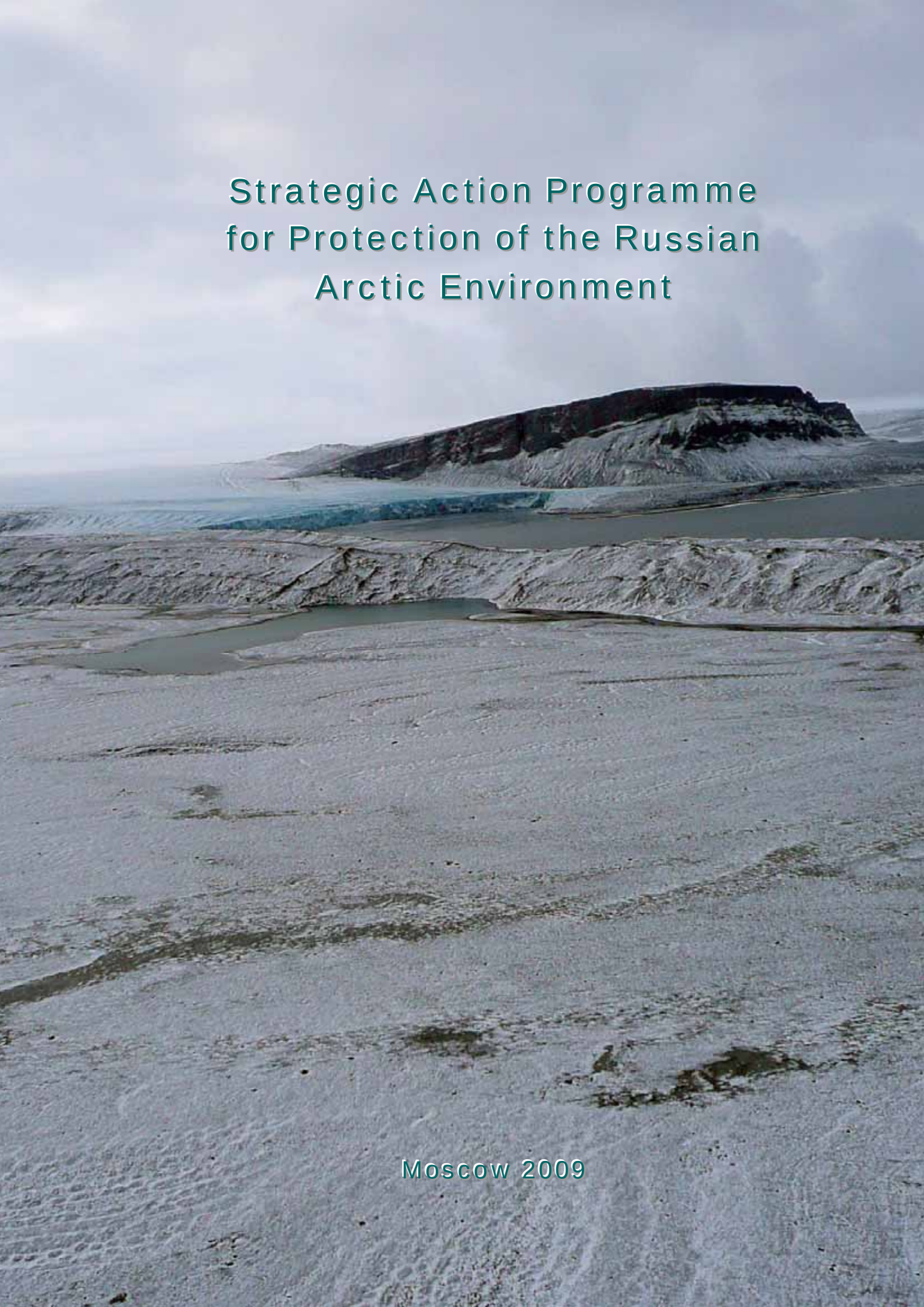
Strategic Action Programme for Protection of the Russian Arctic Environment



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Strategic Action Program
for Protection of the Russian Arctic Environment

1. General

The Strategic Action Program for Protection of the Russian Arctic Environment (SAP-Arctic) is directed to preserve and protect Arctic environment and to eliminate negative environmental impacts from economic and other activities.

SAP-Arctic was developed in accordance with the Constitution of the Russian Federation, federal laws, and other regulations of the Russian Federation. It conforms with accepted principles and rules of international law, while taking into consideration the domestic and international practice of environmental protection. It defines the principles, goals, objectives and main activities to ensure protection of the environment in the Arctic Region of the Russian Federation (the Russian Arctic), considering its growing importance in the regional and global context.

SAP-Arctic is a framework document, the provisions of which are to be taken into account when drafting governmental, federal, regional and corporate programs for the development of industrial and other processes in the Russian Arctic.

The scope of SAP-Arctic is the Russian Arctic, including the Republic of Komi, and Khanty-Mansiysky Autonomous District, where pollution sources have a substantial impact on the Arctic environment.

2. Current Environmental Situation in the Russian Arctic

Compared to other regions of the Planet and highly populated areas of the Russian Federation, Arctic remains relatively clean. However, of intensive economic activity in the Russian Arctic created the environmental "hot spots"[1] . These "hot spots" are locations where environmental degradation has reached threatening volumes. The levels of pollution in these locations are considerably higher than the maximum allowable levels.. In the "hot spot" areas, the natural ecosystems are disturbed and often destroyed, resulting in a substantial damage to the health of the local population and traditional life styles of the Arctic indigenous communities.. Note that the destruction of fragile Arctic ecosystems may be irreversible. Over 100 hot spots (with 30 priority locations) have been identified in the Russian Arctic. (Annex 1).

Since the 1930s, the Russian Arctic became a region under intensive development, to include mining, metallurgy, forestry, woodworking, pulp-and-paper production, and other branches of industry as well as transportation sector. The increasingly rapid development of the oil and gas sector in the Russian Arctic , including the plans to develop the continental shelf of the Barents and other Arctic seas intensified the threat of degradation of the environment on a local scale that can grow into a larger regional problem. The ongoing global climate changes is aggravating negative impacts of man-induced factors on the Russian Arctic requiring urgent measures to both mitigate the existing environmental damage and to prevent the escalating environmental threats.

[1] A "hot spot" means a limited area, within which man-induced pollution sources have adverse environmental impacts. Such areas demonstrate pollution of the environmental components the level of which is many times higher than the allowable limits. There is also degradation of the ecosystems, deterioration of the public health, loss of biodiversity, and disturbance of life support systems.

The detailed diagnostic analysis of the current situation and forecasting of the potential environmental changes in the Russian Arctic were used to identify the following priority environmental issues in the region:

- Environmental pollution (transboundary transport of pollutants by water and air, and oil, chemical, and radiation contamination) and deterioration of the quality of surface and ground waters in the coastal areas of the Russian Arctic;
- Land degradation and irresponsible use of land
- Changes in biodiversity and depletion of biological resources;
- Deterioration of the living conditions and environment of the indigenous population of the Russian Arctic and disruptions of their traditional use of natural resources;
- Negative consequences and threats from the ongoing global climate changes.

