

**Indigenous Peoples of the North:  
Traditional Culture and Knowledge for the Environment**

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### Characteristic Features of the Region

The region known as the Arctic (from the Greek ἄρκτος – “she-bear”) encompasses the Arctic Ocean with its seas and islands, and also the peripheral areas of the surrounding continents of Eurasia and North America.

More than a half of the area of the arctic islands of Eurasia is covered with glaciers. The largest arctic glacier (glacial sheet) in Eurasia is located on the Northern Island of the Novaya Zemlya archipelago and has an area of 19,000 square kilometers, almost half of the island’s territory. The biggest glacier in the Arctic is the glacial sheet of Greenland with an area of 1,726,000 square kilometers. It contains around twelve percent of the surface ice on the planet.

The Arctic Circle (66° 33’ northern latitude) is the southern geographical border of the Arctic, but the climatic border of the Arctic is measured according to the July isotherm +10°C, which in Eurasia is located close to 70° north latitude and runs from Norway eastward through the entire stretch of Siberia.

The bare region at the southern border of the tundra can be called the ecological boundary of the Arctic. The so-called arctic desert, with sparse vegetation, broken rock, and glaciers, lies to the north of the tundra zone.

When talking about the Arctic and the “Far North,” these terms will be used in their wider sense and will include territories from the islands of the Arctic Ocean and the northern shore of Eurasia to the forest tundra. The term “North” will be used when talking about the taiga zone – the northern and middle taiga.

The expression – “harsh Arctic or harsh Polar conditions” – did not come about by chance, as it is truly extremely cold in the Arctic. On the Taimyr Peninsula, for instance, winter lasts for almost nine months, and the air temperature can go down below –50°C. Neither the short summer is comfortable: the medium temperature in July is + 2°C, and on the southern side of the Peninsula only a little above +10°C. The coldest point of the northern hemisphere is located in the village of Oimyakon on the Indigirka River. An almost one hundred and five degree temperature difference, the biggest in Eurasia, was recorded here: from -67.7°C in winter to +37°C in summer.

North of the Arctic Circle the sun does not fall below the horizon for days, a phenomenon which has become known as the “polar day.” Depending on the latitude, the “polar day” can last from two days at the latitude of the Arctic Circle to more than half a year (from March 18 to September 26) at the North Pole. The “polar night,” when the sun does not rise above the horizon, comes during winter. For instance, in the village of Oimyakon in eastern Yakutia during the summer period of “white nights,” when it is light practically continuously, the duration of

the daylight exceeds twenty hours. In December, by contrast, daylight lasts for only about three hours.

Ice in the Arctic is spread not only on top of the soil, but also in the soil column. The frozen ground, or “permafrost,” is a mix of mountain-type rock and ice. Permafrost occupies around 25% of the Earth’s soil, and in Russia, more than half of the country’s territory. The tundra, and the whole territory of the Arctic, is a zone of permafrost three hundred meters deep or more, with temperatures of minus 2°C and lower.

The bare tundra landscape began to form around 18-20,000 years ago when wide areas of land were cleared by retreating glaciers. At present the tundra (including the forested tundra) occupies 15% of Russia’s territory, stretching from the Kola Peninsula in the West to Chukotka in the East, and also covering a part of the Arctic Ocean islands.

From North to South the tundra zone is divided into three subzones:

- *The arctic tundra* is characterized by sparse vegetation growing in small islands of bare soil in hollows and cracks,
- The *moss and lichen, or, typical tundra*, widely spread from the island of Vaygach to the Kolyma River, is characterized by lichen, moss, different types of grass, and small shrubs.
- In *the shrub tundra* there are three tiers of vegetation: the upper shrub tier (arctic birch, arctic willow and alder), middle grass tier (the most common are sedge and shrubs of red bilberry and crowberry), and the lower moss and lichen tier (dominated by brown and green moss).

The forest tundra lies south of the tundra, and to the south of the July isotherm +10°, on an expanse of flatlands that are from twenty to two hundred kilometers wide. It is a transition zone from the tundra to taiga. The forest tundra is one of the most waterlogged natural zones. However, its most important feature is the combination of bare areas with islands of sparse forests that consist of larch, pine and birch trees.

