

REPORT

on the survey of selected ecosystems in the territory of the Republic of Uzbekistan (Republic of Uzbekistan, Bukhara province, Republic of Karakalpakstan 27-29 July 2025)

Introduction

The work on "Studies on priority issues in the field of water, energy and environment in the Amu Darya and Syr Darya basins" is implemented as part of the GIZ Regional Project "Climate-sensitive water resources management in Central Asia" of the Green Central Asia initiative.

Currently, an expert team conducts research on the topic "Joint work to preserve ecosystems of the Amu Darya River Basin, including zones of flow formation and dispersion" under overall coordination by the Scientific-Information Center of the Interstate Commission for Water Coordination (SIC ICWC) of Central Asia.

The work plan on this research topic includes **field studies** of selected sites in the basin. In this context,

- **on May 30, 2025**, an expedition was organized to the Tigrovaya Balka Nature Reserve (currently *Beshan Palangon*) located in the southwest of Tajikistan (Jilikul, Kabodiyon, and Qumsangir districts of Khatlon province,) near the border with Afghanistan
- **between August 27 and 29, 2025**, an expedition survey was conducted in selected sites in Bukhara province and the Republic of Karakalpakstan, focusing on ecosystem conditions in the context of water management.

I. Expedition's aim, objectives and survey methodology

The **aim of the expedition** was to assess the current state of water-dependent ecosystems in the Amu Darya River Basin within the territory of Uzbekistan and propose measures to be taken to ensure sustainable functioning and preservation of these ecosystems.

Field survey methodology. The field survey was organized in the form of a fixed-route expedition, which covered key nature and water sites in the territory of Bukhara province and the Republic of Karakalpakstan. As part of the field route, the following sites were examined: the Amu-Bukhara Main Canal (ABMC), the Kuyimazar and Tudakul reservoirs, the Bukhara Jayran/Gazelle Nursery, the Lower Amu Darya Biosphere Reserve (LASBR), and the Mezhdurechensk Reservoir.

The field survey included visual observations and a preliminary assessment of the condition of water bodies and protected natural areas in the lower reaches of the Amu Darya within Bukhara province and the Republic of Karakalpakstan. The assessment was made using the information provided by the staff of the surveyed sites, as well as the data available on SIC's web-platform ([CAWATERinfo](#)) and project national experts' reports.

II. Expedition's route and surveyed sites

Day 1 (27.08.2025 г.): Sites in Bukhara province

ABMC: key water source in the region

The Amu-Bukhara Main Canal remains a vital waterway providing water to population, agriculture and the nature. Given the strategic role of water, the expedition was started from the meeting with the ABMC's management, namely Head of the Canal Mr. R.M. Ostanov and his Deputy Mr. A. Zhuraev.



Head of the ABMC Authority, R.M. Ostanov explains pump modernization efforts



Repair shop

ABMC originates on the right bank of the Amu Darya River, approximately 12 km upstream of the city of Chardzhou, and passes through the Kyzylkum Desert in the direction of the Bukhara Oasis. The first stage of the canal was commissioned in 1965, and the second in 1976. Its total length is about 400 km, of which 186 km lie within the territory of Uzbekistan. The maximum capacity of the headworks is 300 m³/s, while within Bukhara province it reaches 250–270 m³/s. The height of water lift is 111 meters.

The canal is intended to ensure reliable water supply for irrigated land in Bukhara and Navoi provinces and to improve drinking water supply for the city of Bukhara and adjacent regions. More than 65 hydraulic structures, including pumping stations, have been built along the canal.

Along the expedition route, efforts on dredging silted sections of the canal were recorded. The team also visited one of the key pumping stations — “Kuyimazar,” which supplies water to the reservoir of the same name. The station was commissioned in 1965 and fully modernized in 2017, including replacement of pumping equipment. As a result of the reconstruction, energy efficiency was improved and energy consumption reduced by 15–20%.



View of ABMC



Dredging machine cleaning ABMC's bed

Jayran Nursery: oasis of rare species dependent on water supply

In addition to its primary function — supplying water to irrigated land, industrial facilities, and settlements — the Amu-Bukhara Main Canal also plays an important role in maintaining the water balance of ecosystems and the lake system of the Bukhara Jayran Nursery.

