

THE ALTAI REGION FORESTRY: ITS FEATURES AND CHALLENGES OF DEVELOPMENT

*Daniil N. Golotvin*¹,
*Alexander Ya. Trotskovsky*²

The article evaluates the condition and development of the Altai region forestry. Special attention is paid to the spatial aspects of the regional forestry development both in terms of its characteristics as a whole, and in the context of forestry-based zones of the region. The article not only reveals and systematizes the key issues of the forestry development of the region, but also outlines the authors' stance on their settlement.

GENERAL DESCRIPTION OF THE REGIONAL FORESTRY

The Altai region occupies the southern part of Western Siberia and encompasses four natural zones: steppe, forest-steppe, Salair lowland taiga and mountain taiga of Altai. About 28% of the Altai region area is occupied by forest ecosystems which differ in the wood species' composition, productivity and age structure.

According to the territorial authority of the Federal State Statistics Service of the Altai region on January 1, 2013, forest land and lands of other categories, where forests are located, occupies 4506.6 thousand hectare or 26.8% of all lands in the Altai region. The area covered by forest vegetation accounts for 3,796.7 thousand hectare or 84.2% of the total area of forest resources³.

The variety of major forest species of the region is not very diverse on account of harsh climatic conditions. Coniferous species occupy 40.7% of the silva covered land. Scotch pine, Siberian spruce, Siberian fir, larch and Siberian cedar grow here. The share of hard deciduous and soft deciduous wood species is 58.6%. Plantation of other wood species and shrubbery accounts for 0.8%.

As it has been noted earlier, the Altai region is one of the low forest cover territories. The amount of forests of the region constitutes only 22.6% while the average rate for the Siberian Federal District is 53.8%, for Russia – 46.6% (Figure 1).

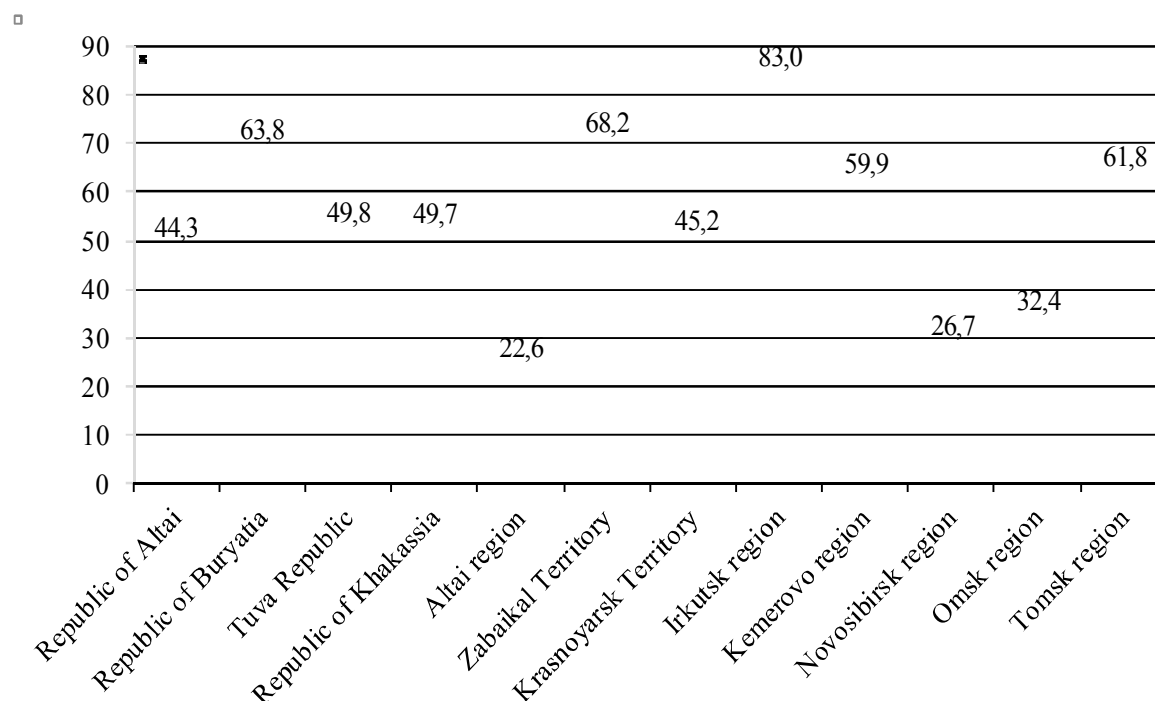
Many areas of disappearing wildlife were taken under protection during the last years. This is the specificity of the Altai region. The region has a network of natural areas of preferential protection, including 1 wildlife reserve, 1 natural park, 36 environmentally sensitive areas, and 51 natural sanctuaries. However, the total area of protected territories comprises only 4.4% of the area of the region, which is well below the average for Russia, and not enough for preservation of favorable environment in the region⁴.

