Rational use and protection of forest lands of the Russian Federation

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Abstract. The paper studies the relationship in the field of forest management and protection of forest lands. It determines the ways to improve the concepts of forest, forest area, and rational use of forest lands. The experience of the Soviet period is studied. The distribution of forests on the territory of Russia and composition of the forest fund are considered. The authors give the recommendations aimed to improve forest management and protection of forest lands.

1. Introduction
Russia is rich in natural resources such as minerals, fertile lands and water resources, including forests. According to the state (national) report on the condition and use of lands in the Russian Federation, as of January 1, 2020, the area of land in our country amounted to 1,712,519.1 thousand hectares including 1,126 643.0 thousand hectares of forest fund. This is approximately 65.8% of the territory of the Russian Federation. The lands occupied by forests are located from the Arctic to the southern borders of Russia. The total standing forest in the country is approximately 82-83 billion m$^3$, while the share of valuable conifers is 77% of the total stock. If we assess the timber reserves in the regional aspect, then in the western part of the country it is 28%. The main forest-forming species are: spruce - 32%, pine - 28%, birch - 24%, aspen - 7%. Most of the reserves are in the Asian part, where following species prevail: larch - 40%, pine - 17%, cedar - 13%, spruce - 7% and birch - 10%. The distribution of forests (the degree of forestry area of the country's territory) is shown in Figure 1 [1].

Forests in the Russian Federation are located not only on the lands of the forest fund. Forests are also located on lands of other categories. For example, forests can be located on lands of settlements (urban forests). Forests may be found in recreational areas, specially protected areas and agricultural land (forest belts adjacent to forests). At the same time, the use of forests and lands is determined by the regime of the territory in which they are located. As a result, the methods and approaches to the development of forest lands may differ. In particular, the following issues remain topical: What are a forest and a forest area? What is the rational use and protection of forest areas? What is the relationship between the use of forest areas and the location of the climatic zone? What are the land use and environmental damage?
2. Materials and methods
During the research the following methods were used: general scientific methods of analysis and synthesis, generalization and analogy. Special and private methods were also used: formal-logical, comparative legal, historical, forecasting method in order to determine the directions for the improvement of the use and protection of lands occupied by forests.

3. Results and discussion
The modern stage of the development of Russia is associated with the ongoing intensive development of natural resources. Active mining, placement of infrastructure facilities, construction of buildings and structures directly affects the climate. However, the development of new territories and their economic development are impossible without anthropogenic interference. As it is already mentioned, the forestry area of the territory of Russia is one of the factors of a special attitude towards the areas where forests are located.

For this purpose, various methods of land use and restrictions on their use are being developed. The example of this is the Arctic zone. However, the developed projects for the development of forest lands always include the most important component, namely, the balance of economic and environmental interests. That is, definitions of rational use and the protection of forest lands.

Let us note that the main type of forest use in Russia is timber harvesting. Other types of forest use are also allowed, for example without cutting down forest stand. The list of types of forest use is not limited. It is also allowed to extract minerals on the lands of the forest fund. At the same time, the use of all types of forests and the implementation of all types of forest use must comply with the requirements of rational use. For each natural resource, the term sustainable use may have its own content. For example, the rational use of subsurface resources provides the most complete extraction of minerals in accordance with GOST R 59071-2020. According to GOST R 52106-2003 the rational use of resources is the achievement of normalized efficiency in the use of resources in economic activity at the current level of development of technology with simultaneous reduction of negative impact on the environment.

According to the above mentioned aspects, when determining the rational use of lands and forests of the forest fund, forest use should be as efficient and sustainable as possible. Multi-purpose, rational and continuous use of forests should be ensured to meet the needs of society.
Talking about the forest lands of Russia, it is necessary to take into account that these territories are not always occupied by forest vegetation, but they also have objects that are not related to the forest fund. In this regard, the question arises of what is considered as forest and forest lands.

