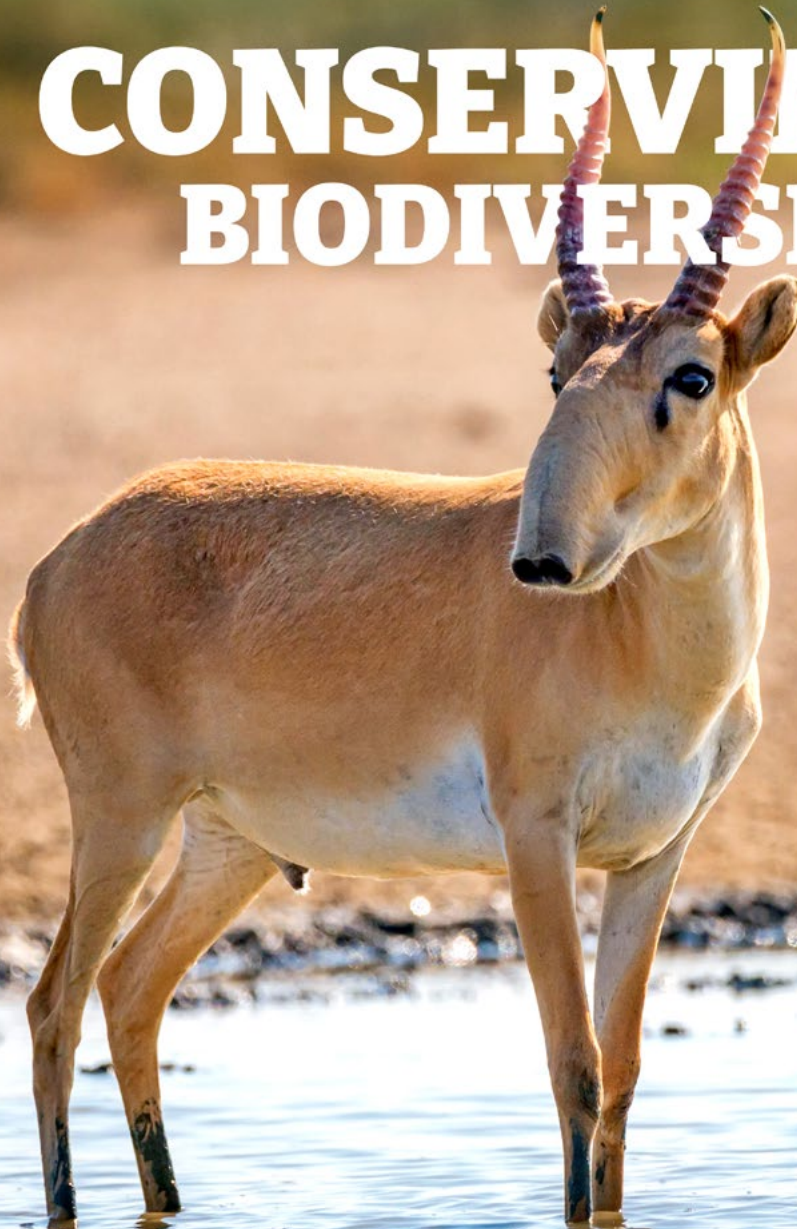


30 YEARS OF SUSTAINABLE DEVELOPMENT

CONSERVING BIODIVERSITY





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ABOUT THE BOOKLET

The booklet presents LUKOIL's management approach and demonstrates its best practices in preserving natural ecosystems and biodiversity onshore and offshore. In today's global environment, this sector is growing more urgent for oil companies. Since LUKOIL was founded, its management has decided that environmental protection should become an integral part of production. Our approach builds on unconditional compliance with the law and includes voluntary initiatives to help find the best solutions for specific regions.



V. Alekperov

President of LUKOIL

"WE SHOULD ALWAYS KEEP IN MIND THAT PRESERVING NATURE AND ITS RICHES IS OUR DUTY TO OUR DESCENDANTS!"

THE COMPANY'S BIODIVERSITY CONSERVATION ACTIVITIES CAN BE LOOSELY DIVIDED INTO THE FOLLOWING STAGES

Clean-up of past (pre-privatization) damage and reclamation of land

Formation of a systematic approach to the management of environmental impacts on all components of the environment, including ecosystems

Formation of a single approach to biodiversity conservation, development and implementation of targeted programs, activities and action plans

LUKOIL is one of the world's largest vertically integrated oil companies. Its core business lines include exploration and production of carbon raw materials, oil and gas processing, as well as marketing and distribution of petroleum products.

The Company is represented in more than

30

countries, with the main assets in Russia.

The Company's website, Biodiversity Section:



LUKOIL Group's Sustainable Development Report:



BIODIVERSITY CONSERVATION ACTIVITIES

1991

Establishing
LangepasUraiKogalymneft
(LUKOIL) Oil Concern

2004

Approving the concept of safety
in the operation of sea and river
terminals

1995

Taking initial measures
for the reproduction
of sturgeon fish fry
in the Caspian Sea

2003

Assessing the impact
of envisaged activities
on the ecosystems of the Baltic
Sea as advised by the Helsinki Convention
on the Protection of the Marine
Environment of the Baltic Sea

2005

Approving the program
for the reproduction of fish
resources of northern rivers
(the Komi Republic)

2000

Adopting the first
Environmental Safety Program,
with environmental monitoring as one
of the focus areas.
Starting systemic measures to eliminate sludge
pits and accumulated pre-privatization waste
in the Komi Republic, Western Siberia,
Volga Region and Kaliningrad
Region

