

Bezrukov, Leonid

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## The barriers and ways for development of Siberia's regions with limited transport accessibility

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**THE BARRIERS AND WAYS OF DEVELOPMENT OF SIBERIA'S REGIONS  
WITH LIMITED TRANSPORT ACCESSIBILITY**

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Regions with limited transport accessibility are considered to mean territories with no year-round roads and communications. Within the confines of Siberia, the largest macroregion of Russia, there are huge (in area) hard-to-access territories endowed only with seasonal routes of communication and the expensive air transport. The socioeconomic state of the Siberian regions with limited transport accessibility is under a negative influence of the two transport-economic barriers simultaneously.

The existence of the former of them is characteristic for the entire Siberia, including the zone serviced by arterial railroads and year-round motor roads. The operation of this barrier is associated with the intra-continental (landlocked) location of Siberia, and with the huge expensive distances which have to be traveled when transporting cargoes and passengers to the leading centers and sea ports of Russia and the world (and, accordingly, vice versa). The second barrier arises directly because of lack of year-round communications, and its operation is characteristic precisely for regions with limited transport accessibility, having to bear exorbitant transportation costs and to remain in a backward socioeconomic state.

**THE BARRIER OF THE INTRACONTINENTAL LOCATION**

**The difference in the effectiveness of land and sea transportation.** The advancement of transport and communications, accompanied by a drastic reduction in transportation costs, has been responsible over the last several decades for a truly “explosive” character of the processes of territorial division of labor by opening access to the most remote regions and to the most diverse resources on the globe and accelerating the globalization processes. In connection with progress in the transport-communication sphere, it is even thought that the transport and geographical factors no longer play any significant role and that the “principle of payment for distance” loses its determining importance. But does the tendency for a “shrinkage” of space act identically for all regions on the globe and to what

extent can we speak about a decline in the role of the transport-geographical factor in economic development?

We now consider some facts and ask some questions. Why when pointing out the unfavorable location of Siberia relative to the main world markets – West Europe, the USA and East Asia – no mention altogether is usually made of the inconveniences of the more remote (from these markets) Australia and New Zealand (moreover, it is the “Australia – East Asia” direction that became recently the most powerful international cargo traffic in the world)? Why were the most advanced countries in Europe in the 19<sup>th</sup> century and in Asia in the 20<sup>th</sup> century represented by small insular states – Great Britain and Japan, respectively? Why do the four “East Asian tigers” (Republic of Korea, Hong-Kong, Singapore and Taiwan) consist exceptionally of the insular and peninsular countries? On the other hand, Why are the intra-continental (landlocked) countries of Asia, Africa and Latin America, usually, the most backward and poorest countries?

The answer to these questions must be sought primarily in the transport-communication sphere, as the effectiveness of transportation by land and sea is fundamentally different. A qualitative assessment of these differences was made by comparing the average income rates from transportation of cargoes by the railroad transport as the most effective among the types of universal land transport, and the average income (freight) rates of the sea transport. Calculations showed [1] that the freight rates of the sea transport as of the end of the 20<sup>th</sup> century – beginning of the 21<sup>st</sup> century were lower than the average income rates of cargo railroad transportation of West Europe and Japan by a factor of 70–80, North America – by a factor of 20–25, and Russia – by a factor of five. As a result of the obvious technico-economic advantage of the sea transport over the more expensive land transport, the landlocked countries and regions, when compared with maritime ones, have to bear an increased level of transportation costs per unit of identical products.

The results of a reduction (during the 20<sup>th</sup> century) in transportation costs are highly differentiated by regions and countries of the world, and they are primarily determined by differences in the effectiveness of transportation among the dominant types of transport. The most economical type of transport is the sea transport which ensures an unprecedented (for the other types of transport) cheapness of transportation. On the other hand, the high transportation costs for intra-continental regions still remain an important obstacle to the entry in the world market, because not only did the gap between railroad and motor road transport tariffs, on the one hand, and sea transport tariffs, on the other, decrease, but it even increased substantially by the beginning of the 21<sup>st</sup> century. As a result, the main competitive

advantages from a reduction in the transportation costs were gained by maritime areas which are serviced by the sea transport, whereas in the heart of the continents the transport-economic situation remains fundamentally different. Contrary to the common expectations that, in view of the overall “reduction in distances” the world has “shrunk” to become “quite small”, the transport-geographical factor, as before, plays an immense differentiating role in international and regional development.