The taiga zone is the largest natural zone of Russia, stretching from the country's western borders to the coasts of the Sea of Okhotsk and the Sea of Japan. The taiga zone lies in both the arctic and temperate zones. In western Siberia from the Yenisei River to the Urals, the taiga mainly consists of spruce forests. The territory east of the Yenisei River practically as far as the Sea of Okhotsk is occupied by the larch taiga. Grass meadows and marshes are common among the taiga massifs.

The great watershed divide between the basins of the Arctic Ocean and the Pacific lies in the taiga. The largest rivers of Russia – the Ob, Yenisei, and Lena – flow across the taiga from the south to the north and empty into the Arctic Ocean.

### **The Arctic Exploration**

Archaeological data shows that humans began to occupy the North and the Arctic around thirty thousand years ago during the Stone Age (the Paleolithic). During the last fifty thousand years the arctic zone has seen several freezing and warming periods. At the beginning of this period, ice covered a large part of the European North and Siberia; however, the adjoining areas of the tundra and forest tundra were far from lifeless. Water birds and herds of hoofed animals found plenty of food here. Musk ox wandered near the edge of the ice, and in the summer thousands of deer came here to find shelter from gnats. This abundance of potential game drew the ancient humans to the North.

Small groups of people from Central Asia, Mongolia, China, the Cis-Ural region, and the Russian plain came to the North. Around thirty thousand years ago the climate of this part of the Arctic was warmer than it is now: January temperatures were higher by 2-3°C, and July temperatures by 3-4°C. Later, around eighteen thousand years ago, the climate grew colder, beginning a freezing period that ended only around 12-13,000 years ago. Then, once it grew warmer again, the migration of people from Central Siberia to the Arctic resumed.

The most ancient Arctic human site discovered in the Pechora River Basin at the latitude of the Arctic Circle is dated between 37-24,000 years old. Stone and bone tools about 27-28,000 years old were found in the lower regions of the Yana River. Several stone tools made around 30,000 years ago were found on Chukotka. To the south, in Middle Siberia, three female figures made by Paleolithic man of mammoth tusk were found at the Buryet site on the bank of Angara River (Irkutsk Oblast). They are about 24-25,000 years old. The surface of several of the figures is covered with an ornament presumably depicting hooded fur clothes – the kind of clothes that are still worn by some of the Arctic peoples.

The ancient artists often depicted the surrounding wildlife and hunting scenes on stone and bone objects.

The northernmost petroglyphs (drawings on stone) in Asia made by Arctic hunters 2,000 years ago were found on Chukotka, on the bank of the Pegtymel River that flows into the East Siberian Sea. The subjects of these artifacts include the scenes of reindeer, bear, and whale hunting.

### **Indigenous Peoples**

More than 30,000 years ago the northern regions of Eurasia began to be explored by the peoples whose descendants to this day live in harmony with the harsh natural world of the Far North. At present there are seventeen indigenous or aboriginal peoples inhabiting Russia's North from the Kola Peninsula in the east to Chukotka in the west.

International law and the national legislation of many countries use the term “indigenous peoples” to describe social and cultural groups that can be characterized by the following features:

- Self-identification on the basis of attribution to a distinctive indigenous cultural group and the acknowledgement of this identification by others;
- Native language, often different from the official country language;
- Collective attachment to a geographically defined ancestral territory and to the natural resources of this territory;
- Orientation towards traditional methods of subsistence;
- Indigenous cultural, economic, social, and political institutes that differ from the analogous institutions of the dominant society or dominant culture.

For indigenous peoples, preserving, developing, and passing on their specific ethnic characteristics to future generations is extremely important because it is the basis for enduring as a people.

The term “the peoples of the North” includes several aspects, including ethnic, geographical, cultural, and social ones. In Russian legal documents and research publications, this definition is accompanied by a demographic characteristic of “minority,” if the population size is less than fifty thousand people.