2.1. Environmental pollution and the deterioration of surface and ground water quality of the coastal areas of the Russian Arctic

The sources of environmental pollution in the Russian Arctic are as follows:

- Transboundary atmospheric and aquatic transport of contaminants, including atmospheric transport of the by-products of fuel combustion, the decomposition and emissions of petroleum, dust, and heavy metals from industrial activities and transport of pollutants by the Gulf Stream system;
- Solid waste accumulation from industrial production and consumption; illegal and unsupervised waste disposal;
- transport of pollutants by the major rivers, including the spring thawing of snow cover and river ice which in turn is contaminated by substances transported through the atmospheric streams from other continents and is being accumulated throughout the winter period;
- the discharges of polluted wastewater by industrial enterprises, municipal facilities, and mobile sources (all types of transport, including marine and river fleets, aircraft, vehicles, and oil pipelines) into the seas and the rivers which flow into the Arctic Ocean;
- accidental spills of petroleum and petroleum products on land and into the seas;
- natural siphoning sources in oil and gas areas and on the shelf zone of the Arctic seas;
- operation of engineering facilities in the coastal zone of the Arctic seas.

Transboundary atmospheric and aquatic transport of pollutants is the highest-priority problem for the Russian Arctic, because the Arctic region accumulated significant sources of transboundary pollution. Also, due to the tropospheric transport of contaminants, the Russian Arctic is turning into a region of global deposits of contaminants emitted into the atmosphere in Western Europe, North America, and Asia. The two major Arctic Regions s which now contribute to tropospheric transboundary transport of contaminants include the Kola Peninsula and Norilsk. Every year, about 4 million metric tons of sulfur dioxide and hundreds of thousands of metric tons of carbon monoxide and nitrogen oxides enter into the atmosphere in these regions. The main pollutants involved in the two-way transboundary transfer of atmospheric and water currents in the Russian Arctic are sulfates, sulfides and chlorides, phosphates, petroleum products, and organic chlorine substances.

Up to 1 billion tons of waste rock and solid waste are generated every year in the Russian Arctic. Large areas of waste piles and solid waste are concentrated in Murmansk Oblast, the lower reaches of the Pechora River in the Nenets Autonomous Okrug, in the southern part of the Yamalo-Nenets Autonomous Okrug, in the Norilsk Industrial District, in northern Yakutia, and in the areas adjacent to gold-mining districts on the Chukchi Peninsula. The consequences of unregulated waste build-up are continual pollution of the land, ground waters, and soils; the degradation of natural ecosystems, the destruction of traditional plant and animal habitats, and the formation of new man-made habitats populated by associations of introduced plant species.

Oil pollution of the Arctic basin reached high levels. Every year several hundred thousand tones of petroleum products are transported by rivers into the Arctic seas. Severe pollution of surface waters has been found beyond the boundaries of oil- and gas-bearing deposits and even the basins of the rivers flowing into the Arctic seas. There are data that show that in the ground waters of the Middle Ob Oil and Gas District (Western Siberia) there are petroleum hydrocarbons, phenols, and other pollutants associated with oil and gas production in concentrations that exceed the maximum allowable concentrations (MACs). The concentration of petroleum products found in ground waters in certain sectors of the Timan-Pechora Oil and Gas Basin reaches levels equivalent to several dozens MACs.

Direct ingress of crude oil into the marine environment, freshwater bodies, and onto the coastal landscapes of the Russian Arctic is currently limited in nature and not viewed as a factor that exacerbates the environmental situation in the region. The threat of polluting the marine environment with oil is associated with plans to produce oil on the continental shelf of the Russian Federation. In the Russian Arctic, the oil and gas cluster is based on the existing fields such as Prirazlomnoe, Shtokman, Severo-Medynsky, Severo-Guliaevsky, Varandei Sea, Pomorsky, Dolginsky, etc. and it will grow as other promising fields are opened up. Most hydrocarbon resources (about 70 percent) are in the seas of the western Arctic – the Barents, Pechora, and Kara seas. Within the next decade the transport of oil by sea from the West Arctic, in particular, from the White, Barents, and Pechora seas may increase several times over.

Chemical contamination in the Arctic poses a hazard because of the low assimilative capacity of its marine and terrestrial ecosystems. The concentration of heavy metals in soils, plants, and animals, in water and snow, in sea ice and bottom sediments is increasing nearly everywhere. More than 30 percent of polluted wastewater is discharged into the aquatic environment of the region. Many marine expanses of the Barents, White, Kara, and Laptev seas hold concentrations of pollutants that exceed maximum allowable concentrations two or three times over. The Kola Bay, the Barents Sea, the Pechora Sea, the lower reaches of the Pechora River, and the Ob Bay are among the areas with the highest levels of contamination.

The man acidifying substances are sulfur and nitrogen compounds emitted by transport, industrial enterprises and thermal power stations fired with coal and furnace oil. Long distance transportation of these substances is the main factor of impact on the quality of air in the Arctic, in particular in winter. Acid pollution is becoming a serious environmental problem in the areas adjacent to a number of industrial centers. The combined impact of acid precipitations and stress load, that is being caused by severe climate, increases the probability of damage to vegetation in the Arctic. Acid rains also cause leaching (washing) of metals from the tailings, rock refuse, clinker, with metals getting into rivers, lakes, and seas.

Deterioration of the drinking water quality is another priority problem. Poor quality of drinking water is observed in the Nenets Autonomous Okrug and Yamalo-Nenets Autonomous Okrug, where the concentration of petroleum hydrocarbons in the drinking water intake is as high as 10 to 35 of MAC. High levels of contamination in the water bodies that are sources of drinking water supply are a permanent feature in Murmansk Oblast due to the discharges of wastewater from the metallurgical mills and mining companies. The situation becomes particularly dangerous during the spring thawing period, when toxic forms of metal accumulated in winter time, get into water bodies in large amounts. The Russian Arctic has no major sources of persistent organic pollutants (POP). The existing local sources of POPs are as a rule associated with operational and retired electrical equipment, barrels containing used oils and other fuels and lubricants, stockpiles and haphazard stores of obsolete pesticides.

Most of the POPs enter the region's environment as a result of long-range transport of atmospheric fluxes, rivers, and ocean currents originating in Asia, Europe, and North America. Because of their exceptional lipophilism, most chlororganic compounds accumulate in the fatty tissues of species in the food chain where the highest concentrations of pollutants are found in the subcutaneous fat and adipose tissues of animals at the upper levels of the food chain (for example, polar bears, seals, and whales). This poses potential hazards for indigenous small-in-numbers peoples of the North who consume a large amount of lipid-rich food products provided by hunting and fishing. In the Russian Arctic, the POPs concentrations that are a threat to the health of the indigenous population are the highest in the circumpolar Arctic.

The Russian Arctic has felt the impacts of global anthropogenic sources of radionuclides. The main source of radiation contamination, which is having and will continue to have impacts for hundreds and thousands of years to come (as long-lived radionuclides decay), is the nuclear weapons testing carried out by the USA, USSR, China, United Kingdom, and France in1945-90. The 1986 Chernobyl accident was an additional source of radionuclides entering the Arctic environment.

The ocean currents of the Gulf Stream system continue, though to a lesser degree than before, to transport radionuclides across borders from the West European nuclear facilities at Sellafield and Dounreay (United Kingdom) and La Hague (France).

