From the Continental and Resource Curse of Siberia to Institutional Harmony\textsuperscript{1}

V. A. Kryukov\textsuperscript{a} and V. E. Seliverstov\textsuperscript{a,} *

\textsuperscript{a} Institute of Economics and Industrial Engineering, Siberian Branch, Russian Academy of Sciences, Novosibirsk, 630090 Russia

* e-mail: sel@ieie.nsc.ru

Received September 27, 2021; revised October 20, 2021; accepted October 22, 2021

Abstract—The positioning of Siberia in the Russian and global economic space is considered, taking into account the opportunities, challenges, and threats of the 21st century. The driving forces and directions of development of Siberia in the historical, economic, geopolitical, and geographical aspects are investigated. Particular attention is paid to the question of whether the space and resources are the “Siberian curse” or the strongest strategic advantage of the macro-region. It is concluded that we should rather talk about Siberia’s “institutional curse,” associated with the inability of the state to use its space and resources rationally and with the reluctance of business to implement projects for deep processing of extracted raw materials and fuel on Siberia’s territory. It is shown that there is no need to contrast the raw materials and innovation-oriented path of development of the Siberian economy, since in modern conditions the raw materials sector is one of the largest consumers and generators of demand for modern technologies and scientific and technical solutions. In this context, elements of a new paradigm for the development of the Siberian Arctic and a new Arctic policy are considered. Proposals are formulated for the socioeconomic and regional policies of the Russian Federation, as well as for the state policy in the field of subsoil use, which should contribute to solving the main problems of development in Siberia. They relate to the improvement of the institutional conditions for interaction of the Federal Center and Siberian regions, mining companies with regions and their population, as well as the forms and mechanisms of regional integration interactions on the territory of Siberia. The emphasis is on investing in people and the development of science and education.

Keywords: socioeconomic development, colonial policy towards Siberia, drivers of development, space, resources, Siberian curse, Siberian Arctic, Arctic policy, subsoil use

DOI: 10.1134/S2079970522010038

INTRODUCTION: SIBERIA AS AN OBJECT OF RESEARCH IN DOMESTIC AND FOREIGN SCIENCE

The Siberia’s economy and society, its subsoil and space, nature and culture are increasingly in the orbit of research and discussions by Russian and foreign scientists, politicians, experts, and representatives of the business community. Despite the fact that Siberia has always been a symbol and a national brand of the Russian state, the attention of the state itself to this territory and people inhabiting it has been far from unambiguous.

The perception of Siberia by the scientific community of domestic and foreign economists, historians,

\textsuperscript{1} This article opens a thematic block—Development Paths for Siberia: Disputes over Its Future—dedicated to the problems of the development of Siberia, which acquire special relevance in light of changes in state policy that have both already commenced and are expected, including its territorial aspect. It can be suggested that the shift to the East, determined both by the country’s internal development needs and its tasks in international relations, primarily by long-term trends in the geo-economic situation, will become one of the most important national tasks for the coming decades. The article examines the institutional problems of the development of Siberia, including the solution of such a crucial task as overcoming the “continental curse”—the negative impact on the economy of remoteness from seaports. In the article by A.B. Likhacheva and I.A. Stepanov, “Russian Arctic Policy: Opportunities for the Development of the Siberian and Far Eastern Regions,” analyzes development of the Arctic in the post-Soviet period and its prospects with emphasis on the industrial, scientific, and educational potential of the most important economic centers of Siberia. V.E. Seliverstov’s “Connectivity of the Siberian Space: Problems and Solutions” examines the great internal differentiation of this vast region, often perceived as a single whole. The problem of “stitching together” the giant Siberian space is one of the most important in the development of Siberia. Finally, the article by A.A. Zaytsev, O.A. Klochko, and E.Yu. Sirotin, “Labor Productivity in Siberian Regions—Is the Divergence Great? Estimates Based on a New Approach Taking into Account Structural Differences of the Economies” offers a non-trivial approach to assessing labor productivity based on the authors’ original methodology. This view indicates the inaccuracy of common ideas about labor productivity, in particular, in the extractive industries of Siberian regions. \textit{Guest Editor: V.A. Shuper, Institute of Geography, Russian Academy of Sciences, Moscow, Russia.}
geographers, political scientists, and demographers has also been ambiguous. Polar opinions have been expressed about its importance in the system of Russian and global economic relations, the efficiency of the economy, driving forces, potential, and development prospects. As a result, many persistent myths and stereotypes have developed around Siberia, which were partly true with respect to specific historical and economic conditions, but did not correspond to modern realities and possible promising directions of development.

The world bibliography contains few large mono-
graphic studies in which Siberia is described in a comprehensive and multifaceted manner. The main publications deal with specific issues related to the history of Siberia’s development, its economy and nature, specific sectors of the economy and regions, demography and the social sphere, transport development, and development of the indigenous peoples of the North and Siberia.

The first scientific work on the history of Siberia, the five-volume History of Siberia (1937–1941, published in the USSR in two volumes), was compiled back in the 18th century by historiographer of the Russian state G.F. Miller. The comprehensive study of Siberia significantly intensified in the late 19th—early 20th centuries, when it began to attract the attention of scientists in various fields of science. Studies by A.L. Chekanovsky, V.I. Vernadsky, A.E. Fersman, and others made it possible to accumulate invaluable information about the natural resources of this vast territory. An original view of Siberia from the standpoint of federalism, regionalism, and identification of its own regional interests was set forth in works by prominent figures of Siberian regionalism: S.S. Shakshov, G.N. Potanin, and N.M. Yadrintsev (1892). It should be noted that the revolutionary period produced notable scientific advancements on the problems of the spatial development of Russia and Siberia (Semenov-Tyan-Shansky, 1915; Veinberg, 1915). Let us emphasize that at that time, Siberia was understood as all the spaces of modern Asian Russia, including the Far East.

The strategic directions of the development of Siberia from the first years of the existence of the Soviet state were determined by the needs of its economy and defense. Research in these areas were carried out not only by single scientists, but also by research teams at universities and institutes of the Academy of Sciences. A significant contribution was made by the Soviet school of economic geography, in particular, by N.N. Baransky, N.N. Kolosovsky (1932), A.E. Probst, Ya.G. Feigin, etc.

Foreign studies of Siberia have traditionally focused on the experience of developing a vast territory and its resources in order to involve them in the national and international economy (Shabad and Mote, 1977; Soviet ..., 1983; Whiting, 1981). There are two main lines of analysis of the Siberian economy that currently dominate the foreign literature (Melnikova and Seliverstov, 2008). First, the possibilities of Siberia to guarantee uninterrupted fuel supplies by the Russian Federation to consumer countries (Buszynski, 2006; Considine and Kerr, 2002; Dienes, 2004). Second, the tendencies and effectiveness of development of Siberia’s economic system in its transition to a market economy (Bradshaw and Vartapetov, 2002; Thompson, 2004). The basic direction of this analysis is the concept of misallocation of resources, i.e., the incorrect, from a market standpoint, location of production and population, which is considered, first of all, a legacy of the Soviet central planning system, and in modern conditions, a manifestation of the ”resource curse” of the Russian economy.