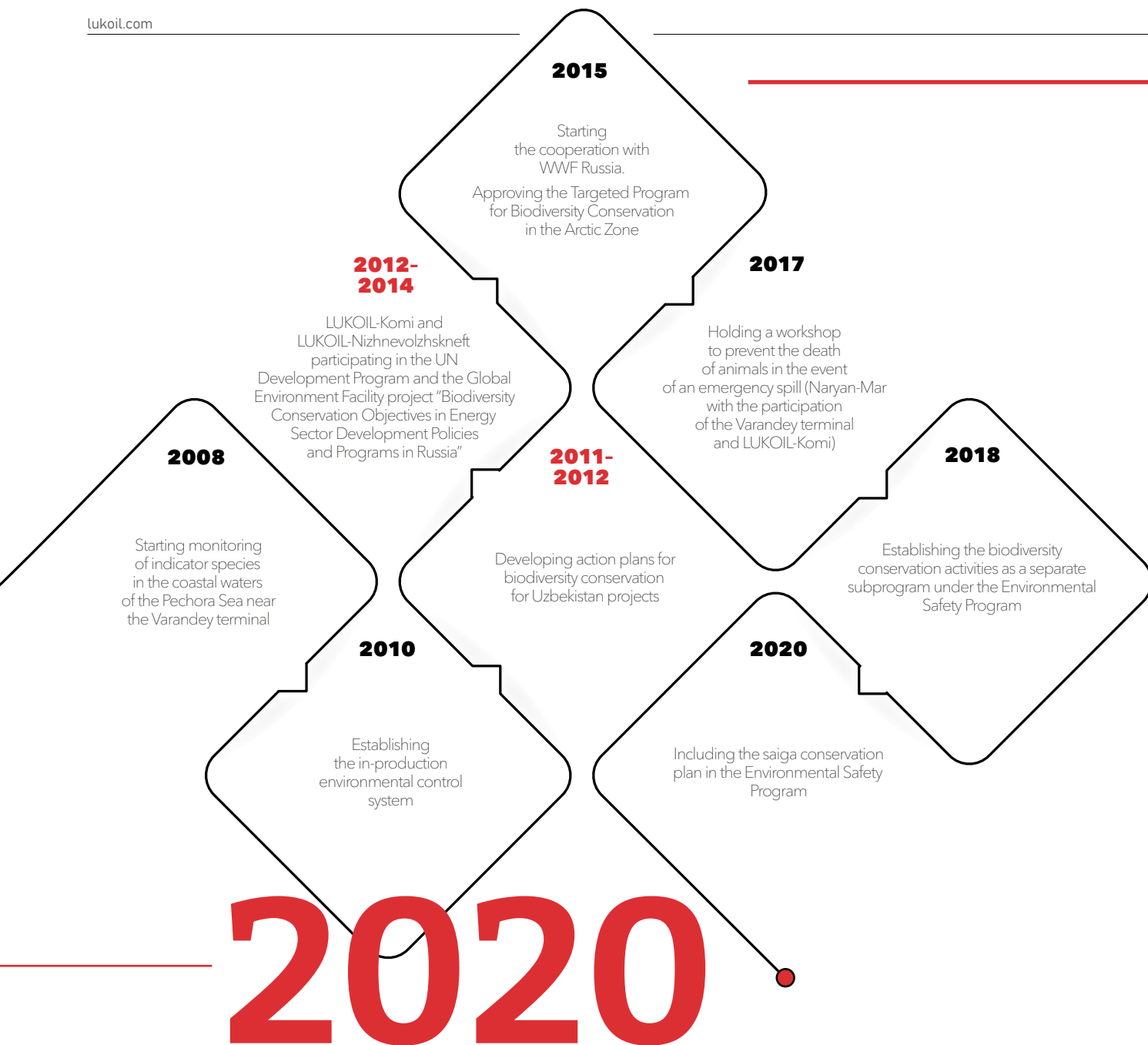
2002

Holding the first
"Environmental Protection"
contest among LUKOIL
organizations

**2000-
2005**

Implementing
the Corporate Program
on Ecological Rehabilitation
of Contaminated Territories
in the Komi Republic

1991





ECONOMIC **GROWTH** AND BIODIVERSITY

GLOBAL TRENDS

The biosphere is the source of indispensable ecosystem services for humans and all living beings on the Earth, without which our existence is impossible. The main service is to ensure the constancy of conditions on the planet. The natural world is constantly changing, with a huge number of processes going on, silent and invisible to humans, but preserving the ability of ecosystems to recover. But it is precisely because of this crucial feature of nature that it is difficult to trace the damage caused and to unequivocally determine responsibility for its consequences.

In the XX-th century, the relationship between humans and the biosphere changed significantly. Humans managed to make their life substantially better, not only through the new technologies and materials they created but also through the overexploitation of nature. Despite scientific advances, the depletion of natural capital in the XXI-st century is occurring at a much higher rate, and species diversity is declining¹ faster than at any time in human history.

The UN Sustainable Development Goals emphasize the importance of four areas of collective action related to the state of the biosphere:



The contribution of biodiversity² to global economic value is estimated³ at USD 44 trillion per year, which exceeds half of the global GDP. However, since traditional macroeconomics does not include the depreciation of natural capital in the calculation of GDP, its growth continues to be built without the economic valuation of biodiversity loss.

Recently, international actions to change this situation and to incorporate ecosystem services into the overall cost of production have been intensified, including through the introduction of regulatory activities and financial instruments. The European Green Deal has already adopted the Biodiversity Strategy for 2030, which aims at more efficient use of ecosystem services and achieving specific targets for biodiversity restoration.

Strategic investors are placing increasingly greater attention⁴ to the risks of biodiversity loss from the companies that represent the portfolio assets. Task Force on Nature-related Financial Disclosures (TNFD) has been established to change investment flows based on a framework of reporting and disclosures made by corporations and financial institutions similar to TCFD climate recommendations. Countries are expected to adopt global collective biodiversity targets for 2030 and 2050, as is the case with the Paris Agreement.

All of the above trends point to the high relevance of this topic for oil and gas companies.

¹ Source: The Economics of Biodiversity: The Dasgupta Review, 2021.

² Biodiversity is the variety of living organisms, species, ecosystems and their interaction with each other.

³ Source: Reports of the World Economic Forum and the World Bank in 2020.

⁴ Source: BlackRock's 2021 investment stewardship priorities.





OUR GOALS AND PRINCIPLES

Our goal is to preserve the diversity of natural biosystems in the regions of our operations and to use them sparingly, without threatening their ability to regenerate themselves.

Our root principle: "Prevent - mitigate - restore - compensate".



PREVENT

The Company has assumed obligations not to conduct its operations in the World Heritage areas and the I-IV category protected areas of the International Union for Conservation of Nature (IUCN).



RESTORE

Biodiversity conservation initiatives are integral to all LUKOIL's projects. Land reclamation and vegetation restoration works are carried out on licensed areas in the process of production activities and after their completion.



ZERO DISCHARGE PRINCIPLE

Offshore projects apply the "zero discharge" principle, which complies with MARPOL requirements¹. LUKOIL entities entirely exclude pollution of the marine environment by industrial waste and effluents generated on drilling platforms. All waste is collected and sent to shore bases for further disposal.



COMPENSATE

Corporate programs include measures to protect biological resources and compensate for damage to local ecosystems.



MITIGATE

We are committed to minimizing the impact of our operations in those cases where they cannot be avoided. Each stage of the projects involved the search for technological and engineering solutions to mitigate the detrimental effect on ecosystems.

LUKOIL's environmental safety and biodiversity conservation programs and projects support the achievement of the following UN Sustainable Development Goals:



¹ MARPOL – International Convention for the Prevention of Pollution from Ships.



MANAGEMENT SYSTEM

We realize the importance of conserving the diversity of the Earth's species and ecosystems. The measures taken by LUKOIL are incorporated into the integrated management system for industrial and environmental safety issues. The Company employs consistent approaches in all countries of presence.

LUKOIL Group's **policy** in the field of industrial safety, labor and environment protection in the XXI-st century defines the Company's long-term tasks and obligations, including the conservation of biodiversity.

Priority is given to the conservation of the most vulnerable and valuable ecosystems:

- the Arctic (the Barents Sea, part of the land land in the Komi Republic, Nenets Autonomous Area (NAA) and Yamalo-Nenets Autonomous Area (YNAA));
- seas (Baltic, Caspian, Barents);
- specially protected conservation areas located near production facilities.



