment and credit provision combining with the relevant risks management, if the client does not have the time, willingness or qualifications to undertake such work or considers this work non-core for his activity. Therefore, value creation by a bank is only possible and feasible by creating value for the consumer.

It is important to note, that in the mass product market such as retail banking, product availability, price and terms of consumption prevail over the importance and character of the client's relationship with the bank. In corporate banking, terms of cooperation with the bank become no less important for companies than the bank's product range and its price characteristics.

Increased competition in the banking market resulted in the standardization of many banking products, reduction of its price, and increased ease of use (one might say, their commoditization), making it more difficult for consumers to differentiate between individual banks. Therefore, the next stage of competition is not increasing the bank's recognizability, who sells standard products (what is expensive and difficult to do with small chances of success, which can be short-term), but the influx of new customers and the retention of existing ones with new profitable services, which is not an easy task.

Theoretical studies of banks' relations with corporate clients were determined by the need to answer the question: how can the bank benefit from such a relationship? Therefore, the initial development of the topic focused on the functional aspects of the relationship between bank and corporation (attracting deposits and providing credit and other services) [9]. In parallel, the issue of eliminating the information asymmetry that exists between the lender and the borrower was examined.[7] Accordingly, the first approach is called transaction relationships (transaction banking) — one-time transactions and obtaining information about the client by the bank limited to public data. Competition for a larger share in the customer's operations has forced banks to move towards closer relations with non-financial sector companies, which enabled them to obtain confidential information about their activities, to better assess risks and, on this basis, dare to increase the volume and expand the product range of operations with them. This approach has become known as a banking service based on a trusting relationship between the bank and the company (relationship banking) [10, 11]. At the same time, the proposal to strengthen the role of banks before intervening in the current affairs of the company (both in Japan and partly in Germany [12]) was not viable due to banks competition for customers and companies' desire to optimize their respective costs, dividing business between different banking structures [13].

Relationship banking theory assumes that multi-level personal contacts of bank and

[7] Diamond D. W. Financial Intermediation and Delegated Monitoring. The Review of Economic Studies. 1984;51(3):393–414.

company managers (in addition to using the fruits of the information and technological revolutions, which allow you to learn a lot about the object of interest without personal communication) will fill the information vacuum of both sides on the current situation, will create a base for servive of the customer and sales of various banking products, as well as a help the client during economic crises or in the implementation of long-term perspective projects [14, 15]. However, the parties do not sign any formal documents under the terms of such cooperation, leaving the possibility for each of them to change their affection due to different circumstances, that, in addition to the potential benefits to one side in a change of partner, threatens the other side with loss of business and opportunities together with the risk of disclosure of confidential information obtained through cooperation. It is correct to assume that binding a company to one bank, even in many-way relationships, can narrow the company's choice in terms of the product range and the cost of banking services. However, specialized studies prove that the profitability of companies focused on such relationship is higher than that of companies with a large number of banking partners [16]. Moreover, too much competition de-motivates banks to establish such a relationship with companies, require large investments in the creation of the infrastructure to work with them, due to the high probability of a corporate client changing the banking partner [17].

This theory explains the interest of banks in the relationship with corporate clients in terms of increasing revenues from the sale of their products and creating value for the bank. But it does not take into account the position of companies in relation to payment and credit operations and management of the respective risks, that has changed significantly recently. This is because the non-financial sector has increasingly seen the financial function of companies as a non-financial reporting activity, as well attracting and putting money, but as a work primarily aimed at identifying within the company the reasons for improving its efficiency in internal processes, the products it manufactures, its relationships with suppliers, buyers, employees, shareholders and community, which no one else will do and which determines its competitiveness in the relevant market and creates value. In this context, the company's payment and credit operations support its core activities, but do not distinguish a company from others in the fight for the consumer of its products. It cannot be said, that companies lost interest in payment and credit operations and management of the related risks. They simply become non-priority in terms of achieving the main goals of the company, require serious costs and highly qualified specialists, and therefore it turns out to be desirable to transfer their processing to specialized organizations. Probably banks have not yet fully realized the change of priorities of their corporate clients, and therefore their business models are mainly focused on selling their individual, although and complex, products, rather than on an integrated partnership with companies to provide the necessary payment and credit operations and management of the related risks through formal arrangements.

CORPORATE CUSTOMER BANKING MODELS

Models of cooperation of banks with corporate clients are determined by the goals that banks want to achieve. The main ones: increased profit and return on capital, taking into account the opportunities available to credit organizations through the sale of bank-generated products to customers, reducing costs to improve its ration to income, countering aggressive attempts of digital competitors to take part of banking business, accelerating innovation and meeting complex customer requirements. Working in these directions influences the entire value chain of banks, which includes contacts with customers, banking products (with and without taking risk

on the bank's balance sheet), sales channels, availability of resources (monetary and intellectual), brand and history of customer relations, operational processing and supporting the bank's core business functions.