The term “the peoples of the North” used in the Russian Federation includes not only the peoples of the Arctic and the “North,” but also the indigenous peoples of Siberia and the Far East. The List of the Indigenous Ethnic Minorities of the North, Siberia, and the Far East (abr. IEMN) established by the administrative decree of the Russian Federation in 2006 includes forty peoples: Aleut, Alyutors, Vepsians, Dolgans, Itelmens, Kamchadals, Kereks, Kets, Koryaks, Kumandins, Mansi, Nanai, Nganasan, Negidals, Nenets, Nivkhs, Orok /Ulta/, Orochs, Saami, Selkups, Soyots, Taz, Telengits, Teleuts, Tofalars, Tubalars, Tozhu Tuvans, Udege, Ulchs, Khanty, Chelkans, Chuvans, Chukchi, Chulym, Shors, Evenks, Evens, Enets, Eskimo, and Yukaghirs. With the exception of Saami, Evenks, and Eskimo these people live only in the Russian Federation. The total population of these groups is 260,000 people (according to the population census of 2010); the population varies among different peoples from several tens of thousands (for instance the Nenets) to several hundreds or even several dozens (the Enets) of people.

Many members of the indigenous peoples of the North lead a nomadic and semi-nomadic way of life even today, conducting seasonal moves from the tundra to the forest or taiga and then back again. Hunting, fishing, reindeer herding, and gathering are the basis of the traditional way of life and distinctive ethnic identity of the peoples of the North. Other local groups of the North, Siberia, and the Far East resemble them in their way of life, as their cultures are unique blends of the traditions the indigenous ethnic minorities and those of the dominant European and

Asian peoples. These are the Karelians, Komi, Yakuts and Buryats, and also the Russian Pomors (descendants of the earliest Russian settlers near the White Sea), and Russian Old Believers (descendants of those who rejected Orthodox Church reforms of 1666, many of whom settled in Siberia). Their mode of subsistence also depends upon the state of the surrounding natural world (places of hunting, fishing, gathering, and gardening).

At present, the total population of the Russian North is about one and a half million people. In the past forty to fifty years it has grown ten times, largely because of people who relocated to the North to work at mining industry enterprises that produce and transport petroleum and other mineral resources from beneath the ground and Arctic seabeds.

### Climate Changes and Adaptation

Humans have long been adapting to the environment around them. Most of world's population has followed the path of creating artificial environments: changing the landscape, utilizing water power, utilizing hydrocarbon resources to create conditions for a more comfortable life, etc. Indigenous peoples, however, continue to lead a lifestyle that is respectful towards the use of natural resources and has minimal impact on the environment. Their economy is based on thoughtful examination of natural processes and the desire to harmoniously merge the human world with nature.

Indigenous people are only able to conduct their traditional way of life in pristine or slightly disturbed landscapes, which is why one of the main conditions of their existence is supporting the level of biodiversity and productivity of their lands. They have been dealing for thousands of years with this difficult problem. Indigenous peoples keenly observe and understand changes in climate and other aspects of their environment. This has allowed them to find ways of cultural adaptation based on their own traditional knowledge that is passed down from generation to generation.

The “Agenda of the Twenty First Century” adopted in 1992 by the participants of the World Summit in Rio de Janeiro states: “Many generations of indigenous people have formed an integrated understanding of their land based on the traditions. Governments and international organizations need to recognize these values – traditional knowledge and methods of rational resource use practiced by the indigenous population in their relationship with the environment – and apply this knowledge in other developing regions.”

The traditional knowledge of indigenous peoples who continue to live in direct contact with nature is an important source of information for studying the climate change processes and developing strategies for minimizing the negative results of these changes for the entire population of Earth.

In accordance with the Convention for the Safeguarding of the Intangible Cultural Heritage approved by the UNESCO Member States in October 2003 “social practices, rituals and festive events”, as well as “knowledge and practices concerning nature and the universe” are the part of intangible cultural heritage and a mainspring of cultural diversity and a guarantee of sustainable development.

In terms of traditional knowledge of the indigenous peoples of the Arctic, the International UNESCO Conference on “Climate Change and Arctic Sustainable Development: Scientific, Social, Cultural, and Educational Challenges” (2009) recommended to promote:

- Study and preservation of cultural traditions of the indigenous peoples of the Arctic;
- Recognition of the fact that indigenous communities in the Arctic are modern societies and use modern technologies;
- Study of the experience of the Arctic communities, as these communities are capable to quickly to natural changes of their environment.

This project was carried out by the UNESCO Institute of Information Technologies in Education as a part of the activity of the UNESCO Intersectoral Platform “UNESCO Contribution to Climate Change Adaptation and Mitigation.”