The region also has large potential sources of radiation contamination associated with the activities of the naval and civilian nuclear fleet and spread along the entire northern coast of the Kola Peninsula and near Severodvinsk on the White Sea. The storage sites for spent nuclear fuel are a potential danger including containers with spent nuclear fuel sunk in the sea off Novaia Zemlia. Other potentially dangerous sources of radiation are the Kola and Bilibino nuclear power plants.

Radioisotopic thermo-electric generators (RITEGs), which are used in navigation equipment, present a special problem when their service lives have expired. If handled improperly, they can present a lethal threat of irradiation, while lack of proper control over nuclear materials increases the risks of such materials getting into the hands of terrorists. At present, the inventorying and replacement of most RITEGs in the western part of the Russian Arctic has been completed, and this should be continued in the Sakha Republic and Chukchi Autonomous Okrug

2.2. Land Degradation and Land-Use Impairments

Human-caused fragmentation of the soil and vegetative cover in the Arctic cause the degradation of Arctic lands and can in the long run of lead to irreversible environmental consequences.

Large pockets of degraded lands have been formed in forest-tundra and southern tundra areas as a result of logging and tundra and forest fires. Parts of the cut-over and burn areas have become waterlogged. Zonal vegetation in the Arctic restores itself much more slowly than in more southerly regions. The alteration of domestic reindeer pastures, which cover more than 334.7 million ha in all, has now reached as high as 63 percent. In all, degraded land accounts for 1-3 percent of the total area of the mainland Arctic, but near the copper and nickel combines of Norilsk, Monchergorsk, and Pechenga, the soil cover is disturbed for a radius of dozens of km and natural landscapes are noticeably transformed.

Soil, thermokarsts and thermal erosion at the current stage of development in the Russian Arctic are increasingly evident in industrial centers and along linear structures such as oil and gas pipelines, railways, highways, and power lines. The area of unrehabilitated lands grows by 5,000-6,000 ha annually in the oil industry, 2,500-3,000 ha in the natural gas industry, and 400-500 ha under pipeline construction.

The techniques for land restoration are ineffective in the Arctic, and regionally adapted schema for land restoration are lacking. Traditional restoration methods are used for about 50 percent of lands impaired by natural gas production, and 60-70 percent for lands impaired by oil production and non-ferrous metallurgy.

2.3. Biodiversity Change and Depletion of Biological Resources

Biodiversity change, and reduced populations and habitat transformation of rare Arctic species is a phenomenon of recent decades, when climate change and large-scale economic development have made the remote regions of the Russian Arctic more accessible and when pressures on biological resources have grown. Of special concern is the status of rare Arctic species, including red-listed species such as polar bear, Atlantic walrus, whales and other cetaceans, snow sheep, certain species and subspecies of whitefish and salmon, and waterfowl and shorebirds such as geese, brant, and waders.

Uncontrolled utilization of biological resources including uncontrolled takes of oceanic and migratory fish and other sea food, the poaching of wild reindeer, fur-bearing mammals, and waterfowl and widespread poaching are the highest-priority ecological problem, since they can lead to the loss of biodiversity in some regions of the Russian Arctic.

Poaching in the Arctic is financially comparable to, or even larger than, legal hunting and fishing for the commercial market (seafood, salmon, caviar, velvet antlers and meat of wild reindeer, spring hunting for geese and brant, etc.). The poachers are primarily local residents who are isolated from the modern economy and have very low incomes. In the high Arctic, bird rookeries are subject to human impacts on individual islands and the mainland coast.

The alteration of ecosystems in the Russian Arctic has long been confined to no more than 1-3 percent of the areas of the polar deserts and tundra. Now, with larger-scale development and increasing fragmentation of the soil and vegetative cover of the Arctic, the threat to biodiversity loss in ecosystems and the widespread alteration of ecosystems have become increasingly obvious. The forest ecosystems at their northern limit (Murmansk Oblast, the Sakha Republic) and shrub ecosystems (Chukchi and Nenets Autonomous Okrugs) have shrunk so much that their restoration is in doubt. The diversity and areas of coastal, lowland, and delta ecosystems – meadows, thickets, and lowland forests and others -- have shrunk considerably in certain regions of the Russian Arctic. Pockets of degraded reindeer pastures have been observed in recent

years in the Nenets and Yamalo-Nenets Autonomous Okrugs. Large segments of fragmented ecosystems have formed in the lower reaches of the Pechora River in the Nenets Autonomous Okrug, around the city of Vorkuta in the Komi Republic, in the southern part of the Yamal Peninsula in the Yamalo-Nenets Autonomous Okrug, in the Norilsk industrial district, in northern Yakutia, and in the gold-mining districts of the Chukchi Autonomous Okrug. Parts of the coasts of the Novaya Zemlya where nuclear tests were conducted are among the areas affected.

Inadequate geographic coverage and ineffective biodiversity protection is characteristic of the specially protected natural areas of the Russian Arctic. There are practically no marine zapovedniki (preserves) in the region, and neither typical nor unique marine areas are under protection. Less than 50 percent of landscape diversity can be found in protected territories, and only 60-65 percent of terrestrial biodiversity (20-30 percent for plants, especially rare species, and 70-75 percent for fauna). The Russian Arctic has currently 14 national zapovedniki as well as the federal zakaznik “Franz Josef Land,” with a total area of more than 15 million hectares. The total area of northern, Arctic, and sub-Arctic specially protected natural areas is about 30 million hectares, which is on average about 5 percent of the territory of the Russian Arctic (3 percent of the Kola Peninsula, 5 percent of the Taimyr Peninsula, 8 percent of the Putoranah area, and only 1.5 percent of the Kolyma upland). These are unevenly distributed, and there are only four current and several planned specially protected natural areas in eastern Siberia, although protected areas of different categories account for 20-40 percent of various regions of the Arctic abroad.

Biotic pollution on account of invasive species and the introduction of exotic species are and will be a high priority because of expanded economic activity and climate warming in the Arctic. Of concern are the spread of the Kamchatka crab and Far Eastern salmon species into the Atlantic sector of the Arctic and the broad northward expansion of many species of weedy plants and synanthropic animals, which settle primarily in industrial areas, where they form relatively stable natural-anthropogenic communities and drive out the native flora and fauna.

2.4. Deteriorating Living Conditions of the Indigenous Population of the Russian Arctic And Disruption of Traditional Nature Use Of Indigenous Small-in-Numbers Peoples of the North

Deteriorating living conditions of the indigenous population have emerged as a high-priority problem because of the high levels of contamination at drinking water intakes, poorer air quality in populated areas, waste strewn about haphazardly, etc.

Disruption of traditional nature use of the indigenous small-in-numbers peoples of the North, as an environmental problem, stems not only from the taking of their lands for industrial uses but also from the subversion of the resource potential of the traditional economy of the indigenous peoples. Many northern rivers have lost their significance as fisheries because of pollution, the destruction of spawning areas, and poaching. The hunting grounds of the native peoples have been made accessible to newcomers by the development of transportation facilities and are taken for mining and industrial development. The legislative framework for the conservation and development the areas of traditional nature use with limited economic activity is not sufficiently developed. There are no effective government mechanisms to support the small businesses of the indigenous small nations.