¹ MA (Econ.), Director of «Altaiexport» Ltd., Biysk, Russia.

² Prof. D.Sc. (Sociology), Head of the Economic Theory Department, Altai State University, Head of the Altai Department, Institute of Economics and Industrial Engineering, Siberian branch of the Russian Academy of Sciences, Barnaul, Russia. trotskovskiy@ds.asu.ru

³ Ecological functions of forests and efficient use of forest resources of Altai region: analytical review. / V.M. Mochalov, S.Yu. Bayeva, N.N. Deryuga; edited by V.M. Mochalov: Regional office of the Federal State Statistics Service of Altai region. – Barnaul, 2013. – P. 4.

⁴ Detailed description of the flora and fauna of the Altai region forests as well as their performed functions such as climatic, meteorological, water protection, soil conservation, recreation, sanitation and hygiene, is given in the previously mentioned analytical review of Altaikraistat, thus, there is no necessity of their presentation in the present article.



Source: Ecological functions of forests and efficient use of forest resources of Altai region. – P. 4.

Fig. 1. Amount of forests of the Siberian Federal District territories, %

Executive authority of the Altai region in the forest sphere is the Forestry Department, which is a structure within the Chief Department of Natural Resources and Environment of the Altai region. It is responsible for forests located on forest land – 4429.4 thousand hectares or 98.7% of the total regional forested area¹. The average annual growth on forest land funds is 8.46 million m³, of which the share of coniferous forest accounts for 3.68 million m³, the share of deciduous forest is 5.67 million m³.

On the territory of the Altai region there are also forests located on the lands of other categories, namely:

- lands of the Russian Federation Ministry of Defence – 12.6 thousand hectares;
- lands of specially protected territories under the jurisdiction of the Federal Service for Supervision of Natural Resources (Rosprirodnadzor) – 41.4 thousand hectare (State Nature Reserve «Tigireksky»);
- lands of urban settlements, i.e. urban forests – 10.0 thousand hectare (Table 1).

In accordance with the peculiarities of silva wood, economic conditions, intensity of forest management as well as the role and importance of forests, the forest fund is divided into 4 forestry-based regions, namely

Band-type pine wood forests. Here there are unique band-type pine wood forests that stretch like long, narrow bands from northeast to southwest across the Kulunda steppe and two state forest belts. Geographically, these forests are divided into fifteen forestries.

Priobskiy forests. The district includes forests, located on the right bank of the Ob River and its tributaries. All Priobskiy forests are referred to as protective ones². There are seven forestries in these forests.

¹ It is worthy to note that the total forest area of the Altai region has decreased from 4522.2 to 4506.6 thousand ha or by 0.35% in the period from 2008 to 2012.

² For details see: Kukis S.I. History of protective afforestation in Altai region / S.I. Kukis, V.I. Gorin. – Barnaul: Altai publishing house, 1973. – 308 p.