In modern conditions, the achievement of these goals is accelerated by implementation of emerging technological solutions, which improve the efficiency of each bank's activity. For example, in-depth analysis of customer needs contributes to income growth, identify a range of products and services beyond those already provided and offer existing and new, when they are needed by the client, at the optimal price for the bank and the client. Models of predictive analytics provide an opportunity to identify and significantly reduce possible risks in the activities of the bank and the customer. Integrated automation of processes organized on new technology platforms, is contributing to the simplification and accelerates transaction processes, increases their reliability and, therefore, lowers transaction costs. Innovations allow to qualitatively improve the management of liquidity and capital, provide for the client transparency of operations in real time. The digital transformation of banking transactions is clearly reflected and increasingly articulated in the assessment of these service providers by the market: for example, in October 2021 the ratio of the capitalization of universal banks worldwide to the book value of their capital was on average 1.0 and has been falling at a rate of 5% per year for the last 5 years, while the non-bank entities specializing in servicing retail customers had these rates 1.8 and it has been raising by 31% annualy, herewith the organizations dealing with payment only had these indicators as 8.5 and +66% respectively [18].

These data are also consistent with the results of the global survey of the consulting company Accenture, which showed that in 2020 only 12% of traditional banks actually adopted digital technology as the defining architecture for their business model, at the same time 38% of them were just on track to reach this goal.[8]

Since far from everyone is able to work effectively at all links inthe value chain, the following models of interaction between banks and business can be identified:

- Confidential consultant, when the bank, having won the client's favor by deep knowledge of his business and the industry in which he works, offers advisory services to support a particular business, in which the bank's own products or the products of third-party providers play the role of tools to accomplish the task of increasing the income from this customer. That is, the focus is on earning more commission than on interest income on risky transactions.
- Product specialist, developing innovative products, demand of which is determined by the best market ability to meet the specific needs of the customer by price/quality ratio, allows it to gain market share even with high prices. Specialization on individual products provides an efficient cost-income ratio for the bank and a large market share because of their novelty and high demand.
- Transaction banks focus on economies of scale from selling standard banking products or low-cost solutions.
- Universal banks try to offer their products to customers in all industries and segments of banking, diversifying risks and expanding sources of revenue in an attempt to reduce costs by increasing the number of customers.

The existing models of relations between banks and corporate clients are primarily aimed at selling their products on individual requests, rather than at a comprehensive solution of the problems that customers have. These models consider corporate clients as buyers of various banking services, there is no desire to move to a new level of service, which would mean

[8] Banking as usual. Banking industry narrative. Accenture. August 2021. URL: https://images.info.accenture.com/Web/ACCENTURE/%7B23aa3f91-cdac-4119–8e63–506e4e36b34e%7D_Accenture-Banking-Global-Industry-Outlook.pdf?elqcst=272&elqcsid=1168

removing technical problems from companies, related to payment and credit operations and management of related risks, which would allow companies to focus on improving their core business.This change in interaction does not mean of course that all risks are passed on to banks, rather the opposite: banks undertake such work after thorough study of the client and his industry, determining the need for payment and credit support for its activities and the associated risk parameters, where the bank provides appropriate support to such a customer.

As an example of the effectiveness of such a business model is a life-cycle contracts for the construction and maintenance of infrastructure in Moscow, where the city government's mission is to create a comfortable living environment for residents, rather than solving the problems of infrastructure facilities, which are a tool for achieving this goal. Under such contracts, the producer/supplier of an infrastructure facility (trains, roads, etc.) has to take care of more than just its sale, but also by removing from the city authorities of the burden of issues of management and operability of a non-core facility for them during the entire predetermined period of its life. As a result, such producer receives more money from selling its product, which is combined with the service on its functioning, and the city has no problems with a non-core work for the authorities (when they fulfilling their payment obligations). Clearly, both parties win in this situation.

According to OliverWyman and MorganStanley data, over the last 10 years, for every dollar of revenue, banks have reduced the share of active operations funded from their balance sheet by 21%. Moreover, some experts believe that due to regulatory innovations and taking into account the results of the work of digital competitors, banks should move to a model followed by non-bank organizations that receive more than 80% of commission income [4], while banks have them at about 40%. It appears that such recommendations do not take into account that a business organization come to the bank nor for the purpose of making payments only, that can be carried out by any bank, but to obtain loans that increase the effectiveness of its core activities, boost its output, and ultimately improve its position in relevant markets and return to capital. Raising loans for businesses is also interesting because it is usually a cheaper form of company's funding of its development than to attract capital. But just the presence of credit relations allows the bank to sell its other products, including ones on a commission basis, much more effectively (and earn more profit), firstly, because often it is a condition of credit, and secondly, it is just convenient for the corporate customer, given the standardization of many banking products in quality and price, i.e. to go to a competing bank for a separate service does not make much sense.

Development of credit relations with corporate clients, which are natural for banks, is necessary to continue the fight against non-bank competitors. Many large technology companies have introduced credit (deferred payment) programmes for their marketplace suppliers, in order to link the best of them to their ecosystems, to provide them opportunities to develop, because the enormous working capital of the technology companies allows this. In this case, it turns out that on a number of parameters such loans are more advantageous than bank credit: for example, with the same amount of loan provided by Amazon to its small and medium-sized business supplier, the total cost of the loan is in the range of 10–13% per annum versus 4–14% traditional bank loan rate, which, in addition, usually simultaneously charge an additional fee for loan granting. In addition, the approval of a loan in Amazon takes no more than 5 days compared to 5 weeks in the bank; when making a loan, Amazon uses its transaction information and does not require any additional documentation, unlike a large data package requested by a bank from a potential borrower; Amazon does not impose

penalties for early repayment of loans, unlike the bank, etc.[9]

Technology companies, seeing the inability, unwillingness or misunderstanding of traditional banks to work with these customers, themselves begin to engage in credit support for their suppliers.. It seems that such an approach of such companies is forced, since it diverts some of the capital from improving the efficiency of core operations, only to increase the efficiency of interaction with their clients in unusual activities for them, if banks are not able to carry out their operations on competitive terms or they have more attractive objects of lending (state authority, for example). As a result, technology companies increase customer loyalty, increase profitability, and banks lose a significant part of the profitable business of commercial counterparties.