2.5. The Adverse Effects and Threats of Global Climate Change

The warming which began in the second half of the 20th century has led to an increase in the average annual temperature in most regions of the Russian Arctic. The rising trend in air temperature (by 2.0-3.5°C by 2050 according to some scenarios) may lead to the degradation and shrinkage of permafrost areas by 12-15 percent by the mid-21st century and may shift the southern permafrost boundary some 150-200 km to the north. According to modeling calculations, the depth of seasonal melting will increase by 15-25 percent on average, and up to 50 percent on the Arctic coast and in some areas of western Siberia. In addition to the direct impacts on economic infrastructure, this can also lead to a dramatic increase in thermal erosion of shorelines and an acceleration of shoreline destruction (even now, 10 meters and more in some regions).

The impacts of climate change on pollution of the Arctic environment, especially the seas, are assumed to be direct and indirect. Direct impacts are associated with the physical and chemical processes that ultimately determine pollutant concentrations and changes in pollutant transport in the atmosphere and in the ocean, due to stronger cyclonic activity in the atmosphere, changes in the trajectories of ice drift and marine waters, increased contact time between air and water. Precipitation increases (by as much as 20 percent by the end of the century) will increase the volumes of atmospheric deposition, as will changes in the ratio of snow and rain, because role in snow and fog are more effective than liquid precipitation in releasing pollutants from the atmosphere. Increased precipitation will give ocean currents and ice a greater pollution transport. In addition, increases in river flows (by up to 20 percent) will increase the quantity of pollutants entering the Arctic Ocean. Conditions will be created for the retention of pollutants in Arctic lakes, owing to changes in the ice and hydrological cycles. Permafrost changes may lead to higher concentrations of organic substances in river flows, a more active circulation of mercury, and an increase in natural radioactivity. With the thawing of permafrost and glaciers, the pollutants accumulated for hundreds and thousands of years may begin to be released into the atmosphere and the ocean. This is especially true of DDT, heavy metals, and other substances. Furthermore, permafrost thawing leads to the release of greenhouse gases, carbon dioxide and methane, which in turn will intensify the greenhouse effect, accelerate climate warming, and upset the natural global equilibrium. Overall, one may expect a preponderance of adverse consequences stemming from direct climate impacts on pollution of the Arctic.

The indirect consequences are linked to a heightened risk of environmental pollution caused by climate impacts on infrastructure and economic activity in the Arctic. More frequent and intense flooding, runoff, and inundations will increase the amount of pollutants released into the river and marine systems. The thawing of frozen ground and more active thermal erosion of shorelines will raise the likelihood of accidents at pipelines and other elements of the economic and social infrastructure, which together with the development of shipping, tourism, and oil and gas extraction will increase the risk of polluting new land and sea areas. The increase in storm activity will heighten the risk to shipping and activities on the continental shelf. Possible changes in the way of life of the indigenous population due to changes in hunting conditions can alter nutritional patterns and pollutant impacts on humans.

3. Principles of the SAP-Arctic

The SAP-Arctic is based on the following principles::

- The principle of sustainable development, which calls for a balanced approach to addressing socioeconomic issues and preserving a healthy environment, as well

as for sound management of the natural resources of the Russian Arctic for the purpose of satisfying the needs of the present and future generations;

- The precautionary principle, which is meant to prevent the threat of adverse environmental and related social and economic consequences, associated with economic activities in the Russian Arctic, by means of conducting environmental impact assessments and strategic environmental assessments (including assessments of the environmental and social consequences associated with the implementation of government policies, programs, and plans) when preparing and making economic decisions. This principle means that the consequences of actions or decisions capable of causing serious or irreversible changes for the environment and people of the Russian Arctic, even in the absence of compelling scientific evidence with regard to the causal relationships between action and effect, are the responsibility of those who make the decisions.
- The “polluter pays” principle, which says that legal entities and individuals that inflicted damage on the environment in the form of pollution, depletion, spoilage, destruction, unsound natural resource use, degradation, and impairment of natural ecosystems, natural complexes, and natural landscapes and other violations of the environmental law, must compensate for such damage in full and in accordance with the Russian legislation.
- The principle of preventive action means that timely actions should be taken to inform the responsible authorities and other executive bodies concerned about potential consequences arising from the environmental impacts and to eliminate current and potential sources/causes of unfavorable impacts on the environment and
- The principle of an ecosystem approach to the solution of environmental problems, which means integrated management of the land, water, and biological resources of the Russian Arctic to ensure the conservation and sustainable management of the resources on an equitable basis.
- The principle of accessibility of environmental information means that all the stakeholders including the public should be informed about the contamination of the Arctic environment;
- The principle of stakeholder partnership (governmental authorities and local self-governments, research institutions, businesses, non-governmental organizations, and individuals) provides for the creation of political, institutional, and economic framework for the participation of the stakeholders in the implementation of SAP-Arctic activities and in the process of making decisions affecting the status of the Arctic environment.
- The principle of reasonable adequacy, which means that the environmental protection requirements should be scientifically based, economically acceptable, and be consistent with the best available technologies.
- The principle of a comprehensive approach, which includes the identification of priorities, the definition of goals and objectives, the formulation of specific activities and performance indicators, as well as monitoring of results and adjustment of the plan.

4. Goal, Objectives, and Principal Activities of the SAP-Arctic

The long-term goal of the SAP-Arctic is to implement measures aimed at preventing, eliminating, , and reducing the consequences of adverse human-induced environmental impacts in the Russian Arctic from activities on land and in the adjacent seas down to levels that will ensure sustainable development while at the same time taking account of the interests of the human population, including the native small nations of the North.

The long-term goal will be met by implementing a number of objectives which can be grouped into three main components:

- Prevention and abatement of pollution of the coastal and marine environments in the Russian Arctic, including the transboundary transport of pollutants with aquatic and atmospheric flows oil, chemical, and radiation contamination;
- Conservation and improvement of the quality of the environment, living conditions of the indigenous small-in-numbers peoples and conditions for traditional nature use by native small nations of the North;
- Prevention and mitigation of the negative consequences of natural disasters and technological emergencies, as well as of global climate changes.

4.1. Component 1 **- Prevention and abatement of pollution of environment in the Russian Arctic** includes the following objectives***:***

- Establishing the legal and institutional frameworks to prevent or reduce the levels of the environmental contamination with the focus on preventive measures due to the development of hydrocarbon resources on the continental shelf;
- Improving the energy and environmental efficiency of the national economy including stronger liability for failure to meet the permissible environmental impact standards and for reclamation of the past environmental damage; encouraging the implementation of energy-saving and environmentally-friendly technologies including tax and other incentives to be offered to companies that apply the above technologies;
- Improving the system of the state environmental control and monitoring, of assessment of anthropogenic contamination levels of the Russian Arctic seas, strengthening control over the transboundary transport of pollutants in the Arctic;
- Reducing the negative environmental impacts in the hot spots in the Russian Arctic;
- Developing/improving financial and economic mechanisms for attracting investments to solve environmental problems in the Russian Arctic;
- Expanding fundamental and applied research related to the spread and impacts the critical pollutants on man and the environment in the Arctic;
- Raising the level of environmental education and awareness; ensuring public access to information concerning the environmental pollution in the Russian Arctic;
- Developing international cooperation among the Arctic countries in the area of environmental protection in the Russian Arctic;

The Component I objectives will be implemented through the following main activities:

