



Original article

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Problems of Forest Resource Management in the Arctic Zone of the Russian Federation

Vasily F. Kovyazin¹, *Doctor of Biology, Prof.;*

ResearcherID: [AAD-5917-2020](https://orcid.org/0000-0002-3118-8515), ORCID: <https://orcid.org/0000-0002-3118-8515>

Olga Yu. Lepikhina¹, *Candidate of Engineering, Assoc. Prof.;*

ResearcherID: [Q-4455-2017](https://orcid.org/0000-0003-1270-9730), ORCID: <https://orcid.org/0000-0003-1270-9730>

Polina M. Demidova¹, *Candidate of Engineering, Assoc. Prof.;*

ResearcherID: [AAP-3828-2020](https://orcid.org/0000-0002-8488-512X), ORCID: <https://orcid.org/0000-0002-8488-512X>

Olga A. Kolesnik¹, *Candidate of Engineering, Assoc. Prof.;*

ResearcherID: [AAD-5718-2020](https://orcid.org/0000-0003-0423-2119), ORCID: <https://orcid.org/0000-0003-0423-2119>

Seyed O.R. Shobairi^{2,3}, *PhD in GIS and Remote Sensing;*

ORCID: <https://orcid.org/0000-0002-6528-8653>

An Truong Nguyen¹, *Postgraduate Student; ResearcherID: [HGD-4706-2022](https://orcid.org/0000-0002-4881-7947).*

ORCID: <https://orcid.org/0000-0002-4881-7947>

¹Saint Petersburg Mining University, 21st Line, 2, Saint Petersburg, 199106, Russian Federation; vfkedr@mail.ru, Lepikhina_OYu@pers.spmi.ru, Demidova_PM@pers.spmi.ru, Kolesnik_OA@pers.spmi.ru, annguyenthebeatles1997@gmail.com

²Central South University of Forestry and Technology, Shaoshan South Road, 498, Changsha, Hunan, 410004, P.R. China; Omidshobeyri214@gmail.com

³Nanjing Forestry University, Longpan Road, 159, Nanjing, Jiangsu, 210037, China

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Abstract. The study exposes the issues with managing land and forest resources in the Arctic region. Among them are the inability to estimate the cost of forest resources, the conversion of forestry lands into industrial lands, the consequences of renting forest lands, an insufficient forestry inventory, a small number of employees of the State Forest Protection Service, and underdeveloped infrastructure. The main statements of the Arctic Hectare Program are reviewed, which give the possibility of granting land plots primarily located in forest areas. The program is discussed in comparison with the analogous Far Eastern Hectare Program. The development of the Arctic Hectare Program is expected to preserve and increase the popularity of the Arctic region in the future. However, the efficient use of the land requires the improvement of transport infrastructure. The internet site, Geoportal, is used for an analysis of the primary disadvantages of geoinformation systems for selecting land plots in the Arkhangelsk region, which is a part of the Arctic zone of the Russian Federation. The website was established within the Arctic Hectare Program. The article provides suggestions for additional functions of the public cadastral map. It also reveals the reasons for the absence of a methodology for estimating forest resources, including Arctic tundra vegetation. Furthermore, the difficulties with the forest land delegation are observed in relation to the

implementation of investment projects in mining, fuel, and energy areas, the development of transportation infrastructure, and the formation of environmental protection zones. The cases of renting out forest lands are discussed.

Keywords: forest resources management, Arctic zone, Arctic Hectare Program, public cadastral map

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Научная статья

Проблемы управления лесными ресурсами в Арктической зоне Российской Федерации

В.Ф. Ковязин¹✉, д-р биол. наук, проф.; *ResearcherID:* [AAD-5917-2020](https://orcid.org/0000-0002-3118-8515),

ORCID: <https://orcid.org/0000-0002-3118-8515>

О.Ю. Лепихина¹, канд. техн. наук, доц.; *ResearcherID:* [Q-4455-2017](https://orcid.org/0000-0003-1270-9730),

ORCID: <https://orcid.org/0000-0003-1270-9730>

П.М. Демидова¹, канд. техн. наук; *ResearcherID:* [AAP-3828-2020](https://orcid.org/0000-0002-8488-512X),