Comprehensive studies of the problems and prospects for the development of Siberia are mainly domestic developments, reflected in major monographs. Most are works by scientists of the Siberian Branch of the Russian Academy of Sciences (SB RAS), primarily of the Institute of Economics and Industrial Engineering SB RAS2 (for example, (Sibir’, …, 1980) in pre-perestroika times; (Ekonomika ..., 2009; Formirovanie ..., 2010; Problemy ..., 2002; Sibir’, ..., 2008 (later translated and published in China); Sibir’ ..., 1998)—on the assessment of Siberia’s role in the new Russian economic system). Problems of Siberia’s development have been elaborated at the Sochava Institute of Geography SB RAS (Irkutsk), Institute of Geography RAS (Moscow), and the Faculty of Geography of Moscow State University.

We can formulate the following main conclusions about the driving forces of the exploration and development of Siberia in different historical periods:

1. National goals and objectives have always been the main driver (expanding the country’s geopolitical space by moving East; defense and national security, including on the eastern borders of the state; creating a resource base for domestic industry; filling the state budget; national nuclear and space programs; etc.). The interests of Siberian regions and their populations were barely taken into account in all these processes.

2. The accelerated industrialization of Siberia, on the one hand, was based on implementation of an integrated approach to developing new regions via the combination and technological complementarity of resources, industries, and territories. To this end, Soviet science achieved brilliant scientific substantiations and designs (projects for the formation and development of the Ural–Kuznetsk combine, the Western Siberian oil and gas complex, the economic development zone of the Baikal–Amur Mainline

---

2 These studies and monographs are analyzed in (Seliverstov, 2013; Kryukov, 2018).
On the other hand, actual practice has focused mainly on achieving economic performance at the expense of social and environmental issues. It was not taken into account that Siberian nature (primarily in the northern latitudes) is particularly vulnerable; the consequences of mistakes are felt even after decades. For example, the territories of the closed Usolye–Siberian Chemical Combine and Baikal Pulp and Paper Combine are now characterized as ecological disaster zones.

(3) In the USSR, elements of colonial policy towards Siberia were carried out by the state itself and in the name of the proclaimed strategic state goals. In post-Soviet Russia (especially in the 21st century), such colonial policy also began to be implemented by large private businesses in the form of transnational and vertically integrated companies that exploit Siberian resources.

(4) Modern Siberia is increasingly developing as a macro-region, the economy of which is based on interregional knowledge and skills spillovers. The importance of new technologies and the ways in which they are combined with knowledge-intensive service activities of production nature is increasing. An important role will be played by the space and natural environment as a place of human life and activities. Therefore, the most important task of the “government–business–society” triad is to institutionalize these new opportunities for the development of Siberia in the face of global challenges and threats of the 21st century, discarding the rudiments of colonial policy towards Siberia.

Against this background, a new comprehensive view of the problems and positioning of Siberia in the Russian and global economic space has become necessary. The objective of this article is to present the authors’ position on some of the most important problems of the present and future development of Russia’s largest macro-region. We should note in advance that this is not a new concept or ideology of Siberian development. However, fragments of it may become elements of the “Siberian puzzle,” which, eventually, can be put together into a comprehensive picture of the macro-region’s development in the face of global challenges, threats, opportunities of the 21st century. Taking into account the discussion of the problems of increasing the connectivity of Siberia’s space, which we outlined in another article of this issue (p. 23–34), this should indicate the ways to achieve “institutional harmony”: in relations between the federal center and Siberian regions; in the “government—business—society” triad; in the consistency of economy, social sphere, and ecology in Siberia; in the interactions of its three development vectors: intraregional, interregional, and cross-border.

### A BRIEF SYNOPSIS OF THE POSITIONING OF SIBERIA IN THE RUSSIAN ECONOMIC SPACE AND THE PROBLEMATIC ISSUES OF ITS DEVELOPMENT

The current positioning of Siberia in general and the Siberian Federal District, in particular, in the Russian economic space in no way corresponds to the richest resource, intellectual, and scientific and technological potential of this macro-region (Kryukov et al., 2020). For a long time, the following problematic issues of its development have developed and accumulated:

1. **Reducing the role of the Siberian Federal District (SFD) in the national economy. Lack of progress in solving the problem of lagging in the level and quality of life of Siberians.** In the post-Soviet period, the SFD has gradually reduced its share in the most important indicators of the country’s development (Table 1). In 1995, the district’s share (within the current borders) in the GRP of the Russian Federation was 13.7%; by 2019, it decreased to 9.7%. The lag of the SFD in terms of GRP per capita was even more significant: from 107.3% with respect to the average for the Russian Federation in 1995 to 82.8% in 2019. The district’s share in national investments in fixed assets decreased from 11.5 to 9.6%, and in the revenues of consolidated budgets of the Russian Federation from 12.8 to 10.3% over those years. Against the background of deindustrialization trends in a number of...
Siberian regions, there was no turning point in the growth rates of processing industries.

In recent years, there have been some positive shifts in the SFD’s level of economic diversification due to development of service industries, but the degradation of the industrial structure continued. As a result, the share of manufacturing industries in the gross industrial output of the district (in the volume of shipped industrial goods) decreased from 78.5 in 1995 to 58.3% in 2019 (in 2020 it increased to 61.5% as a result of the reduction of oil production under the OPEC+ deal).

However, the greatest concern is the situation in the social sphere. The share of the macro-region in the total final consumption of households decreased from 12.9% in 1995 to 9.0% in 2019; the average annual monetary income of the population as a proportion of the national average decreased from 83.2 in 2005 to 77.8% in 2020; the lag in retail turnover per capita increased. There has been no significant improvement in the provision of Siberians with housing, public utilities, and basic foodstuffs (versus the national level). Provision of housing in the SFD, although insignificantly (by about 5%), lags behind the Russian indicator, and in terms of housing improvement the lag is noticeably greater.

In general, many of the indicators set forth in the Strategy for the Social and Economic Development of Siberia for the Period up to 2020 (including implementation of approved investment projects) have not been met. The negative migration balance in the SFD in 2018 was 29000 people; in 2019, 11900; and in 2020, 24500. This is a consequence of both the lag of Siberian regions in terms of quality and standard of living compared to the European regions of the country and a decrease in demand for labor. The share of population living in the SFD within its present-day borders in the country’s population decreased from 12.6% in 1995 to 11.8% in 2020, with a positive balance of international migration of the population to the territory of the district. This is the main negative result of development of Siberian regions over the past quarter century.

