RADIOACTIVE WASTE MANAGEMENT

The uranium mining and processing sector generates small amounts of solid (SRW) and liquid radioactive waste (LRW). This is mainly radioactively contaminated soil and spent productive solutions. A total of 25.7 thousand tonnes of SRW and 129.8 thousand tonnes of LRW will be generated in 2024. The entire volume of generated LRW is disposed at the tailings storage facility of UMP JSC, which is managed in accordance with the Tailings Storage Facility Waste Management Regulations, containing the conditions of waste storage and disposal in accordance with the Code of the Republic of Kazakhstan "On Subsoil and Subsoil Use" and the Environmental Code of the Republic of Kazakhstan for the period of 2023–2042.

We carry out safe and responsible radioactive waste management in accordance with the requirements of the legislation of the Republic of Kazakhstan and international standards. In 2024, NAC KazAtomProm JSC will continue to implement the Radioactive Waste Management Programme for 2023–2030, aimed at improving the efficiency of waste management and introducing best global practices.

REMEDIATION OF HISTORICAL CONTAMINATION AND LAND REMEDIATION

We continue works on utilisation of historical wastes and clean-up of contaminated land. In 2024, NC KazMunayGas JSC disposed of 1,099 thousand tonnes of historical oil-containing waste, rehabilitated their disposal sites and started work to clarify the remaining volumes of oil waste. The total area of disturbed land reclamation totalled 172 hectares.

In particular, Karazhanbasmunai JSC completely eliminated historical pollution in the contract territory; 518,879 tonnes of historical oil waste were disposed of in the period 2021–2024. They eliminated oil waste pits in the coastal zone of the Caspian Sea, 3 units of onshore pits and cleaned 246 oil-contaminated areas in the contract territory of Karazhanbasmunai.

We carry out reclamation of worked-out areas of ash dumps, including their restoration and transformation into environmentally safe and functional zones. In 2024, the estimated value of the fund for the liquidation of ash dumps totalled KZT 3,739.3 million, which is 18.96% higher than in the previous year. This increase is due to an increase in the cost of works and materials for ash dumps reclamation and restoration of disturbed lands.

In the mining and metals sector, the liquidation works at the Uvanas deposit continued in 2024, with the plugging of all process wells completed, all site sand pits removed and the levelling of capping works carried out. All liquidation works, including demolition and dismantling of buildings and structures at the industrial site, are expected to be completed in 2025.

In the reporting year, we started working on progressive liquidation at JV Akbastau JSC, where 80 wells were liquidated. This practice implies the liquidation of spent process units at geotechnological uranium mining sites before the end of subsoil use contracts, which will have a positive impact on the environment by reducing the duration of potential harmful effects, will contribute to reducing financial obligations for liquidation works in the future, and fully takes into account the interests of the local population in the regions of operation.

Biodiversity

GRI 3-3 Globally, ecosystems are under threat and need comprehensive protection. According to the 2024 Sustainable Development Index, conservation of terrestrial ecosystems is among the six most pressing issues in Kazakhstan.

To comprehensively protect ecosystems, the new Environmental Code of Kazakhstan includes a chapter on biodiversity conservation and describes a biodiversity offset mechanism that establishes the principle of prevention, minimisation, mitigation and compensation of biodiversity loss, designed to address the potential impacts of industrial and infrastructure projects at the planning stage. In 2024, UNDP[42] in partnership with the Ministry of Ecology and Natural Resources of the Republic of Kazakhstan has developed a draft Concept for the conservation and sustainable use of biodiversity in Kazakhstan for a ten-year period.

We recognise the significant impact of the Fund's portfolio companies on Kazakhstan's ecosystems and consider biodiversity conservation to be an important criterion for the well-being of the population and the sustainability of the country's economic development. The Fund's portfolio companies manage biodiversity issues at their level. The environmental policies of industrial companies fix areas of activity in the field of ecosystem protection, a number of companies have developed and are implementing programmes to prevent and minimise impacts on flora and fauna, strict control over the state of the environment in areas near unique natural sites, and compensation for biodiversity losses is made if necessary.