### **Climate Warming in the Northern Hemisphere**

In the modern climate, warming on the global and regional scale progresses within the bounds of the latest cycle of natural climatic fluctuations tied to the changes of the Sun’s activity. In the age of intensive industrial development, however, the climate is also influenced by anthropogenic factors, such as the growing concentration of gases in the Earth’s atmosphere that causes the so-called “greenhouse effect.” Climatic fluctuations are manifested very strongly in the Arctic zone. On Chukotka, for instance, during the one hundred years of record-keeping, the annual average temperatures have risen 1.6°C, at the same time as the global temperature of our planet during the same period has risen only by 0.6–0.7°C.

Throughout history the indigenous peoples have seen several periods of freezing and warming in the natural environment of the North. The most noticeable lowering of temperatures occurred in 1906-1907 with less marked reductions in temperature at the end of 1940s and the beginning of 1970s. Increases in temperatures in the North during the twentieth century were noted in the 1930-1940s and the 1961–1990s. At present the annual average temperature level has come close to the warming of the 1930-1940s, and also to the warming of the early Middle Ages in the ninth to twelfth centuries A.D.

### Traditional Land Use

Contemporary indigenous or aboriginal peoples are the descendants of the ancient communities of hunters, fishermen, and gatherers who considered nature not as something apart from themselves, an environment with a complex of natural resources, but as a part of their own communities. The Japanese ethnologist, H. Watanabe, calls this attitude “the system of social solidarity with nature,” which is based on understanding the connection between all living things, and the reciprocal integrity of all natural objects including humans.

The key principles of traditional land use among the indigenous peoples of the North include:

- Traditional methods of land use are not a form of economy but a way of life. These ways of land use are truly unique and are part of common world culture, an ancient and successful experience of adapting human communities to extreme environmental conditions. This is the difference between the practices of the indigenous communities from the practices of the modern Western civilization.
- Traditional methods of land use were and still are the only form and condition for subsistence among Northern natives. Only these methods guarantee the preservation and reproduction of the distinct cultures and ethnic identities of the northern peoples.

The main types of traditional land use and subsistence among the peoples of the North are listed in the classical work of the Soviet ethnographers M. G. Levin and N. N. Cheboksarov (1955). These economies and cultural types, based on the terminology of the authors, reflect different forms of utilizing biological resources:

- Taiga hunters and fishermen;
- Fishermen of the large river basins;
- Hunters and reindeer herders of taiga;
- Hunters of the tundra and forest tundra;
- Reindeer herders of the tundra;
- Arctic marine hunters.

The specialized modules in this project look at the characteristic ways in which the members of the most distinctive types of land use adapt to the changes in the environment.

The peoples inhabiting the vast regions – Nenets, Evens, Evenks, Chukchi – use several types or strategies of land use and various local variants. The peoples inhabiting small regions with a single type of natural conditions use only one

strategy, local variants of which distinguish local cultures (Nganasan, Asian Eskimo, Enets, and others).

Neighboring peoples that differ in their origin may still have similar and sometimes even practically identical forms of economy. However, they always try to find their own specific niche in order to share the area with the neighboring peoples. They can also borrow each other's strategies of land use. For instance, the Chukchi that settled on the shores of Bering Strait adopted elements of sea-mammal hunting culture from the Eskimo. In the nineteenth century, due to the reduction in the numbers of wild reindeer, the Yukaghirs of the Kolyma Lowland, who originally hunted wild reindeer on foot, adopted the reindeer-herding way of life of their neighbors, the Evens and western Chukchi, and by the end of the 1820s had become typical tundra reindeer herders. For sedentary, nomadic, and semi-nomadic peoples "personal lands" (family, clan, or communal territories) play a very important part, as the lands that they can return to.

Preserving the high quality of territories of habitation for thousands of years was made possible by the strict observation of traditions, rules of conduct, and a responsible attitude towards the use of natural resources. An exceptionally keen sense of responsibility is characteristic of the indigenous peoples that practice reindeer herding and hunting during animal migration seasons or in the areas of their reproduction.

The first rule of land use which the indigenous peoples of the North developed and follow up to the present is to "not take from nature more than is necessary for survival." The second rule of "few people on a large territory" was developed by the indigenous peoples on the experience of many centuries living in extreme conditions, and their preparation in case of sudden, and sometimes catastrophic changes in the level of the hunting and fishing reserves and the state of the pastures. This rule is determined by the slower rate of reproduction for biological resources in the North.

