Issues of the preservation of historical, cultural and environmental heritage of indigenous peoples of the Arctic

E Vorobievskaya, S Kirillov, A Mazurova and M Slipenchuk
Lomonosov Moscow State University, Moscow, Russia
lvorob@mail.ru

Abstract. The article addresses issues related to the preservation of the natural and cultural heritage of the Arctic for the maintenance of the traditional way of life of indigenous peoples, whose culture of nature management form unique examples of sustainable development of territories in specific natural conditions. These issues are especially relevant today, when industrial expansion is becoming more and more evident in the territories, where traditional nature use is still carried out, while globalization and unification of cultures of different peoples is underway. The lack of systematization of cultural landscape elements and programs for their preservation threatens to gradually lose many components of natural and cultural heritage. The importance of the creation of territories of traditional nature use is emphasized for the solution of urgent problems of our time: development of traditional activities and preservation of natural and cultural heritage of indigenous people. This question is relevant for many regions, including the north of European Russia, where there is a pressing problem of comparing the socio-economic efficiency of the preservation of the natural environment with the industrial or other economic use of the territory, which has not only rich raw materials, but also well-preserved natural landscapes and a unique preserved "living" culture of the aboriginals of the Kola Peninsula - the culture of the Saami people.

1. Introduction
Nowadays the problem of coexistence and interaction of different cultures is one of the most relevant. In modern management it is important to take into account the invaluable experience of traditional nature use by the aboriginal population, which is based on the careful, rational use of natural resources, based on a set of environmentally sound methods of economic activity and reflection of certain worldviews [1, 2], so its functioning can be considered as one of the possible options for implementing the concept of “Sustainable development”. Such an experience can be a useful adoption and a kind of interpretation for modern methods of environmental management in the development of various areas.

The culture of each nation is unique, it carries special characteristics different from the other. The special interest and necessity to realize the importance of preservation of cultural and historical heritage arises in the case of small indigenous minorities living on the same territory for a long time, while the influence from the outside on the peculiarities of their way of life was minimal. At the moment, there are still native speakers of the native language and tradition bearers, who preserve many interesting objects of their cultural heritage. The first cultural landscapes in any territory are formed by the culture of aboriginal peoples, their natural use was based on the biocentric model, in which man was a part of nature [3]. Such cultural landscapes gradually began to disappear due to the
development of industrial nature use in the early 1930s. Nevertheless, the territories, where in many respects cultural aboriginal landscapes remain their integrity and identity, were preserved. The presence of such unique natural and cultural sites is enshrined in traditional folk culture, language and artistic images.

The moral aspect of the need to preserve cultural and historical heritage is also important. The more the processes of globalization taking place in our society gain momentum, the stronger is the desire of a person or certain groups of people to preserve their individuality, uniqueness. During the human impact on the territory of their native habitat, indigenous peoples use their identity as a way to declare their exclusiveness, it becomes important for them not only to survive, but also to remain unique.

Successful functioning of such activities is impossible without nature conservation, which carries a great importance as an element of life support for many indigenous peoples. In addition, Aboriginal peoples are characterized by a close link between nature and culture, which is reflected in cultural landscapes that lead to the loss of indigenous peoples’ identity and unification. It is also important that the knowledge of indigenous peoples in the North and their culture of natural resource management is a special category of cultural heritage, and that the territories in which they originally live and conduct their economic activities are part of the natural and cultural heritage of Russia. In this regard, it is particularly important to restore the historical and economic framework of life support and, ultimately, the preservation of small ethnic groups. Unfortunately, insufficient attention is paid in Russia to the problems associated with the search for ways of coexistence between the traditional world of small indigenous minorities and the world of modern people who use natural resources in the native territories of residence of aborigines. At present, there is no single integrated scheme for modern environmental management in the regions, which would incorporate traditional environmental management not just as an element of land use, but as a special type of economic activity with a special culture and traditions. Such a task should be solved by applying a regional approach, for example, at selected model sites, where such schemes could become the basis for strategic planning and forecasting of nature use development.