LIABILITY

Plan and implement a set of measures for the conservation of biological diversity in an effort to:

- avoid carrying out works in habitats of valuable and specially protected species of plants and animals, in especially sensitive ecological zones, in the periods of vegetation of plants, breeding and migration of wild animals or minimize the exposure when such works in certain areas and in certain seasons cannot be avoided;
- reduce the area of disturbed lands, preserving the integrity of landscapes as much as possible;
- prevent or minimize the impact of employees and otherwise involved persons of LUKOIL Group's entities on wildlife;
- regularly cooperate with all parties interested in the Company's operations (representatives of indigenous minorities, legislative and executive authorities, scientific organizations, etc.).



LUKOIL-Komi is a participant in the international project "Environmental Culture. Peace and Harmony" of the V. Vernadsky Non-Governmental Environmental Foundation, presenting the project "Preserving Arctic Biodiversity in Extreme North Economic Activities"

MANAGEMENT SYSTEM ELEMENTS AT THE LIFE-CYCLE STAGES OF EXPLORATION AND PRODUCTION PROJECTS



PROSPECTING AND EXPLORATION OF RESERVES

Assessing the impact of the projected activities.
Projecting oil spill prevention and response plans.



PREPARING FOR THE FIELD DEVELOPMENT, ELABORATION OF DESIGN DOCUMENTS

Assessing the impact of planned projects, obtaining permits of governmental authorities.
Arranging recovery and reclamation after the abandonment of exploratory wells.



FIELD DEVELOPMENT

Conducting production environmental control and various types of monitoring of the state of ecosystems.
Taking measures to reduce the impact and preserve biodiversity, with compensatory measures taken in the event of incidents.
Implementing partnership projects with various organizations to assess and monitor the state of individual species.
Providing grant support for local environmental organizations for the implementation of biodiversity conservation projects.



ABANDONMENT

Undertaking restoration and compensation works.

RISK IDENTIFICATION

Identification and assessment of risks and environmental aspects affecting biodiversity take place at the design, construction, reconstruction stages, as well as at all operation stages of production facilities. These involve the anticipation of situations and events sensitive to the state of natural systems and estimation of their probability and consequences.

IMPACT ASSESSMENT

Environmental Impact Assessment (EIA) is conducted during the preparation of design documentation before the commencement of exploration and production activities in Russia and abroad. EIA is carried out at the preliminary stage of drilling, construction, overhaul and abandonment of all types of wells.

Objectives of the EIA:

- to study the nature, extent and degree of the impact of the proposed developments on the natural environment;
- to assess the adequacy of design solutions that ensure the environmental safety of the proposed developments;
- to develop measures to prevent / mitigate the possible adverse environmental impact to acceptable values.

Assessing the impact of proposed developments on biodiversity is an integral part of the EIA. The EIA report includes, but is not limited to:

- the findings of the assessment of the current state of natural ecosystems and their component description;
- the observation data on the population of inhabiting biological species, the census of the number of rare and protected species;
- list of indicator species characteristic of the ecosystems of a particular region, indicating the population stability;
- list of identified sources of pollution;
- analysis of potential impacts of operations and their consequences for biodiversity, as well as risks to local communities (if any);
- list of high conservation value territories and ecosystems, specially protected areas.

The information obtained is taken into account when choosing sites for production facilities. If EIA identifies material adverse effects on ecosystems, the design documentation is amended so to implement the proposed developments in an alternative way.

The plans and results of the EIA are discussed with stakeholders during public hearings. The fundamental proposals of the participants are incorporated into the design documentation.

The EIA findings are also used as a background to work out measures for preserving rare and endangered species of animals and their habitats. Associated activities are added to corporate environmental and industrial safety programs.

OIL SPILL PREVENTION AND RESPONSE PLANS

The most adverse in terms of consequences for the natural environment is an emergency accompanied by oil spills or fires in wells.

The corporate standard on "Prevention of, Preparedness for and Response to Accidents and Emergencies" was introduced to prevent accidents and emergencies and to provide a prompt response in the event of their occurrence.

As currently statutorily required, all entities of LUKOIL Group in Russia that own hazardous production facilities have Spill Prevention and Response Plans (hereinafter referred to as SPRP plans) in place.

The SPRP plans identify, among other things, areas of possible spread of oil contamination. Such assessments in offshore projects are based on the results of mathematical modeling. The assessment is also performed for maximum oil spills, taking into account the drift of the oil slick under the most adverse hydrometeorological conditions.

In accordance with the SPRP plans, LUKOIL Group entities whose facilities are threatened by such emergencies conclude contracts with professional emergency response teams. Specialized vessels equipped with special equipment are on constant day-and-night duty around all offshore facilities.

In addition, the Company is strongly focused on the establishment of its own emergency response teams, which are filled with the most experienced employees who are involved in the operation of facilities. As of 2020, 44 such teams (numbering about 2 thousand people) and 5 professional gas rescue units (numbering about 200 people) were created. All employees are certified under the established procedure and qualified as "emergency response worker".

The Company ensures the necessary level of readiness of regular and non-regular emergency response teams: the personnel is given training in various rescue exercise programs; teams are equipped with modern machinery, transport and equipment in accordance with established standards.

The field development projects accommodate a reserve of funds to ensure environmental safety and compensate for potential damage to the natural environment.

ANIMAL RESCUE

LUKOIL's corporate standard features a distinctively new requirement. It stipulates that the Environmental Safety Program should include measures to prevent and to relieve the consequences of oil/petroleum products pollution affecting animals and birds where provided for by applicable law, as well as on a voluntarily basis for high-exposure areas.

LUKOIL initiated and assisted in the establishment of a mobile Animal and Bird Rehabilitation Station in the Astrakhan Region (Russia) in the area of the Southern Specially Protected Natural Territories Directorate for the Maintenance and Breeding of Wild Animals. With this station, the Company is prepared for potential situations with oil spills.

The station is equipped with special machinery, equipment, gear and a stock of medicines. There is a field stabilization and transport rescue unit. The Directorate has qualified staff, including veterinarians experienced in working with wild animals.

SITUATION MONITORING

LUKOIL uses the most advanced methods to monitor the impact of production facilities on onshore and offshore ecosystems. In-production environmental control (IPEK) and satellite (offshore) monitoring plays are crucial parts of the biodiversity impact management system. These tools

enable comprehensive tracking of the state of ecosystems located in the areas of the possible influence of operations and facilities, based on the analysis of a wide range of natural environment state assessment parameters.



The use of various types of monitoring is a voluntary initiative of LUKOIL

This involves a wide range of partners, contractors and independent experts. The initiative encompasses more than 50 research and environmental organizations, thus promoting a scientific approach to studying the state of ecosystems and enabling the utilization of the data obtained for scientific purposes.

IN-PRODUCTION ENVIRONMENTAL CONTROL SYSTEM

The corporate IPEC system was developed and put in place in 2010. It is based on information technologies integrated with automated control systems for industrial facilities. The purpose of the system consists in regular monitoring of compliance with legislative and corporate standards for the protection of atmospheric air, water, subsoil, soil, and waste management. Adopting IPEC provisions makes managerial decision-making more prompt and reduces the probability of emergency risks.



IPEC is common for all LUKOIL Group's entities presenting any extend of adverse environmental impact

A unified IPEC approach is realized through the corporate standard "In-production Environmental Control System. Design Rules", which received a positive opinion of the state environmental expertise in Russia and was recommended for use in other oil and gas companies.

With this control system, one can timely receive information about the environmental situation at the facilities and promptly make necessary management decisions.