The most important unfavorable peculiarity of the transport-geographical location (TGL) of Siberia at the global level is an exceptionally large remoteness of its territory from the unfreezing seas and oceans, and from the leading centers of the country and the world and, accordingly, from the main sales markets of products. In view of the distances by arterial railroads, the remoteness from the main year-round national sea ports (St. Petersburg, Novorossiisk, Vladivostok–Nakhodka, and others), the territory of the Siberian Federal District will be more than four thou km, with even more than four thou km corresponding to such industrial Siberian regions as Krasnoyarsk krai and Irkutsk and Kemerovo oblasts. At the same time, according to our calculations [2], Siberia accounts for more than a half of the national volume of cargo shipped by the general-purpose transport.

There is no other industrial region or country of the world where such super-long and, at the same time, cargo bulk transportation by land has to be dealt with. In China, the vast Sinjiang and, moreover, Tibet, separated from the sea coasts by more than two thou km, are distinguished by an insignificant industrial potential. The territory of Canada that is situated at a similar distance from the unfreezing sea ports, is exceptionally weakly developed and populated. The USA, Brazil and Australia occupying the last three places among the six states on the globe with the largest areas, do not include at all any inland spaces separated by such distances from the sea. It is Siberia which is the world’s largest ultra-continental massif of land, and a combination of this continentality with its significant industrial potential places the macroregion into a situation that has no equal the world’s other regions.

The factor of deep intra-continental (inland) location and gigantic land distances that is responsible for the increased level of transportation costs has always had an unfavorable influence on the Siberian economy, making the participation in the international and inter-regional division of labor difficult. In Soviet times, however, the cost-increasing influence of this factor was partly “smoothed out” by a targeted state policy aimed at a minimization of transportation tariffs, arterialization of the railroad transport, and regulation of pricing in the key sectors of the economy. In the post-Soviet era, a most drastic dwindling of the regulating and redistributing functions of the state, combined with a precipitous integration of Russia

into the world market, has exacerbated dramatically the problem of “overcoming space” thus placing the Siberian regions into the country’s most disadvantageous transport-economic conditions.

**Transportation costs and economic effectiveness.** We now unravel the cost-increasing influence of the transport-economic factor on the effectiveness of economic performance by considering an example of Irkutsk oblast located in the heart of Eurasia. The total transportation costs for products manufactured by oblast’s commodity producers constitute a very considerable amount which in the first half of the 2000s exceeded, for instance, all regional budgetary earnings [1]. The highest proportion of these costs was recorded in the chemical industry of the region (13.8%), nonferrous metallurgy (16.1%), coal mining (18.9%), paper-and-pulp industries (20.1%), and in ferrous metallurgy (30.1%).

The proportion of transportation costs in the final cost of separate kinds of regional products reaches unprecedented amounts for the overwhelming majority of Russian regions and, moreover, for the other countries of the world. Thus, transportation costs in the total cost of exported aluminum are as high as 16%, which exceeds the similar indicator for foreign aluminum companies by a factor of 3–5. The transportation component in the price of alumina imported in the region reaches 30–50%, whereas for western rivals such costs are minimal. The proportion of transportation costs is still larger in the cost of a number of kinds of mass products exported by the timber, coal and chemical complexes – sometimes as high as 60–70% or more.

A large negative influence comes from increased transportation costs upon their profits and upon the financial-economic system of Irkutsk oblast as a whole. The analysis used data on six major enterprises of the aluminum, paper-and-pulp and chemical industries for 2003. Comparison of their summary indicators of balance-sheet profit and transportation costs shows that because of the high amounts of the costs, the profit is decreased by a factor of more than 10 [1]. The total reduction in profits tax on account of transportation costs for the enterprises under consideration exceeds 2.2 billion rubles, and the losses of the oblast’s budget are estimated at 1.5 billion rubles. This means that the profits that are excluded from the region’s tax base due to the increased transportation costs in the profits tax item, merely for 6 enterprises, exceed 9% of oblast’s budget. Consequently, high transportation costs ultimately lead to a marked decrease in the taxes for the regional and local budgets.