It may be assumed that this attitude of banks to lending is largely due to the fact that, as noted experts in Oliver Wyman, Marsh, GuyCarpenter, Mercer, the existing credit models rely mainly on historical data to predict risks in the near future and therefore are essentially retrospective. Their effectiveness has been questioned in a macroeconomic environment where reasonable expectations for the near future may be very little resemblance to those of the recent past. For a large number of enterprises, pre-crisis financial indicators provide significantly less information on their continued viability, as industry business and operating models evolve rapidly and change to adapt to the new environment.

The experts point out that to adapt to changed conditions, banks may need more than a systemic review, calibration and/or updating of existing models, policies and decision-making processes, but also creating new perspective forecasting capabilities at the customer level. These capabilities will need to model the borrower's performance in economic situations, which are not visible in historical data, and thus determine the cause-and-effect relationships of future events, not just historical correlation. Such an analysis would facilitate a shift away from the typically less detailed, product-oriented retrospective statistical models (which are superimposed to expert estimates) to industry analysis, independent of the banking product, with predictive modelling of causal relationships. Understanding why a client may fail and how this can be avoided with financial support, will have a profound impact on both the ability of banks to manage risks in the uncertain future and their ability to proactively, better and less costly to serve the financial needs of their customers. Not only the way in which credit is provided should change, but also the understanding of the risk profile — today this is a completely different challenge [19].

Thus, it can be stated that banks need qualitative transformation of their operational processes to increase their efficiency and reach the level of cost of products and services that is no worse than that of digital competitors, as well as a radical overhaul of their business models to adequately support corporate clients in achieving their goals through better corporate engagement by providing payment and credit support and management of related risks. In turn, such changes will increase the profitability of banking activities, which, as noted by the consulting company Bain, "goes hand-in-hand" with high customer loyalty [20].

CHANGE IN THE CORPORATE CUSTOMER BANKING SERVICE MODEL

Taking into account the above circumstances, banks by improving and automating internal processes and using application programming interfaces (API) (its own and fintech companies') try to create opportunities to connect banking networks to enterprise resource planning (ERP) and treasury management systems (TMS). This allows corporations to safely and conveniently manage bank and payment transactions in its internal environment without entering multiple

[9] URL: https://www.oliverwyman.com/our-expertise/insights/2020/jul/big-banks-bigger-techs.html

platforms to perform various functions, helps customers make payments in real time, control their financial position, improve standardization of operations and reduce errors. So, for example, a bank J.P. MorganChase does, who connects its program Treasury Ignition to the system NetSuiteERP of its corporate customers to make payments and provide other business services without re-entering various systems and costly or prolonged technology deployment.[10]

From the bank's point of view, the activities it implements are divided into those, which require early introduction to maximize value creation and operational efficiency, and those that have the greatest impact on customer satisfaction, compliance with regulatory requirements, etc. Although the integration of banking operations with corporate cash flows has the greatest impact on customer satisfaction, priority for banks, in terms of value creation, according to the research of the consulting company Capgemini in 2021, digitization of communication with clients and investment in fintech solutions.[11]

Probably, there is a divergence of priorities of banks and their corporate clients. It was mentioned earlier that banks tend to sell their products, rather than assist customers in an integrated manner in achievement of its own goals in their core markets through bank support. Now we can see that the technical aspects of the digital transformation of banks prevail over the integration with companies in the area of payment and credit operations. Many commercial banks focus on data-based transformations, gradual improvements to existing business models and processes. But "focus, generally, is done on the elimination of immediate pain points, rather than on breakthrough innovations that can lead to exponential growth of profitability. 78% of banks in the world use data extensively, but only 7% scale analytics and only 5% scale artificial intelligence to extract more value from customer data" [21].

It is unlikely that the institutional selfishness of banks regarding immediate increase in their profitability can be blamed on them — after all, this task is set by shareholders. But, on the other hand, solving short-term problems creates the base, and does not ensure the implementation of the more important strategic task of strengthening relations with corporate clients based on the transition to a new level of integration with them in terms of payment and credit support for their activities and management of the related risks. Especially since, as consulting company Bain notes, if banks focus more on their core competencies and open up to partners, they may emerge victorious from the current price war (with digital competitors). Competitive price offer is important, but in the long-term corporate customers will choose not the cheapest, but the best bank.[12] That is, the problem is likely to be a different understanding of what banks think is best for corporate customers and what they want most from banks.

Then it is reasonable to try to find the answer to the question: which bank do corporate clients consider the best? According to the results of a global survey of financial services, the consulting company BCG notes that corporate treasurers want their banking partners "provide a convenient, integrated and seamless process of the company's interaction with suppliers, systems and products ... So that banks do more than automate existing processes ... They want that bank was a universal center to meet all the needs of the Treasury" [22].