ENVIRONMENTAL MONITORING AT SEA

Several types of monitoring are used to explore the state of marine systems.

Offshore facilities in the Baltic, Barents and Caspian Seas is covered by satellite monitoring. With satellite observations undertaken on a monthly basis, we can efficiently monitor the oil spills on the water surface, based on radar images, to identify sources of pollution and to predict the drift of oil spills (including the time when they reach natural objects).

Additional monitoring activities include ship surveys, shore and coastal observations, stationary observations and observations from bottom stations (this method was first used by LUKOIL). The comprehensive researches help to study the core components of the natural environment: atmospheric air, surface waters, bottom sediments, marine biota – and reveal anomalies, toxic pollution and significant deviations in the characteristics of ecosystems.

ENVIRONMENTAL MONITORING ON LAND

The main purpose of monitoring is to control certain species of flora and fauna identified as indicators of the stable state of ecosystems. The type of monitoring used (e.g., geodynamic, engineering and environmental monitoring) depend on the peculiarities of local conditions.

Data collection is carried out on an ongoing basis; the collected data are then processed and sent to the Company's specialists to assess the compliance of corporate activities with the real situation and to make further management decisions. In special cases, the information is brought up to the notice of responsible officials.

DATA ANALYSIS

The assessment of the main-induced impact on the marine environment involves mathematical, statistical and analytical methods of analysis, including the historical comparison (before/after the construction of LUKOIL's facilities) and comparison with parameters of sites located as far away as possible from the Company's facilities and other production facilities. Sample analysis and measurement methods comply with state standards. The Company keeps adopting new research methods and data processing and analysis methods proposed by its partners and contractors.

With this approach, we are able to identify the sources of pollution, receive information on chronic pollution in time and take adequate response measures.

The monitoring results are published on the website in the form of regular reviews:





BULGARIA

CONSERVATION OF

STEPPE

KESTREL

BEST PRACTICES: BULGARIA

The refinery in Bulgaria is located at two production sites. The main site is located 10 km from small (inland) Gulf of Burgas, and the port terminal is on the Black Sea coast, in the southern part of the Gulf. The Via Pontica, one of the three main bird migration routes in Europe, runs above both sites. The Gulf of Burgas falls under Ramsar wetlands. The port terminal is partially located on the territory of the Bakarlaka protection (conservation) zone.

The Via Pontica route is followed by many species of birds, including 78% of white storks (*Ciconia ciconia*) and the entire population of the pink pelican (*Pelecanus onocrotalus*) in Europe, as well as rare species of the Egyptian imperial eagle and griffon vulture (*Gyps fulvus*).

The leopard climbing snake (*Zamenis situla*), the spur-thighed tortoise (*Testudo graeca iberica*) and the European tortoise (*Testudo hermanni*) were found at the territory of the terminal. All three species are included in the Red Book of the Republic of Bulgaria with conservation status EN (endangered species).

The Company is taking continuous awareness-building efforts to raise the awareness of refinery employees and contractors about the value of biological species that can be found at production sites or near the refinery. The awareness is also promoted through the issuance of an information leaflet describing the species of birds and marine animals found on the territory of the refinery and specifying their habitats and rules of conduct. All employees of the refinery and the port terminal, as well as the contractors' staff working at the refinery sites, are made aware of the relevant information.



This approach makes it possible to save and even restore the population of rare species of birds

In 2014, a distressed bird was found on the territory of the main site. The refinery workers brought it to the rescue center, where they determined it was a steppe kestrel (*Falco naumanni*), a species considered to have been extinct in the country since the 1950s. It is listed in the Red Book of the Republic of Bulgaria, included in Annexes I and II of Wild Birds Protection Directive 2009/147/EC, as well as in the annexes of several international conventions ratified by the Republic of Bulgaria.

In Bulgaria, there is an international project to restore the steppe kestrel. This project facilitated the establishment of the Adaptation Center "Green Balkans" in the Sakar Mountains, where they managed to artificially breed a small colony of this species. All birds adopted and hatched in this center are marked. The kestrel found at the refinery, however, was not marked. This meant that it was a representative of a natural colony. The specialists studied the place where the kestrel was found and confirmed the presence of a small natural group of birds.

The refinery worked out a Steppe Kestrel Conservation Action Plan and approved it with the Chairman of the Managing Board. The action plan aim is to stabilize the colony and increase its population. In subsequent years, the ecology department of the refinery was working together with the Green Balkans Center: the exact nesting sites were determined, periodic observations were carried out. In 2017, 10 wooden nests were set up, and already in 2018 at least three of them were seen to be used by steppe kestrels. The Green Balkans now continues the research and monitoring activities.

PROGRAMS AND ACTION PLANS

Corporate programs and action plans are drafted and executed annually to achieve the strategic goal and objectives. In foreign organizations, within the framework of international exploration and production projects, action plans for the conservation of biodiversity of natural territories are being developed together with partners and authorities.

ENVIRONMENTAL SAFETY PROGRAM

Since the 1990s, LUKOIL Group's entities have been annually implementing biodiversity conservation measures as part of their corporate environmental and industrial safety programs.

The program is secured with annual funding, the amount of which depends significantly on the nature and scope of the envisaged activities.

KEY FOCUS AREAS

Ensuring preparedness for the prevention of and response to emergencies, including wildlife rescue measures

Reclaiming disturbed and oil-contaminated lands

Installing fish and bird protection devices

Reproducing aquatic bioresources

Clearing the riverbeds of small rivers, including the area of the underwater crossing of pipelines

Planting trees and shrubs at production sites



ARCTIC BIODIVERSITY CONSERVATION PROGRAM

The Biological Diversity Conservation Program for the facilities located in the Arctic Zone of the Russian Federation has been in effect since 2015. The Program defines commitments, principles and approaches to biodiversity conservation, as well as requirements for the development of environmental measures for offshore facilities.

To accomplish the program, each LUKOIL entity that operates in the Arctic has biodiversity conservation action plans in place, keeps logbooks and records of indicator species, and promotes the awareness of corporate employees and contractors. Monitoring studies involve leading scientific organizations and institutes, as well as employees of the Nenetskiy State Nature Reserve.

FACILITIES LOCATED IN THE ARCTIC ZONE OF THE RUSSIAN FEDERATION





LAKE DENGIZKUL

BEST PRACTICES: UZBEKISTAN

Development and implementation of biodiversity conservation action plans

LUKOIL Uzbekistan Operating Company carries out its activities in the republic of Uzbekistan under the Production Sharing Agreements of the Kandym Group of Fields, Khausak-Shady and Kungrad areas, as well as the South-West Hissar and Ustyurt regions. The main production facilities are located on the territory of Bukhara and Kashkadarya provinces.

At the time the design stage of the project was underway, the local laws envisaged no mandatory measures to protect biodiversity, there were only requirements for compensation for damage caused. LUKOIL launched an initiative to develop the country's first biodiversity conservation plan, thereby reaffirming its commitment to the corporate principle of preventing potential negative impacts.