[42] United Nations Development Programme in Kazakhstan.

POTENTIAL IMPACT ON AREAS OF OPERATIONS BY TYPE OF OPERATION

GRI 304-1 **GRI 304-2** Our portfolio companies are present in all regions of the Republic of Kazakhstan, some of which have extensive linear infrastructure with significant impacts on biodiversity. The linear infrastructure includes main oil and gas pipelines of KazTransOil JSC and NC QazaqGaz JSC, main overhead power lines of KEGOC JSC, overhead power lines of distribution power companies of Samruk-Energy JSC, railway tracks of NC Kazakhstan Temir Zholy JSC, cable telecommunication networks of Kazakhtelecom JSC. This infrastructure is located in all natural zones of the country – from forest-steppes and steppes to mountain ranges of Kazakhstan and affects various types of ecosystems, including forest-steppe, near-water, steppe, semi-desert, desert and mountain ecosystems.

GRI 3-3 We identify two key aspects of the negative impact of portfolio companies with significant linear infrastructure on biodiversity:

- Obstruction of railway tracks, artificial fences, embankments, high-speed motorways to the migration routes of ungulate mammals;
- Animal deaths on railway tracks and roads.

GRI 304-4 We have also compiled a list of flora and fauna species listed in the International Union for Conservation of Nature red list and a national list of protected species whose habitats have been identified in the areas where the portfolio companies operate.

GRI 3-3 The listed aspects and types require additional control and protective measures from our side. For this purpose, a number of portfolio companies (QazaqGaz, Kazakhtelecom, Kazatomprom, Samruk-Energy) have developed relevant Programmes and other guiding documents aimed at protecting biodiversity. In 2025, NC KazMunayGas JSC plans to develop a long-term Biodiversity Conservation Programme, which will include comprehensive measures to protect ecosystems. In addition, targeted training was conducted there in the reporting year to develop a deep understanding of biodiversity issues in the context of management.

GRI 304-4 **Species identified in areas of presence and their conservation status**

International Union for Conservation of Nature Red List categories	2023	2024
Least Concerns (LC)	48	244
Vulnerable (VU)	7	12
Near threatened (NT)	9	16
Disappearing (EN)	5	6
Endangered species (CE)	2	3

PRODUCTION AND DISTRIBUTION OF ELECTRIC POWER

GRI 3-3
GRI 304-2

Organisations of the energy sector are located in regions with a high level of industrial load in Pavlodar and Almaty regions, on lands of industrial purpose, on which no halos of habitats of red-listed species have been identified. The main aspects of the negative impact of hydroelectric and wind power plants on biodiversity are:

- death of ichthyofauna (eggs), aquatic invertebrates, aquatic plants, some waterfowl birds under significant water level changes in rivers and/or other water bodies;
- bird deaths from collisions with wind farm turbines;
- death of birds from electric shock on medium-power overhead lines and substation equipment under operating voltage.

In 2024, the Fund's energy sector activities had no significant direct or indirect impact on vulnerable ecosystems and biodiversity. We continuously implement programmes aimed at protecting flora and fauna. To protect fish populations at hydroelectric power plants, we have installed specialised fish protection systems on hydro turbines. In accordance with the recommendations of the Kazakh Research Institute of Fisheries, a measure has been implemented to protect spawning fish: illumination of the water surface with searchlights at night near water intakes in front of turbine conduits. This effectively discourages fish and minimises their ingress into the turbines, contributing to the preservation of the ecosystem.

During the pre-design and design phase of wind power plants (WPP), special attention is paid to minimising the impact on nature. For example, to minimise light pollution, which can disturb the biorhythms of flora and fauna, lighting on the wind turbine is limited to the necessary position lights, which contributes to the maintenance and restoration of biodiversity. We recorded no incidents with migrating birds during the operation of the WPP in 2024, which is confirmed by records in the logbook.

To reduce the impact of power lines on birds, we implement educational programmes and cooperate with ornithologists, constantly study the market for developments in the field of biodiversity conservation, learn from the experience of similar companies and liaise with environmental organisations.