In this case, it is especially important to restore and preserve the historical and economic framework of life support and, ultimately, the preservation of small ethnic groups. This can be helped by the creation of Communities of Traditional Natural Resource Use (CTNRU) and “Territories of Traditional Natural Resource Use” (TTNRU) [4, 5], which are engaged in economic activities based on the experience of ancestors. It is important to take into account the current positive experience of environmental management in foreign countries in similar natural areas, as well as to integrate other types of natural resources that are not typical for traditional use, such as tourism (ethnoecological, resource and field, adventure). Such specially protected areas should not be an open-air museum or nature reserves with conservation of traditional nature use, but rather actively operating systems of integrated management based on the experience of traditional nature use in specific natural conditions, taking into account the necessary innovative transformations.

2. Research Aims and Objectives

With reference to the above mentioned, it is extremely important to find ways of territorial optimization of nature use, which would allow, on the one hand, to develop economic activity and, on the other hand, to contribute to the preservation of historical, cultural and natural heritage of indigenous peoples.

MSU Faculty of Geography has been carrying out comprehensive work on the search for ways to rationalize the use of natural resources in different regions of the North and Siberia using an ethno-cultural approach for more than 10 years. Interesting results have been obtained from Murmansk Oblast, Khanty-Mansi Autonomous Area, Komi Republic, Severobaikalsky District of the Republic of Buryatia, etc. The work is carried out by employees and students of the Department of Environmental Management of the Faculty of Geography. The objectives of the study include: 1) study of environmental, geographical, historical, cultural, and socio-economic features of the study areas; 2)
identification of the features of traditional nature use by indigenous peoples inhabiting the studied area; 3) analysis of the current structure of nature use and identification of its conflicts, both existing and potential; 4) initial assessment of a number of components of the natural resource potential for traditional nature use; 5) identification of prospects for the development of traditional nature use in modern conditions, based on the experience of traditional adaptation management, taking into account the modern experience of this type of management abroad.

3. Approach and Methodology
Problems of rationalization of traditional nature use at the regional level are widely considered in modern geographical science. Among the main directions can be highlighted: research of natural-resource potential as the basis for the development of traditional nature use; territorial organization of traditional nature use; work on the substantiation of territories of traditional nature use [1, 2, 6, 7]. The work of the Institute of Geography of St. Petersburg State University, the Institute of Ecology and Evolution of the Russian Academy of Sciences, the Institute of Problems of Indigenous Peoples of the North of the Siberian Branch of the Russian Academy of Sciences, the Irkutsk Institute of Geography of the Siberian Branch of the Russian Academy of Sciences and other scientific institutions is devoted to the study of traditional nature use, the issues of its preservation and development in modern conditions. Modern approaches to the study of traditional nature use are being developed by A.P. Gudyma, O.G. Zavyalova, N.N. Zarubina, V.F. Zadorozhny, V.N. Kalutskov, K.B. Klokov, S.M. Myagkov, A.T. Nrasnikov, A.S. Panarin, M.V. Ragulina, E.E. Syroechkovsky and other Russian researchers, as well as foreign scientists: Buggey S., Charrin Anne-Victoire, Cosgrove D., Fondahl G., Francs D., Roue M., Rayer C., H.J. Tuan Y-Fu, Wiget A., Ziker J.P. and others. Studies of natural resource potential as the basis for the development of environmental management are described in the works of Baklanov P.Ya., Preobrazhensky V.S., Zvorykin K.V., Naprasnikov A.T., Privalovskaya G.A., etc. Nevertheless, there are no generally recognized methodological approaches to achieving the formulated goal of this study and solving the tasks set.

The following methods and approaches are expected to be used to achieve this goal:
1) A synthetic approach based on the analysis of not only natural sciences but also humanities is needed to reveal complex interrelations in the system of nature management (“nature-population-economy”). Such an approach aims at a systematic analysis of internal interrelations in environmental management and cultural landscape as a product of traditional environmental management [1, 6].