But it still looks like a technical requirement to improve, accelerate, increase the efficiency

[10] Commercial Banking Top Trends2021. Capgemini. 2020:26. URL: https://www.capgemini.com/wp-content/uploads/2020/12/Commercial-Banking-Trends_2021_web.pdf

[11] Commercial Banking Top Trends 2021. Capgemini. 2020:26. URL: https://www.capgemini.com/wp-content/uploads/2020/12/Commercial-Banking-Trends_2021_web.pdf

[12] Bain corporate banking index: decline in corporate banking business accelerated. Bain corporate banking index: the decline in corporate banking is accelerating. Bain & Company. July 09, 2018. URL: https://www.bain.com/about/media-center/press-releases/germany/2018/corporate-banking-index-bain-2018/

of existing processes, that do not change the essence of the relationship between the company and the bank, as it is about transaction functions, such as accounting, accounts payable and accounts receivable management. In this regard, McKinsey notes that, while most companies have opportunities for further improvement, further efficiency improvements will almost inevitably show a decreasing impact as the basis for improvements in these activities is reduced. At the same time, however, efficiency gains in such areas are much lower, as financial planning and analytics of internal processes of the company, optimization of the capital structure, tax planning, control, internal audit and financial risk management. Percentage financial services time devoted to these areas, that contribute to the creation of additional value as opposed to transaction and accounting transactions, increase from 2010 to 2020 from 43 to 51.3% [23]. Although, according to KPMG estimates, in order to maximize the contribution of the financial service to the company's strategic objectives to improve its financial efficiency, it should devote at least 80% of its time [24]. From this point of view, the priority of the company to win competition in the market of its goods and services and to focus the efforts of all departments on this goal, leads the financial service both to the maximum automation of routine processes and to outsourcing to the bank some of the functions of the financial service on payment and credit operations and management of the related risks as an activity that does not determine a company's competitiveness in the market, as opposed to the technical, quality and price characteristics of the goods and services offered, in order to devote almost all of his time to solving the company's strategic tasks, improvement of internal processes to increase financial performance.

As shown, both banks and corporations understand that it is necessary to significantly improve the quality of their cooperation, but largely focused on its technical aspects. Banks and companies face the task of increasing the efficiency of their core activities in order to win market competition in their industries in the context of increased instability and uncertainty of the economy. It is logical to assume that, in their mutual relations, deepening cooperation through the concentration of each party on their respective work would have a positive effect of each of them. Banks and companies are working quite seriously to solve many technical issues of cooperation, but so far within the old paradigm of companies issuing orders and requests to banks for execution of certain operations and banks selling their services. If companies consider it appropriate to free themselves from such non-core work as the technical part of payment and credit operations and management of related risks (which are the profile activity of banks), credit organizations should help their corporate clients within the framework of outsourcing to perform the above routine part of the financial function. The bank can increase the efficiency of this work for the company, which will increase the contribution of its financial service to improve the efficiency of the core business.

Nevertheless, the parties are still hesitant to move to a new level of relations, which will be characterized by the transfer by companies of settlement and credit support of their core activities and management of related risks to partner banks, leaving to companies the setting of the parameters of such support and control over its execution. Banks will provide such support within established parameters automatically, offering effective, qualified solutions that will generally bring bank-company relations to a higher level, strengthen and make their relationship long term. In the author's opinion, for the establishment of this kind of complex partnership of banks with corporate clients (partnership banking), banks, especially universal ones, need to use appropriate infrastructural foundations, that will not only integrate banking and corporate systems, but also transfer the relationship from the area of execution of orders for certain

operations to the state of their automatic implementation within the parameters specified beforehand.

These changes represent a radical restructuring of the nature of banking relationships with corporate clients. If the digital transformation was triggered primarily by the intrusion of digital competitors into banking operations and a fear "they'll eat the bankers' breakfast", about 10 years later the fear of the banks has passed, as the total seizure of banking operations did not occur. The statements apearred that "active players will keep what they have ".[13] We believe that there is no ground for such complacency, as digital competitors are moving (may be slower than previously feared, but surely) towards capture next jumping-off place in relations with banks'corporate clients, which is reflected, as shown above, in return on banks' capital. The main thing that banks lose, when losing the competition to digital rivals, it is close contacts with companies that enable banks to generate income and profits.

The proposed transition to a comprehensive partnership of banks with corporate clients seems necessary for banks as a source of new income, which will be generated by creating conditions in the banking field for such clients to achieve their own goals in their core business. The transition from the sale of services by banks to payment and credit support for the business of their clients, building on this foundation, a new, stronger relationships with them will provide a sustainable growth base for both sides of the cooperation, that with adequate development with implemention of new technologies will allow to repel attacks of digital competitors on banking contacts. Comprehensive service will reduce the costs of corporate clients to carry out payment and credit support of its business, while the management of related risks will be carried out by a qualified partner.

[13] Emerging business models in banking. EY, Tapestry Networks. November 2019:15. URL: https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/banking-and-capital-markets/ey-bgln-vp-emerging-business-models.pdf

The need for such changes is felt by experts. As BCG notes, to ensure further growth, instead of thinking in terms of individual products, banks need to analyze customer relations in general and propose solutions, which eliminate key pain points and provide enhanced experience in addition to maintaining primary banking relationships [25].