- Preparing analytical materials and a report to the Government of the Russian Federation concerning the need to improve the Russian environmental legislation and to develop the regulation framework to ensure environmental safety in the Russian Arctic;
- Preparing draft regulations concerning the establishment of special approaches to natural resources management and environmental protection in the Russian Arctic including monitoring of its contamination on the basis of the international law and international commitments of the Russian Federation;
- Preparing proposals to the Environmental Sections of the Strategy and State Program of Socio-Economic Development of the Russian till 2020;
- Developing and adopting, under the regional strategies and programs of the socioeconomic development, specific measures for protection of the environment in all the subjects of the Russian Federation that are fully or partially located in the Russian Arctic;
- Preparing proposals to the adjustment of the existing or development of new general and special technical regulations setting the requirements with due regard to the specific character of the environment and climate changes in the Arctic;
- Compiling and maintaining the geoecological datasheets for the licensed areas of the continental shelf;
- Establishing new and upgrading the existing points of the marine observational hydrometeorological network; improving the list of the monitoring parameters and improving their quality by making use of the modern measuring systems;
- Establishing new and upgrading the existing centers for the collection, processing and dissemination of environmental information;
- Developing the systems of satellite and aircraft monitoring of the environment;
- Establishing publicly accessible information databases on the environmental status of the Arctic by making use of GIS technologies;
- Conducting strategic environmental assessment (SEA) of the Russian Arctic focusing on the areas of its future development and adjacent sea areas of the Arctic Ocean;
- Developing and adopting regional standards for safe concentrations of oil products and other hazardous materials in soils, grounds, and water with due regard to the specific features of the regions;
- Expanding the program for the recovery and utilization of associated natural gas in the oil-producing regions;
- Upgrading production processes and implementing air and water protection activities at pulp and paper works, non-ferrous metal mills, coal mining enterprises, thermal power plants, and utility and housing facilities (under regional and corporate programs);
- Developing and implementing governmental and corporate programs aimed at improving the safety of radioactive waste and used nuclear fuels management; implementing activities to prevent the risk of radioactive pollution of the environment;
- Developing instruments of long-term co-sharing financing of investment projects

aimed at addressing environmental problems in the Russian Arctic;

- Developing a regulation on introduction of natural resources development charges to finance rehabilitation of the environment in the "hot spots" of the Russian Arctic;
- Developing measures to encourage the use of renewable energy sources in the Russian Arctic;
- Developing and implementing financial and economic instruments preventing the delivery of unrecoverable packing to the Russian Arctic;
- Developing proposals for the intensification of fundamental and applied research for the protection of the Arctic environment (including in the area of transformation of permafrost processes; erosion of the banks and shores of the rivers, lakes and seas; status of the ecosystems;
- changes in the pollution status of the Arctic seas and coastal zone due to the development of the economic activities in the Russian Arctic and adjacent areas;
- new technologies for monitoring the status of the marine and land ecosystems; environmental protection in the open seas and deep water areas, which are subject to the sovereign rights of the Russian Federation;
- developing effective green sources of energy;
- creating effective methods of cleaning-up oil pollution in the ice-covered marine environment;
- studying the impact of environmental pollution on human health and ecosystems in the Arctic; using biotechnologies to prevent and clean-up pollution of the marine environment with oil, radionuclides, and heavy metals);
- managing training and retraining of governmental authorities and local self-governments in the issues related to environmental protection of the Arctic;
- Expanding the participation of the Russian Federation in the activities of working groups, development and implementation of the Arctic Councils programs.

4.2 Component 2. **Conservation and improvement of the quality of the environment, living conditions of the indigenous small-in-numbers peoples and conditions for traditional nature use by native small nations of the North**

a) With respect to remedying past environmental damage on land and in the coastal zone of the Arctic seas

- Improving, at the federal and regional levels, the legal and regulatory frameworks for control of petroleum, chemical, and radioactive contamination associated with activities on the land and continental shelf;
- Expanding public-private partnerships to improve effectiveness of environmental protection;
- Developing and implementing investment projects aimed at remedying past environmental damage on land and in the coastal zone of the Arctic seas;
- Using the existing and developing new international instruments for attracting investments into the implementation of environmental projects in the Russian Arctic;

b) W*ith respect to improving the surface and ground water quality in the coastal areas of the Russian Arctic:*

- Improving the water management system in the Russian Arctic;
- Ensuring environmentally sound utilization of liquid and solid wastes in the areas adjacent to water intakes;
- Introducing modern technologies and facilities for the treatment of wastewater and storm water runoff and the utilization of contaminated sediments;
- Establishing and developing water-protection zones and shoreline protection belts at water bodies;
- Improve monitoring of the condition and quality of surface and ground waters.

c) *With respect to the conservation of biological and landscape diversity and the potential for renewable biological resources affected by technological and human-caused pollution*:

- Developing new legal and economic instruments to regulate management of biological resources in the Arctic, in order to improve the system of payments for biological resource use and to combat poaching;
- Strengthening the system of land-based and marine protection of the Russian Arctic biodiversity, taking into account effects of the existing and future human-caused impacts;

Developing research on the biota and ecosystems of the Arctic, including research with the international and regional participation;

- Improving the system of monitoring biodiversity and natural ecosystems in the Arctic, including this system into the circumpolar network of the flora and fauna monitoring;
- Supporting activities for the ecological reclamation and rehabilitation of disturbed land; implementing re-introduction activities for the restoration of populations of species that have gone extinct in certain regions.

d) *With respect to preserving living conditions of the indigenous small-in-number peoples of the North and their traditional nature use*:

- Improving legal and regulatory framework for the protection of the centuries-old way of life of the indigenous small-in-numbers peoples of the North in the Russian Arctic;
- Improving mechanisms of interaction between the authorities and industrial companies on one hand, and non-governmental organizations of the indigenous small-in-numbers peoples of the North, on the other hand;
- Implementing instruments for comprehensive ecosystem management in the areas with compact settlements of indigenous small peoples of the North;

The Component II objectives will be met by implementing the following activities:

- Establishing and improving the legal and regulatory framework that permits (i) legal and financial liability for failure to take measures for remedying past damage; and (ii) application of financial and economic incentives for such activities;
- Developing a set of environmental quality standards for the Arctic and methodologies for the incorporation of these indicators in the calculation of pollution charges;