The very concept of a forest and a forest plot has long been a subject of dispute among scientists. What “forest” and “non-forest” should mean? Professors G.N. Polyanskaya, L.I. Dembo, G.F. Morozov, O.I. Krussov were engaged in this discussion at one time. Professor G.N. Polyanskaya wrote that the concept of the forest fund appeared in connection with the needs of forestry, which requires not only forests, but also land areas, since forestry is carried out on lands where timber is harvested. The land is used for afforestation, road construction, construction of premises and forest infrastructure facilities. In addition, in the forest there are non-forest lands (for example, swamps, loaches, inconvenient lands), which are inappropriate to separate from the composition of forests [2].

In Soviet times, the attitude to the forest was consumer. The forest was considered as a resource. “The forests of the republic” were considered as land areas intended for the cultivation of firewood, construction and ornamental wood. Forest areas could be excluded from the forest fund in order to develop agriculture. Subsequently, all forests and land areas intended for growing wood for the needs of forestry, delimited in the established order from lands for other purposes, formed a single state forest fund. This concept of the forest fund appeared in connection with the need for forestry. It was broader than the concept of “the forests of the republic”: it includes lands intended for growing not only timber, but also for creating protective forests, as well as those necessary for the needs of forestry.

The difference between forest and other woody plants that do not have the specified properties is shown by Professor G.F. Morozov, the author of “Teachings on forest”. “An alley or road lined with trees on the sides can stretch for hundreds of kilometers, so that the trees planted along it can represent a great many separate woody plants not forming a forest. There are also such artificial and natural forms of a landscape where trees are scattered in a solitary position on a large area of land and, despite their abundance, still do not form forests” [3].

Professor G.F. Morozov considers the listed woody plants, which are in solitary standing and deprived of the interaction properties that are inherent in woody vegetation in forest as “not forest”.

According to G.F. Morozov mass element is an obligatory, but not the only sign of forest. The decisive feature of a forest as a natural phenomenon is a certain closeness of trees, which causes the interaction of woody plants with each other and with the occupied soil and atmosphere.

Professor V.V. Dokuchaev, who proved that forests can grow and actually grew in the steppe zone, at the same time indicates that in the conditions of the steppes and forested areas they have “island nature” and are located in small tracts among the steppe, feather-grass-steppe and pseudosteppe vegetation [4]. The example from the lands of the Russian North can be cited to support this opinion. In the same way, woody growths are recognized as forests in the forest-tundra, on the northern border of forests (despite the scattering and small size of trees), due to the fact that they serve as protection from the winds of the Arctic.

The northern lands can be divided into four vegetation zones: arctic desert, tundra, forest-tundra and forest. In the first zone, vegetation is almost absent. The second zone occupies a belt with a width of 30 to 60 km (for example, the Kola Peninsula). The main vegetation here is presented by mosses, lichens, varieties of dwarf birch. The third zone is forest-tundra. This zone is dominated by birch crooked forest with an admixture of spruce. In the forest zone, there are pine and spruce forests with an admixture of birch, aspen, mountain ash, willow and alder. There are also shrubs, herbaceous and moss vegetation. The boundaries between zones do not have straight lines, since the distribution of vegetation depends not only on climatic conditions, but also on a number of other factors. Within the limits of the Kola Peninsula, the tundra stretches in a narrow strip along the coast of the Barents Sea and along the White Sea, giving way to a strip of forest-tundra, which is also not very wide. The main part of the regional territory belongs to the forest zone. On the Kola Peninsula, there are nature reserves and sanctuaries: Lapland Nature Reserve, Pasvik, Kolvitsky Nature Reserve, etc. The communities of mountain tundra, primary forests, swamps and lakes are preserved in it in their natural
state as habitats for rare and typical species of flora and fauna and as a factor in maintaining the ecological balance in the region.

The forest vegetation of the North is interesting due to the function that forest vegetation performs, but its reserves are extremely small. In particular, this is an ecological function – to prevent soil erosion, recreation, providing food for wild animals. Chukotka is rich in such vegetation, where it is traditionally used for the needs of the local population. However, this wood cannot be used in industry.