Some banks and companies may view banks' complex partnerships with corporate customers as something unusual they have not seen before. But it seems that both banks and companies have theoretical grounds for developing such relations. The uncertainty and fragility of the global economic situation pushes the most thoughtful to make decisions, which had not been tested before, but all the prerequisites for exploiting the emerging opportunities are available. Business leaders, who are able to see even weak signals, try to implement them in new business solutions, of which there are many examples in recent times: these are social networks for communication, new patterns of trade, management of tourist business, economy of shared consumption, etc., that simply didn't exist 20 years ago. But they have been successfully implemented because the initiators of such projects have realized that the conditions for their implementation are ripe.

CONCLUSIONS

The picture of the changing circumstances of banks' work presented above and the transformation of the priorities of non-financial companies in the provision of credit and payment support for its activities makes it possible to conclude, that it is expedient and advantageous for both sides to re-examine the pattern of interaction in the direction in which each of them will deepen their specialization and provide their customers with a service of the best quality and at the best price. The company's outsourcing to a trusted bank of cash management, coordination of automated payment and credit support for business

and management of related risks within the framework established by the parties will allow the financial services of companies to focus on improving internal processes, and the banks will have a new area of cooperation with corporate clients. As a result, each side will increase customer satisfaction, will create opportunities for improved cooperation with them, which will strengthen their position in the relevant markets, and allow banks to protect their corporate business from digital competitors.

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Measures of State Support for the Aviation Industry and the Impact of the Coronavirus Pandemic on the Global Air Transportation Market

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ABSTRACT

This article analyses the international air transportation market, assessing the impact of coronavirus and government support measures. Air transport is now extremely important for the successful functioning of the global economy, its further harmonious development, and the maintenance of sustainable economic growth; allows for the mobile high-speed movement of people and goods between different continents, contributing to the development of world trade and the international tourism industry. Given that sales of high-tech goods depend on a well-functioning air transport system, there is currently no alternative to air transport for the transport of perishable goods. The current trend in the development of air transportation is focused on the growth in demand for international air transportation, the annual improvement of its infrastructure and the legislative framework in this area in the world and in individual countries. Consumers prefer air transportation to another mode of transport, which is justified by the reduction in the time of delivery of goods to anywhere in the world.

Keywords: air transportation; international cargo air transportation; pandemic world air market; global air cargo market; Russian international air cargo market; COVID-19

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During the COVID-19 pandemic, as part of a global effort to contain it and protect public health, Governments around the world have imposed full or partial isolation. Countries closed borders, imposing strict restrictions on journey and travel, issued recommendations warning against unnecessary travel. Such measures have led to an unprecedented decline in demand for air transportation. The aviation sector is now one of the most affected.

Serious shortage of liquidity in the aviation sector caused a sharp reduction in air transportation, endangering its economic viability, threatening millions of jobs, that depend on the industry. All interested parties in aviation, including airports, airlines, air navigation service providers (ANSP) and manufacturers of aerospace products, and all participants have problems ensuring the continuity of their work, and perhaps even their survival in the production process of value added.

According to recent research by the International Civil Aviation Organization ICAO, analysis of the economic impact of COVID-19 on civil aviation showed that, global passenger traffic fell sharply, by about 60% in 2020, which is equivalent to a decrease of about 2.7 billion passengers compared to 2019 (*fig. 1*).

It is estimated that the sharp decline in traffic resulted in a decrease of 370 billion USD in airline gross operating income, and losses in revenues of airports and ANSP, respectively, reached 115 and 13 billion USD. Short-term forecasts indicate that the industry will have weak transport demand for a long time.

Fig. 1 shows that from 1970 to 2019 there was a stable growth in civil aviation. Border closures, as well as other restrictive measures during the quarantine, caused extensive damage to the aviation industry. In addition, the diagram confirms the following statistics from the report of the