Table 1

Structure and main characteristics of the Altai region forests

Forests affiliation	Total area, thousand hectare	Silva lands, thousand hectare	Distribution of forest area for designated purpose, thousand hectare			The total stock of wood, thousand m ³	The total annual growth of wood stock, thousand m ³
			Protective forests	Merchantable forests	Reserve forests		
Forests, located on the lands of the forestry							
Total on the Altai region forestry	4429.4	3817.2	2436.4	1197.1	–	535569.0	8462.7
Forests, located on the lands of the Ministry of Defence							
Altai military forestry	8.2	7.3	7.3	–	–	1768.4	7.9
Forests, located on lands of urban settlements, i.e. urban forests							
Urban forests	10.0	9.3	9.3	–	–	2058.0	31.5
Forests, located on specially protected territories							
State Nature Reserve «Tigireksky»	41.4	33.1	41.4	–	–	4787.4	44.7
Total on the Altai region :	4489.0	3866.9	2494.4	1197.1	0.0	544182.8	8546.8

Source: Forest plan of the Altai region. Barnaul, 2011 – (<http://www.altailles.ru/actual/lesplan/>)

Salair Ridge Forests. The area is represented by aspen-birch and fir woodland on lowland Salair ridge and forest and groves at the adjoining forest-steppe. Geographically the forests are arranged into four forestries.

Foothill forests. The area includes the foothills of the Altai Mountains. Geographically these forests are arranged into five forestries.

Tenants of the forest sites for logging are commercial organizations, mainly companies, mostly Ltds., and one individual entrepreneur. Most tenants of forest sites for logging are incorporated into a timber holding company «Altailles».

The principal activities of the tenants are the implementation of works on logging and wood processing, conducting activities on protection, conservation and reforestation on the leased forest areas.

In 2012, according to Altaikraistat data, sixty three forest sites per the area of 2202.2 thousand hectare which comprises 49.7% of total forest area were released on loan for wood harvesting. The statutory volume of wood harvesting on the leased forest areas is 2848.7 thousand m³. Ninety one forest sites per 242 hectare area were released on loan for recreational activities. In addition, 154 forest sites were released for harvesting food forest resources and collecting medicinal plants, implementing activities in the field of hunting, performing works on geological exploration of mineral resources, exploitation of mineral resources, construction, reconstruction, operation of power lines and other linear objects on the area of 155.8 thousand ha.

In 2012, tenants of forest sites performed wood harvesting in the amount of 2416.0 thousand m³. In addition, timber has been harvested while executing state contracts on conducting works for conservation, protection and reproduction of forests, as well as while implementing contracts of forest purchase and sale in the amount of 565.9 thousand m³.

Table 2

Dynamics of the allowable volume of cut wood

Year	Allowable cut volume, thousand m ³	The volume of cut liquid wood	
		thousand m ³	% for allowable cut volume
2009	5911.0	2810.5	47.5
2010	6407.1	3084.2	48.1
2011	7119.2	3345.5	47.0
2012	6543.4	2981.9	45.6

On January 1, 2013 the total forest reserves in the Altai region amounted for 547.8 million m³, more than half of which fell at conifers. Allowable wood cuttings have been recently estimated at about 5.9 – 6.5 million m³, and their use – 45.6 – 48.1% (Table 2).

Sanitary thinnings were annually carried out in order to increase productivity and improve the qualitative composition of forests. The area of sanitary cuttings fell by 8.3% in 2012 compared to 2009.

Activities on conservation, protection and reproduction of forests on forest sites that are not leased are carried out by the executors which are mainly business entities (Ltds). These business entities concluded state contracts to perform the above-mentioned types of work based on the results of the auctions held by the Forestry Department of the Altai region. Tenants of forest lands also participate in these auctions. They claim to perform works on the unleased forest areas adjacent to their leased ones.

Large-scale wood-processing enterprises of the Altai region are equipped with foreign expensive equipment and consist of automated belt complexes, high-tech drying chambers, highly productive planing machines, optimization and production lines for manufacturing laminated furniture boards¹.

Forestry complex of the region is mainly based on the use of local forest resources. Exports of manufactured wooden products such as pit props, lumber, sleepers, milled products in the form of flooring strip and wainscoting, round logs are carried out both in the near-abroad countries and far abroad ones such as the Republic of Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan as well as China and Afghanistan. The main consumers of wooden goods have been and still are the consumers of the Russian Federation, i.e. a greater share of wooden products sale is the domestic market.

According to Altaikraistat data as of January 1, 2013, the actual received payments into the federal budget total 121.5 million rubles, which is 2.5% higher than in 2011. The Altai region budget received 36.2 million rubles. Total income for the 2012 year from forest usage accounted for 157.7 million rubles.

