Urban reorganization and development of Baikal macro-region

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Abstract. One of the most important areas of spatial development of Russia is the innovative development of the territories of the constituent entities of the Russian Federation, which is reflected in the main documents of strategic planning - the forecast of socio-economic development of the Russian Federation for the period until 2030 [1]; Strategies for the innovative development of the Russian Federation for the period until 2020 [2]; Federal Law "On Territories of Advancement of Socio-Economic Development in the Russian Federation" [3]. With the formation of the Baikal macro-region, which includes the Irkutsk region, the Republic of Buryatia and the Trans-Baikal Territory, the role of the natural territory of Lake Baikal becomes the cornerstone. Without understanding the resettlement tasks in this area of Lake Baikal, it is impossible to implement the package of measures provided for by the Law on the Protection of Lake Baikal of May 1, 1992 No. 94-ФЗ [4] and the Federal Target Program "Protection of Lake Baikal and the Socio-Economic Development of the Baikal Natural Territory for 2012-2020 " [5]. Determination of the basic principles of the organization of urban planning systems in the Baikal and Trans-Baikal regions, and, above all, in their systemic core, the Baikal Natural Territory, is an extremely urgent urban planning problem.

1. Introduction

The purpose of the work is the justification of an integrated approach to the study, planning and forecasting of the Baikal natural territory, as the most important component of the three constituent entities of the Russian Federation.

Issues related to the deployment of the country's productive forces and the provision of a sound spatial development strategy by 2018 have come to the fore in government resettlement programs in the Russian Federation. The concept of the country's spatial development strategy up to 2035 with the prospect up to 2050 was adopted [6]. According to the proposals of the Ministry of Economic Development, Russia is divided into 14 macro-regions. Each of them reflects and even contains in the names the essence of its territorial and, possibly, resettlement aspect.

20 years ago, academician of the RAABS I.M.Smolyar noted that in the constitution of the Russian Federation, urban planning is not included in the list of subjects of competence at the federal level of state power, as well as in the list of subjects of joint jurisdiction of the federal government and subjects of the Federation [7].

Today, the situation in the resettlement of the country at the state level is recognized and, finally, an important document on the spatial development strategy of Russia has been adopted.

Irkutsk region, the Republic of Buryatia and the Trans-Baikal Territory became part of the sub-territorial block - the Baikal macro-region, united by proximity to Lake Baikal, and have a special
specificity of socio-economic and ethno-cultural development and mutual influence. The regions included in the Baikal macro-region have all the signs of landscape-ecological and economic-cultural integrity, which allows us to consider the existing formation as a conditionally uniform territorial entity.

The factors uniting the territory:
- The presence of significant natural resource potential;
- General transport and energy infrastructure;
- Significant environmental requirements and restrictions on doing business in the zone of influence on the ecosystems of Lake Baikal;
- Proximity to the rapidly developing countries of East Asia (Mongolia, China, Korea) - the main promising sales markets, as well as future sources of large investments.

2. Subjects of the Russian Federation in the structure of the Baikal macro-region

The unification of the Irkutsk region, the Republic of Buryatia and the Trans-Baikal Territory into a single territorial community, the Baikal macro-region is justified on the one hand by the necessity and possibility of joint participation of subjects in solving the national task: the revival of the industrial and economic complex in the east of the country, since further east and north only separate, mostly sectoral, industrial units are located. Therefore, the subjects of the Baikal region rightfully acted and are a powerful base for the development of the Far Eastern and northern regions of Russia.

On the other hand, programs and joint actions of state and regional institutions are required to overcome [8]:
- territorial disunity and the elimination of infrastructure "gaps";
- inconsistencies in the preparation of sectoral territorial planning schemes for individual entities and their parts (agglomerations) among themselves;
- unevenness and low density of settlement;
- a "peripheral" approach to the problems of protection and rehabilitation of the coastal territories of Baikal and the lake as a whole in the territorial planning schemes of the Irkutsk region, Trans-Baikal Territory and the Republic of Buryatia, that is, important strategic documents for the development of the constituent entities of the Russian Federation.