The lag in the socioeconomic development of Siberia and the SFD and continuing dominance of their resource orientation become especially noticeable against significant growth in the economic potential of the northern and northeastern territories of China bordering Russia in the East.

These processes took place unevenly in different subjects of the SFD. In a number of regions (e.g., in Novosibirsk and Tomsk oblasts), positive changes have taken place, leading to a reduction in the lag in development and production efficiency, standard of living, and development of high-tech industries. It should also be noted that in recent years (i.e., during a period of stagnation of the Russian economy), the production dynamics in the SFD was somewhat more favorable than in the country as a whole. But this was not so much the result of emerging positive trends, but rather the more failed development dynamics in regions of European Russia.

(2) Insufficient attention to the problems of Siberia in the main program documents of the country’s development, in the spatial policy of the Russian Federation, and in the implementation of the eastern vector of Russia’s development.

Due to the special conditions of its development (vast territories with colossal resources and difficult natural and climatic conditions, remote from the economic and cultural centers of the country), a significant part of the economic and social problems of Siberia noted above cannot be solved only through internal sources and the efforts of local authorities and Siberian business. As in other large countries of the world, the development of such territories is based on strong state support, special forms of state spatial, structural, investment and social policies.

However, in the final decades of USSR’s existence and in the post-Soviet period, such attention of the state to the problems of Siberia has considerably weakened. This is evidenced by the analysis of the main program strategic documents of the country in recent years. Thus, the Strategy for the Spatial Development of the Russian Federation up to 2025 does not identify the regions of Siberia in any way, either in problems or in national priorities or in goals. The potential of integration interactions on Russia’s eastern borders is underutilized; Siberia is poorly involved in these processes.

(3) Continuing trends of fragmentation of Siberia’s economic space and the lack of groundwork for qualitative strengthening of its connectivity.

In the post-Soviet period, Siberia began to lose its political, geographic, and economic integrity, which weakened the ability to manage the development of this macro-region based on the complementarity and synergy of the resource and production potential of federal subjects. These processes began with the reorganization and subsequent privatization of production and technological complexes. Private business was not oriented towards strengthening integration, intersectoral, and interregional interactions. As a result, the specialized mechanical engineering focused on implementing projects taking into account the specifics of Siberia was almost completely liquidated, and the output of products of higher degrees of processing (in chemistry, petrochemistry, wood chemistry, and metallurgy) was eliminated (or decreased catastrophically).

This was continued by the formation of federal districts, when the traditional Siberian territories—Tyumen oblast and its autonomous okrugs (AOs)—were assigned to the Ural Federal District. Later, other primarily Siberian regions—the Republic of Buryatia and Zabaykalsky krai—were transferred from the Siberian to the Far Eastern Federal District.
(4) Lack of a breakthrough in the development of highly competitive and high-tech segments of the Siberian economy; poor use of the capabilities of Siberian science.

One of the main drawbacks of the previous period was the lack of comprehensive development of the Siberian economy. As a result, activities related to the sale of primary processing products became more unprofitable, and the orientation towards the foreign market led to the primitivization of production and technological chains and a decrease in the demand for domestic science. As a result, there has been no breakthrough in the development of highly competitive and high-tech segments of the Siberian economy with continuing consolidation of its raw materials orientation.

Apart from the development of the Vankor oil field (and Vostok Oil project being formed on its basis), the implementation of the Yamal LNG project (including construction of the port of Sabetta aimed at transporting liquefied natural gas and ensuring year-round navigation along the Northern Sea Route (NSR)), as well as the creation of extra-large production capacities of polyethylene and polypropylene in Tobolsk (PISC SIBUR-Holding), no major project of national significance has actually been implemented on the territory of Siberia in the post-Soviet period.

Among the Siberian achievements, we should note the formation of highly efficient and high-tech agro-food complexes in Omsk, Novosibirsk, and Tomsk oblasts and Krasnoyarsk and Altai krais, which have practically solved the problem of providing Siberians with meat and dairy products, eggs, certain vegetables, and culinary and confectionery products.

Despite the presence of high-tech industries in the SFD (in the defense-industrial complex—aircraft, spacecraft and missiles, tank-building; in high-tech industries—nano-, micro-, and bioelectronics, new materials, catalysts, IT, and biotechnology; etc.), in general, the structure of the economy remains quite archaic. Only in the Tomsk and Novosibirsk oblasts the share of innovative segment exceeds the average Russian level (in Novosibirsk oblast, it approached 25%).

This is largely due to both defects in the federal and regional industrial and innovation policies and the weak use of the latest advances in domestic science in industry and other sectors of the economy (primarily SB RAS institutes). Particular importance in Siberia’s innovation economy should be given to those technological areas for the application of which there is significant potential demand in the region and its own groundwork in scientific research and development centers. However, this requires serious state support for scientific and innovative complexes in the region as a whole, as well as in Novosibirsk, Tomsk, and Krasnoyarsk, and other Siberian cities.

SPACE AND RESOURCES OF SIBERIA: SIBERIAN CURSE OR STRATEGIC ADVANTAGE?

Foreign and Russian economists, analysts, and political scientists often ask two questions: (1) Is the Siberian space a burden or strategic advantage and (2) Is the subsoil of Siberia and its raw materials orientation a symbol of backwardness or the basis of prosperity? Stable myths have formed around these problematic issues that have nothing to do with reality.

1. Siberian Curse or Siberian Path of Development?

At the beginning of the 21st century, several books were published in Russia and abroad, which stimulated discussions on the problems of the economy of the North and Siberia, raising the question of the inexpediency of further development of these areas. Primarily, this is the book by A.P. Parshev Why Russia is not America (2000), as well as the book by American researchers F. Hill and K. Gaddy The Siberian Curse. How Communist Planners Put Russia out in the Cold (2003).

The main idea behind these books boils down to two main statements: (1) the climate and geography of the North and Siberia strongly “spoil” their economies and therefore it is impossible and inexpedient to develop them at the same pace as was done in the USSR; (2) decisions made under centralized planning and administration are absurd from an economic viewpoint and do not allow Siberian cities or Siberian enterprises to function successfully in a market-oriented economy.

Let us consider the arguments of these authors in more detail. First, due to the more severe natural and climatic conditions in the North and Siberia, projects become more expensive and less effective. The decisions made under the centralized planning and administration system not only did not take this into account, but also exacerbated its impact in the future by creating large settlements dispersed over the large territory of the East with its harsh climatic conditions.