2) Ecological and economic analysis of nature use to determine the necessary costs to reduce the negative effects of anthropogenic impact on the economically developed territories; substantiation of the identification of necessary areas for the creation of ecological framework and preservation of ethno-cultural features of the study areas, to justify the creation of specially protected areas “Territories of Traditional Natural Resource Use”. In the course of the work methods of assessment of ecological and economic efficiency of various types of management were applied taking into account the significance of ecological functions of natural goods on the basis of the concept of common economic value and other methods [8, 9], which are actively used in foreign researches in the field of ecological economy and are not widely used in our country, especially for revealing the value of the territory from the point of view of traditional use of natural resources and preservation of the cultural aboriginal landscape as a part of natural and cultural heritage of Russia.

3) Ethnocultural research is necessary to identify cultural and economic “adaptive” mechanisms of nature use to specific natural conditions. The objectives of the research include studying the history of settlement and development of territories, conducting historical retrospective analysis of the use of natural resources in the pre-industrial period, identifying cultural heritage, and conducting toponymic and sociological studies using appropriate methods. Within the framework of this block of studies, a database on “indigenous” toponymy is being created, the specific feature of which is its “attachment” to the peculiarities of the natural environment, the history of natural resource use, and the peculiarities of economic activity - such studies can provide valuable analytical material, in particular with regard
to the study of the toponymy of unwritten indigenous peoples, the preservation of which, in the current conditions of globalization, is essentially an invaluable monument of their cultural heritage.

4) SWOT-analysis.

4. Results and Discussion

As an example, there are given illustrations to the research conducted in the Lovozero district of the Murmansk region, where Aboriginal residents of the Kola North - the Saami - live densely. This work was carried out as part of a long-term cooperation between the Department of Environmental Management and the “Lovozero District National Cultural Autonomy of Saami”, and the National Cultural Centre of the village of Lovozero and the Saami community of traditional nature use “Piras”.

Stage 1. Study of ecological-geographical, historical-cultural and socio-economic peculiarities of model territories. Identification of peculiarities of traditional nature use of indigenous peoples who inhabited and populated the studied territories. Identification of regularities of the modern territorial structure of nature use. These studies are carried out using archive and literature materials, remote sensing data, as well as data collected directly in the study areas. Special attention is paid to supplementing data on natural and economic systems with materials on traditional land use systems and natural and cultural heritage of the studied areas, as well as to identifying and substantiating the territories of natural and cultural heritage of the indigenous population. At this stage, toponymic (Figure 1) and sociological studies are necessarily conducted to collect information on the history, culture and traditional use of natural resources of indigenous peoples; mapping of spiritual culture materials and objects of indigenous peoples of the North in the model territories (commercial lands, places of former and existing settlements, burials, cult objects, legendary objects, etc.) is carried out in order to draw up retrospective maps of natural resources use, maps of traditional natural resources use [10]. For example, the sites of traditional nature use of a number of Saami clans in the Central part of the Kola Peninsula have been studied. The research work on this topic resulted in a series of maps: “Saami cultural monuments of the end of the 19th - beginning of the 20th centuries in the central and eastern parts of the Kola Peninsula”, “Lovozero Saami ancestral lands at the end of the 19th - beginning of the 20th centuries”, “Tribal lands of the Nizhnekamensk Saami at the end of the 19th - beginning of the 20th centuries”, “Tribal lands of the Chudoyavrsky Saami at the end of the 19th and beginning of the 20th centuries”, “Natural and cultural heritage of the Lovozozero mountain group”, fragments of some maps are presented in Figure 2 and 3, as well as a matrix for the preparation of a legend to them (Table 1).

Special attention is paid to the identification of the natural resource potential of the territories for the traditional use of natural resources.