Northern and especially arctic indigenous peoples have never been numerous communities, but they have always tried to exploit large areas of land. Understanding the patterns of the nature in the North, indigenous peoples avoided setting up large settlements, especially on soft soils. Even in places with a high level of biodiversity and productivity, they settled and moved as separate, small groups, keeping some distance from each other and intuitively trying to reduce the pressure on the soil and the vegetation. The only exception was the whaling villages of the Eskimo and Chukchi, their population could be higher than eighty to a hundred inhabitants. However, even they preferred to combine the forces of several small villages only for the duration of the whaling season.

The families of taiga hunters and fishermen had large hunting grounds that were set forth by common law. Sea hunters whose settlements were located along the

shoreline close to one another hunted on vast territories. The Pomors of the White Sea and Murmansk sailed as far as Svalbard and Novaya Zemlya and often visited the coastal waters of the Franz Joseph Land. The sea hunters of Chukotka traveled hundreds of kilometers away from home to hunt in times when there were few animals nearby their settlements.

### **Traditional Knowledge**

The traditional knowledge of the indigenous peoples of the North is a special part of the cultural and spiritual heritage of the peoples who rely upon oral tradition. This knowledge is the basis of the stable interaction with nature and the rational, sustainable use of its resources for providing subsistence and spiritual practice. Traditional knowledge allows peoples with no writing system to pass down the heritage of their unique land use experience to their descendants.

The traditional knowledge of the majority of the northern peoples has come down to the present times though not without irreplaceable loss. The oral and demonstrative (“hand to hand”) ways of transmitting this knowledge have practically disappeared by the end of the twentieth century due to the breakdown of the traditional way of life and the passing of older generations. At present the fate of the unique knowledge directly depends on the realization of its value by the young people, and also on the possibility of its use by modern science.

Traditional knowledge is a part of the living cultural heritage of the aborigines of the North, and includes the following components:

- Calendars for Traditional Economy preserve the historically-fixed annual cycle of ways of land use practiced by a certain people. Local hunting and fishing calendars defining the optimal times and places of hunting a specific species govern the hunting of animals and regulate pressure on the population of the animals depending on the natural dynamic of their reproduction, etc.
- The preservation of places that play a key role in the reproduction of species hunted and fished and in maintaining the biodiversity of a certain region: indigenous peoples strictly guarded the places where they hunted animal species reproduced and cleaned the rivers where fish spawned and the spawning places themselves, and as well as rookeries of sea animals. There were rules and certain times set for gathering stalks, leaves, and roots in places where valuable edible and medicinal plants grew. On those lands most valuable for maintaining the reproduction of the hunting and fishing species, local people would periodically restrict any hunting activity; certain lands would be withdrawn from any use and proclaimed sacred. Some of the rarest animals and plants, as well as certain landscape features and natural objects, could also be considered sacred.

- The systems for pasture rotation, carrying capacity of reindeer pastures and projections for pasture productivity: these systems existed among all reindeer-herding communities and were strictly regulated in order to avoid overgrazing and the spread of disease among domestic reindeer. The best reindeer moss areas were considered to be very valuable for the community and during normal weather conditions were not used. In cases of impenetrable ice cover, droughts, and fires reindeer herders would allow their neighbors (other ethnic groups) to temporarily pasture herds on grazing lands belonging to them.
- The preservation of the aboriginal species of domesticated animals: this goal is recognized by the world community as one of the most important paths to the preservation of the world's cultural and natural heritage, since domestic animals (reindeer, for instance) stimulated the development of certain cultural traditions. For many indigenous peoples these animals to this day are considered sacred and often determine the characteristic features of their spiritual world and their cultural diversity.
- The continuity of the land use traditions: critical knowledge, rules of behaving in the wild, and household economy skills were part of the cosmological and religious beliefs of the peoples of the North, and were considered taboo. The carriers of this knowledge and rules were primarily shamans and the elders. They preserved and transmitted to future generations the traditional methods for healing people and animals, as well as unique psychoenergetic techniques for influencing people, animals and even natural processes. Both indigenous peoples and those non-native groups who are nevertheless long-standing residents placed great emphasis on the system of education, which played a big role in the transfer of tradition and was based on early inclusion of children into the labor activities of the family, as well as excellent physical training through special methods of acclimatization, training and exercises. Usually by the age of eight to ten boys and girls had already mastered all the production processes and did as much work as they were able to.