ORCID: <https://orcid.org/0000-0002-8488-512X>

О.А. Колесник¹, канд. техн. наук; *ResearcherID:* [AAD-5718-2020](https://orcid.org/0000-0003-0423-2119),

ORCID: <https://orcid.org/0000-0003-0423-2119>

С.О.Р. Шобайри², канд. наук, эксперт по ГИСам;

ORCID: <https://orcid.org/0000-0002-6528-8653>

Ч.А. Нгуен¹, аспирант; *ResearcherID:* [HGD-4706-2022](https://orcid.org/0000-0002-4881-7947),

ORCID: <https://orcid.org/0000-0002-4881-7947>

¹Санкт-Петербургский горный институт, 21-я линия, д. 2, Санкт-Петербург, Россия, 199106; vfkedr@mail.ru✉, Lepikhina_OYu@pers.spmi.ru, Demidova_PM@pers.spmi.ru, Kolesnik_OA@pers.spmi.ru, annguyenthebeatles1997@gmail.com

²Центрально-южный университет лесного хозяйства и технологий, Шаошань Сауф Роуд, д. 498, г. Чанша, пров. Хунань, Китай, 410004; Omidshobeyri214@gmail.com

³Нанкинский университет лесного хозяйства, Лонгпан Роуд, д. 159, г. Нанкин, пров. Цзянсу, Китай, 210037

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Аннотация. Выявлены проблемы управления земельными и лесными ресурсами в Арктической зоне. К таким проблемам можно отнести невозможность стоимостной оценки лесных ресурсов, перевод земель лесного фонда в земли промышленного пользования, последствия аренды лесных участков, недостаточность проведения инвентаризации земель лесного фонда, небольшое количество работников лесной охраны, слаборазвитую инфраструктуру. Рассмотрены основные положения программы «Арктический гектар», предоставляющей возможность получения земельных участков, расположенных преимущественно на землях лесного фонда. Программа описана в сравнении с «Дальневосточным гектаром». Предполагается, что развитие программы «Арктический гектар» предотвратит отток населения из Арктической зоны и увеличит

количество проживающих на этой территории. Однако для эффективного использования земельных участков необходимо развитие транспортной инфраструктуры. На примере геопортала Архангельской области, входящей в Арктическую зону Российской Федерации, проанализированы основные недостатки геоинформационных систем для выбора земельных участков в рамках программы «Арктический гектар». Предложено использовать дополнительные возможности публичной кадастровой карты. Раскрыты причины отсутствия методологии оценки лесных ресурсов, в том числе тундровых лесов арктической зоны. Обсуждаются проблемы передачи лесных земель в связи с реализацией инвестиционных проектов горнодобывающего и топливно-энергетического комплексов, транспортного строительства, созданием природоохранных зон. Рассмотрены случаи сдачи лесных земель в аренду.

Ключевые слова: управление лесными ресурсами, организация лесопользования, Арктическая зона, Арктический гектар, программа «Арктический гектар», публичная кадастровая карта

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Introduction

The value of land and forest supplies increases with the identification of problems related to the rational use of natural resources, the analysis of possibilities for territorial improvement, and climate change [12, 17, 18, 23, 25, 26, 28].

The land funds are reduced because of the conversion of agricultural land for industrial purposes, settlements, and road network growth. Swamping, physical, and chemical deterioration have resulted in the loss of vast areas of agricultural territories [11, 14, 20, 24]. However, it is possible to solve the problem by providing the population with land at the expense of the forest areas.

One of the most significant categories of natural resources is forests. As a part of biological resources, it is exhaustive but renewable. Forest resources are evaluated by the extent of the forest area, timber reserves, and forest cover.

The world's wood reserves are about 350 billion m³. Russia has the greatest timber supplies in the world, with 26 % of the total, where about half is the softwood type [3].

Two-thirds of the territory of the Russian Federation is covered by forests. The Arctic area of Russia includes the northern part of the Siberian taiga, the largest forest on Earth. The taiga originates in the Scandinavian countries and extends over 9000 kilometers through Russia to the Pacific coast. It is several times larger than the Amazon Forest and occupies almost 20 % of the world's forest area. The Siberian taiga is legitimately called the lungs of the entire planet.