Second, according to the authors of the book The Siberian Curse..., not only the “incorrect” location of cities and settlements and the lack of stable economic ties between them create additional difficulties in adapting the economy of Siberia and Far East to the market, but also the hypertrophied single-industry character of population centers. It was concluded that “Russia’s huge size is not a strength. It is a disadvantage that has to be overcome. Russia’s land mass poses particular problems for economic competitiveness and effective governance. Population centers are spread over vast distances. As distances between cities and towns increase, physical movement becomes more difficult. Direct transportation costs increase. Information flows ... are all impaired.”(Hill and Gaddy, 2003, p. 25).
Third, American researchers noted that “… market mechanisms alone were not able to rectify economic distortions in the 1990s, and … these distortions are likely to persist in the immediate future—given desires at all levels of the Russian government to redevelop and repopulate Siberia …” (Hill and Gaddy, 2003, p. 4).

Melnikova and Seliverstov (2008) substantiate the erroneousness of these theses. Let us consider some of the arguments.

(1) All decisions on the development of the productive forces of Siberia in the Soviet years were determined to a large extent by political motives and the need to protect the country, which was in a hostile environment in a completely different economic system. Therefore, it is inappropriate to assess decisions from the standpoint of a modern market economy. It is wrong to talk about the deliberate inefficiency of projects and programs implemented on its territory; rather, it is necessary to bring physical factors and conditions for the development of the region’s economy in line with changing norms and rules, as well as price and tariff proportions.

(2) “Non-market” development of the Russian and Siberian North, in fact, was and remains a reality for one simple reason: in almost all northern countries (Russia, Canada, Scandinavian countries, Iceland, as well as Alaska in the United States), the north and Arctic have never been mastered and have never been developed solely on market conditions. For example, Canada has the “Northern” program Products by Mail. This is an example of an effective public—private partnership, when the state takes over compensation of costs to private transport companies and logistics centers that provide year-round supply of quality food to the northerners.

(3) The conclusions about the overpopulation of Siberia, the percentage of Russia’s GDP “lost” due to its continued development, the harsh Siberian climate, the rise in production costs, and inefficiency of development (when measured by market criteria), which are partly true for the Siberian North and the Arctic, cannot be transposed to all of Siberia. In natural and climatic conditions, Siberia’s central and southern territories are close to the central provinces of Canada, and the northern states of the USA, Sweden, Finland, and Norway. In the southern territories of Siberia, there are quite comfortable living conditions that are, in a sense, even healthier than in European Russia. In recent years, due to climate change and global warming, milder winters have been observed here, severe Siberian frosts occur only sporadically, but the summer period is not accompanied by the sweltering heat that plagues many European countries. Unlike other Russian territories (in Southwest and Far East) Siberia does not suffer from annual floods ruinous for the state, regions, and their inhabitants.

(4) Siberia’s peripheral position and the remoteness of its regions from the economic and cultural centers of the country, from the main markets, which causes discomfort to residents and reduces the potential efficiency of production due to increased transport costs, in fact, was largely characteristic of the past stages of development. However, in the short term, the geographic factor of Siberia’s remoteness must be adjusted.

First, increased transport costs are not typical for all industries and types of cargo, but mainly for large tonnage. With the transition to intensive development of industries in Siberia for the deep processing of raw materials and fuels, the influence of the factor will decrease. New production facilities are significantly less transport-intensive, Siberian deep-processing products can be sent not only to western Russia, but also for closer distances to the countries of Central Asia and the northern provinces of China, which are, on average, 2000 km closer. New modes of transport and new transport corridors passing through Siberian territory, as well as the beginning of year-round navigation along the Northern Sea Route, will also contribute to overcoming the Siberian “tyranny of distance.” However, to implement such a development model, it is necessary to break the vicious circle: investors continue to implement projects for deep processing of Siberian raw materials and fuels mainly in European Russia due to the lower capital and transport costs in these regions; however, it is only possible to reduce these costs in Siberia and increase the efficiency of its development by locating new processing facilities in the Siberian territories.

Second, the last decade has been characterized by a radical change in industrial relations in the world, associated with informatization and the digital economy, new network forms of business organization, remote work, e-commerce, etc. The global COVID-19 pandemic has intensified these processes. All this will force us to overestimate the negative impact of “Siberian remoteness.” Economic and other mechanisms exist to neutralize or mitigate the factor of the macro-region’s remoteness for the population: increased coefficients to wages (northern allowances and regional coefficients, which are still valid for most Siberian territories); the possibility of providing employees with additional paid vacations and/or compensation for air travel costs; etc.

(5) Despite the painful environmental problems in a number of Siberian territories and cities, large areas of Siberia have a unique biosphere and biodiversity, which increases the value of Siberia in its entirety as Russia’s most important economic and social asset. These territories are a strong strategic resource for the development of a green economy, production of organic food, and the development of tourism, which makes it possible to re-evaluate the development prospects for a number of territories previously considered...
Areas from a burden into a major national and international chance to transform their vast undeveloped territories, which first and foremost include Russia, have a world will only increase. Countries with vast territories—will contribute to the implementation of new technological trends. We are talking about global data centers, which, as global experience shows, due to the enormous costs of their cooling systems, can operate most efficiently in the circumpolar region and beyond the Arctic Circle (such as, e.g., the international Verne Global Data Center in Iceland). The combination of permafrost and cheap electricity may become a basis for a major project to create a network of international data centers in Siberia’s Arctic zone.

And perhaps the most important argument about the value of the Siberian space is that under conditions of turbulence and global instability, it is the territory of Siberia that becomes the most important strategic spatial resource of the Russian state. Its importance for preserving the sovereignty, integrity, and unity of Russia and ensuring the country’s national security can hardly be overestimated. The vast forest areas of Siberia will serve as the “lungs of the planet”; Lake Baikal and Siberian rivers will remain global sources of fresh water for a long time. In the face of new challenges and threats, the importance of space as the most important strategic resource throughout the world will only increase. Countries with vast territories, which first and foremost include Russia, have a unique chance to transform their vast undeveloped areas from a burden into a major national and international asset.

ARE SIBERIA’S RESOURCES A SYMBOL OF THE BACKWARDNESS OF ITS ECONOMY OR THE BASIS OF ITS PROSPERITY?

Modern history has not confirmed the enthusiasm for the automatic impact of the possession of natural resources on the prosperity of certain countries. Countries that are relatively resource-poor have often developed faster, leading economists to talk about the resource (oil, gas, gold, diamonds, etc.) “curse.”