Until recent, the indigenous ethnic minorities of the North did not have their own writing systems. The transfer of knowledge from generation to generation was done orally and was an essential component of the living traditions of every people. That is why the preservation of the languages of the indigenous peoples has always played a great role: a significant part of their vocabularies record meanings and actions associated with hunting, fishing, reindeer herding, gathering, specific features of local landscape and weather conditions. In our times the carriers of the native language are the people who lead a traditional way of life.

### Traditional and Scientific Knowledge: Opportunities for Integration

The data on the traditional knowledge of nature (“ecological knowledge”) of the indigenous peoples has been collected little by little, at first through the works of travelers, then through works of ethnographers. However, since scientists did not correlate that knowledge with the preservation of specific ecosystems, this data was never systematized. Much more attention was given to gathering folklore and materials on religious and every-day rituals, which were accompanied by objects of material culture than to the ecological component of the traditional knowledge. However, some ethnographic research did touch upon questions of land use and indirectly on the preservation of biodiversity. The analysis of this research allows us to begin to recognize a somewhat unusual fact: people take care of and respect nature only within the framework of specific traditions. In other words, the environment is protected not by the people but by the tradition.

Many researchers who conducted independent research in the sciences in the second half of the twentieth century discovered that biodiversity is best preserved on the territories of traditional residence and activity of the indigenous people. These researchers have proposed to include such territories into the systems of natural territories under special protection.

A comparison of traditional and scientific knowledge in the sphere of preserving biodiversity and the productivity of biological systems of the North has shown that:

- Traditional and scientific knowledge is comparable in terms of their systematics, depth, and accuracy in regards to the areas historically occupied by the peoples of the North.
- Traditional knowledge has been gathered for centuries. The indigenous peoples would keep constant watch over certain areas of the landscape for several generations. The knowledge was collected, kept, and continuously improved and corrected in connection with changing natural conditions, and was always passed on in a form accessible to future generations.

Unlike scientific knowledge, traditional knowledge is neither objective nor impersonal; it bears the marks not only of the informer, but also of those who transferred their knowledge to him or her. The characteristic features of the oral transmission of such knowledge resemble those of folklore narratives, and because of this, traditional knowledge is easily remembered by the young generation as fascinating and suspenseful stories. The fullest transfer of traditional knowledge is possible only with direct and prolonged cooperation between different generations speaking in their native language, in which most words are tied to nature and natural resource use. An important role in the transfer of knowledge is played by ethnic practices of childrearing and education, primarily the family practice engaging children at a young age into all the processes of labor.

### **Influence of Climate Change on the Traditional Way of Life of the Indigenous Peoples of the North**

Climatic fluctuations can be identified through archaeological research and written sources. We see exceedingly strong climatic changes in the Far North, a region where not long ago people's existence depended entirely on the condition of the natural resources. During the long period of their existence the indigenous peoples of the North have been forced to adapt several times to climate warming and freezing, which they accomplished successfully.

Indigenous peoples have developed their own special strategies for using natural resources that are specifically adapted to the limitations of biodiversity and productivity of the northern ecosystems. As a result, these strategies are highly resistant to the negative effects of dramatic changes in the environment. These processes of adaptation became established in indigenous societies due to the following factors:

- Indigenous peoples have traditionally lived “within” the natural ecosystems and consider themselves a part of them. In this, they profoundly differ from Western industrial and postindustrial societies that live “above nature.”
- Indigenous peoples are tied to nature through powerful spiritual connections; nature is the basis of their spiritual world, culture, and language.
- The traditional communities of the North retain the level of biodiversity of their lands necessary for their continued existence by relying on spiritual and cultural traditions, and the normative behavior of the community as a whole, as well as its individual members.
- The conditions of the surrounding world compel northerners to lead an exclusively communal way of life and to treat the environment with care in accordance with established cultural traditions.