On August 1, 2021 in accordance with Federal Law No. 119-FZ, a simplified procedure for granting land plots for free use started on some territories of the Arctic zone. The process was stimulated by the practice of the Far Eastern region [15].

The Arctic Hectare Program is based on the Far Eastern Hectare Program, which has been operating on the territory of our country since 2016. A piece of land is given for five years; afterwards, it can be registered in ownership or leased on a long-term basis. This allows to maintain and increase the population of the Arctic zone in

the future. However, these areas are not as attractive as those that are located on the southern borders of the country. The efficient use of the territories also requires the improvement of transport infrastructure.

Results and discussion

Problems of land management. The Arctic Hectare Program excludes agricultural lands for reindeer breeding, nature protection areas, as well as the Forest Fund, cultural heritage sites, and coastal regions.

The results of the Far Eastern Hectare Program have shown that because of the distribution of land property, many segments of the economy have been developing, such as tourism, agriculture, the service market, and so on. However, they have also revealed the difficulties that may arise after acquiring a piece of land.

According to the legislation, the transferred plots must be under municipal or state ownership. If the plot's possession is not clearly defined, the local government must carry out a registration procedure. Another limitation is the land application categories, which are permitted by the law. The most attractive are plots for agricultural use, but they usually belong to communal property.

In the 1990s, radical changes took place in Russia related to the distribution of agricultural lands to workers on collective and state farms. As a result, citizens received land shares that didn't distinguish private ownership from communal property. In order to determine such plots according to the current official registration, it is required to provide a person with a part of land consistent with the land share.

Geoportal is used in the Arkhangelsk region to identify land plots suitable for the Arctic Hectare Program. It indicates the possible location of land plots [4] (fig. 1).

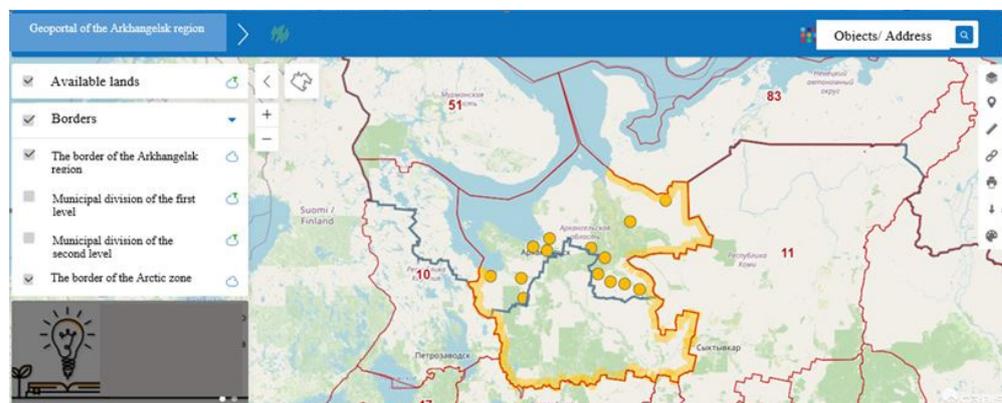


Fig. 1. Geoportal of the Arkhangelsk region

This website allows selecting land plots for further registration. Fig. 2 illustrates a list of possible locations in the Arkhangelsk region. Therefore, this online resource helps with the preliminary selection of a land plot. The usage of this site alone is undesirable because it does not contain enough information [2, 3, 11, 22, 23].

Let us choose as an example a land plot for potential registration with cadastral number 29:16:060201:43, information about which is available on the

Geoportal of the Arkhangelsk region (fig. 3). As can be demonstrated, this source does not contain enough information that should be considered when selecting a land plot. For example, it does not present limits on the use of the land plot that are significant. However, the public cadastral map [22] contains information about each area with special usage conditions, which are included in the Unified State Register of Real Estate.