![Figure 1](image)

**Figure 1.** Analysis of toponyms of the “Lovozero-Khibiny” site by group
Figure 2, 3. Tribal lands of the Nizhnekamensk Saami at the end of the 19th - beginning of the 20th centuries.: reconstruction (map fragments)

Table 1. matrix for the preparation of a legend to the maps of Saami tribal lands and monuments

| Group                      | Subgroup                                                                 |
|----------------------------|---------------------------------------------------------------------------|
| Traditional nature use     | Natural forage lands:                                                     |
|                            | - reindeer grazings (all-season, summer, winter)                          |
|                            | - pozheny (hayfields in flood meadows)                                   |
|                            | Forest land (logging, dry land for personal use)                         |
|                            | Fishing grounds with indication of the main object of the fishery (berry picking, hunting, fishing) |
| Main tribal lands of the Saami groups | - Lovozero and Maselgian Saami                                           |
|                            | - Chalmn-varre and the Lower Kama Saami                                  |
|                            | - The Chudzyslawski Saami                                                |
|                            | - Common areas                                                           |
| Monuments of Saami culture | Generic groups and generations:                                         |
|                            | - stone seids                                                           |
|                            | - sacred sites of rivers and lakes                                       |
|                            | - sacred mountains, hills, rocks                                         |
|                            | - sacred islands                                                        |
|                            | - sacred groves, trees                                                  |
|                            | - petroglyphs                                                           |
|                            | - labyrinths                                                            |
|                            | - Saami settlement sites                                                |
|                            | - Saami burial grounds                                                  |

The carried-out researches, including toponymic ones, have shown that the Aboriginal (Saami) cultural landscape represents the historically developed natural and ethno-cultural landscape. This work is seen as extremely important for achieving the ultimate goal of the study. The lack of systematization of elements of the cultural landscape and programs for their preservation threatens to
The dual transformation of natural and cultural heritage, as well as to conduct traditional and regulated recreational nature use in the study areas, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use at model sites.

Stage 2. The current structure of nature use is analyzed, maps reflecting the territorial specifics of nature use in the study areas are drawn up. In the course of the work, the geo-ecological consequences of the results of nature use are characterized, both existing and potential conflicts between traditional nature use and other types of economic activities are revealed, and the mapping of conflicts of nature use and their analysis are carried out. At this stage, sociological research is also conducted among indigenous peoples in order to identify their “value benchmarks”, in order to find out their views on the problems and prospects of conservation of traditional natural resources, and so on. For example, most indigenous people see the preservation of traditional nature use and traditional culture as extremely important; the clan-based community is a priority form of self-governance. More than 80% of respondents see the need to preserve ancestral cultural traditions, understand the importance of preservation of natural and cultural heritage and consider it necessary to develop cultural and educational activities here, both for the local population and tourists. The majority of respondents here have especially important sacred places for them - these can be mountainous areas, rivers, lakes, an island, a group of trees, etc.

Stage 3. The final stage of the research is devoted to the system analysis of environmental management. The forecast of the development of nature use in the study areas is given, the place of traditional type of management in the general structure of nature use is determined. A very important task is to obtain data on the economic efficiency of traditional nature use in the study areas. The analysis of ecological and economic efficiency of traditional and other types of nature use is carried out on the example of several model districts on the basis of the concept of common economic value (value) taking into account ecological functions of ecosystems [8], including, taking into account ethno-cultural component (value of preservation of territories for maintenance of traditional types of management).

Stage 4. The study is finished with recommendations on substantiation of prospects of development of traditional use of natural resources in modern conditions with reliance on experience of adaptation traditional management taking into account modern experience of its conducting abroad in mid- and long-term perspective. Thus, for example, analytical materials obtained as a result of researches formed the basis for substantiation of creation of territories of traditional nature use in the Lovozero mountain massif and part of its foothills, which was proposed to be called “Ethno-ecological territory “Luyavrurt”. The need to create such a territory on the Kola Peninsula is primarily due to the conflicts of nature use of both “resource” and “ethical and moral” nature, primarily arising here conflicts of nature use between traditional, recreational, environmental and industrial nature use. This territory has been the ancestral land of a number of Saami families since ancient times, and, most importantly, it is here that the largest number of Saami sacred sites on the Kola Peninsula is probably concentrated. The preservation of the Saami toponymy here is about 90% of the other names are self-explanatory toponyms of Saami landscape, which indicates an organic, indivisible link between the natural and cultural components of it for the Saami. Most of the toponyms bear the imprint of ancient Saami legends and legends, and many names reveal the peculiarities of nature management. In addition, this area is an example of good preservation of natural ecosystems, many of which are unique, there are natural monuments of biological and geological importance. The Lovozero mountain group and its foothills are still used by the Saami for traditional nature use. The proposal to create a traditional nature use area is a compromise solution to the problems that have arisen, as it allows to preserve the natural and cultural heritage, as well as to conduct traditional and regulated recreational nature use here.