The nursery, established in 1977, is located about 40 km southeast of the city of Bukhara, near the town of Kagan, on an area of approximately 5,145 ha in the southwestern part of the Kyzylkum Desert. It is intended to preserve and breed rare and endangered species, including the Bukhara gazelle/jayran, the markhor (screw-horned goat), the Bukhara argali, the hangul deer, and the Przewalski's horse. The nursery is also of international importance as a significant ornithological site: since 2008 it has been included in the list of Important Bird Areas (IBAs).

This ecosystem represents a unique landscape that combines elements of tugai thickets, saxaul groves, solonchak, takyrs, and sand dunes. Its particular scientific and ecological value is determined by its location on the bed of the ancient Tethys Ocean — the flora and fauna of the nursery reflect the full biological diversity of the Kyzylkum region.

A lake system is located in the south of this territory. It consists of four water bodies with varying degrees of water salinity. They are recharged by water from ABMC via the Shokhrukh Canal. Due to insufficient water supply, one of the water bodies has completely dried up, turning into solonchak. Water is diverted into Shokhrukh Canal without approved water diversion quotas. To preserve the lake system and ensure sustainable functioning of the nursery's ecosystem, it is necessary to calculate the water demand and formally include the corresponding water quantities in the pre-set water quotas.

For reference: According to the Water Code of the Republic of Uzbekistan (ZRU–1076 of July 30, 2025):

- Sanitary and environmental purposes occupy the second position in the list of priority water uses (Article 52);
- To provide for a water diversion quota, water users must submit a request in written or electronic form to the relevant water supply organizations serving them no later than September 1 of each year (Article 69).



Shokhrukh Canal in the area of nursery



Inflow from the Shokhrukh Canal into lake systems



Nursery's Deputy Director tells about water supply from ABMC



Water does not reach the fourth lake in low-water years



Free ranging Przewalski's horses within the Jayran Ecocenter

Kuyimozor and Tudakul Reservoirs: internationally protected ecosystems

Further, the expedition route ran along ABMC to the Tudakul and Kuyimazar reservoirs. Since 2020, both water bodies have been included in the Ramsar List of Wetlands of International Importance. This status is granted under the Convention on Wetlands, signed in 1971 in the city of Ramsar, and highlights the particular ecological value of these reservoirs as habitats for waterfowl and other biotic communities.

The Conventions establishes that:

- The Contracting Parties shall formulate and implement their planning so as to promote the conservation of the wetlands included in the List, and as far as possible the wise use of wetlands in their territory;
- Each Contracting Party shall promote the conservation of wetlands and waterfowl by establishing nature reserves on wetlands, whether they are included in the list or not, and provide adequately for their wardening.

The Tudakul reservoir is located in a natural desert depression (with the water surface elevation of 223.5 m) in Kyzyltepa District of Navoi province, 26 km east of the city of Bukhara. The water body was formed naturally in 1952 as a result of floodwaters from the Zeravshan River breaching into the Tudakul Depression. The reservoir was commissioned in 1968 and reconstructed in 1977. In 2020, the “Silk Road Family Resort” recreation area was opened on its shore, increasing the recreational pressure on the ecosystem.

For reference:

Parameters of Tudakul reservoir

- *water source*: ABMC
- *reservoir type*: off-stream
- *purpose*: irrigation
- *commissioned*: 1979
- *full reservoir level, m*: 224.0
- *full volume, Mm³*: 1200.0
- *useful capacity, Mm³*: 600.0
- *dead storage, Mm³*: 600.0
- *surface area, km²*: 162.0
- *length, km*: 15.0
- *width, km*: 14.0
- *max depth, m*: 11.7
- *dam type*: earthen
- *dam height, m*: 12.0



View of the Tudakul reservoir

The Kuyimozor reservoir is located in Navoi province, between the Kuyimozor and Kogon railway stations. It was created in one of the depressions of the Zeravshan River. The reservoir serves as the main source of drinking water for the city of Bukhara and also supplies water to a number of industrial facilities. Accordingly, its perimeter is fenced and guarded to ensure the sanitary and environmental safety of the facility.