In recent decades abroad and in the national media and academic space there are increasingly clichés about the “resource curse” of Russia and Siberia and the “raw materials addiction” (Gaddy and Ickes, 2010), that the orientation towards development of raw materials industries in Siberia testifies to the backwardness and archaism of its economy, etc. The argumentation of adherents to the theory of the Siberia’s raw materials backwardness is based on well-known and uncontested facts that a significant part of the Russian budget comes from the export of hydrocarbons, mineral raw materials, coal, and timber, the bulk of which are Siberian resources. A straightforward focus on the production and export of hydrocarbons and raw materials preserves Russia’s technological lag and does not contribute to the transition of its economy to an innovative path of development.

Discussions about the extent to which the raw materials orientation of the Russian economy is justified and expedient has seriously intensified recently. The main question is: can the Russian Federation take a worthy place in the global division of labor, remaining a country that predominantly exports unprocessed raw materials or, at best, semi-products derived from the primary processing of these raw materials? We believe that the answer is an obvious no. The only possible path for Russia is to implement a structural reform of the economy by developing modern science-intensive and high-tech goods and services, based on financial resources obtained from the export of mineral resources (or products of their processing). Thus, it is precisely mineral resources that should serve as a financial source of economic diversification and overcoming the “resource curse” of the Russian Federation.

However, this raises a number of tactical questions: (a) how can the financial resources from mineral exports be transformed into knowledge, technology, new goods and services? (b) how should these transformations be spatially distributed, can Siberian regions, using their resources, not only be producers of the financial basis of the country’s reindustrialization and transfer to innovative development, but also the implementers of these processes in their territories?

As for the first question, it is necessary to move away from the dichotomy between raw materials and innovative ways of developing the economies of Russia and Siberia. Today, the raw materials sector is one of the largest consumers and generators of demand for modern technologies and scientific and technical solutions. This is largely due to the fact that the conditions for prospecting, exploration, and extraction of many mineral resources have deteriorated significantly in recent decades.

However, why in Russia in general, and Siberia in particular, is it not yet necessary to talk about such a role and position of the raw materials complex? One particular reason is the inaction of the state and state institutions in creating new, modern requirements for subsoil user companies. The state is the owner (according to the RF Constitution) of all minerals and in this regard can and must determine the requirements and conditions for their rational exploration and development. For example, the oil and gas sector of Norway has been the catalyst for the formation of a modern knowledge-based and innovative economy in the country over the past 20–30 years, and this did not happen automatically, but by the implementation of a strong state policy and its acknowledgment by business. The role of the state in subsoil use in Russia should take an adequate form, including through the adoption of a number of urgent (and in many ways painful) measures and steps, among them the separa-
tion of supergiant companies, the development of a flexible model of state technical regulation, increased attention to property rights for assets created by business, and to the formation of a real competitive environment in the mineral sector.

Let us briefly comment on the second question. The spatial maneuver in turning the export and rental revenues of the state and subsoil companies into the financial basis of modernization and industrialization of the economy, focusing on the activation of such a policy exactly on the territory of Siberia consists in:

—establishment of management structures in the system of executive authorities at the regional level. Despite the fact that Siberian and Far Eastern federal subjects are currently deprived of the right of the “second key” in resolving issues related to subsoil use, nevertheless, the possibility of their participation in procedures for agreeing on the terms of subsoil use is an opportunity to move in this direction;

—implementation of new forms of cooperation between the Federal Center and regions of Asian Russia in the interaction between the raw materials and innovation-oriented sectors of the economy. This involves the formation of conditions for the functioning of the raw materials sector on the basis of domestic (primarily Siberian) scientific, technical, and human resource potential; strengthening its interaction with high-tech sectors of the Russian economy; and the establishment of effective government regulation.

Let us formulate four main conclusions.

(1) The “Siberian curse” and “raw materials backwardness” of Siberia simply did not and does not exist. There is an “institutional curse of Siberia” associated with the inability of the state to use its space and resources rationally, and with the reluctance of business to implement projects for deep processing of extracted raw materials and fuel on Siberian territory. For decades, oil and gas revenues from Siberian resources have been wasted for any other purposes (image and sports projects, support of other countries’ regimes, maintenance of the state apparatus and law enforcement agencies, etc.), but not for the structural modernization of the Siberian economy.

(2) The vast expanses of Siberia are undoubtedly Russia’s newest most important strategic resource.

(3) Structural strategic maneuvers with respect to the resource potential of Siberia should take into account both potential risks (transition to medium and small oil fields with low-yield wells; decarbonization of the economy and the possible introduction of a carbon tax, etc.) and new resource opportunities. The latter are associated with development of the world’s largest Popigai deposit of impact diamonds and the Tomtor rare earth metals deposit, located on the border of Krasnoyarsk krai and the Sakha Republic, with the emergence of new resource industries that will be in high demand on global markets (hydrogen fuel from various sources; large-scale helium production, etc.). In the implementation of all these maneuvers, a special role should belong to the latest scientific and technical advancements in domestic (primarily Siberian) science.

(4) It is categorically impossible to agree with the concept imposed on Russia of abandoning economic activity in the North and Siberian Arctic. Much of Russia’s natural resources are located in the North and Arctic. Recommendations to curtail extraction of raw materials there look naive, to say the least: there are rare examples in the world when harsh natural and climatic conditions were the reason to abandon the extraction and exploitation of scarce natural resources.

There are virtually no alternatives to implementing new resource projects in the North and Siberian Arctic. Sooner or later, mining will take place, but all risks and threats must be carefully considered, calculated, and assessed. The main question is how to do this with maximum efficiency, with the least possible use of human potential in harsh climatic conditions, with the best possible environmental protection measures, and with new technological and innovative solutions.

**SIBERIAN ARCTIC: ELEMENTS OF A NEW DEVELOPMENT PARADIGM**

The power of any country is inseparable from its connectivity—technologically, economically, infrastructurally, socially, and ethnically. In recent decades, the Arctic zone of the world has been an object of close attention of scientists, politicians, businessmen, and the military elite of various countries. Arctic policy, the interaction of various states in the Arctic and potential conflict of their interests are widely discussed within the framework of the international Arctic Council and in the media. Particular attention is drawn to the Arctic zone of Asian Russia. This is a sphere of special geopolitical, defense, and economic interests of the Russian Federation, both due to the enormous resources located in this territory and its special military-strategic and economic-geographical position (Kryukov V. and Kryukov Ya., 2019; Mir ..., 2018; Pilyasov et al., 2015).