The development of a comprehensive scheme of natural resource management, taking into account historical experience (including positive examples of adaptation mechanisms of traditional natural resource management systems), conflicts of natural resource use and the main types of natural resource use in their dynamics, could become the basis for strategic planning and forecasting the development of natural resource use at model sites.
5. Conclusion
Unfortunately, there is insufficient attention paid to the problems associated with the search for the coexistence of the traditional world of the indigenous peoples of the North and the world of modern people who also use natural resources in the native territories of indigenous peoples. Currently, not only in the Arctic, but also in other regions, there is no single integrated scheme of modern environmental management, which would include traditional use of natural resources not just as an element of land use, but as a special type of economic activity with a special culture and traditions [11]. The above given research algorithm may serve as a basis for carrying out works devoted to analysis and search for ways to optimize the use of natural resources in territories where indigenous peoples still live and conduct traditional economy, including in conditions of climate change [12].

The analytical and cartographic materials obtained in the course of the study make it possible to form the basis for further analysis and assessment of the results of nature use based on the aggregate environmental, economic and social results, and help to determine the place of traditional nature use in the overall structure of the economy. Such works help to form a methodological basis for analysis of traditional nature use at the regional level from the point of view of environmental and economic efficiency. The research in the model territories, each of which is unique in its own way, the proposed approaches to the analysis of traditional nature use and ways of its optimization in each specific case, can contribute to the transition of the studied territories to a balanced development and transformation of the model areas of research into model territories of innovative transformations in nature use, and, importantly, will help to preserve the natural and cultural heritage of indigenous peoples.

References
[1] Krasovskaya T M 2008 Nature management of the North of Russia (Moscow: LKI Publishing House) p 288 (In Russian)
[2] Naprasnikov A T et al 2005 Territories of traditional nature use in Eastern Siberia: Geographical aspects of substantiation and analysis (Novosibirsk: Science) p 212
[3] Gudyma A P and Bulatov V I 2002 Social-philosophical and ecological aspects of sustainable development of the indigenous peoples of the North: Analytical review (Novosibirsk: GPNTB SB RAS) p 109 (In Russian)
[4] Federal Law On Territories of Traditional Nature Use of Indigenous Peoples of the North, Siberia and the Far East of the Russian Federation of 07.05.2001 N 49-FZ
[5] Federal Law On the General Principles of Organization of Communities of Indigenous Peoples of the North, Siberia and the Far East of the Russian Federation of 20.07.2000 N 104-FZ
[6] Klokov K B 1997 Traditional use of natural resources of the peoples of the North: concept of conservation and development Ethno-geography and ethno-ecological research 5 91 (In Russian)
[7] Traditional knowledge, culture and nature use of the peoples of the North 2005 (Moscow: AKMNSS) p 116 (In Russian)
[8] Dixon J A et al 1994 Economic analysis of environmental impacts (London: Earthscan) p 210
[9] Tishkov A A 2005 Biospheric functions of the natural ecosystems of Russia (Moscow: Science) p 309 (In Russian)
[10] Ivanishcheva O 2017 Anthropocentricity of the language of the native low-numbered population of the north (Based on the example of landscape-related vocabulary in the Kildin Saami language) X Linguae 10(3) 218228
[11] Slipenchuk M et al 2016 Multifaceted approach to natural resource management: ethnology, geography, culture Journal of geographical institute "Jovan Cvijic" SASA 66(3) 449455
[12] Jaakkola J K et al 2018 The Holistic Effects of Climate Change on the Culture, Well-Being, and Health of the Saami, the Only Indigenous People in the European Union Current environmental health reports 5(4) 401417