The materials of territorial planning developed in modern conditions for all three subjects of the Baikal macro-region are distinguished by the presence of common shortcomings:

An “intraregional” approach to the development of territorial planning schemes, underfunding of measures laid down in federal and regional target programs to improve the socio-economic and natural-ecological situation of the Baikal natural territory, inefficiency and uncoordinated measures, aggravate the unfavorable situation in each of the constituent entities of the Russian Federation individually.

STP of the Irkutsk region is an illustration of a “peripheral” approach to resolving issues related to the rehabilitation and development of the coastal territories of Lake Baikal. The administrative boundaries of the STP of a constituent entity of the Russian Federation limit the scope of consideration, exclude the necessary accounting for the influence of Lake Baikal and neighboring constituent entities of the Russian Federation on the urban planning system as a whole [9].
Uncoordinated activities exacerbate the adverse situation in each of the constituent entities of the Russian Federation individually [9].

Picture 2. Territorial planning scheme of the Irkutsk region. GIPROGOR 2018

Picture 3-4. Territorial planning scheme of Republic of Buryatia and Zabaykalsky Krai. GIPROGOR 2018

3. Baikal natural territory as a whole object of research and territorial planning

In the framework of the current Urban Code of the Russian Federation, the development of planning strategic documentation of an intermediate nature is a territorial planning scheme for a part of the subject of the federation.

This regulation is used by Russian urban planners - designers in the development of large urban agglomerations. In our case, the existing territorial planning schemes of the Irkutsk, Chita and Ulan-Ude city agglomerations are considered.

Specialists - urban planners confirm the need to develop intermediate, transitional planning documents for the development of urban planning systems from the territorial planning scheme - the upper level of consideration, to the lower level - the general plan of the settlement and, further, to the planning projects of the territories of settlements.

The design of the Baikal natural territory on the basis of the Law on the Protection of Lake Baikal, as an independent object of socio-economic regulation, is necessary for implementing the provisions of the Federal Target Program "Protection of Lake Baikal and the program for the socio-economic development of the Baikal natural territory for 2012-2020."

The design of the Baikal natural territory on the basis of the Law on the Protection of Lake Baikal, as an independent object of socio-economic regulation, is fixed by the provisions of the Federal Target
Program “Protection of Lake Baikal and the Socio-Economic Development of the Baikal Natural Territory for 2012-2020”.

This suggests, in our case, the formulation of urban planning, settlement approaches as a self-sufficient object of study. Only on the shores of Lake Baikal live more than 200,000 people. The volume of negative impact on the Baikal natural territory per year (2016-2018) by the subjects of the Russian Federation was characterized by the following indicators:

- **Irkutsk region:** Emissions - 391.5 thousand tons Discharges -30.1 mln.m3 Waste - 275.7 thousand tons
- **The Republic of Buryatia:** Emissions - 119.6 thousand tons Discharges -495.4 million m3 Waste - 11712 thousand tons
- **Transbaikal region:** Emissions - 10.9 thousand tons Discharges - 1.3 million m3

Waste - 366.6 thousand tons

The growth rates of these indicators are growing and, according to expert estimates, average 15-17% per year, both in terms of emissions and discharges, and 4.5% - waste generation [10].

At the same time, it becomes obvious that the development of individual subjective measures with the existing methodology for their coordination is doomed to receive a low-effective or even negative result.

The Baikal natural territory is considered as an integral and independent object of research and territorial planning.

Three zones of the Baikal natural territory form three types of urban development approaches.

**Central zone:**
- Environmental measures;
- Stabilization of resettlement and improving the quality of socio-economic and environmental living conditions of the population: transport links, jobs (fish farming, fishing, tourism and recreation);
- Atmospheric impact zone: Introduction and development of all types of modern technologies in production, excluding harmful emissions into the atmosphere;
- Transition to gas supply and gasification of public and personal vehicles.

**Buffer Zone:** The development of technologies and production in industry and agriculture sharply reducing the discharge of harmful substances.