In accordance with performance standard No. 6 of the International Finance Corporation and with the participation of international experts, LUKOIL Uzbekistan Operating Company conducted an environmental audit of the areas of projected activities and drafted an Action Plan for the conservation of biological diversity of the Khausak-Shady area. This practice was subsequently applied at each of the license areas.

Key activities of the Biodiversity Conservation Action Plan of the Hausak-Shady area

The high conservation value object of the license area is the Ramsar wetland - "Lake Dengizkul", a place of concentration of wader birds during migration. This factor was taken into account during the development of design documentation.

Construction

- All facilities are designed to be built outside the water protection zone (except for facilities that cannot be relocated).

- The passage across the lake is built in the narrowest place with the use of water gates that do not affect the hydrological regime of the lake. Environmentally friendly materials were used for the construction.
- A pipeline is laid under the water body (without lakebed and lake water interventions), metal thick-walled pipes of a reinforced anti-corrosion version are used.

Birds protection measures

- To prevent birds from dying from electric shock, all insulators on transmission towers along the lake are enclosed.
- Special biotic monitoring is organized.

Work with local communities

- The Company installed and has been continuously updating information boards, posting the materials concerning the biological vulnerability of the lake and the rules of conduct on the territory.
- A kilometer-long no-take zone around the nesting sites of wetland birds is visually marked and upheld.
- With the assistance of the security service of LUKOIL Uzbekistan Operating Company, anti-poaching arrangements are being made.

In addition, we are making continuous efforts to rescue animals and birds in distress on the territory of production sites and adjacent areas, and established cooperation with local environmental organizations, for example, with the Republican Ecocenter "Jeyran".

Action plans are adopted for several years. After the expiry date of each document, its accomplishment progress is assessed, and action plans for the next period are developed and approved.



MARINE ECOSYSTEMS

LUKOIL's main production approach at offshore facilities is to ensure a high level of environmental and industrial safety based on advanced engineering and information technologies.

Automated monitoring systems (AMS) are used on the platforms, enabling to establish remote control over the processes of well drilling and completion, maintenance and repair of equipment, to detect leaks and fluid balance in the oil pipeline. Operational dispatch control runs on an ongoing 24/7 basis. More than 20 thousand indicators are monitored via secure communication channels in real time.

LUKOIL's platforms are equipped with a system of fire and gas detection sensors installed along the perimeter. Triggering one of them activates an automatic system of emergency shutdowns.

In the event of emergency or pre-emergency situations, the technologies adopted to ensure the prompt shut-in of the well. In case of equipment out-of-normal performance, the AMS sends out signals about the need for prompt intervention of the Company's employees or contractors.

With the "zero discharge" principle, no waste and effluents are discharged into the sea. Sea water withdrawn for cooling equipment and desalination is not used in technological processes and does not have contact with sources of pollution; it is discharged back into the water body conditionally clean. Before discharge, the water is cooled as statutory required.

Based on the results of long-term observations, the impact of production activities on marine ecosystems (noise and vibration) is assessed as short-term, moderate in intensity

and local, which does not have a significant physical effect on ecosystems. Due to the relocation of production sites away from the coastline, the probability of their impact on coastal systems is assessed as low.

Key actions to conserve the biodiversity of marine ecosystems include the following activities at all stages of the project life cycle.

Engineering, design and construction of facilities and infrastructure

- Laying of offshore pipelines as to bypass specially protected natural areas.
- Taking into account the spawning migration routes when building underwater pipelines.

Production activities

- Regular environmental monitoring and constant control of the oil film in the water area.
- Water intake optimization, wastewater reuse and reuse of drilling mud.
- Compliance with the no-take regime of high conservation value zones.
- Introduction of biotechnologies that accelerate the self-purification of the marine environment and protect against oil pollution (artificial reefs).
- Equipping water intakes with fish protection devices.
- Control over natural hazards that pose a threat to the Company's production facilities and the local communities.

The above activities are taken at all offshore facilities of the Company, the results obtained are also used for scientific purposes.

Scope of work on environmental monitoring

	The Baltic Sea	The Caspian Sea	The Barents Sea
Year of monitoring start	2003	1997	2008
Length of coastline, km	In 2003 – 82 km (ornithological observations). In 2020 the shoreline monitoring covered 148 km.	-	25
Water area, sq.km	5 600	30 328	243
Frequency of observations	In 2003 – two expeditions. In 2020 – seven shore-based, six coastal (boat-based), one integrated, eight ornithological, and one ichthyologic expedition.	Annually, two expeditions per year.	Annually, one expedition per year.

THE BALTIC SEA

Since 2003, LUKOIL's environmental monitoring in the Baltic has covered the entire south-eastern part of the sea and the natural object – the Curonian Spit. These works laid a foundation for the regular studies of the Baltic Sea water area adjacent to the Kaliningrad region.

The continuous collection of satellite real-time data is crucial for this kind of works: all oil spills from any sources that appear in the water area are recorded on the satellite images.. Ship observations are carried out right around the platforms and at coastal points. Coastal studies cover mainly the Curonian Spit. Additional analysis encompasses the data obtained from autonomous bottom stations (installed near platforms), automatic hydrometeorological stations (fitted on platforms) and autonomous seismic stations (on the seabed and on land).

Radar measurements of surface currents are taken at the landfall point of the submerged pipeline. The activities in the coastal zone include the study of bottom vegetation and control of petroleum products content in the water and on the beaches.



THE CASPIAN SEA

Since 1997, marine environment monitoring has been in place, covering almost the entire Russian sector of the Caspian Sea, except for its north-western part. The monitoring predominantly implies hydrochemical and geochemical studies. The expeditionary offshore operations involve meteorological, hydrological, hydrochemical observations, sampling of water, bottom sediments, plankton and benthos.

Assessment of the state of the water area and marine ecosystems includes the measurement of parameters characterizing the quality and physical condition of marine waters and bottom sediments, the level of chemical pollution and other parameters. The Company prioritizes the marine environment quality assessment in the locations of offshore ice-resistant fixed platforms, the offshore transshipment complex and the submerged oil pipeline route.

THE BARENTS SEA

Since 2008, the coastline near the Varandey terminal and the adjacent marine area has been subject to annual monitoring, including the measurement of the parameters of atmospheric air, surface waters, bottom sediments and soil quality, as well as geocryological measurements. The Biological Diversity Conservation Action Plan envisages research efforts to study the state of biological resources (marine hydrobionts, ichthyofauna, theriofauna, ornithofauna) and selected indicator species every year.





PRESERVATION OF THE ENVIRONMENTAL COMPARTMENTS

Our operational activities are aimed at preserving and restoring the natural environment, thus maintaining ecosystems in balance.

SOIL AND SUBSOIL

Land conservation is fundamental to biodiversity. Since economic activities inevitably involve land alienation, measures to restore disturbed land and wildlife habitats after the end of operations and accidental spills are important in the long run. LUKOIL strives to restore land plots to their original state.

LAND REHABILITATION

All lands within the Company's footprint are subject to land rehabilitation. LUKOIL's entities shall without fail take into account the natural conditions of each production site (landscape, location of natural objects, soil composition, etc.). Remediation methods that are best suited to local conditions are selected, and modern equipment and materials are used that do not have a negative impact on the soil.