This is why new systemic solutions and new management technologies are needed, embodied in a holistic strategy for development of the North and Russian Arctic and in appropriate state policies. Here it is necessary to take into account and use the serious lessons of northern and Arctic development based on world experience:

—new drivers for development of the global Arctic: climate change, increasing economic activity in high latitudes (primarily in the maritime Arctic), and globalization processes;

—a new interpretation of security in the Arctic zone. It is for reasons of growing natural and social risks and uncertainties in the Arctic zone of the world...
that security in the Arctic is becoming less and less a matter for the military alone. Increasingly, it is linked to economic activity, natural and climatic dynamics, and the interests of major Arctic players, including in ensuring their own and global energy security;

—consideration of the consequences of development and implementation of national Arctic strategies;

—the need to use new mechanisms of subsoil use and new resource regimes in the North and the Arctic;

—to find and implement effective management models adapted to northern and Arctic latitudes.

Globalization and the development of modern vehicles and information technologies have brought the Arctic closer to the rest of the world, not only in Russia, but also in the world as a whole. In its development, both new challenges and new opportunities are emerging. For example, Arctic tourism is growing rapidly; the cold climate and permafrost are becoming an advantage in implementing natural gas liquefaction projects and creating data storage centers. At the same time, when the Arctic is neglected, it asserts itself in full force (melting permafrost and related cataclysms, the unlimited growth of the deer population and animal diseases as a consequence, and the rapid depletion of pastures and land).

In modern conditions, the design, production—technological, and spatial—sectoral connectivity of the Siberian Arctic with other Siberian territories is of particular importance. The emphasis should be increasingly placed not so much on individual design solutions (construction, extraction, transportation, etc.), but on the formation of frameworks and conditions that ensure the progressive and sustainable functioning and development of the vast Arctic region, as well as on the expansion and development of forms of cooperation and joint participation by several companies in implementing certain projects. An important feature of the procedures and approaches to implementing projects at high latitudes is their integrative and cooperative nature—from the level of individual communities of indigenous peoples of the North to large interregional and intercountry projects and areas of interaction.

It should be noted that over the past 25–30 years, the economy of the entire Russian Arctic, in particular, in the Arctic zone of Siberia, has developed the following features of economic activity, most of which have negative consequences:

—acute deterioration of economic ties with more southern regions of the country (the main material flows are directed to the West and the foreign East);

—destruction of many cooperative intrasectoral links (the actual cessation of timber export along the Northern Sea Route; a sharp decrease in the delivery of goods for the needs of a significantly reduced population; outflow of the working-age population from regions of the Arctic, which are not directly related to the implementation of highly efficient projects for mineral resource extraction);

—concentration of economic activity in the zone of large-scale mineral and raw material projects implemented by large companies (as a rule, with state participation);

—the predominance of small and medium-sized businesses within the boundaries and frameworks of the public (state-funded) sector for provision of social services;

—loss of skills and forms of regulation of traditional economic activities of the indigenous peoples of the North and newcomers based on traditional knowledge and skills.

The most significant negative consequence of these processes was division of Siberia’s economic space. Siberia’s Arctic zone is increasingly oriented towards latitudinal connections (from West to East); freight traffic along Siberian rivers from South to North has decreased by six to eight times or more; Siberian industry is very little involved in the implementation of projects in Russia’s Arctic zone.

Russian enterprises capable of implementing oil and gas projects on the Arctic shelf have become territorially dispersed throughout the country. The main domestic oil and gas contractors are concentrated in the Central, Ural, and Caspian regions. However, the meridional technological and logistic links of the southern territories with the Arctic North that the USSR built based on waterways, in the new Russia have been virtually destroyed, and a specially created fleet of river vessels—sold out or lost. As a result, there has been an inadequate increase in the cost of delivering Russian goods and equipment from the hinterland to the northern coast.

At the same time, there is a desire to implement a number of large investment projects in the Arctic, which were considered not so necessary, if not impossible, even in Soviet times. In particular, the Northern Railway from Vologda to Arkhangelsk has been hastily converted to a wide gauge, the port of Arkhangelsk is being equipped, the Murmansk Railway is being built, and all this without a predesigned harmonious plan, without building a chain of multiplier effects, and without a clear understanding of the role of industrial Siberian regions at each stage of implementation of these projects, which, of course, critically affects their multiplier ability.

A significant share of domestic equipment today neither in terms of assortment, nor in quality and delivery time meets the requirements, since domestic developers have no experience in participating in complex Arctic projects. Russian industry, including knowledge-intensive industries for the Arctic, has fallen in a trap. On the one hand, suppliers cannot offer competitive products that ensure a winning tender for participation in Arctic projects; on the other hand, enterprises do not have the financial capabilities...
for technological modernization due to lack of orders, which perpetuates their backlog and, in the worst case, leads to bankruptcy and sell-off of assets.

Russian production of equipment for the North and Arctic is largely based on localization of foreign technologies, and the resulting effects are of a latitudinal geographic nature and do not yet extend beyond the boundaries of federal subjects hosting new industries or ports. Projects to develop the Northern Arctic liquefied natural gas industry (LNG projects) are actually oriented towards foreign technologies and their localization with appropriate import substitution. The leader of such projects, the NOVATEK company, has engaged foreign partners not only as equipment suppliers, but also for the supply of certain types of inert materials.

The dependence of development of the Russian Arctic on the implementation of only the largest and most major projects is one of the constraining factors in obtaining the necessary multiplier effects from the development of Arctic resources. Foreign experience shows that not only large projects, new offshore platforms, and LNG plants should be developed, but also an innovation-oriented environment, companies of the appropriate type, organizational and technical solutions, and new financing schemes. Small and medium-sized businesses are the basis for such an environment. Small companies can operate efficiently in small deposits, and the service sector involved with large projects should become a place for small companies as well. For example, in Norway, the share of local contractors in the oil and gas sector is 60–70%, which is the result of targeted government policies. This is what the regions of southern Siberia can now offer for the Arctic.

To strengthen the connectivity of Siberia’s economic space, strengthening of integration interactions of the north and south of Siberia with the Arctic is a priority task. This will not only increase the efficiency of development of the Arctic region, but also become a factor in the development of other Russian regions. In particular, it is extremely important that the Transsib belt, with its manufacturing and agricultural bases, work in conjunction with the Arctic, participate in the development and delivery of equipment to the Arctic, and in solving scientific, engineering, and other problems.

When implementing projects in the Arctic, it is necessary to support the already existing base circum-polar cities, which supply shift workers servicing large Arctic projects. Currently, Tyumen is the base city for all oil fields, and the town of Mirny supplies shift workers for new diamond deposits and oil fields. This list can be expanded to include cities in southern Siberia. Biomedical institutions and research and engineering centers serving the Arctic should also be developed.

The infrastructural basis for enhancing the connectivity of the Siberian space and cross-border integration interactions is the Northern Sea Route. Its significance for Russia in modern conditions is increasing, since the main land transport corridors implemented by China within the strategic initiative Belt and Road bypass the Russian space. They are competitors to the Russian corridors (expansion of Transsib, etc.), which were guided earlier by the hope that Siberia could become a bridge between Europe and Asia–Pacific countries. In such a situation, the NSR is becoming a de facto no-alternative maritime transport corridor for connecting the countries of Europe and Northeast and Southeast Asia, and this is why these countries are paying close attention to it.