The last conclusion is quite well confirmed by comparing the actual level of transportation costs of Irkutsk oblast with calculated levels of the transportation costs borne by regions of the country’s European part – the metropolitan Moscow oblast and the

Republic of Bashkortostan which is the center of “gravity” of the population and industry of Russia. The location of these regions relative to the sea routes and external sales markets is more advantageous; moreover, they have a receptive domestic market. It is therefore quite natural that their commodity producers bear substantially lower transportation costs in the case of the entry in the external and domestic markets when compared with the Siberian commodity producers.

Results of calculations show that in the case of transportation of identical cargo, the size of transportation costs and corresponding losses of budgetary earnings in European regions will be much lower when compared with Irkutsk oblast and the Republic of Bashkortostan, namely by a factor of 1.6, and in Moscow oblast by a factor of 2.2 [1]. At the broader territorial level of generalization, this means that when compared with transportation costs of commodity producers in the deepest part of Siberia, such costs borne by commodity producers of Ural and the European part of the country in the case of marketing of products are lower by a factor of 1.5–2 as a minimum. Therefore, for the commodity producers in European regions, all other factors being equal, the profits are much higher than in the case of the commodity producers in Siberian regions and, hence, the profits tax and budgetary earnings are higher.

As a result, it turns out that the exceedingly high transport component in the value of exported raw materials and semi-finished products acts to decrease substantially the profitability of the operations, and the earning power and the price competitiveness of products of most production facilities and industries of Siberia. A very appreciable proportion of the resultant financial resources is “pumped out” from the incomes of commodity producing enterprises and from enterprises consuming imported products, from the incomes of the population, and from financial-economic systems of Siberian regions through payment for transportation costs, which is responsible for a reduction in budgetary receipts, and for a decline in the level of living of the population. The increased cargo transportation costs represent a peculiar kind of negative differential economic rent of the location which Siberia’s regions are paying, in some or other form, to the other (transit) Russian regions, to the federal center, and to the world community. This rent of the “continental-oceanic genesis” leaves Siberia mainly via general national transport monopolies represented by OAO “Russian Railways (RZhD)”, OAO “Gazprom” and OAO “Transneft” as well as predominantly through foreign sea carriers. Thus Siberia’s intra-continental location as the transport-economic barrier constitutes a very strong negative macroeconomic factor which is, to a great extent,

responsible for the decrease in effectiveness of production, budgetary earnings and the level of living of the population, remaining an important obstacle to the entry in remote markets.

### THE BARRIER OF LIMITED TRANSPORT ACCESSIBILITY

The territories of Siberia lacking railroads and year-round roads are under pressure of two transport-economic barriers at a time, undergoing a negative influence of their deep intra-continental location as well as of the barrier of limited transport accessibility. The zone that is serviced by arterial railroads and year-round motor roads, generally corresponds to a relatively narrow Main belt of population distribution encompassing mainly the southern part of the macroregion along Transsib. On the other hand, almost the entire (with its area predominating) part of Siberia's territory is hard-to-access region in the transport-economic context – it is endowed only with seasonal water ways and with the most expensive types of transport and communication routes, namely winter motor roads and the air transport. These huge continuous peripheral territories, devoid of year-round communication routes, may well be referred to as the remote (according to B.B. Rodoman [9]) or zonal (according to A.N. Pilyasov [8]) Siberian “out-of-the-way” places. These notions deflect, to some extent, the specific character of Russia's eastern regions which are as yet extremely poorly developed as regards the transport and communication routes.

The area of Siberia's territory with limited transport accessibility is unrivaled among the other regions of the world in its huge size. Thus, as before, there are no railroads in Tyva and Altai, Taimyr and Evenkia, the northern districts of Krasnoyarsk krai and Tomsk and Irkutsk oblasts, and in almost all Yakutia. Several tens of thousand of human settlements with the population size totaling several million people do not have any stable communication with the country's transport network via paved motor roads. In view of a limited number of settlements with airports plus the immense distances between them, most of the population are left beyond the zone of accessibility by the air transport.