The remediation comprises following stages:

- technical: collecting as many pollutants as possible from the surface, agrotechnical activities, applying oil-oxidizing biopreparations, loosening soil of better aeration;
- biological: sowing seeds or seedlings of trees and shrubs, fertilizing.

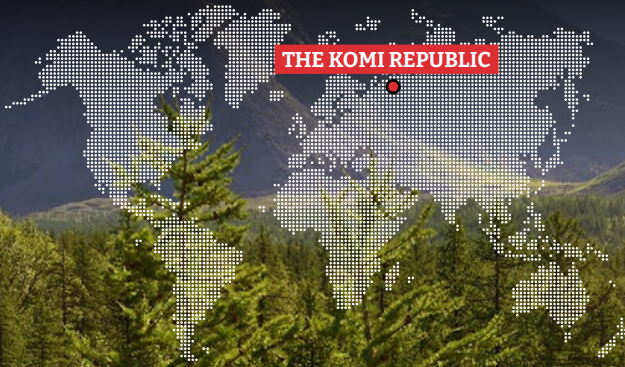
If the topography of the area suggests washing off and further spreading of residual contamination, the contaminated layer is completely removed and transported to specialized bioremediation sites, then clean soil is brought to the reclaimed area for further biological reclamation (remediation).

DECOMMISSIONING OF PRODUCTION FACILITIES

The decommissioning of facilities is preceded by an assessment of the condition of the territory where the production operations took place. The resultant justification materials reflect the results of the land study, including:

- prediction of the possible formation of sinkholes, cracks, flooding and waterlogging of areas that may arise during or as a result of the abandonment of facilities;
- background characteristics of pollution (including the level of contamination of the soil cover of the territory adjacent to the sites of the facilities to be abandoned);
- general assessment of the state of ecosystems and their capacity for restoration.

The assessment is followed by the development of a land remediation project and natural environment rehabilitation measures.



HISTORICAL PRACTICE

THE KOMI REPUBLIC

LUKOIL began operations in the Komi Republic five years after the environmental disaster associated with the accident on the Kharyaga-Vozei-Head Structures oil pipeline (Usinsky District, near Usinsk), which occurred in 1994. The accident is considered the largest oil spill in the history of onshore oil production (according to various estimates 100,000 to 300,000 tonnes were spilled). The cause of the accident was a burst oil pipeline and the refusal of the producing company to shutdown despite the accident. The spilled oil polluted a large area and flowed into local rivers.

After acquiring the assets of KomiTEK in 2000, LUKOIL assumed voluntary obligations to remove much of the consequences of this accident. The Company's specialists studied the natural and climatic conditions of the Usinsk district to select the optimal soil remediation technologies.

A corporate program for the period 2000-2005 was developed to fulfil the above commitments. Given the lack of experience in cleaning up such significant volumes

of spilled oil in difficult geological conditions, we analyzed international industry-specific experience, developed and put in place corporate regulations ("Requirements for Oil-contaminated Land Remediation Technologies", "Regulations on Acceptance of Land and Water Bodies after Rehabilitation", "Guidelines for Gravimetric Method of Determining the Mass Fraction of petroleum products in the Soil") and other documents. LUKOIL engaged 16 research and specialized organizations from Russia, the Czech Republic and France to carry out the clean-up. The post-accident clean-up operations lasted about 10 years.

In addition, within the framework of the Agreement with the Republic of Komi another problem was addressed in the Usinsky district - the elimination of sludge pits containing oil waste accumulated at the stage of intensive development of oil production in 1970-1980. The agreement resulted in the reclamation of 105 hectares of polluted lands that were not on the balance sheet of LUKOIL-Komi.



As a result, more than 460 thousand tonnes of oil-containing waste were recycled, about 900 hectares of land underwent biological reclamation, and 383 hectares of new forest were planted. In 2004, the Usinsky district was cleared off the emergency zone status

INLAND WATER BODIES

Water resources are of great importance to natural systems, influencing not only soil capability and animal populations, but also the microclimate and volume of ecosystem services.

In accordance with its policy, LUKOIL strives to use water resources rationally, reduce water intake for production needs, return most of the water withdrawn in proper quality back to water intake sources, and improve the quality of waste water. The condition of water protection zones, groundwater horizons during drilling operations is monitored.




REGULAR PRACTICE: REPRODUCTION OF FISHERY RESOURCES

Activities to restore the fish population in rivers and water bodies in the territories within LUKOIL's foothold are implemented on an annual basis: millions of juvenile fish of valuable species are released into water bodies on land and at sea:

- muksun fry - in the Irtysh River (Khanty-Mansi Autonomous Area) and the Ob River (Yamalo-Nenets Autonomous Area);
- sterlet fry - to the Kamskoye and Votkinskoye water reservoirs (Perm Territory);
- sig fry - in the rivers of the Pechora Basin (the Komi Republic);
- sterlet fry - in the Mologa and Sukhona Rivers and in the Sheksnisky water reservoir (Vologda region);
- Russian osetr fry - into the Volga River.

If it is impossible to compensate for the damage to fish stocks from all types of production activities, compensation payments for damage are paid to regional state governments.

- 
- 1 Ob River
 - 2 Irtysh River
 - 3 Kamskoye and Votkinskoye water reservoirs
 - 4 The rivers of the Pechora Basin
 - 5 Mologa and Sukhona Rivers and the Sheksnisky water reservoir
 - 6 Volga River

AREAS OF HIGH BIOLOGICAL VALUE

Protected areas are central to the conservation of natural ecosystems and the preservation of the high quality of ecosystem services at the national level. We try to locate our facilities away from specially protected areas and in the sites of significant historical and cultural importance.

If a designated natural area of high biological value is located close to licensed areas or operations directly affects such territories, LUKOIL turns to special technologies, for example, non-flame production, pitless drilling, removal of drilling sludge for disposal outside the designated natural area. The construction of facilities envisages the negative impact minimization measures (for example, reducing the land allocation area). Drilling mud with low-toxic substances is used in the well site construction. Formation waters are used to maintain reservoir pressure, which minimizes the impact on the hydrosphere of territories.

The state of vegetation and soil quality is monitored every year, and intact monitoring (research methods are adapted to the features of "undisturbed" territories) and biomonitoring (geobotanical survey and soil quality control) are employed.

The state of surface and ground water in the territories is monitored more often as compared to other production facilities - several times a year. The survey results define the measures developed to identify sources of pollution and a program of their localization and elimination.