According to Altaikraistat data, the main sources of income became the revenue from wood harvesting (87.8%), monetary penalties and fines (5.8%), leased forest sites used for recreational activities (3.9%).

Thus, the Altai region possesses sufficiently developed wood processing complex, modern production facilities for logging and wood processing. However, despite a considerable potential, the use of non-wood resources finds no significant industrial applications.

CHALLENGES OF FORESTRY DEVELOPMENT

Not only does the forestry take the leading place in the Altai region economy, but it is a «trendsetter». Over the past four years the Regional Forestry Authorities managed to attract solid investment in the sector. For instance, the Forest holding company «Altailes»,

¹ A detailed description of the wood-processing see: State and trends of development of the Russian wood-processing market [electronic resource]: an electronic scientific journal www.uecs.ru.

which is the largest tenant of the forest in the region, intends to invest in the sector more than 5 billion rubles in the coming years. Attracting investments allowed not only to start the process of modernization and technical re-equipment of production, but also created the conditions for rapid socio-economic development of the Altai forest settlements primarily because the majority of the forestry investment projects were implemented exactly in these rural territories. Together with the development of wood processing enterprises not only new jobs are being created, but also social infrastructure is being built, i.e. affordable housing, cultural and sports facilities, transport and engineering infrastructure¹.

In our opinion, due to this situation, there are no problems in the forestry development in the Altai region that are common to most areas of Russia, including a marked depletion of operational stocks of wood in the areas where the functioning wood processing companies are located as well as transportation ways².

Meanwhile, many of the mentioned challenges of the Russian forestry development are relevant to Altai region as it is. Let us consider the main ones.

Among the first issues is *the lack of facilities for deep mechanical and chemical processing of wood raw materials*, capable of processing low-quality deciduous wood and lighter species as well as wood waste and wood harvesting.

Chemical-mechanical and chemical processing of wood have been recently the world's most rapidly developing manufacturing while in the Russian Federation the production volume of paper and paperboard still remains at the level of the 1980 year which is caused by the lack of own capacities for deep wood processing³.

There has been reached almost maximum level of capacity utilization in the regional forestry, which is 100% in the production of plywood, fiberboard, paper and cardboard. There is no market cellulose production in the region.

The presence of forest road network is another key issue of the Altai region forestry⁴.

The total length of highways is 35,366 km, whereas 3642 km of highways is covered with hard surface. The density of the road network constitutes 8.1 km per 1 thousand ha of forestry, including 0.8 km. road sections with hard surface⁵. Taking into account the total length of roads in the region, the road network could be considered sufficient. However, some forest roads, represented by natural passages, are not suitable for automobile traffic in the spring and autumn periods because of waterlogged areas and the absence of man-made structures. From the mentioned above, it follows that on the whole the provision of the Altai forestry with transport routes cannot be considered sufficient. Especially there are not enough hard surface roads and upgraded quality roads. Such conditions can neither make effective use of forest resources nor the operational control of forest fires and pests.

¹ Klyayn V. Forestry of the Altai region // LesPromInform. – 2012. – № 1 (83). – P. 24.

² It should be noted that some authors are of the opposite point of view. So, in the prepared analytical review by the experts of Altaikraistat it is written as follows: «Despite the huge amount of forest areas, Russia faced the problem of depletion of forest resources. This phenomenon is also characteristic of Altai region. The presence of vast forest areas that are not affected or are slightly affected by human activity makes no difference. These are either low-productive forests or forests that are located in difficult to access regions». See: Ecological functions of forests and efficient use of forest resources of the Altai region. – P. 12.

³ The shortage of facilities for deep wood processing remains relevant throughout the years of the forest industry evolution. Not only scientists but the Government as well is well aware of the criticality of the situation. However, no significant progress has been observed in the industry yet: Russia remains the world leader with regard to forest areas with valuable coniferous species, production and exports of round logs and at the same time it is significantly behind the developed countries on efficient use of wood, production volume of paper, plywood, fiberboard and other products. See: Kalabekov I.G. Russian reforms in facts and figures. – Moscow. – 2010. – P. 129.