As part of our protective measures, we install bird protection devices on the crossbeams and gantries of outdoor switchgears, which prevent birds from landing on elements of lines and substations. In particular, KEGOC JSC has installed more than 11,000 such safe bird protection devices in 2024. We also use visual and audible signalling devices that are activated by wind and reduce risks for birds, as well as deter birds at times of high activity, such as during migration. Insulated wires are installed during the reconstruction of the poles; this significantly reduces the risk of electrical contact damage, which contributes to the safety of birds and the conservation of their populations. This approach makes the coexistence of transmission line infrastructure and biodiversity more harmonious.

OIL AND GAS PRODUCTION

GRI 3-3 Production activities of the oil and gas sector affect protected areas of the Caspian Sea, protected areas of Mangistau and Aktobe regions. We implement conservation measures both within and outside the boundaries of protected areas. The biodiversity conservation policies of a number of portfolio companies, in particular NC KazMunayGas JSC, include:

1. conserving habitats and migration routes of animals;
2. minimising and compensating for potential damage to ecosystems;
3. reducing disturbed areas through restoration measures.

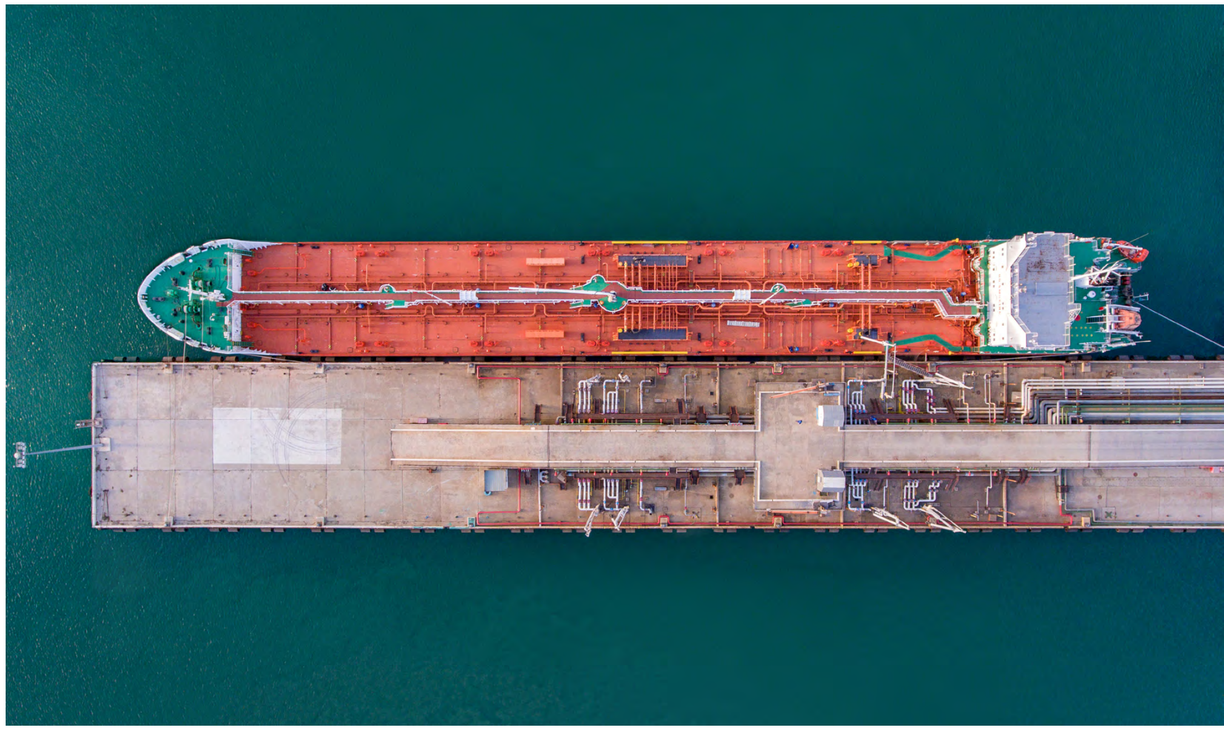
The eastern part of the North Caspian and the deltas of the Volga, Ural and Emba rivers are part of the protected area. These wetlands are of key importance for Eurasia's biodiversity, home to millions of waterfowl birds. More than 70 bird species migrate through the north-eastern Caspian Sea. Among them are five rare species listed in the Red Book of Kazakhstan. The waters of the region are home to 25 species of fish, including sturgeon, as well as a population of Caspian seal, an endemic of the Caspian Sea.