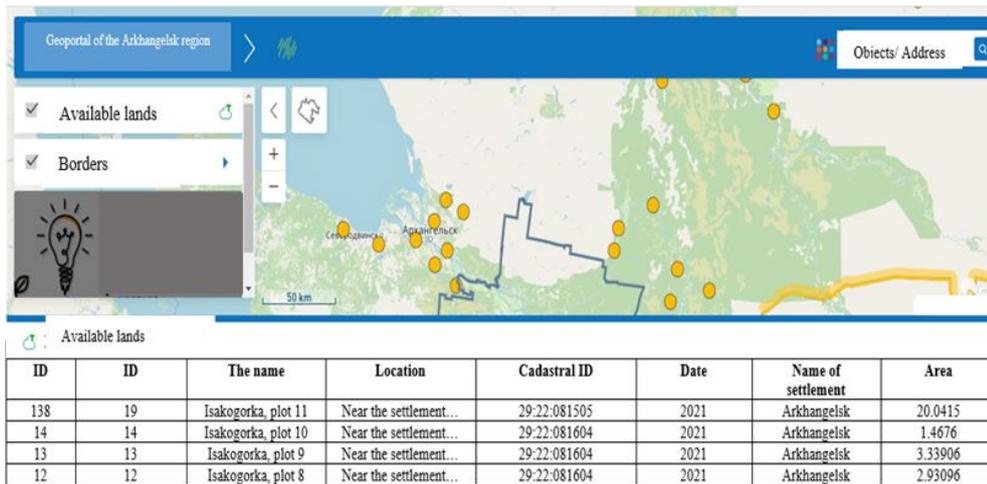


Fig. 2. Tabular representation of available land plots

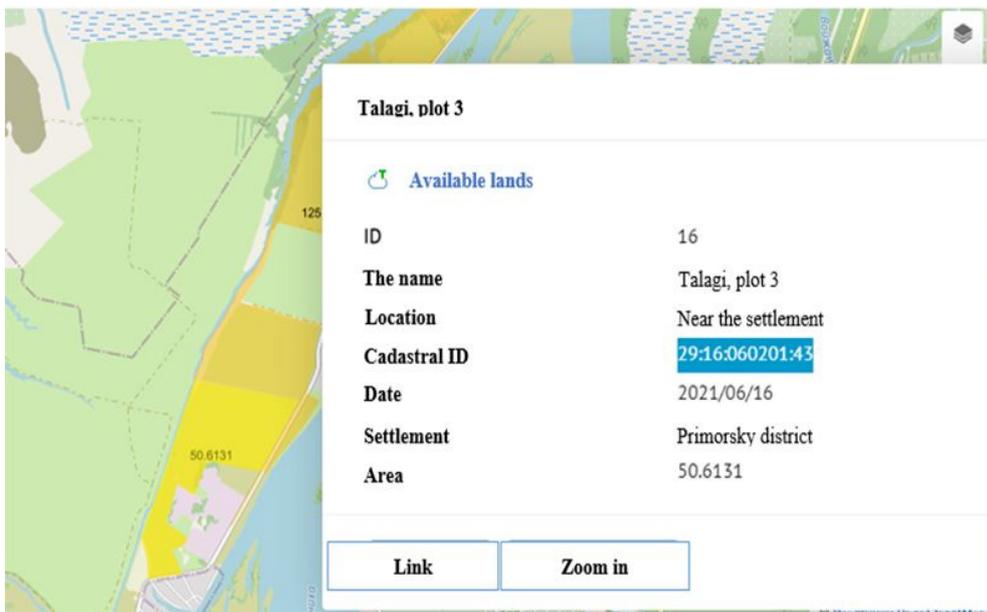


Fig. 3. Land plot selection

According to the information of the public cadastral map, the land plot with the cadastral number 29:16:060201:43 overlaps with the protected zone of the engineering communications (Protective Zone of Overhead Line-10 kV “09–06”), water protection zone, coastal protection belt (fig. 4).



Fig. 4. Graphical representation of a land plot with cadastral number 29:16:060201:43 on the public cadastral map

Therefore, using only one source of information is not enough. It is necessary to use additional resources for the selection of land plots (public cadastral map, Federal Spatial Data Fund [2]) [5, 6, 9, 10, 13, 14, 27].

Problems of forest resource management. However, it isn't correct to think simply about the worth of land resources while risking forest resources for the growth of the Arctic zone's economy. A peculiarity of the subjects of the Russian Federation located in the Arctic is the predominance (more than 95 %) of the Forest Fund lands over other categories of land. The role of forest cover in subarctic areas is extremely important. Tundra forests are an evolutionarily formed biome in areas of highly unstable contact between natural complexes of taiga and tundra. The lands allocated for the Arctic Hectare Program are adjacent to the lands of the Forest Fund. This can expose them to various dangers, including the emergence of fires on forest land, illegal logging, etc.