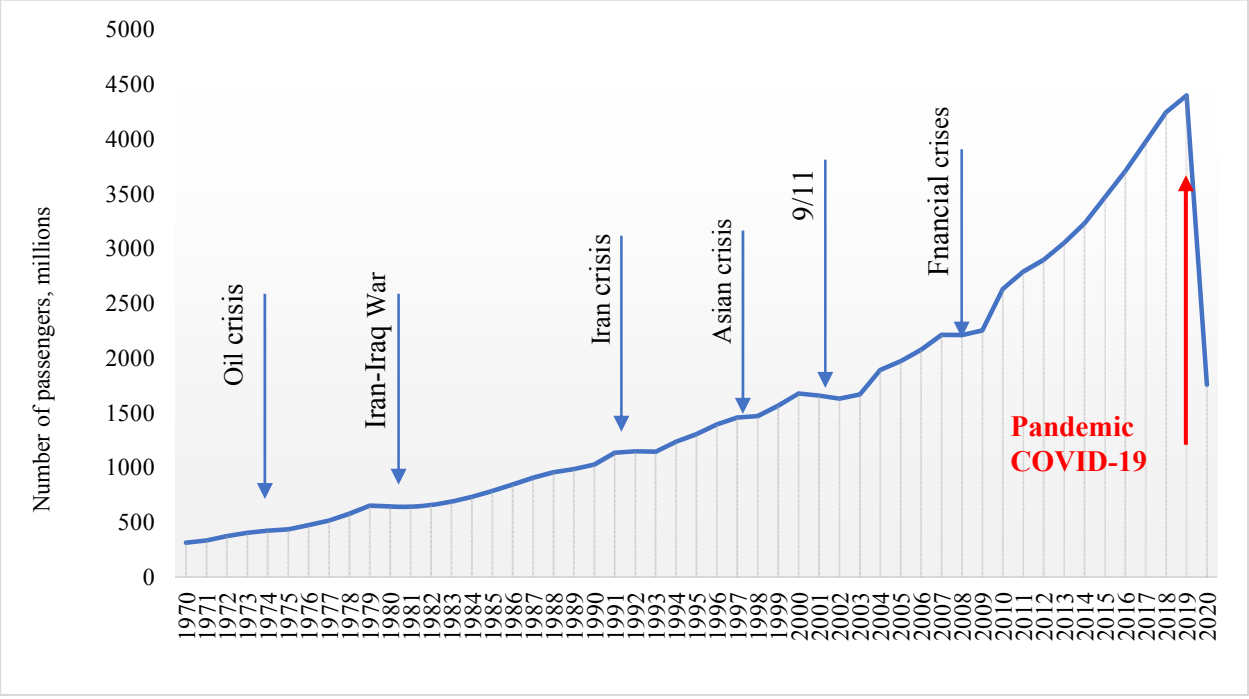

Fig. 1. **Passenger traffic dynamics**

Source: https://www.icao.int/sustainability/Documents/COVID-19/ICAO_Coronavirus_Econ_Impact.pdf

Table 1

Impact of COVID-19 on global scheduled passenger travel relative to 2019 levels

2020	2021
Total seating decrease, offered by airline companies, by 50%	Total seating decrease, offered by airline companies, from 39 to 40%
Total reduction in the number of passengers by 2 699 million (–60%)	Total reduction in the number of passengers from 2 108 to 2 196 million (from –47 to –49%)
Estimated loss of airline companies' sales from passenger services — 371 billion USD	Estimated loss of airline companies' sales from passenger services — from 310 to 323 billion USD

Source: [1].

Table 2

Change in international passenger traffic relative to 2019 levels

2020	2021 (preliminary estimates)
Total seating decrease, offered by airline companies, by 66%	Total seating decrease, offered by airline companies, from 60 to 62%
Total reduction in the number of passengers by 1 376 million (–74%)	Total reduction in the number of passengers from 1 309 to 1 356 million (from –71 to –73%)
Estimated loss of airline companies gross operating revenue — 250 billion USD	Estimated loss of airline companies' sales — from 245 to 253 billion USD

Source: [2].

Table 3

Change in domestic passenger traffic relative to 2019 levels

2020	2021 (preliminary estimates)
Total seating decrease, offered by airline companies, by 38%	Total seating decrease, offered by airline companies, from 23 to 25%
Total reduction in the number of passengers by 1 323 million (–50%)	Total reduction in the number of passengers from 798 to 840 million (from –30 to –32%)
Estimated loss of airline companies gross operating revenue — 120 billion USD	Estimated loss of airline companies' sales — from 65 to 69 billion USD