Our operations in the Caspian region are represented by the Isatay, Abay and Al-Farabi blocks and the Karazhanbas field, and in the Aktobe region by the Urikhtau, Alibekmola and Kozhasai fields.

The main aspects of the negative impact of oil and gas production companies on biodiversity are:

- a factor of concern for Caspian seals;
- pollution of bird and seal habitats with oil and oil products;
- harm to ichthyofauna and seals as a result of accidental/unauthorised releases of toxic substances into the Caspian Sea;
- toxic effects of petroleum hydrocarbons in open evaporation fields;
- mortality of waterfowl birds landing on vapour fields;
- bird deaths from electrocution on power lines;
- a factor of concern in the development of new wells and associated infrastructure;
- degradation of vegetation communities as a result of the expansion of the road network.

To prevent any impact on these areas, we actively monitor the contract areas, controlling the condition of flora and fauna, the level of pollution of sea water, bottom sediments and atmospheric air.



During 2024, 88.8 thousand juvenile sturgeon and sterlet were released into the Ural River as part of compensation measures. 23.6 thousand young beluga were released into the Kigash River to preserve the biodiversity of the Caspian Sea and its coastal zone.

GRI 3-3 QazaqGaz has a Biodiversity Programme developed in accordance with the International Finance Corporation Performance Standard 6 (IFC), Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), International Union for Conservation of Nature and Natural Resources (IUCN), LIFE Certification Standards (LIFE), The Science Based Targets Network (SBTN) and Taskforce on Nature-related Financial Disclosures (TNFD). The Programme assessed potential impacts on biodiversity in three types of ecosystems – mountain, semi-desert and desert, steppe and forest-steppe, and developed recommendations on the organisation of a monitoring system to provide all stakeholders with information on the state and pollution of ecosystem components in our impact areas.

MINING AND METALLURGICAL SECTOR

The mining and metallurgical sector is represented by uranium and polymetallic ore exploration and mining organisations. The sector's production activities border the following specially protected natural areas: South Kazakhstan State Protected Area, Arys and Karaktau State Protected Areas, Kargali State Natural Reserve. Their zone of influence includes 16 sites/ deposits of Kazatomprom JSC.

Main impacts on biodiversity in the mining and metals sector:

- disturbance of the soil layer and natural vegetation cover due to direct mechanical impact during construction, drilling and excavation works;
- additional pressure on soil and vegetation cover due to the increase in the number of field roads near production sites;
- fragmentation of animal habitats during construction activities (reptiles, birds and mammals may temporarily leave the impact area);
- acclimatisation of alien animal species is possible, but this process is not irreversible and does not affect the gene pool of the local fauna;
- reduction of areas of significant habitats due to construction works and transport load.

To minimise risks in the mining and metals sector, a biodiversity assessment standard has been developed that takes into account environmental impacts during industrial mining operations and measures to restore ecosystems in the post-reclamation period. As of 2024, impacts on biodiversity continue to be localised, temporary and reversible. It remains limited to areas of industrial infrastructure construction and transport load, with no significant impact on individual species.

In line with statutory regulations and international best practice, all new and expanding mining projects are subject to an environmental impact assessment that takes into account biodiversity issues. Thus, as part of the development of project documentation, a detailed assessment of the project's impacts on flora and fauna is carried out as part of the environmental impact assessment, and based on the results of the assessment, Biodiversity Management Plans are developed to ensure the implementation of measures to manage risks and impacts on biological components of the ecosystem associated with project activities during the construction and operation phases.