Siberia's areas with limited transport accessibility have to bear exorbitant transportation costs and, hence, remain in a disadvantageous socioeconomic situation. We have established as part of a cost assessment of the TGL [2], transportation costs in areas devoid of railroads are increased several times when compared with the belt in the vicinity of the railroad. An especially disadvantageous TGL corresponds to areas in which the transportation schemes consist of several components, or links. They are the most backward and abandoned areas, deeply peripheral territories of Siberian subjects of RF distinguished by

an exceptionally sparse network of settlements, by a total lack of roads, and by extensive kinds of economy.

The acuteness of the population's life support problems arising here can be vividly illustrated by an example of how supplies are arranged for a number of Arctic areas (uluses) in the Sakha (Yakutia) Republic. Cargo arriving for them by railroad is transshipped in Ust-Kut (port Osetrovo) to the river transport to be transported downstream the Lena as far as its mouth, further by the sea lines of the Northern Sea Route on the ocean to the mouths of the Yana, Indigirka, Kolyma, Olenek, Anabar, Khatanga and other rivers, then upstream these rivers and, finally, are delivered from them by winter motor roads to the particular points of destination. The total transportation duration of goods to the end consumers is as long as 1 year for some of the uluses, and sometimes even 1.5 year [7].

The transport-communication factor plays an exceptionally important role in economic and social-demographic development: the worse is the degree of transport accessibility, the lower is, in the general case, the level of living and the life quality of the population, the more archaic is the economy, etc. Thus, among the 100 Siberia's districts separated by many hundreds of kilometers from railroads, noteworthy as regards the volumes of production are only five districts with their centers in Norilsk, Mirny, Bodaibo, Severo-Yeniseisk and Yakutsk which are distinguished by highly profitable extraction of the most valuable and mostly transportable resources. In all of the other hard-to-access districts, industrial production is extremely insignificant.

In Siberian areas with limited transport accessibility, the entire post-Soviet era has witnessed an extremely unfavorable population dynamics. For instance, while the areas in Krasnoyarsk krai and Irkutsk oblast that are endowed with railroads and year-round motor roads, lost 7.6% of their population during 1989 to 2010, the areas with limited transport accessibility lost 38.8% (i.e. the depopulation processes were by a factor of five more intense here). The demographic potential of a number of hard-to-access areas and cities decreased by 60–80%, which signifies a very strong depopulation and a degradation of the existing population distribution schemes.

In spite of its acuteness and current importance, the problem of development of areas with limited transport accessibility, as a major issue having an overall Siberian and even national significance, has not been discussed in this country in recent decades. The practical actions that are undertaken with regard to such areas largely have an inadequately systemic character. For instance, great potential is expected from the proliferation of information-communication technologies which when employed widely, are allegedly capable of making



for transport inaccessibility. However, the possibility of comparing the level of living in out-of-the-way places with the attractive lifestyle in capital cities most often yields quite an opposite effect thereby enhancing the outflow of population to the more successful centers and deepening the core-periphery polarization of Russia's space.

On the other hand, most districts with limited transport accessibility have a considerable natural-resource potential, primarily large reserves of mineral-raw material, forest, hydropower and water resources. The absence of year-round routes of communication, especially railroads, prevents broad-scale development of these resource-rich territories.

## HOW TO OVERCOME THE TRANSPORT-ECONOMIC BARRIERS

**Measures for a minimization of transportation costs.** In view of the negative influence on Siberia's development from the two transport-economic barriers: the barrier of the intra-continental location, and the barrier of limited transport accessibility for most of the territory, efforts must be concentrated on all conceivable reduction in transportation costs. It is logical to systematize the appropriate suggested measures by dividing them into two groups [1].

The **first group of measures** includes six directions focusing mainly on a direct decrease in transportation costs.

1. An enhancement in the role played by the state in the regulation of transport tariffs aimed at their maximum possible decrease. Maintenance of a relatively low level of railroad tariffs (and, incidentally, of the other transport tariffs) is a vital condition for keeping up the economic and social-everyday life ties in a huge continental country and, primarily, in Siberia.