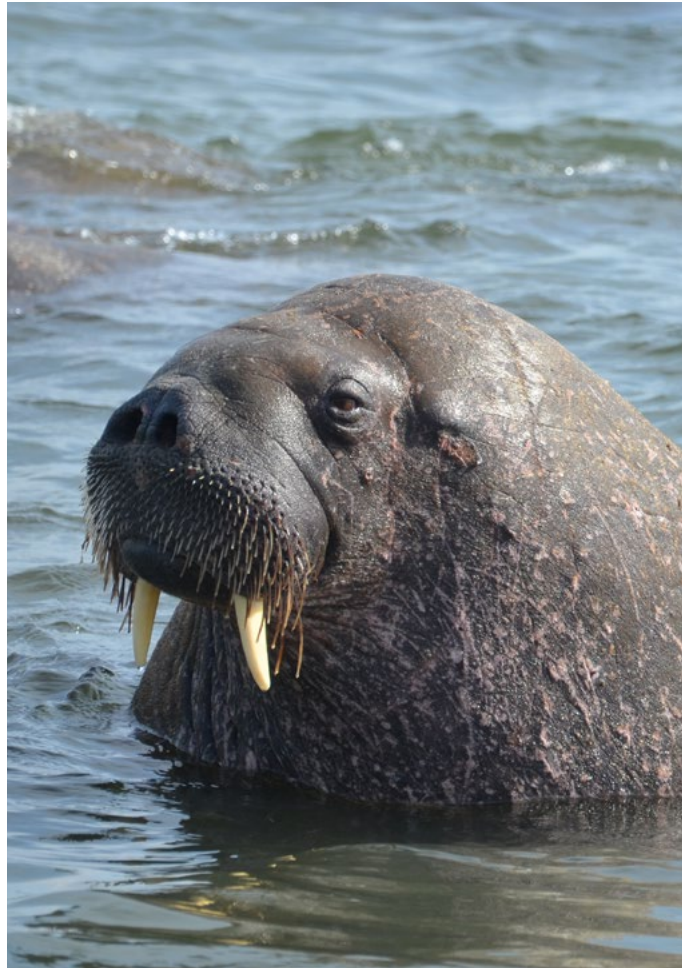
SPECIES CONSERVATION PROJECTS

LUKOIL is partnering with environmental and scientific organizations to support the conservation of animal species that are threatened or crucial for local ecosystems.

ATLANTIC WALRUS

Since 2016, the Atlantic walrus population has been monitored as part of the Biodiversity Protection Action Plan of the Varandey Terminal.

In 2016, LUKOIL and WWF Russia organized an expedition in the south-eastern part of the Barents Sea to study this species. The research was carried out by The Mammals Council.





CASPIAN SEAL

Since 2017, LUKOIL has been organizing studies of the Caspian seal in the Northern and Central Caspian license areas in the Caspian Sea. Observations are made from research vessels to study the density of the distribution of this species.

In 2020, the book named "Caspian Seal: Past and Present" dedicated to this species was published (author - A.Sokolsky). The publication is based on the materials of the environmental monitoring studies of LUKOIL-Nizhnevolzhskneft conducted between 2010 and 2019. The reviewers were members of the presidium of the Council of the All-Russian Society for Nature Conservation: N. Tsimlyansky, Director of the Astrakhan State Biosphere Reserve, and A. Kurapov, Doctor of Biological Sciences.

In 2021, the Company offered financial support to a project for the comprehensive study and conservation of the Caspian seal using observation methods from aircraft and sea vessels. The originator of the project was the International Ecological Foundation "Clean Seas" together with the A. Severtsov Institute of Ecology and Evolution. Based on the results of the observations, scientific data on the distribution, habitat structure and population size of the Caspian seal will be updated.

SAIGA

Since 2020, the Environmental Safety Program includes measures to preserve the population of the saiga living on the territory of the Chornye Zemli (Black Lands) State Nature Biosphere Reserve in the Republic of Kalmykia and in the Stepnoy State Nature Sanctuary of Regional Significance in the Astrakhan Region (Russia).

Under the terms of the Agreement on Cooperation between the Ministry of Natural Resources and Environment of the Russian Federation and LUKOIL, an Action Plan for the Conservation and Reintroduction of Saiga in the Republic of Kalmykia and the Astrakhan Region for 2020-2024 was approved, indicating particular measures, deadlines and funding amounts. The document was developed by LUKOIL-Nizhnevolzhskneft with the assistance of environmental and scientific experts and with the participation of management of nature reserves in the Republic of Kalmykia and Astrakhan Region and WWF Russia experts.





PARTNERSHIP

The Company establishes partnerships with government, environmental and scientific organizations and implements joint projects and initiatives.



МИНИСТЕРСТВО ПРИРОДНЫХ
РЕСУРСОВ РОССИИ
RUSSIAN MINISTRY OF
NATURAL RESOURCES

MINISTRY OF NATURAL RESOURCES OF RUSSIA

Since 2020, LUKOIL has been sitting on the Task Force of the Ministry of Natural Resources of Russia on the Business and Biodiversity Initiative. Cooperation falls under the federal project "Conservation of biological diversity and development of ecological tourism" of the national project "Ecology".



UNITED NATIONS DEVELOPMENT PROGRAM IN RUSSIA / GLOBAL ENVIRONMENT FACILITY / MINISTRY OF NATURAL RESOURCES OF RUSSIA

2012-2014 was a period of partnership under the project "Tasks of Biodiversity Conservation in Policies and Programs for the Development of the Energy Sector of Russia". The Project activities took place in the Komi Republic and the Caspian Sea.



WWF RUSSIA

The Agreement on Cooperation on the Exchange of Information between the World Wildlife Fund (Russian branch) and LUKOIL has been in force since 2015; it covers bilateral consultations, workshops, exchange of information and data on the implementation of environmental projects. The parties approve a roadmap of joint activities every year.



RUSSIAN GEOGRAPHICAL SOCIETY

Since 2010, during its cooperation with LUKOIL, the Russian Geographical Society has implemented several research and educational projects, including the study of the coast and coastal zone of the northern part of the Kola Bay and mapping of the Gulf exposure to oil spills.

APPENDICES

APPENDIX 1. MAIN INTERNATIONAL AND RUSSIAN DOCUMENTS

In building management systems and creating a list of environmental protection measures, the Company is guided by the following international and Russian documents:

- UN Convention on Biological Diversity (ratified by Russia in 1995);
- Arctic Council Guidelines for Oil and Gas Companies on the Arctic Shelf;
- International Convention for the Prevention of Pollution from Ships, MARPOL 73/78;
- Helsinki Commission Recommendations (HELCOM) 40/1 on the protection and preservation of marine and coastal biotopes, habitats and biotope complexes categorized as threatened according to the HELCOM Red Lists;
- HELCOM Environmental Protection Action Plan;
- Conference of the Parties to the Convention on Biological Diversity (COP15);
- Instruction No. Pr-1530 of the President of the Russian Federation dated June 29, 2014 to companies implementing field development projects on the Arctic continental shelf of the Russian Federation, inland sea waters, territorial sea and contiguous zone to develop and adopt biodiversity conservation programs (item 4 of the list);
- Order No. 25-r of the Ministry of Natural Resources of the Russia dated September 22, 2015 "On Approval of the List of Flora and Fauna Species that are Indicators of the Stable State of Marine Ecosystems of the Arctic Zone of the Russian Federation";
- The federal project "Conservation of biological diversity and development of ecological tourism" of the national project "Ecology";
- Order No. 35-r of the Ministry of Natural Resources of Russia dated November 25, 2019 "On Approval of Guidelines on the Structure and Content of Biodiversity Conservation Programs at Profit Organizations";
- International Finance Corporation Standards.

APPENDIX 2. LIST OF INDICATOR SPECIES IN RUSSIA AND UZBEKISTAN

The corporate programs and action plans for biodiversity conservation involve the monitoring of over 69 indicator species of natural ecosystems (in Russia and Uzbekistan).