Source: URL: https://ura.news/news/1052269206

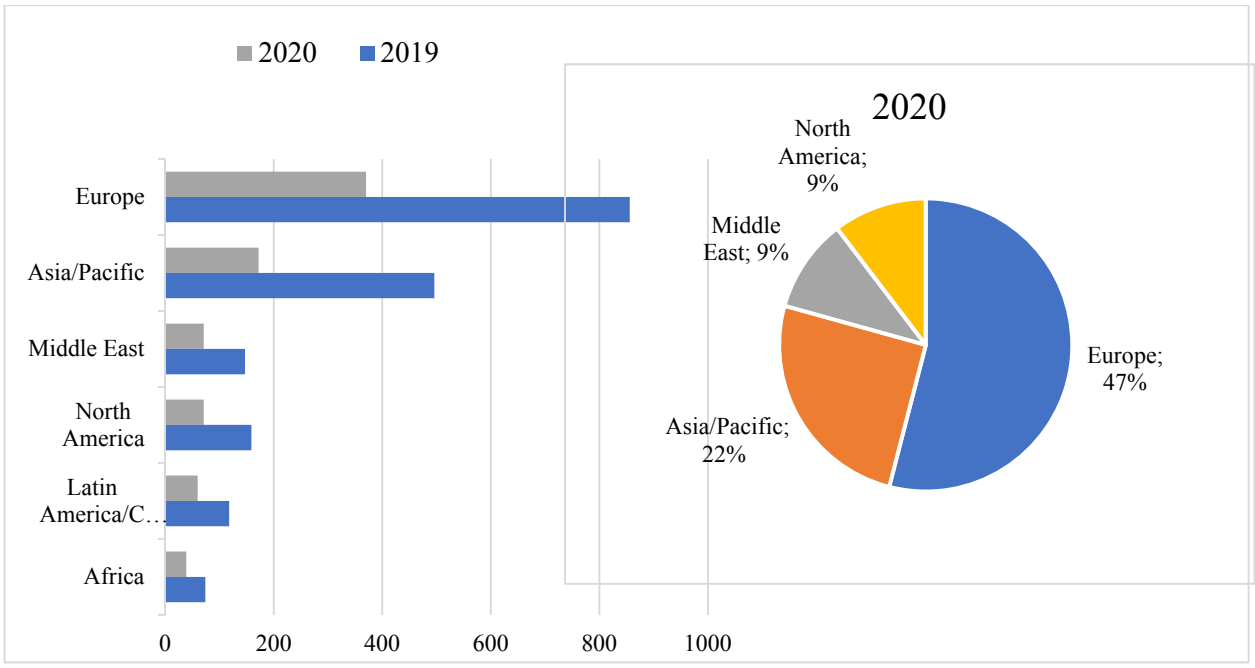

Fig. 2. **Number of passengers by regions in 2019–2020**

Source: URL: https://www.icao.int/sustainability/Documents/COVID-19/ICAO_Coronavirus_Econ_Impact.pdf

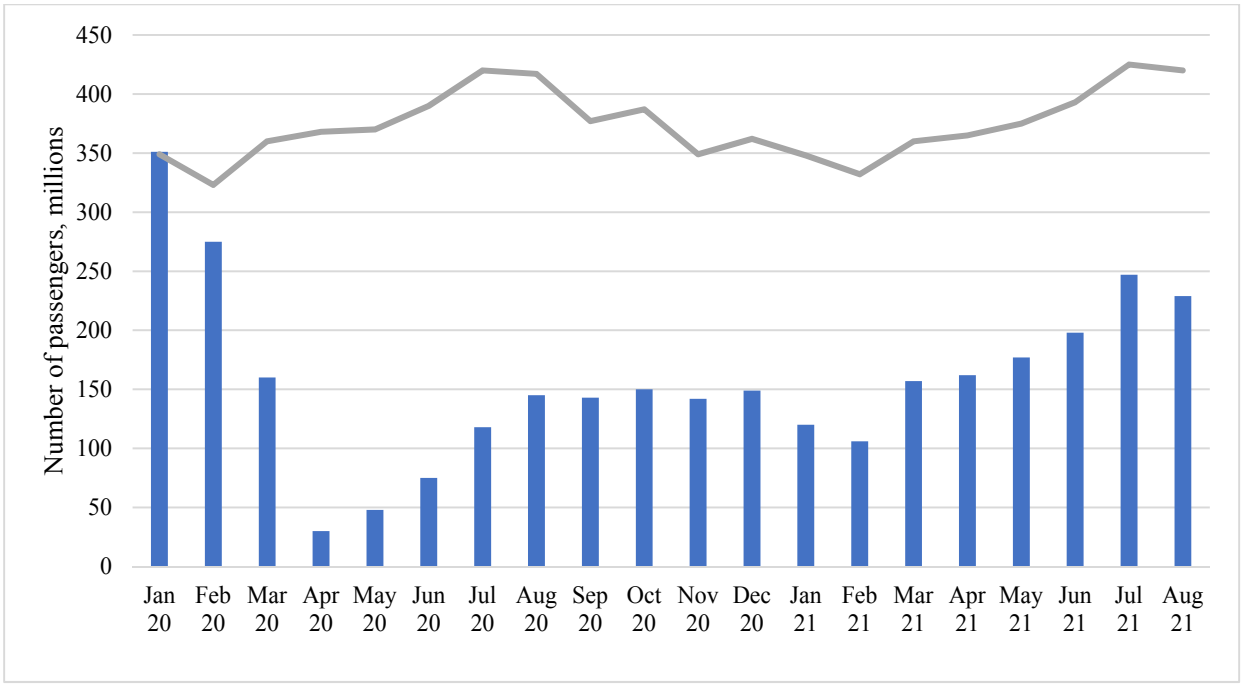

Fig. 3. **Number of passengers in 2020–2021**

Source: URL: https://www.icao.int/sustainability/Documents/COVID-19/ICAO_Coronavirus_Econ_Impact.pdf

International Civil Aviation Organization.

In *table 1–3* are given statistical data for 2019, 2020 and 2021 on passenger transport, on which it can be concluded that there was not only a significant reduction in the seats offered by airline companies, and passenger traffic, but also recorded a gross loss of airline revenue.

In the future, the potential deterioration of economic activity in this sector will affect the balance sheet of the aviation ecosystem, with far-reaching consequences at all levels of the economy. That is why the airline companies need to urgently take decisive and courageous steps, aimed at strengthening their financial situation, as well as reducing the consequences of the huge income deficit. Of course, it is equally important that all States take appropriate measures to support and stabilize the aviation industry, which is in financial difficulty so that it can continue to play an important and key role in air connectivity, job creation, stimulating the national economy and contributing to the total economic recovery.

There are a number of economic and financial activities that need to be undertaken by States and aviation companies to address the financial implications, caused by pandemic, easing liquidity shortage and financial pressure on the sector. But most importantly — need to increase the industry's resilience to future crises.

The aviation recovery task force of the ICAO Council published a report in June 2020,[1] covering 10 main principles and 11 recommendations, agreed at the global and regional levels on mutually acceptable measures to ensure safe, sustainable and reliable renewal, recovery of the aviation sector. Its main principles are presented below.