- Establishing the federal and regional information systems with data on past environmental damage and the current status of the environment in the Russian Arctic;
- Preparing and implementing programs and investment projects on remediation of past environmental damage covering the priority types of pollution/damage, territories and sea areas of the Russian Arctic including:
    - reducing mercury contamination; disposing of obsolete and banned dielectric liquids and pesticides from the POP category;
    - clean-up of water bodies, coastal marine area, islands, and sea coast from the abandoned vessels, abandoned large-size property and garbage;
    - clean-up of the area along the Northern Sea Route from obsolete RITEGs and their utilization; comprehensive clean-up of the territories of abandoned polar station, hydrometeorological posts and military bases from drums, abandoned machinery, frames of vessels, aircraft and other metal structures, reclamation of natural landscapes;
    - Implementing scheduled utilization of ships with over-age nuclear installations, as well as of radioactive waste;
- Developing and implementing innovating technologies for the reclamation of the areas contaminated with oil and oil products including developing and testing of biotechnologies;
- Developing a regulatory act to ensure safe transportation of hydrocarbons in the Russian Arctic with due attention to the vulnerability of the environment and minimization of risks of natural disasters and technological emergencies;
- Rendering government support to projects aimed at improving water bodies used as a sources of drinking water supply under federal, departmental targeted and regional programs;
- Improving the water management system in the Russian Arctic; developing and updating the scheme for comprehensive management and conservation of water bodies and regional programs with specific measures for the improvement of water bodies used as sources of drinking water supply;
- Developing and approving target indicators, maximum permissible impacts and territorial plans for attaining the water quality standards in water bodies in accordance with the applicable legislation concerning the use and protection of water bodies and sanitary epidemiological wellbeing of the population;
- Implementing environmentally-friendly technologies and facilities for the clean-up of the marine environment (including by establishing buffer zones of seaweed around the pollution sources), for the treatment of wastewater and storm water runoff and the utilization of contaminated sediments; upgrading water supply systems by implementing modern water treatment, wastewater and storm water treatment techniques, and sludge recovery methods;
- Establishing and developing water protection zones, and sanitary protection zones around the water supply sources including the implementation of measures for the collection and treatment of surface runoff from residential and production areas;
- Establishing zones of special protection and use of the mothballed water supply sources in case of emergencies;

- Developing research of biota and ecosystem of the Arctic including with the international participation;
- Improve monitoring of the condition and quality of surface and ground waters; expanding and upgrading networks for the observation of hydrological, hydrochemical, and hydrobiological regimes of water bodies;
- Developing and implementing new economic incentives and instruments of government regulation concerning the use of biological resource in the Arctic aimed at improving the system of payments for the use of biological resource, combating poaching, and developing environmental partnerships with private companies;
- Amending the framework of regulation and management of bioresources in the Russian Arctic;
- Improving economic and financial mechanisms for the conservation of biodiversity including insurance, compensation of pollution charges;
- Strengthen the system of land-based and marine protection of biodiversity in the Russian Arctic, with allowance for the effects of existing and potential technological impacts;
- Establishing new land-based and marine federal-level specially protected natural areas in the Russian Arctic;
- Organizing the network of stationary studies concerning the status of the Arctic biota and biological resources;
- Preparing the concept for the development of monitoring stations network in the Arctic including permanent and remote stations, as well as mobile observation platforms;
- Organizing seed stations and nurseries for wild flora and fauna to support the work of ecological restoration and rehabilitation of disturbed lands; implementing re-introduction measures for restoration of populations of species that have gone extinct in certain regions including musk ox, wild northern reindeer, birds of prey, water fowls, etc.
- Ensuring expanded involvement of Russia in the Arctic Council program “Conservation of Arctic Fauna and Flora” (CAFF) including the Circumpolar Biodiversity Monitoring Program;
- Supporting the development of territorial public self-governance and community forms of self-governance among the indigenous small-in-numbers peoples of the North in the Russian Arctic;
- Creating regional mechanisms in the Russian Arctic ensuring participation of representatives of the regional authorities and local governments, communities of indigenous small-in-numbers peoples of the North and industrial corporations in addressing jointly environmental problems in the areas of traditional settlements and traditional economic activities of the indigenous small-in-numbers peoples of the North;
- Organizing and conducting monitoring of the living conditions and environmental status in the areas of traditional settlements and traditional economic activities of the indigenous small-in-numbers peoples of the North;
- Developing and adopting regulatory acts concerning the assessment and calculation of damage incurred by commercial entities on the traditional nature

use of the indigenous small-in-numbers peoples of the North in the Russian Arctic.

4.3. Component 3* - Prevention and mitigation of the negative consequences of natural disasters and technological emergencies, as well as of global climate changes*:

- Creating scientific, legal, regulatory, methodological, and institutional framework of governance concerning prevention and mitigation of negative consequences caused by natural disasters and technological emergencies;
- Reducing risks inherent in the adverse consequences of climate change for the environment, economy, and residents;

Component III Objectives include the following activities:

- Establishing a system of integrated security to protect territories, people and facilities (that are critically important for the national security of the Russian Federation) of the Russian Arctic from the risks of natural disasters and technological emergencies;
- Studying hazardous and critical natural events; development of modern technologies and techniques for their forecasting in the context of climate change;
- predicting and assessing the consequences of global climate change in the Russian Arctic for the natural environment, economy, and residents under the influence of natural and human –induced factors in the mid- and long-term perspective including infrastructure sustainability improvement;
- Establishing financial mechanisms to support activities aimed at reducing adverse consequences of climate change;
- Taking into account negative consequences induced by climate change in the federal, sectoral, regional and corporate programs;
- Adaptation of traditional nature use by the indigenous small-in-numbers peoples of the North to climate change;
- Expanding international cooperation on adaptation to global climate change, primarily under the Arctic Council.

5. Informational Support of SAP-Arctic

When establishing the integrated system of monitoring including the improvement of the system of information and statistical monitoring of the indicators of national safety in the Russian Arctic, it will be necessary to reflect the issues of environmental safety in the Arctic including analysis of the SAP-Arctic progress report.

For the purpose of information support to the implementation of the SAP-Arctic it will be necessary to use:

- Web-site for placing the SAP-Arctic and information on its progress in Russian and English;
- Mass media of the federal, regional and local levels (special programs on the radio, TV, articles in newspapers and journals);

- English and Russian language publications concerning the detailed analysis of the current status and forecasts of potential changes in the Russian Arctic environment carried out during the preparation of the SAP-Arctic;
- Preparing photo and video materials about the activities carried out to meet the objectives under SAP-Arctic (these materials will be demonstrated at various national and international forums);
- Round tables on the environmental problems in the Russian Arctic with the participation of the federal and regional authorities concerned, the Russian Academy of Sciences, corporations operating in the Arctic and subarctic areas including nongovernmental organizations;
- Cooperation with nongovernmental organizations and population when solving environmental problems in the Russian Arctic;
- Developing training programs, raising the levels of public environmental awareness to build a world outlook consistent with the need to conserve and protect the Arctic environment;
- Informing the Arctic Council on the progress of the SAP-Arctic.

6. Mechanisms of SAP-Arctic Implementation

The SAP-Arctic will be implemented on the principles of public-private partnerships among the interested federal and regional authorities and local self-governments, commercial and non-commercial organizations, research institutes in accordance with their mandates and areas of activities, and as part of the cooperation of the Russian Federation with foreign governments and international organizations.

SAP-Arctic will be implemented by:

- Implementing the federal level environmental priorities under the Subprogram “Development and Use of the Arctic” of the Federal Targeted Program “World Ocean”, approved by the Resolution of the Government of the Russian Federation on 30 September 2008 (no.731);
- Integrating the main provisions of SAP-Arctic when preparing the Russian Arctic Development Strategy, the State Program for the Development of the Russian Arctic till 2020, and the State Program for the Study and Exploration of the Continental Shelf of the Russian Federation;
- Integrating the main provisions of SAP-Arctic when preparing new, and implementing current, federal, regional, and sectoral programs as well as programs of corporations operating in the Russian Arctic and subarctic territories;
- Integrating the main provisions of SAP-Arctic by the subjects of the Russian Federation when preparing the socioeconomic development strategies for the subjects of the Russian Federation, schemes of the territorial planning and socioeconomic development programs;
- Developing, at the federal, regional and municipal levels, regulatory acts for the establishment of special regimes for the use of natural resources and protection of the environment in the Russian Arctic including monitoring of its pollution;

- Implementing specific investment projects aimed at repairing past environmental damage and preventing/mitigating risks to the environment in the Russian Arctic;
- Properly coordinating the federal and regional authorities, local self-governments concerned, the Russian Academy of Sciences, private sector and nongovernmental organizations;
- Expanding international cooperation of the Russian Federation concerning the environmental problems in the Arctic and adaptation to climate change in this region, primarily by intensifying its participation in addressing the above problems through the Arctic Council, Barents/Euroarctic Region and Northern Dimension Partnership, as well as by developing bilateral cooperation with Arctic states.