2. Construction of new railroads and year-round motor roads via the implementation of major investment transport projects. The planned routes of communication have potential to radically improve the TGL and reduce transportation costs for many northern and mountainous areas of Siberia. This will be instrumental in dramatically expanding the zone of stable transport service and in opening economical access to resource-rich territories.

3. A decrease in the mean distance of transportation through an optimization of economic ties. A very impressive transport-economic effect would come from a maximum possible decrease in the mean distance of cargo transportation through a reorientation of some of the existing foreign trade ties to economic ties with Russian regions (primarily with

neighboring Siberian, Ural and Far-Eastern regions<sup>0</sup> and with the nearest neighbors China, Kazakhstan, and Mongolia.

4. Creation of trans-continental Eurasian transport corridors. Implementation of these projects is a potentially powerful tool for a further transport arterialization and for a minimization of transportation costs. An example of such a super-arterial railroad is, to a certain extent, provided by the Trans-Siberian Trunk Railroad (Transsib), on the basis of which it would be highly advantageous to create the trans-continental transport corridor to connect, via the shortest possible route, West Europe and East Asia.

5. Obtaining by the regions of special-purpose financial support from the federal budget for compensating the increased transport costs of the population. Such support must be regarded as a necessary social measure with a focus on the mediation of unprofitable consequences of the remote location of Siberia and the Far East from the capital city and the more comfort (including maritime and health resort) areas in the European part of Russia.

6. Accelerated development of the transport-communication infrastructure of maritime and border regions. The case in point is buildup of port capacities at all main sea entries of Russia: Baltic, Azov-Black Sea, Murmansk and Sea of Japan, through a reconstruction of the operating sea ports and the construction of new sea ports, as well as their more convenient connection with the country's arterial railroads.

7. Radical reforming of the international commercial rules that serve as guidelines for the "basic delivery conditions" of goods, with the purpose of eliminating one-sided economic advantages of maritime countries and regions to the detriment of landlocked (continental) countries. Such a radical restructuring of the world-economic relations will make it possible to achieve a more equitable distribution of transportation costs in the case of foreign trade operations between countries and regions of the world, regardless of their macrolocation relative to the sea routes.

**The second group of measures** consists of four directions aimed at an overall reduction in cost intensity and product cost, including through a decrease in transportation costs.

1. Gradual replacement of gross exports of raw materials and semi-finished products by exports of transportable end products this is especially true for high-technology and science-intensive products. It is necessary in this case not to oppose science-intensive and resource-extracting sectors but to ensure a synergistic effect from their interaction. A central direction for improving the economic effectiveness of Siberia should involve a deepening of

processing of raw materials through the establishment of end process stages, primarily on the pre-existing industrial base.

2. Resumption of the practice involving systematic formation of territorial-production complexes (TPC) as an efficient system of organization and development of the continental country's productive forces. Most of the TPC's economic effect implies concentrating the interrelated production facilities on a relatively compact territory, and optimizing the economic ties, which permits a considerable reduction in transportation costs.

3. An active state policy of protectionism toward domestic commodity producers. Considering the peculiarities of the Russian economy, foreign economic activity must involve the use of a broad range of protectionist measures to be taken with respect to domestic commodity producers, including the control instruments of an economic nature (transportation tariffs, customs duties, charges, etc.) as well as nontariff measures involving limitations or prohibitions of import and export (embargo, quotas, etc.).

4. Deployment (with state support) of transnational corporations, with Russian capital predominating, in countries with lower costs of production and commodity circulation. The removal of reproduction cycles beyond the national frames thereby considerably reducing a dependency of the national economy on unfavorable geographical factors would open up brand new vistas for active participation of Russia, including Siberia, in the formation, distribution and appropriation of world income.

Implementation of almost all of the suggested strategic measures is largely under the jurisdiction of federal authorities and requires from them an enhancement in direct state regulation of the most important sectors of the economy (natural monopolies, foreign economic activity, etc.) as well as carrying out an appropriate (i.e. meeting the Russian realities) structural, investment, price (tariff), taxation and regional policy. We now consider in some greater detail the problems of implementing the two of the aforementioned measures (directions).