Support to financial assistance strategies. In accordance with their mandates, States and sectoral agencies should explore the need for direct and/or indirect assistance in various proportionate and transparent ways. It should also ensure fair competition, avoid market distortions or limitations in its diversity and/or access.

Sustainability. States and industry in the aviation sector need to strive for economic and environmental sustainability.

Adoption of economic and financial measures. Member States should consider implementing the appropriate, comprehensive, integrated, proportionate, targeted and other responses to the emergency Situations, which comply with ICAO policies, in order to ensure economic sustainability and maintain the required security indicator. These measures should be effective, ensure flight safety and environmental protection and not interfere with fair competition.

Countries taking into account direct and indirect financial benefits, which are established by air transport — for its economy, необходимо в отдельных случаях (and possibly also through international or regional economic cooperation, as well as cooperation with private sectors and financial institutions) should be given, in selected cases, the most appropriate means of support within the civil aviation sector to all interested parties. These activities should also be applied to ensure operational flexibility. In addition, it will be necessary to provide economic incentives and direct financial assistance.

These measures should be comprehensive, temporary and limited to what is necessary to reduce the impact of COVID-19.

The capacity of the State to support the aviation industry is quite diverse. As different aviation interested parties will be treated with conflicting and competing demands, that States will need to adhere to principles of effective governance that are

[1] URL: https://www.icao.int/covid/cart/Pages/CART-Report--Executive-Summary.aspx

consistent with institutional and regulatory frameworks, to coordinate goals and needs with commitments and resources, often based on conflicting and/or competing priorities.

Aviation companies took care of the crisis to take prompt action, which should mitigate the effects of a rather difficult economic situation and maintain financial and functional capacity to work. However, sharp declines in income have often been beyond the reach of even the industry's most drastic measures. More substantial and long-term financial difficulties have created a real threat to the aviation business, and have also led to the risk of potential bankruptcy and insolvency, which have put some jobs at risk.

In the future, the potential deterioration of economic activity in this sector will affect the balance sheet of the aviation ecosystem, with far-reaching consequences at all levels of the economy. That is why the airline companies need to urgently take decisive and courageous steps, aimed at strengthening their financial situation, as well as reducing the consequences of the huge income deficit.

In their national economies, a large number of countries have recognized the importance and strategic nature of the aviation industry, and its importance in creating the conditions for basic economic activity. However, taking into account the need to stabilize the situation in the aviation sphere, so that it can continue to play a constructive role in stimulating the national economy, and to provide employment to this sector, are provided various types of support by the State. Given the rather gloomy forecasts, it is also expected that more actors in the sector will seek assistance from States [3].

For the continuation of aviation companies, staff retention and survival due to the economic crisis, financial assistance from the State can be provided directly or indirectly. In a context of low demand and limited capacity, the availability of additional capital should guarantee the full or partial operation of aviation companies. In general, financial assistance from the State takes the forms described below, which have various budgetary and debt implications:

- government loans and loan guarantees;
- capital injection in the form of grants;
- state's capital participation in shareholder's capita;
- operational subsidies or donations for specific routes;
- restructuring financing;
- subsidy or wage guarantee;
- reduction of taxes, fees and charges related to aviation;
- total reduction in tax burden;
- complex package of financial support measures.

So, to put the country's aviation and economy on the road to early recovery, which was weakened during the health crisis and travel restrictions, further financial support and assistance may be required. This financial assistance depends on the economic capacity of the country. As the objectives and approaches of assistance vary widely from country to country, the scale and level of support from individual countries will need to have a greater impact on the global civil aviation system in the future. Whatever the form of public financial support, it should be provided in a well-managed and principled manner. It is also necessary to exercise diligence and caution, given its impact on competition, market

structure and future development of the aviation industry. It has to be kept in mind that all competing requests for financial public assistance may come from different sectors. It follows that States need to assess value creation in the national economy through aviation, comparing it with other sectors [4].

With increasing uncertainty associated with a prolonged pandemic and its various variations, forecasts, which should be achieved with regard to the rehabilitation of air transport, remain pessimistic today, along with gloomy economic prospects. Strategies that are adopted by the state and industry will affect the development of aviation, economic stability of the industry, financial viability and future stress tolerance, that is, how long the industry will be able to resist the crisis, how strong and fast its recovery will be, the extent to which the industry is modifying and the extent to which its future structure at the global level will change [5].

While stabilizing the industry is a top priority, there is also an urgent need to use opportunities, that enable it to emerge from the pandemic more competitive, resilient and resilient in the long term. Public assistance should therefore focus on promoting the entire aviation ecosystem in order to make it more responsive to the rapidly changing demand and expectations of clients following the end of the pandemic. Since there is no universal approach, both the State and the industry will have to act reasonably according to their unique capabilities and needs, constantly monitoring and evaluating the changes in the economy during the COVID-19 pandemic. The effects of destruction and the changing environment every day require that countries and industry break away from the classic orthodox eye and think afresh to create a strong, viable and persistent aviation sector in the future.

The expansion of the COVID-19 has had a serious impact on the international air transport market, but timely support and assistance to the industry will help to return passenger and gross turnover of airlines to the pre-endemic level.

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