Availability of the world’s strongest icebreaker fleet in Russia, climatic changes in the Arctic; the implementation of Arctic LNG and new resource projects significantly increase the competitiveness of the NSR and bring it closer to year-round operation. However, to increase the role of the NSR not only for the transit of goods from Asia–Pacific countries to Europe and vice versa, but also to strengthen the latitudinal–meridional connectivity of the Siberian space, it is necessary to solve the problems of mass delivery of goods from the southern and middle territories of Siberia along its most important rivers (the Yenisey and Ob) to the ports of the Arctic Ocean, creation for these purposes of a specialized new-generation river fleet, development of port communications, etc.

Of great importance are the social and ethnic aspects of development of the Siberian Arctic, whose harsh natural and climatic conditions preclude the mass settlement of these territories. The unique phenomenon of Norilsk, when a city with a population of more than 150 000 people was built above the Arctic Circle, can hardly be reproduced in modern conditions. The format of Arctic cities at the giant factories of the USSR is a thing of the past, and now the Siberian Arctic is developing via the combination of shift camps and small settlements with a permanent population.

The current settlement policy in Russia’s Asian Arctic must implement two basic principles: (a) ensuring acceptable living conditions for all Arctic residents, whose direct labour is needed in this region, with mandatory availability and accessibility of at least a national average package of social and public services; (b) providing opportunities for the indigenous peoples of the North to pursue a traditional way of life in places and territories where these activities are motivated by natural, cultural, and historical factors.

The rotation-based employment is likely to remain the most important model for development of the Northern and Arctic territories of Siberia. But in order to increase the connectivity of the entire Siberian space, at least two conditions must be met in its practical implementation: the southern territories of Sibe-
ria have assumed the function of forming support, ser-
vice, and recreational zones for shift camps in the
North and Arctic; the composition of shift workers
would gradually be replaced by Siberians (at present,
the overwhelming majority come for rotational work
from regions of European Russia, as well as from
Belarus and Azerbaijan).

Of course, Siberia needs to implement a new policy
for development of the Northern and Arctic territo-
rries, which should focus both on efficient extraction of
northern resources and optimization of vital systems
in these regions, including the implementation of
resettlement programs, if it is found impossible to
develop and maintain the existing northern settle-
ments, etc. At the same time, year-round navigation
along the NSR and development of new resources in
the Northern and Arctic zones of Siberia open up new
opportunities for the Northern Arctic vector of the
macro-region’s development.

An important step in this direction was taken in
2020, when the Strategy for Development of the Arctic
Zone of the Russian Federation and Ensuring
National Security for the Period up to 2035 was
approved. It clearly formulates the main goals and
objectives of development of this macro-region, both
in the context of ensuring Russia’s national security
and from the perspective of developing business and
population (including indigenous peoples of the
North and the Arctic). Most importantly, this strategy
was supported by the rapid development and adoption
of other resolutions, regulations, and amendments to
the current legislation. The most important of them is
Federal Law no. 193 FZ of July 13, 2020, On State
Support of Entrepreneurship in the Arctic Zone of the
Russian Federation. Thus, in accordance with it, a free
customs zone procedure has been applied throughout
the Arctic zone, and other preferences similar to free
economic zones have been established.

CONCLUSIONS AND SUGGESTIONS

Important, but not the only problems modern
positioning of Siberia in the socioeconomic space of
Russia were considered above. These are the problems
of social, scientific and technical, ecological, trans-
port, and infrastructure development of Siberia, prob-
lems of the indigenous peoples of the North, etc.,
which require a more detailed description. We have
attempted once again to substantiate the thesis that
Siberia’s enormous potential has not yet been used
effectively enough. Therefore, the following are advis-
able:

—creation of decent conditions for doing business
and life for Siberians: what is needed is not so much
benefits and preferences, but a system aimed at pro-
moting and developing initiative in all spheres of activ-
ity; access of Siberians to natural resources is of para-
mount importance;

—stimulation and regulation of integration pro-
cesses in the region’s economy in both latitudinal and
meridional directions; encouragement, development,
and expansion of forms of spatial integration and
cooperation in the development and use of the
region’s natural resource potential;

—development of science and education to meet
the challenges of development of the macro-region
and to maintain and strengthen the defense potential
of the entire country;

—emphasis on investing in people, in generating
new knowledge, skills, and abilities, as well as creating
favorable living conditions and activities, taking into
account local natural and climatic conditions;

—formation of a modern spatial configuration of
the Siberian economy based on interaction of its
regions within the “southern latitudinal belt” and a
network of “meridional frame links” (such as, e.g.,
Yenisey Siberia); accelerated formation of the agglom-
eration (conurbation) along the Trans-Siberian Rail-
way with high-speed and efficient transport links;
development of an intra-Siberian market for goods
and services of industrial nature;

—the transition from a “pure market” of goods and
products for industrial purposes in the implementa-
tion of projects in the leading industries of the region’s
specialization to the market of spatially distributed
production and intellectual services based on new
knowledge;

—inclusion of decision-making procedures in the
context of the civil legal process and ensuring imple-
mentation of Article 72 of the RF Constitution on
issues of joint jurisdiction of the Russian Federation
and its subjects: regions and municipalities cannot but
have the right to vote (up to the right of veto) on deci-
sions in granting rights to natural resource use.

To achieve all these goals and objectives, an accen-
tuated view of Siberia as a whole is required, including
within the framework of strategic planning and
administration at the national and interregional levels.
The institutionalization of the new Strategy for Devel-
opment of the Siberian Federal District in the current
legal system is possible in the form of the State Pro-
gram for Development of the Macroregion. The dif-
ference between this document and the previous strat-
egie should be not only in combining national projects
and state programs, long-term plans of ministries,
corporations, and strategies for the development of
Siberian regions, but also in the formation and devel-
opment of a “process component” focused on the
continuous identification and development of oppor-
tunities for economic interaction within Siberia
between different business agents and territories.

FUNDING

The article was prepared within the framework of
research on the project “Socioeconomic Development of
Asian Russia Based on the Synergy of Transport Accessibility, Systemic Knowledge about the Natural Resource Potential, the Expanding Space of Interregional Interactions” (grant from the Ministry of Science and Higher Education of Russia no. 13.1902.21.0016).

CONFLICT OF INTEREST
The authors declare no conflict of interest.