**The trans-continental Eurasian transport corridor.** The creation of the Transsib-based trans-continental transport corridor holds much promise, but the emphasis itself on international transit transportation appears to have a secondary nature, because the eventual volumes of this transportation are not as large as to be able to considerably affect through the profits from them (about two billion US dollars per year) the economy of Russia [10]. A problem of first importance dealt with by Transsib under reconstruction involves achieving a significant reduction in transportation tariffs and costs for national consignors (consignees) using this artery railroad, which is necessary for the economic "approximation" of ultra-

continental Siberia to the leading centers of the country and the world, to seaports and oceanic ports.

On the other hand, there still remain many outstanding organizational and economic problems related to the creation of the aforementioned corridor. Thus, currently less than 1% of cargo transported between West Europe and East Asia corresponds to Transsib. For increasing this cargo traffic, the “Transport strategy of the Russian Federation into 2030” suggests that the speed of container trains be increased to 1000 km/day, i.e. by a factor of 3.5, so that all Russia from the Pacific Ocean to its western border can be traveled in 11 days. However, little else is said whether this speed is sufficient and how it can be achieved.

At the same time, it is known [6] that in the very near future Transsib will reach the limiting potential of its traffic capacity – an increase in the volumes of international transit transportation will necessarily make the transportation of national cargo difficult, subsequently leading to “stoppage” of this backbone railroad. Evidently, there is a need for a radical modernization of Transsib involving, first and foremost, its complete fencing, or its overpass (above-ground) modification in order to avoid problems associated with the crossing (at the same level) of the other tracks, cities, etc. According to available estimates [5], only the overpass variant of Transsib is able to ensure a realistically high speed of trains of up to 120–150 km/hour, traveling the entire territory of Russia in four days, an impressive productivity and profitability (with profits as high as 100 billion US dollars or more per year), and a workable competition with the sea transport.

Also, there is an outstanding problem of the through tariff rate and of the current non-competitiveness of land transit when compared with the sea route. Nowadays, the transportation cost from East Asia to West Europe by a long-distance sea route is considerably lower than the high-speed land variants, which is often explained by the too high tariffs in the case of Transsib. In fact, the Russian participants in transit from Japan to the Netherlands account only for about one-fourth of the through tariff, while three-fourth of the transportation cost correspond to the higher levels (by a factor of magnitude) of tariffs of European countries as well as to the costs of other operations.

The creation of the Transsiberian corridor also poses acute problems of a socioeconomic character. Thus, an enhancement in the role played by the major transport junctions: Tyumen, Omsk, Novosibirsk, Krasnoyarsk, Irkutsk and others, would inflict damage to the functioning of the other railroad-tied urban settlements along Transsib (in particular, because of liquidation of small maintenance centers, a reduction in the number of stops of trains, etc.). The fact that the arterial railroad has priority as regards performance of

its servicing (including general economic and social) functions would seriously impair the services rendered to the adjacent belt. On the other hand, the amount of profits from the increase of traffic in transit to be gained by the Siberian regions themselves is obscure.

**Construction of new railroads and year-round motor roads.** The planned construction (on the principles of state-private partnership) of new arterial and access ways of communication – railroad lines and year-round motor roads – has the capability of radically bettering the situation in areas with limited transport accessibility. We now demonstrate this by considering an example of the predictive estimated size of reduction of transport costs after commissioning of the planned railroads and motor roads. To accomplish this, a value assessment was made of the TGL (in rubles per ton of cargo) for all Siberian administrative “local” districts from Tyumen oblast on the west to the Sakha (Yakutia) Republic on the east, from 2005 and 2030.

Calculations are based on “economic” distances, i.e. the amount of costs necessary for traveling definite distances using particular routes. The adopted indicator of costs for traveling a definite distance by a given type of transport is represented by the average income rate from transportation of cargo obtained by dividing income from transportation by the size of a corresponding cargo turnover. The type of transport to be assessed is selected, based on the criterion of minimum costs incurred by the consumer to cover the transportation services (cargo transportation).