RUSSIA

Arctic zone

Pursuant to Order No. 25-r of the Ministry of Natural Resources of Russia dated September 22, 2015, LUKOIL Group's entities identified 47 species - indicators of the stable state of Arctic ecosystems, which are covered by advanced monitoring and research, including:

- 14 species of algae;
- nine species of invertebrates;
- six species of zooplankton;
- five species of ichthyofauna (fish);
- 10 species of ornithofauna (birds);
- three species of theriofauna (mammals).

LLC LUKOIL-Komi

Birds. Barnacle goose (*Branta leucopsis*), common eider (*Somateria mollissima*), king eider (*Somateria spectabilis*), ivory gull (*pagophila eburnea*), burgomaster (*Larus hyperboreus*), black-legged kittiwake (*Rissa trydactyla*), common murre (*Uria aalge*), thick-billed murre (*Uria lomvia*), great black-backed gull (*larus marinus*), black guillemot (*Cephus grylle*).

Mammals. Polar bear (*Ursus maritimus*), walrus (*Odobenus rosmarus*).

LLC Varandey Terminal

Fish. Asian smelt (*Osmerus mordax*), Arctic cod (*Laridae*), nine-needled stickleback (*Pungitius pungitius*), three-spined stickleback (*Gasterosteus aculeatus*), Atlantic navaga (*Eleginus gracilis*).

Birds. Barnacle goose (*Branta leucopsis*), common eider (*Somateria mollissima*), king eider (*Somateria spectabilis*), burgomaster (*Larus hyperboreus*), black-legged kittiwake (*Rissa trydactyla*).

Mammals. Arctic shrew (*Sorex tundrensis*).

The Baltic Sea

In the Baltic, we monitor 14 of the most informative indicator species.

Birds. Mute swan (*Cygnus olor*), mallard duck (*Anas platyrhynchos*), common merganser (*Mergus merganser*), great-crested grebe (*Podiceps cristatus*), common goldeneye (*Bucephala clangula*), common scoter (*Melanitta fusca*), long-tailed duck (*Clangula hyemalis*).

The fauna of nesting birds of the south-eastern part of the Baltic Sea coast is represented by a limited set of species, including waders (*Limosa limosa*), ring plovers (*Charadrius hiaticula*), terricks (*Sterna*), common gull (*Larus canus*).

Marine mammals. Ringed seal (*Pusa hispida*), common seal (*Phoca vitulina*), gray seal (*Halichoerus grypus*).

Mammals in the Baltic Sea are represented by two groups of animals – cetaceans and pinnipeds. Cetaceans (dolphins, whales) occur sporadically, mainly those coming from the North Sea. Pinnipeds are represented by seals and hair-seals. The river seal is included in the list of protected species of animals. All species of seals living in the Russian territorial waters of the Baltic Sea are listed in the Red Book of Russia.

UZBEKISTAN

Twenty-two indicator species are monitored in project areas in Uzbekistan.

Kandym-Khausak-Shady

The ornithological reserve “Dengizkul Lake” (up to 5 km from production facilities) and the important ornithological territory “Khoja-Davlet” (up to 10 km from production facilities) are located near the Kandym-Khausak-Shady group of fields in Bukhara province. Natural areas are inhabited by 154 species of animals, 16 of which are included in the Red Book of the Republic of Uzbekistan, 12 species are recognized as indicator species and 14 species – as background.

Birds. Nine indicator species are: isabelline wheatear (*Oenanthe isabellina*), common myna (*Acridotheres tristis*), desert finch (*Rhodospiza obsoleta*), long-legged buzzard (*Buteo rufinus*, CITES II), Asian desert warbler (*Sylvia nana*), streaked scrub warbler (*Solifugae*), gray ground jau (*Podoces*), magpie (*Pica pica*), and rufous warbler (*Cercotrichas galactotes*).

Reptiles. Three indicator species are: reticulate racerunner (*Eremias grammica*), spotted desert racer (*Platyceps karelini*), and toad-headed agama (*Phrynocephalus mystaceus*).

Species included in the Red Book of the Republic of Uzbekistan:

- pygmy cormorant (*Microcarbo pygmaeus*), little egret (*Egretta garzetta*), glossy ibis (*Plegadis falcinellus*), flamingo (*Phoenicopterus*), mute swan (*Cygnus olor*), whooper swan (*Cygnus cygnus*), marbled teal (*Marmaronetta angustirostris*), white-eyed pochard (*Aythya nyroca*), stifftail (*Oxyura*), white-tailed eagle (*Haliaeetus albicilla*), barbery falcon (*Falco pelegrinoides*), pheasant (*Phasianus colchicus*);
- reptiles - steppe tortoise (*Testudo (Agrionemys)*) and desert monitor (*Varanus griseus*).

The IUCN International Red List includes Dalmatian pelican (*Pelecanus crispus*), marbled teal (*Marmaronetta angustirostris*), white-eyed pochard (*Aythya nyroca*), stifftail (*Oxyura*), common northern lapwing (*Vanellus vanellus*), European oyster catcher (*Haematopus ostralegus*), curlew sandpiper (*Calidris ferruginea*), European curlew (*Numenius arquata*), black-tailed godwit (*Limosa limosa*), bar-tailed godwit (*Limosa lapponica*), European pochard (*Aythya ferina*), and the steppe tortoise (*Testudo (Agrionemys)*).

Hissar

On the territory of the Hissar group of fields there are 39 species, of which six are listed in the Red Book of the Republic of Uzbekistan, 10 are counted as indicator species, and seven species belong to background species.

Birds. Eight indicator species: common myna (*Acridotheres tristis*), desert finch (*Rhodospiza obsoleta*), long-legged buzzard (*Buteo rufinus*, CITES II), streaked scrub warbler

(*Solifugae*, CITES II), eastern rock nuthatch (*Sitta tephronota*), white-backed wheatear, brown-necked raven (*Corvus ruficollis*), little owl (*Athene noctua*, CITES II).

Reptiles. One indicator species is Balkan glass-snake (*Pseudopus apodus*).

Mammals. One indicator species is northern mole vole (*Ellobius talpinus*).

The IUCN International Red List includes five species (two species of reptiles and three species of birds): the steppe tortoise (*Testudo (Agrionemys)*), Central Asian cobra (*Naja oxiana*), black vulture (*Aegypius monachus*), Egyptian vulture (*Neophron percnopterus*), lammergeier (*Gypaetus barbatus*)

APPENDIX 3. LIST OF LUKOIL GROUP'S ENTITIES

The booklet includes information and examples of the activities of the following LUKOIL Group's entities:

Varandey Terminal LLC (Varandey Terminal)

LUKOIL-Western Siberia LLC (LUKOIL-Western Siberia)

LUKOIL-Kaliningradmorneft LLC

LUKOIL-Komi LLC (LUKOIL-Komi)

LUKOIL-Nizhnevolzhskneft LLC (LUKOIL-Nizhnevolzhskneft)

LUKOIL-Komi LLC

RITEK LLC

LUKOIL PJSC

LUKOIL Uzbekistan Operating Company

LUKOIL Neftochim Burgas AD (refinery in Bulgaria)

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Download the "Biodiversity Conservation" booklet here

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