REFERENCES
Bradshaw, M. and Vartapetov, K., A new perspective on regional inequalities in Russia, Eurasian Geogr. Econ., 2003, vol. 44, no. 6, pp. 403–429.
Buszynski, L., Oil and territory in Putin’s relations with China and Japan, Pac. Rev., 2006, vol. 19, no. 3, pp. 287–303.
Considine, J.I. and Kerr, W.A., The Russian Oil Economy, Cheltenham: Edward Elgar, 2002.
Dienes, L., Observations on the problematic potential of Russian oil and the complexities of Siberia, Eurasian Geogr. Econ., 2004, vol. 45, no. 5, pp. 319–345.
Ekonomika Sibiri: strategiya imaktaka modernizatsii (Economy of Siberia: Strategy and Tactics of Modernization), Kotorovich, A.E., Kuleshov, V.V., and Suslov, V.I., Eds., Novosibirsk: Ankil, 2009.
Formirovanie blagopriyatnoi sredy dlya prozhivaniya v Sibiri (Development of a Favorable Environment for Living in Siberia), Kuleshov, V.V., Ed., Novosibirsk: Inst. Ekon. Org. Prom. Proizvod., Sib. Otd., Ross. Akad. Nauk, 2010.
Gaddy, C.G., and Ickes, B.W. Russia’s Addiction: The Political Economy of Resource Dependence, Washington, DC: Brookings Institution, 2010.
Hill, F. and Gaddy, C., The Siberian Curse: How Communist Planners Left Russia Out in the Cold, Washington, DC: Brookings Inst. Press, 2003.
Kolosovsky, N.N., Budushchee Uralo–Kuznetskogo kombinata (Future of the Ural–Kuznets Industrial Complex), Moscow: Gos. Sots.-Ekon. Izd., 1932.
Kryukov, V.A., Formirovanie blagopriyatnoi sredy dlya prozhivaniya v Sibiri (Development of a Favorable Environment for Living in Siberia), Kuleshov, V.V., Ed., Novosibirsk: Inst. Ekon. Org. Prom. Proizvod., Sib. Otd., Ross. Akad. Nauk, 2010.
Kryukov, V.A. and Kryukov, Ya.V., Modern economy of Arctic, Konturry Global’nykh Transf.: Polit., Ekon. Pravo, 2019, vol. 12, no. 5, pp. 25–52.
Kryukov, V.A., Lavrovskii, B.L., Seliverstov, V.E., Suslov, V.I., and Suslov, N.I., Siberian development vector: based on cooperation and interaction, Stud. Russ. Econ. Dev., 2020, vol. 31, no. 5, pp. 495–504.
Melnikova, L.V. and Seliverstov, V.E., The past, present and future of Siberia through the eyes of foreign scientists and analysts, in Siber’ v pervye desyatletiya XXI veka (Siberia over First Decades of 21st Century), Kuleshov, V.V., Ed., Novosibirsk: Inst. Ekon. Org. Prom. Proizvod., Sib. Otd., Ross. Akad. Nauk, 2008, ch. 7, pp. 86–101.
Miller, G.F., Istoriya Sibiri (History of Siberia), in 2 vols., Moscow: Akad. Nauk SSSR, 1937–1941.
Mir Arktiki. Tom 1. Vozmozhnosti i ogranicheniya (World of Arctic. Vol. 1: Opportunities and Limitations), Kryukov, V.A. and Krivorotov, A.K., Eds., Novosibirsk: Inst. Ekon. Org. Prom. Proizvod., Sib. Otd., Ross. Akad. Nauk, 2018.
Parshiev, A.P., Pochemu Rossiya ne Amerika (Why Russia is not America), Moscow: Krymskii Most–9D, 2000.
Pilyasov, A.N., Kuleshov, V.V., and Seliverstov, V.E., Arctic policy in an era of global instability: experience and lessons for Russia, Reg. Res. Russ., 2015, vol. 5, no. 1, pp. 10–22.
Problemnye regiony resursnogo tipa: ekonomicheskaya integratsiya evropeiskogo Severo-Vostoka, Urala i Sibiri (Resource-Type Problem Regions: Economic Integration of the European Northeast, the Urals, and Siberia), Alekseev, V.V., Bandman, M.K., and Kuleshov, V.V., Eds., Novosibirsk: Inst. Ekon. Org. Prom. Proizvod., Sib. Otd., Ross. Akad. Nauk, 2002.
Seliverstov, V.E., Regional’noe strategicheskoe planirovanie: ot metodologii k praktike (Regional Strategic Planning: From Methodology to Practice), Kuleshov, V.V., Ed., Novosibirsk: Inst. Ekon. Org. Prom. Proizvod., Sib. Otd., Ross. Akad. Nauk, 2013.
Semenen-Tyan-Shansky, V.P., On the powerful territorial possession in relation to Russia, Izv. Imp. Russ. Geogr. O-va, 1915, vol. 11, no. 8, pp. 425–458.
Shabad, T. and Mote, V.L., Gateway to Siberian Resources (the BAM), Washington, 1977.
Sibir’ na poroge novogo tysyacheletiya (Siberia on the Turn of New Millennium), Kuleshov, V.V., Ed., Novosibirsk: Inst. Ekon. Org. Prom. Proizvod., Sib. Otd., Ross. Akad. Nauk, 1998.
Sibir’ v edinom narodnokhozyaystvennom komplekse (Siberia in a Single National Economic Complex), Bandman, M.K., Kalmyk, V.A., Orlov, B.P., and Tsimdina, Z.R., Eds., Novosibirsk: Nauka, 1980.
Sibir’ v pervye desyatletiya XXI veka (Siberia over First Decades of 21st Century), Kuleshov, V.V., Ed., Novosibirsk: Inst. Ekon. Org. Prom. Proizvod., Sib. Otd., Ross. Akad. Nauk, 2008.
Soviet Natural Resources in the World Economy, Jensen, R.J., Shabad, T., and Wright, A.W., Eds., Chicago, IL, 1983.
Thompson, N., Migration and resettlement in Chukotka: a research note, Eurasian Geogr. Econ., 2004, vol. 45, no. 1, pp. 73–81.
Veinberg, B.P., Positions of the center of the surface of Russia from the beginning of the Principality of Moscow to the present, Izv. Imp. Russ. Geogr. O-va, 1915, vol. 51, no. 6, pp. 365–408.
Whiting, A.S., Siberian Development and East Asia: Threat or Promise? Stanford: Stanford Univ. Press, 1981.
Yadrintsev, N.M., Siber’ kak koloniya v geograficheskom, etnograficheskom i istoricheskom otnoshenii: illyustrirovannoe 16 sibirskimi vidami i tipami (Siberia as a Geographic, Ethnographic, and Historical Colony: Illustrated by 16 Siberian Views and Types), St. Petersburg: Izd. I.M. Sibiryakov, 1892.