7. Financing SAP-Arctic Implementation

One most important factor to ensure financial sustainability of SAP-Arctic implementation is government support by using funds from the budget system of the Russian Federation including the federal budget, regional budgets and budgets of the local (self) governments.

The main SAP-Arctic activities will be implemented on the PPP principles, in particular, by using funds of enterprises, private sector companies and individuals. Expanding PPP programs is a prerequisite for addressing the problem of past environmental damage and preventing new threats to the environment in the Russian Arctic. The major contribution to the implementation of investment projects in the Russian Arctic aimed at reducing industrial emissions and discharges of pollutants must be made by corporate programs of major corporations operating in the Arctic and Subarctic areas including OAO Gasprom, OAO GMK Noril'sky Nickel, OAO NK Rosneft, OAO Lukoil, etc.

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Implementing the SAP-Arctic objectives will involve the use of new financial and economic mechanisms developed with the aim of improving the energy and environmental efficiency of the national economy including stronger liability for failure to meet the permissible environmental impact standards and for reclamation of the past environmental damage; encouraging the implementation of energy-saving and environmentally-friendly technologies including tax and other incentives to be offered to companies that apply the above technologies.

The subjects of the Russian Federation must take into account territorial specifics of the investment process and form a sound investment policy with due regard to the local specifics and existing mandates.

The main instruments for encouraging domestic and foreign investments into the priority environmental projects include:

- Providing temporary full or partial exemption from paying taxes to the budgets of

the subjects of the Russian Federation;

- Tax deferment of payments (or payment in installments) to the regional budgets;
- Providing investment tax credits;
- Budgetary inputs into investment projects;
- Preparing documents and conducting expert reviews of investment projects from the budgetary funds;
- Providing investors with guarantees and warranties;
- Giving enterprises the right to use part of the pollution charges (offsetting);
- Providing companies with soft rates for leasing land and property owned by the subject of the Russian Federation;
- Assisting in the establishment of business infrastructure, obtaining lease and purchasing land parcels and non-residential premises owned by the subject of the Russian Federation.

Involvement of international financial instruments in the implementation of the SAP-Arctic activities will be based on their circumpolar and global importance triggering the interest of the Arctic countries and international organizations in solving environmental problems in the Russian Arctic. Among such international instruments, the leading roles will be played by the Arctic Councils Instrument (Fund) for Project Support and Fund for the Support of Environmental Partnership of the Northern Dimensions.

To mobilize financial resources of domestic manufacturing enterprises of all ownership types and to tap new financial sources, international investment forums and round tables will be organized.

A promising option of financing SAP-Arctic is attracting funds from the international carbon market including the use of Kyoto Protocol mechanisms of flexibility such as JI projects and trading in GHG emission rights. SAP-Arctic will create a special mechanism to finance energy saving and other environmental projects in the Russian Arctic under the scheme of targeted environmental investments.

8. Stages of SAP-Arctic Implementation

SAP-Arctic will be implemented in three stages including:

Stage I 2009-2012;

Stage II 2013–2015;

Stage III 2016-2020;

Stage I should achieve the following targets:

- Improved federal-level environmental regulatory framework applicable to the Russian Arctic including developed draft regulatory acts for the establishment of special regimes of natural resources use and protection of the environment including the monitoring of its pollution;
- Integration of the main provisions of SAP-Arctic into the Russian Arctic Development Strategy, the State Program for the Development of the Russian Arctic till 2020, the Federal Targeted Program “The World Ocean”, and State Program for the Studying and Exploration of the Continental Shelf of the Russian Federation;

- Completion of the environmental activities in the Russian Arctic scheduled for 2009-2012 under the Subprogram “Development and Use of the Arctic” of the Federal Targeted Program “World Ocean”, and other ongoing federal, sectoral, regional and corporate programs;
- Developed package of the priority investment projects for the protection of the environment in the Russian Arctic and mobilization of off-budget resources for their implementation;
- Developing, under the regional strategies and programs of the socioeconomic development, specific measures for protection of the environment in all the subjects of the Russian Federation that are fully or partially located in the Russian Arctic;
- Compiling and maintaining the geoecological datasheets for the licensed areas of the continental shelf;
- Initiating the activities for the development of the environmental monitoring systems in the Russian Arctic by using satellite and aircraft, marine and land based systems for the collection, processing and transfer of data;
- Developing and approving the strategic environmental assessment methodology as a tool of strategic planning when developing the strategies and implementing programs for the development of the coastal areas of the Russian Arctic;
- Developing and implementing mechanisms of cooperation between the authorities and industrial companies on one hand, and non-governmental organizations of the indigenous small-in-numbers peoples of the North on the other hand, concerning environmental protection in the Russian Arctic;
- Identification and inventorying of unauthorized solid waste dumps;
- Identification and inventorying of all sources of POPs in the Russian Arctic;
- Clean-up of the area along the Northern Sea Route from obsolete RITEGs and their utilization;
- Establishment of new coastal and marine specially protected natural areas of federal importance in the Russian Arctic;
- Establishment of regional-level seed stations and nurseries for wild flora to ensure availability of plant and seed materials to support reclamation and rehabilitation of contaminated and disturbed lands in the Nenets and Yamalo-Nenets Autonomous Okrugs;
- Developed (in cooperation with the indigenous peoples) of special training programs aimed at improving skills of the environmentalists and employees of industrial enterprises participating in the activities for the conservation and restoration of natural sites in the Arctic, as well as at raising environmental awareness of the population.
- Preparing and submitting to the Government of the Russian Federation an assessment report on the ongoing climate changes and their impacts on the Russian Arctic;
- Informing the Russian and international public on the SAP-Arctic activities;

As a result of implementation of the Stage I activities, the following performance indicators will be achieved:

- 100% identification and inventory of unauthorized solid waste dumps in the Russian Arctic;
- 100% identification and inventory of all sources of POPs in the Russian Arctic;
- 30% reduction in the number of abandoned and sunken ships that interfere with navigation and cause pollution of the surrounding waters;
- 30% increase in the number of industrial enterprises in the Russian Arctic certified for compliance with ISO 14001 or its equivalent;
- 50% reduction in the number of unused RITEGs in the Russian Arctic;
- 5% increase in the share of the coastal and marine protected natural areas in the total territory of the Russian Arctic; increase coverage of landscape diversity to 85% and biodiversity to 90%;
- Testing of the mechanisms of cooperation between the authorities and industrial companies on one hand, and non-governmental organizations of the indigenous small-in-numbers peoples of the North on the other hand, concerning environmental protection in the Russian Arctic in all the subjects of the Russian Federation that are fully or partially located within the Russian Arctic;
- Maintain populations of rare and endangered species of animals listed in the Red Book of Russia (polar bear, Atlantic walrus, and others) at the 2006-07 level; and in certain regions, restore (increase) the populations of salmon and whitefish species, waterfowl, shorebirds, raptors, and wild reindeer by 15-20%.