Calculations for the year 2005 made use of the actually operating transport schemes with the involvement of the land and water universal public types of transport: railroads, inland water transport, and sea transport. The forecast into 2030 took into consideration the construction of new railroads and motor roads. In accordance with “The transport strategy of the Russian Federation into 2030”, such crucial arterial railroads included the Northern Siberian railroad (Sevsib) from Nizhnevartovsk to Ust-Ilimsk, and the Tommot–Yakutsk–Magadan, Labutnangi–Salekhard–Nadym, Korotchayevo–Kureika–Igarka–Dudinka, Kuragino–Kyzyl, Ust-Kut–Nepa–Lensk, Naryn–Lugokan, Mogzon–Nov. Uoyan, Salym–Khanty-Mansiisk–Ivdel and other lines. The completion of the construction of two paved backbone motor roads: “Kolyma” (Magadan–Yakutsk) and “Vilyui” (Ust-Kut–Mirny–Yakutsk) was also considered.

According to our calculations [2], the implementation of the aforementioned projects would lead to an improvement of TGL (and, accordingly, to a reduction in transportation costs) in almost 100 districts across most of the area of Siberia. The group with relatively short “economic” distances would incorporate more than 20 districts, including the areas with

their centers in Yakutsk, Norilsk and Kyzyl. The most dramatic transformation would correspond to the TGL of separate areas of Yakutia and northern Krasnoyarsk krai: a reduction in cargo transportation here would reach 40–60% or more. Thus the huge territories of Siberia, through an improvement of their direct physical accessibility, could be provided by the year 2030 with quite different, much more favorable possibilities for full-fledged socioeconomic development.

Furthermore, implementation of major transport projects may well involve the occurrence of various risks making the achievement of planned objectives difficult. No serious analysis of many of them has been made yet, however. Thus, large socioeconomic risks involve a possibility of acute shortage of labor resources during the implementation of transport projects themselves as well as during the subsequent operation of the railroads and development and exploitation of those deposits of mineral resources for which the transport construction is, indeed, largely planned. The increasingly acute shortage of highly skilled engineering and technical personnel and workers in Siberia can frustrate implementation of many transport projects.

Traditionally, the construction plans for transport routes, mostly with a focus on the resolution of narrow sectoral tasks, inadequately take into account their multiplicative general-economic and social effect that manifests itself not only at the level of neighboring areas but also at the level of vaster territories as a whole. By far the majority of railroad lines nearly two-thirds of their total length correspond to so-called “cargo-forming” and “technological” lines intended largely for development of deposits of mineral resources. For that reason, it is common for the projects to neglect the issues related to the construction of year-round access roads from these routes to support points in adjacent areas.

The “transport strategies” under discussion bring forth truly impressive railroad line construction projects: Sevsib, Tommot–Yakutsk–Magadan, and others. Their priority status has not been established, and a great variety of technico-economic aspects have not been worked out; the spread in expert opinions here is quite significant, sometimes diametrically opposed. In particular, there is a competent opinion regarding the groundlessness of the proposal of Sevsib as the top priority project [3; 4]. Sevsib is requisite for bulk transportation of cargo within Russia to alleviate the operation of Transsib in connection with its conversion to a transcontinental corridor specializing in high-speed container and passenger trains. Maybe, it would pay to elaborate on the idea of transforming Transsib to the variant of railroad overpasses, with its current ground-level version remaining active. In this case, a dramatic increase in the traffic capacity of Transsib would make it possible to abandon the

idea of constructing the expensive Sevsib project (or, at least, to postpone its construction to a later date).

## CONCLUSIONS

Full-fledged socioeconomic development of Siberia is substantially obstructed by the existence of two transport-economic barriers, namely the macroregion's deep intra-continental location, and limited transport accessibility of most of its territory. To overcome these barriers implying all possible reduction of transportation costs calls for implementation of a great variety of strategic measures having a purely transportation character as well as being of a more general economic and organizational-managerial nature. It is suggested that the enhanced attention be given to elaborating the project of creating the Transsib-based transcontinental high-speed corridor through the use of fundamentally novel designs, which would yield a huge effect in the form of economic "approximation" of Siberia to the leading centers of the country and the world. The planned construction of the new railroad and motor roads is instrumental in dramatically improving the transport accessibility to almost a hundred districts in most of Siberia's area. Nevertheless, this would require a deeper degree of elaboration of these projects as well as a special-purpose substantiation for the influence of the planned transport routes on general economic and social development of the neighboring territories.

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