In addition to performing work on the provision of land in the Arctic zone, a free forest allocation project is in plans. If these two projects might be linked, there will be a demand for wood processing and construction, and as a result, one plot will be able to provide four or five jobs for several years, which will be very useful for the economy of the Arctic zone [7, 21].

1. Impossibility of valuing forest resources. Currently, there is no methodology in Russia for the monetary estimates of forest resources, including tundra forests. The forest range differs in species composition, age structure, and taxonomic specifications. As a result, regional forest management do not have sufficient data on the economic assessment of forest resources; they cannot consider their environmental role when

making management decisions. There is also no single methodology for calculating the cadastral value of forest lands.

The main function of the tundra forests is a protective one. Thus, all types of wood logging are prohibited there, except for sanitary and selective logging for the improvement of the growing stock. Therefore, it is impossible to estimate the tundra forests' resources and protective functions.

2. *Transformation forest lands to industrial lands.* Since mining is intensively carried out in the Arctic zone, oil and natural gas account for a larger share. When developing mineral deposits, there is often a need to transfer forest lands to other categories of land. In this case, the area of forests decreases and their protective function as the main regulator of the harsh northern climate decreases. The transfer is possible only in connection with the implementation of investment projects in mining and fuel and energy complexes, transport construction, and the creation of nature conservation areas.

3. *The consequences of renting forest plots.* Many geological studies of the subsurface are performed in the Arctic zone; mineral deposits are developed; linear facilities are built. Forest plots are leased for the performance of these works; companies are required to provide reforestation of the area after the development of the land [19].

4. *Lack of regular inventory of the Forest Fund.* Prior to the adoption of the Forest Code (2006), a forest inventory was regularly performed in the country once every 10 years. The collected data were used for the development of the forest register, statistical reporting, and documentation for various authorities. Since 2006, the budget financing of the Roslesinfor forest management organization has been cancelled, as the forest inventory. Instead of conducting field measurement, the old taxational data of the forest range were updated, with reduced indicators, which was especially important for lessees of the forest lands. Therefore, the taxational descriptions and flight maps should be considered unsuitable for forestry and forest land management. Due to changes to the Forest Code, annual forest inventories have been performed since January 1, 2022 [20].

It should also be noted that the use of satellite images and aviation (airplanes, helicopters and quadcopters) for the protection and inventory of forests is not possible due to low financing of the forestry [16].

5. *Insufficient number of forest protection workers in forestry leads to violations of forest legislation: unauthorized logging, the occurrence of forest grassroots and riding fires.* One of the declared tasks of the Conservation of Forests [1] federal project and the state program for the development of forestry in the country is an increase in the number of officials exercising forest supervision per 50 thousand hectares of forest lands. The growth rates of this indicator in the state program for the subjects of the Russian Federation differ dramatically, e.g., it will not change in the Arkhangelsk region and will increase by 3 times in the Yamalo-Nenets Autonomous District. In general, it is planned to increase it by 2 times in the Arctic zone [8].

6. *In addition, the infrastructure, especially the transport accessibility of forest areas, is poorly developed on the Forest Fund lands.* The absence of roads is one of the constraining factors for increasing the volume of harvesting of forest resources, namely, detection and extinguishing of fires, and conducting a ground forest land inventory.

Conclusion

A significant part of the territory of the Russian Federation belongs to the Arctic zone, and 95 % is located in the Forest Fund. The management of forest resources in the Arctic zone is characterized by the same basic problems as for other forests in the Russian Federation. These are the impossibility of valuing forest resources, the risk of transferring Forest Fund lands to industrial lands, the consequences of renting forest plots, an insufficient inventory of Forest Fund lands, an insufficient number of forest protection workers in forestry, underdeveloped infrastructure. Also, considering the Arctic zone of the Russian Federation, it is necessary to understand that most of the lands provided under the Arctic Hectare Program are located near the lands of the Forest Fund. Therefore, when choosing a land plot, it is necessary to pay attention to possible problems not only with the land but also with forest resource management.

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