Stage II should achieve the following targets:

- The subjects of the Russian Federation and municipalities of the Russian Arctic will have environmental regulatory framework having incorporated the amendments made at the federal level;
- Approval of a uniform system of environmental quality standards in the Russian Arctic and methodology for incorporating these standards into the calculation of pollution charges;
- Initiation of the priority investment projects for the protection of the environment in the Russian Arctic (primarily those focusing on the pollution abatement in the “hot spots” taking into consideration the off-budget resources mobilized for their implementation;
- Completion of the activities for the development of the environmental monitoring systems in the Russian Arctic by using satellite and aircraft, marine and land based systems for the collection, processing and transfer of data together with the sub-system of environmental and economic assessment of environmental impacts in the Russian Arctic including those caused by the transboundary transport of pollutants from North America, Europe, and Asia.
- Establishing a system of integrated security to protect territories, people and facilities (that are critically important for the national security of the Russian Federation) of the Russian Arctic from the risks of natural disasters and technological emergencies and their consequences;
- Reclamation of the areas of the former military facilities on the Franz Josef Land Archipelago and Novosibirsky Islands;
- Establishment in the settlements and communities of the indigenous small-in-numbers peoples of the North in the Russian Arctic of the social and

environmental monitoring network to assess consequences of climate changes for the environment, economy, and people;

- Developing, based on the Assessment Report, and approving scientifically based activities for climate adaptation and mitigation of their consequences in the Russian Arctic;

As a result of implementation of the Stage II activities, the following performance indicators will be achieved:

- 100% removal and utilization of RITEGs in the Russian Arctic;
- 9% reduction of stationary-source atmospheric emissions in the Russian Arctic;
- Reduction in the intensity of emissions of air pollution from 2.39 kg/1,000 rubles of GRP to 2.0 kg/1000 rubles;
- Reduction in the amount of polluted and only partially treated wastewater as a percentage of all wastewater post-treatment discharges into surface water bodies from 52% to 44%;
- Reduction in the standard values of polluted wastewater discharges into surface water bodies per unit of GRP from 1.4 to 1.2 kg/1,000 rubles of GRP;
- Reduction in the toxicity index in the most severely polluted regions of the Arctic coast by approximately 3-5%;
- Increase in the number of Russian Arctic residents who have permanent access to improved drinking water supply by 20%;
- Increase in the number of facilities that have wastewater treatment works by 15%;
- Increase in the volumes of associated natural gas utilized in oil-producing regions to 95 percent;

Stage III should achieve the following targets:

- Substantial improvement in the quality of the environment in the Russian Arctic by implementing legal, institutional, and technical measures for remedying the past environmental damage and preventing the risks of a new environmental damage;
- Sustainable operation of the state system of environmental monitoring in the Russian Arctic;
- Effective control of the public over the efficiency of the pollution abatement measures in the Russian Arctic;

As a result of implementation of the Stage II activities, the following performance indicators will be achieved:

- 100% cleanup of the coastal water areas of the Arctic seas and islands from abandoned and sunken ships, metal scrap, and solid waste;
- Reduction of stationary-source atmospheric emissions in the Russian Arctic by 20% as compared to 2008;
- Reduction in the intensity of emissions of air pollution to 1.5 kg/1000 of GRP;
- Increase in the number of industrial enterprises in the Russian Arctic that have been ISO 14001 certified or its equivalent by 60 percent against 2008;

- Reduction in the amount of polluted and only partially treated wastewater as a percentage of all wastewater post-treatment discharges into surface water bodies to 33%;
- Reduction in the standard values of polluted wastewater discharges into surface water bodies per unit of GRP to 1.0 kg/1,000 rubles;
- Reduction in the toxicity index in the most severely polluted regions of the Arctic coast by 10-12% as compared with 2008;
- Increase in the number of Russian Arctic residents who have permanent access to improved drinking water supply by 50% as compared with 2008;
- Increase in the number of facilities that have wastewater treatment works by 50% as compared with 2008;
- 10% increase in the share of the coastal and marine protected natural areas in the total territory of the Russian Arctic;
- Achievement of positive demographic trends among most indigenous small-in-numbers peoples of the North in the Russian Arctic including: better life expectancy index; 1.3 increase in the total birth rate; reduction in mortality rates of infants under 12 months by 1.5 times as compared with 2007.

Annex 1. Priority Hot Spots in the Russian Arctic - Ranked List

Hot Spots	Current Impact[2]	Potential Impact	Location
Noril'sk	38.0	42.0	Krasnoyarsk Krai
Nikel'	37.2	41.2	Murmansk Oblast
Zapolyarny	37.2	41.2	Murmansk Oblast
Monchegorsk	31.4	34.4	Murmansk Oblast
Kajerkan	31.0	33.0	Krasnoyarsk Krai
Vorkuta	30.4	34.4	Republic of Komi
Murmansk	29.2	32.2	Murmansk Oblast
Talnah	27.8	29.8	Krasnoyarsk Krai
*Kola Bay**	*26.8*	*28.8*	Murmansk Oblast
Archangelsk	26.2	29.2	Archangelsk Oblast
Pevek	26.2	28.2	Chukotka Autonomous Okrug
Bilibinsky Integrated Works	25.8	27.8	Chukotka Autonomous Okrug
Dvina Bay	*25.8*	*27.8*	Archangelsk Oblast
Anadyr'	25.4	27.4	Chukotka Autonomous Okrug
Kirovsk	25.4	27.4	Murmansk Oblast
Kandalaksha Bay	*25.4*	*27.4*	Murmansk Oblast
Onega Bay	*25.4*	*27.4*	Archangelsk Oblast
Ob Bay	25.2	27.2	Yamalo-Nenets Autonomous Okrug
Eniseyj Bay	25.2	27.2	Krasnoyarsk Krai
Pechoa Bay	*24.4*	*26.4*	Nenets Autonomous Okrug
Olenegorsk	24.4	26.4	Murmansk Oblast
Kola	24.2	25.2	Murmansk Oblast
Urengoisky Field	24.0	26.0	Yamalo-Nenets Autonomous Okrug
Kandalaksha	23.8	25.8	Murmansk Oblast
Solombala	23.8	25.8	Archangelsk Oblast
Koryazhma	23.8	25.8	Archangelsk Oblast
Dudinka	23.8	25.8	Krasnoyarsk Krai
Severodvinsk	23.6	25.6	Archangelsk Oblast
Yamburgsky Field	23.4	25.4	Yamalo-Nenets Autonomous Okrug
Inta	23.2	25.2	Republic of Komi

[2] The following parameters were taken into account: proximity to the sea, population at risk, size of affected area, air and water contamination level, hazard categories for mining raw materials, hazards from transportation, degree of degradation of the environment, range of actual and potential effects, and types of primary activities from which the hot spot derived. Overall severity of actual and potential impacts was evaluated using the above parameters.