### **Traditional Methods of Adaptation of the Indigenous Peoples of the North to the Changes in Their Environment**

- High mobility, including the ability to quickly change the place of residence in negative conditions, is probably the main method of adaptation to the changes in the environment. Every clan, every community, and every ethnic territorial group of any Northern people always retained “its” lands with clear-cut boundaries. However, the lands of any territorial aboriginal group were always “accessible” to other similar groups if they had difficulties using the natural resources on their own land. In fact, for poorer clan members, the lands of the others were always open.

- Mutual aid of neighboring peoples and disinterested help for those in need: the shoreline marine hunters Chukchi and Eskimo share clan ties and language with the reindeer herding Chukchi of Eastern Chukotka. Traditionally strong mutual aid relationships exist between them. In the 1990s, the sea hunters saved reindeer herders from starvation when herds of reindeer were slaughtered for sale by collective farm managers, and the reindeer herders found themselves not only without reindeer, but without work as well. Sea hunters then sent walrus and whale meat, dried fish and seaweed to help their reindeer herder brothers.

According to the northern tradition, it is imperative to provide help to poorer clan members, single elders, and the sick. Indigenous people help not only their fellow villagers, relatives and friends in other settlements, but also other peoples. For instance, in the “Memory Book of Yakutsk Oblast for the Year of 1867” we find records that the Chukchi had provided charity support to the starving Kolyma Yukaghirs.

- Embracing new forms of natural resources use: the peoples of the North easily embrace new forms of natural resources use. Thus, under the influence of reindeer herding Chukchi, part of the Yukaghirs switched from hunting to reindeer herding. This form of economic activity was also assimilated by certain northern groups of Yakuts from the Evens and Evenks. With the arrival of the Russian population, primarily the Cossacks, on Kamchatka and South Chukotka, indigenous people quickly mastered gardening and potato growing, and later horse breeding. At the same time Russian inhabitants of long-standing, the Kolyma and Indigirs, were among the best dog drivers (*kayury*) and trainers in the Arctic, a fact remarked upon by the Norwegian polar researcher Roald Amundsen, who followed the Northern Sea Route in 1918-1920.

The history of development in the northern regions of Russia shows that the peoples of the North cannot survive as independent peoples without their traditional cultures, which are based on their unique experience of interacting with nature and with each other. In most of the northern regions there is still no alternative to the balanced traditional methods for utilizing the reproducing natural resources. At present the biggest threat to the indigenous peoples lies not in the climate changes, but in the increasing influence of the postindustrial civilization and market economy in the face of which the indigenous residents struggle to preserve their distinctive ethnic character, language, and cultural traditions.

Strengthening the traditional ways of natural resource use is an essential condition for the development of the regions of the North. Only this would make it possible to provide the local population with more advantageous conditions by rationally allocating pressure on the biosphere and optimizing the ethnosocial and demographic processes. In this way, it might be possible to minimize the influence of the ecological, socioeconomic, and cultural assumptions foreign to the northern

regions, and brought there by the people coming to work in the natural resource industries of the North.

The Russian North still retains practically untouched hydrocarbon and mineral reserves. Huge projected reserves of oil and gas are located in the Barents-Karsk, Timan-Pechor, Yenisei-Laptev, Indighir-Chukotka oil and gas provinces, and also in the Lena-Anabar and Anadyr oil and gas fields. In addition, the northern territories contain a unique reserve of rare metals and other mineral deposits.

The extraction of minerals often disturbs the balance and sustainability of the extremely fragile environments in the Arctic and the Far East. In winter the industrial exploitation is made difficult by the severe cold and snow storms. The intensive use of heavy equipment with tank-like tracks in the summer leads to an almost irreparable destruction of the vegetation layer. After the use of such equipment it takes around fifty years for the vegetation layer to grow back. During this time the permafrost melts and the territory turns into marshland. The extraction of oil from the continental shelf often leads to catastrophic pollution of the sea environment.

Modern industrial exploration of the North is done so rapidly that neither the environment nor the communities of indigenous northerners can adapt. Thus, it has a destructive influence not only on the environment, but also on the psychology, culture, and traditions of these communities. The industrial exploration of the North can lead to the destruction of the environment that has sustained the unique cultures of the indigenous peoples of the North, cultures that, over thousands of years, have developed traditional knowledge and methods for adapting to the surrounding world, including several climate changes. At present, however, the ability of the indigenous peoples of the North to adapt to climate change is challenged by industrial exploration and the influence of technological civilization.

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