Earlier, experts noted the need to take into account the processes of transformations and changes in trans-boundary territories and adjacent foreign ones.

**Picture 5. Territory of Mongolia in the zone of influence on the Baikal Natural Territory**

The drains of the river systems of the border regions of the Mongolian People's Republic are of decisive importance for the further formation of the buffer zone of Lake Baikal - 70% of the length of the Selenga River falls on the territory of Mongolia and 50% of the volume of water income of Lake Baikal.
The river remains the main supplier of controlled substances to Lake Baikal. Through the “closing gate” of the Selenga, 87.6% of suspended solids, difficult-oxidizable and easily-oxidizable organic substances come in each year - 78.0% of the total amount of these substances with water. The main source of air pollution are energy and motor transport enterprises both in Mongolia and in Russia, as well as Selenginsky Pulp and Cardboard Mill located in the immediate vicinity of Lake Baikal.

4. **Infrastructural background of rehabilitation and development of the Baikal natural territory**

The Ministry of Transport of the Russian Federation today formulated its priorities: “The implementation of the Strategy will ensure the rapid development of the transport network in the territories of the new development of the Far East and the Baikal region, including in the north-eastern part of the Far East” [1]. This position is shared by other departments and state corporations that have their own “sectoral” and targeted programs, oriented, as a rule, to profit.

Academician S.D. Valentai notes that current economic problems are caused by the fallacy of the policy of minimizing state participation in the technological renewal of domestic industry; in regulating the system of labor relations; in training in accordance with the challenges of the XXI century.

**Picture 6. Development of transport infrastructure of the Baku and Far East regions (scheme of the Ministry of Transport of the Russian Federation)**

Leading researcher at the Central Scientific Research Institute of Industrial Property of the RF Ministry of Construction E.O. Tovmasyan continues this idea, and in the urban planning aspect notes that improving the socio-economic status of society based on a nationwide policy is impossible without active state regulation of the spatial features of this process. Otherwise, in the development of the transport infrastructure of the Baikal macro-region, in general, and the Baikal natural territory in particular, the following shortcomings arise:

- Priority development of the north-east and far east directions;
- The “transit” role of the territories of the Baikal macro-region;
- Until 2035, targeted programs of the Russian Federation do not provide for the development of high-speed lines and SM in the Baikal macro-region;
- The prospects of “vertical” entrances to the regions of Mongolia and China were not taken into account. An almost critical situation has developed in the electrification of the territories adjacent to and affecting the ecosystem of Lake Baikal.
The backbone of the main directions of electric networks, the orientation toward the export of energy resources lead to a shortage of electricity in the macro-region, the underdevelopment of the general energy supply network;

The distortions in pricing in the industry and the monopolism of state corporations in foreign markets led to the idea of developing in Mongolia the concept of creating a hydropower complex in the buffer territory of Lake Baikal, consisting of three hydroelectric stations on the Selenga River and its two tributaries. According to preliminary estimates, the total volume of export of energy resources is 5-6 times higher than the region’s own energy consumption.

The industry’s lack of interest in the relevant ministries and the Gazprom corporation in the urgent need for gasification of the Baikal natural territory, the insufficient volume and number of consumers, in their opinion, make gasification of the Baikal and Trans-Baikal areas unprofitable until 2035. At the same time, the main sources of energy (TPPs and large boiler houses operate on brown coal and fuel oil).

There was a problem of the domestic price of local (Russian) raw materials and energy systems 30-50% higher than world prices with the same understatement when moving abroad, which hinders the development of domestic production and is the greatest economic diversion against our country in the interests of geopolitical competitors.

It is the unified state strategy of own development and processing of resources of the Baikal region that should be of primary geopolitical importance.
5. Conclusion

As a result, we can reasonably suggest that the Baikal natural territory is endowed with all the signs of a holistic object of study of territorial planning and urban planning. Lake Baikal is the core of a complex of urban planning prerequisites for the development, improvement and regulation of the settlement system.

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