In contrast to the agricultural regions of the Russian Federation, the natural-territorial complex of the Far North and neighboring areas develops in permafrost conditions, which causes a weak soil layer and poor vegetation. Vegetation cover is the main property that provides life and the formation of conditions for the existence of the animal world. In this regard, the natural-territorial complexes of the regions of the Far North and neighboring areas in human economic activity function in various ways: pastures of domestic and wild deer, hunting and other grounds. Therefore, the main task of land use in the Far North is to create the best organizational and territorial conditions for the preservation of the natural environment. In this situation, the need for on-farm land management in the regions of the Far North becomes extremely important.

The future measures for the development of the resources of the Arctic and the North should comply with the traditional economic activities of small peoples, ensure the rational use of lands and forests and should not have a negative impact on traditional crafts. Land plots and forests used for reindeer pastures, hunting grounds, protection zones around them should be used only with due regard of their special status.

When planning the use of lands in the Arctic and the North, it is necessary to take into account the interests of the indigenous peoples who have long lived in these territories. When mining minerals, developing infrastructure for land use and forest management within the territories of traditional nature use of small peoples and ethnic groups, the important task is to create and preserve favorable living conditions and traditional economic activities of these peoples and restore their lost places of residence, protect and maintain the ecological balance of forests.

The industrialization of the Arctic will undoubtedly affect not only the Arctic zones and forests, but also neighboring territories, including forest lands. They may entail changes in the natural and ecological situation, both due to natural and man-made origin. The mechanism of this influence is still poorly studied and unpredictable. The understanding of this problem was reflected in the “Strategy for the development of the Arctic zone of the Russian Federation and ensuring national security for the period up to 2035”. From this point of view, the need for more precise regulation of economic activities for the extraction of minerals and the development of industry in the conditions of the Far North acquires great scientific and practical importance.

The following features of permafrost construction should be taken into account: the remoteness from industrialized regions; unfavorable natural and climatic conditions: harsh climate, high swampliness; complex engineering and geological conditions of the territory. It is necessary to note that transport facilities will remain an integral part of the infrastructure of the northern lands. Therefore, the approaches to construction work in permafrost conditions should be based on the implementation of the principles of environmental safety, technical reliability and economic feasibility.

Thus, the assignment to forests and one or other naturally growing vegetation is primarily a geographic issue, in other words, forestry one. In the subsequent evolution, the definition of forest lands was supplemented by the indication that inconvenient lands, swamps and other land areas located in forests are also included in its composition. The rational use, protection and reproduction of forests should be carried out on the basis of the increase in their ecological and resource potential. The use of forest lands should be carried out taking into account the concept of forest as a set of forest vegetation, land, fauna and other components of the natural environment, which is of great ecological, economic and social importance.
The concept of a land plot, which is an immovable thing, is mostly used in forest lands in the Russian Federation. A land plot is a part of the earth's surface. It has characteristics that allow defining it as an individually defined thing. A forest plot is practically identical to the concept of a land plot, which is located within the boundaries of forestry. With regard to the concept of “Forest”, the situation is more complicated as precise concept of it is absent.

The understanding of the ecological importance of forest and its unrealized economic potential contributes to the development of the institution of protection of forests and forest lands. Therefore, the protection of forests is aimed to identify processes and phenomena that negatively affect forests, as well as at their prevention and elimination. A special place is given to the regulation of forest protection from fires, from radioactive and oil pollution, protection from harmful organisms and other negative impacts. The restoration of forests is extremely important. This position is also important for the rational use of forests and forest lands.

4. Conclusion

Analyzing the above mentioned aspects for the implementation of the rational use and protection of forest lands and forests, it is necessary to take a number of actions to improve the protection and use of forest lands:

1. Giving the definition to the lands of the forest fund, it is necessary to take into account that it includes a) all forests, whatever their management and use (forest lands); b) land areas not covered with forest vegetation (non-forest lands) required for forestry, including for afforestation, as well as land located inside forests and forest tracts together with them.

2. It is necessary to consider a forest not any woody plants or their groups, but only those that form a plant community of trees influencing each other, soil and atmosphere over a more or less vast space. According to this concept, it is necessary to determine the territorial boundaries of forestry and determine the boundaries of lands that should be included in the lands of the forest fund.

3. During the implementation of measures for the use and protection of forest lands, it is necessary to take into account not only the geographical, but also the climatic factors of the territories.

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