⁴ Depending on the purpose, forest roads are divided into three types: I type – highways, road network uniting the II and III types and connecting woodland with roads of public use. Their width is 6.5 m or more, the width of the traffic area is 4.5 m.; II type – roads serving the forestry and overlooking the main roads. Their width is 4.5–6.5 m, the width of the traffic area is 3.5 m.; III type – highly specialized forestry roads, which include fireproof roads, driveways to logging sites, roads for access to forest nurseries, seed trees' sites and plantations as well as roads for cleaning forest sites after sanitary thinning and etc. Their width is 4.5 m, the width of the traffic area is 3 m.

⁵ The forestry plan of the Altai region.

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The provision of the Altai forestry with transport routes varies considerably from one forestry-based zone to another. So, the number of roads is quite enough to accomplish activities directed at protection and reproduction of forests, as well as their use in two forestry zones such as Band-type pine wood zone and Priobskaya zone. Road length of these zones is 13.9 and 10.5 km. per 1 thousand ha of forest land respectively.

In Salair lowland zone, however, road provision is inadequate; the length of roads is only 3.3 km away. The roads are in poor condition, as they were constructed in the period of logging enterprises existence, i.e. until 1993, and now require reconstruction. In the Foothill forests zones the road length is only 2.6 km per 1 thousand ha of forest land.

More intensive construction of forest roads, the achievement of their required density, and upgrading the quality of roads will definitely lead to the development of infrastructure in the regions alongside with the implementation of new investment projects and the development of new forest lands. As a consequence, the productivity of forests, improvement of their species composition and efficiency of land use will be enhanced.

As a third (not least) issue of forestry development which is to be specified is *the use of outdated technology, machinery and equipment with a high proportion of manual labor and low productivity*. Obsolete machinery and technology are used in logging and forestry. It is connected with the termination of the activities of majority of forest engineering plants. Operating businesses in this sector do not provide the required technical level and quality of logging machinery. Output wood processing machinery manufactured by domestic enterprises does not correspond to the current level of requirements. In terms of material and energy consumption it is considerably inferior to foreign analogues. Applied-research industry and project base development of forest mechanical engineering have been destroyed. There is neither platform for service nor maintenance of domestic logging machinery.

This issue is of less topicality in the Altai region in comparison with the situation in Russia in general due to the fact that forestry enterprises of the region have embarked on the use of imported machinery and equipment. Meanwhile, high cost of imported equipment and the discrepancy between the Russian forest engineering and tasks of forestry development cause the challenge for the Altai region.

The next problematic issue point in the forestry development is associated with *an insufficient level of innovative activity in the forest industry enterprises*. This issue is typical in general for the whole Russia and the Altai forestry is not an exception. The causes of this situation, as well as the above-mentioned challenges, are related to the sharp decline in funding research organizations through the state budget. Business does not substantially participate in funding of research activities. This fact eventually led, on the one hand, to the spray of budgetary funds to address small and private matters, which do not solve the problem of a strategic nature, and, on the other hand, – to the stagnation of research and development organizations. The system of pilot enterprises, test stations and proving grounds that functioned prior has been completely destroyed. In our opinion, there is a lack of new lines of research, in particular in the field of forest economics, forestry management, information systems and models of the industry development. There is a lack of a comprehensive approach to addressing the forestry issues. Technological gap between the world level is characterized by the absence of «breakthrough» innovation projects in the forestry, allowing to remove the structural constraints of the industry development and launch the production of a completely new (i.e. in accordance with consumer properties) range of goods that are in demand both in the domestic and foreign markets such as construction of wood-based materials, environmentally friendly wooden panels, semi-finished fiber goods, manufactured without the use of chlorine, high-quality types of paper and cardboard for printing and packaging, the upgraded range of sanitary and hygienic goods, low-tonnage types of paper for industry, etc.

Equally important for the forestry development is *the lack of qualified personnel and low labor productivity* caused by the deteriorating situation in the vocational and professional staff training, accompanied by a growing shortage of skilled personnel in various fields of forestry and forest industry activities.

Currently, there is no single higher education institution in the forestry sector. Meanwhile, this problem is less attributed to the Altai region due to the conducted training on the basis of state educational establishment of vocational training «Biysk leskhoztehnikum» (Biysk College of Forestry) and at the Department of Forestry in Altai State Agrarian University.

The forestry development of the region is constrained by *insufficient use of forest lands for purposes that are not related to wood harvesting*.

Article 25 of the Forest Code of the Russian Federation establishes the possibility of multiple forest use. Whilst, in the practical application of this article there is still unresolved procedure of allocation of forest sites, as well as the mechanism of coordination and respect of mutual interests of persons who use the forest resources for various purposes. The issue is connected with the distribution of these persons' rights, obligations and expenditures on forest protection and reforestation as well as cadastral registration.

This issue is rooted to the previously existing legislation (i.e. The Forestry Code of the Russian Federation adopted in 1997). The object of regulation of relations was the «forest site», which referred to as «the totality of the land and vegetation that grows on some land» herewith a particular site could be leased by several legal entities for different purposes such as hunting, wood harvesting, recreation. The interests of landlords and tenants are balanced in the lease agreements. In 2007, there was adopted a new Forestry Code, which differentiated the concepts of land and forests. The regulation of forestry relations was built on the use of the «land site» concept. Activities are to be carried out on the land site with a cadastral number only by one tenant. If, for example, the land site has been transferred to the lessee for logging, it can no longer be transmitted to other users for hunting, recreation, etc. To solve this case, in our opinion, it is necessary to return to the positions set out in the 1997 Forestry Code while reviving the concept of «forest land site».

Further, Articles 32 and 34 of the Forestry Code of the Russian Federation stipulate the performance of activities both by legal entities and citizens. Their range includes wood harvesting and collection of non-wood forest resources, forest food and medicinal plants only on the right of long-term lease of forest sites. However, the rent for these types of usage is often not profitable (lean years, seasonal work, little income, whereas the cost of lease payments and performance of activities on conservation, protection and reforestation are mandatory and permanent). Currently, this type of forest use has become not in demand, thus budgets of all levels lose revenue. Enterprises, which were earlier involved in procurement and processing of these types of forest resources, close down the production, and sometimes even businesses.

Since harvesting and collection of non-timber forest resources, forest food resources and medicinal plants alongside with logging are associated with the withdrawal of forest resources, it seems logical to provide the use of these forest resources on the basis of contracts of sale without letting forest sites on lease in addition to leases of forest sites.

The conclusion of forest lease in accordance with the results of auctions with unscrupulous and incompetent managers has become one of the major impediments to the development of the region forestry.

While carrying out forestry auctions in the Altai region, in some cases there have been documented the evidence of participation of legal entities and individual entrepreneurs who are interested only in wood harvesting. These participants have neither experience nor awareness of the specifics of works on conservation, protection and reforestation.

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To ensure the effective implementation of forestry management, improvement of forest lands' condition, development of a favorable investment climate it seems appropriate to replace the forestry auctions by competitions, providing preferential right for usage of forest sites to persons who have the resources and capacity (i.e. human resources, specialized machinery and equipment, etc.) for conducting activities on conservation, protection and reproduction of forests, wood harvesting, wood processing. These criteria should serve as a prerequisite for participation in the competition for the right to sign the lease agreements.

Unsettled relations with regard to the use of urban forests acquire particular relevance for the development of the regional forestry.

Outside the «coverage» of the unified management system of Russia there are forests of specially protected areas (26.9 million ha) as well as forests on land settlements (1.4 million ha) and other lands. Particularly acute issue of forestry management is the use of municipal lands which are extremely crucial in terms of social and environmental importance of forests. The situation here is not transparent - the status of urban forests is to be finalized, their management structure is not clear. Municipal forest control and supervision, municipal forest fire control require close attention as, however, it is not currently clear how these functions are performed, what technology is implemented and who are responsible for monitoring.

Summing it all up, it is worthy to note that there is a whole set of problems on the way to enhance the functioning of the regional forestry and its further growing contribution to the formation of the regional budget. These challenges form a kind of «swaddling bands» in the forestry development.

Difficulty in solving the problems of forestry development is largely determined by the fact that they are rooted in the imperfection of the federal legislation, which does not take into account the interests of various actors of the «forest» relations.

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