For reference:

Parameters of Kuyimozor reservoir

- *water source:* Zeravshan river, ABMC
- *reservoir type:* off-stream
- *purpose:* household-drinking and industrial uses
- *commissioned:* 1960
- *full reservoir level, m:* 238.0
- *full volume, Mm³:* 310.0
- *useful capacity, Mm³:* 263.0
- *dead storage, Mm³:* 47.0
- *surface area, km²:* 17.2
- *length, km:* 5.25
- *width, km:* 3.27
- *max depth, m:* 22.8
- *dam type:* earthen
- *dam height, m:* 23.5
- *dam length, m:* 100.0



Access to Kuyimozor reservoirs – drinking water source – is guarded

The expedition confirmed the ecological and strategic importance of the Tudakul and Kuyimozor reservoirs. Under conditions of climate change and water scarcity, sustainable management of the reservoirs requires enhanced intersectoral cooperation — between water, environmental, and tourism agencies — as well as continuous monitoring of ecosystem conditions.

DAY 2 (28.08.2025): Bukhara-Nukus and LASBR

Observations along the Bukhara – Nukus route

During the transfer along the Bukhara–Nukus route with intermediate stops, the team kept photo and video documentation of natural landscapes and water facilities adjacent to A-380 “Guzor–Denau” road. Particular attention was drawn to a watercourse marked with the sign “Bukhoro Magistral Kanali” / Bukhara Main Canal (approximately at the 369th kilometer of the road).



Watercourse indicated as “Bukhara Main Canal” on A-380 road

A visual inspection showed that the color, turbidity, and flow characteristics in the canal do not correspond to a natural source: water more closely resembles drainage flow. A detailed study of satellite images (Google Earth) of May 24, 2024 revealed that this watercourse is one of the branches of the Main Bukhara Collector. It originates in the area of Lake Shorkul and further branches out: the larger part of the flow crosses the state border with Turkmenistan and is discharged into the Amu Darya River in the territory of Turkmenistan.



Head of Main Bukhara Collector near Lake Shorkul

Discharge of collector water into the Amu Darya River in Turkmenistan

The watercourse marked as “Bukhara Main Canal” is directed toward a natural terrain depression located near Kala-Ata settlement. However, it has no outflow to active water receivers and terminates in a desert area, where water is presumably lost in a natural depression. At the time of analysis, this depression was dry. Moreover, in the section downstream of a bridge, approximately 2.2 km away, there is a dam, and no water was observed further downstream — the bed was dry. This probably indicates that the watercourse has no any economic or ecological function.



Damming of the collector



Collector's outlet

In this context, it appears advisable to conduct additional survey of the watercourse to:

- find out its current purpose;
- determine the potentially irrigated (water-supplied) area;
- analyze technical characteristics of the canal;
- study existing operation scheme and water outflow regime.

Further along A-380 road (approximately at 538 km), a visual inspection of the Amu Darya River was made. In this area, the river divides into numerous branches and arms, forming sandy islands. Such a morphological structure indicates to high dynamics of the river system in the delta and calls for its regular monitoring.



An arm of the Amu Darya River (A-380, 538 km)

The team also observed fish ponds. Such ponds are key for food security and local biodiversity, particularly given a reduction of natural water bodies in the Amu Darya delta.



Feeding fish from a wooden platform in one of the ponds. Republic of Karakalpakstan

Lower Amu Darya state biosphere reserve: protection of floodplain forests under conditions of water scarcity. The final site of the expedition’s second day was the Lower Amu Darya State Biosphere Reserve (LASBR). Information on the current status of this protected natural area was provided to the expedition participants directly by the reserve’s director, N.B. Madominov, and his deputy, A.M. Turaev.

The LASBR was established in accordance with Cabinet of Ministers’ Resolution No. 243 of August 26, 2011 “On the Organization of the Activities of the Lower Amu Darya State Biosphere Reserve at the State Committee for Ecology and Environmental Protection of the Republic of Uzbekistan” in Beruniy and Amudarya districts of the Republic of Karakalpakstan. The total area of the reserve is 68,717.8 ha, of which 11,568.3 ha refer to a conservation area. The primary objective is to preserve the floodplain forest ecosystems in the lower reaches of the Amu Darya River. The reserve includes the lands of the former ‘Baday-Tugai’ Nature Reserve and the territories of the Kypchak and Beruniy forestry enterprises. LASBR has gained international recognition: it was included in the World Network of Biosphere Reserves under UNESCO’s ‘Man and the Biosphere’ (MAB) Programme on September 16, 2021.



Entrance to LASBR



General layout of the territory

The territory of the former ‘Baday-Tugai’ nature reserve (11,568.3 ha) is in the heart of the reserve. Half of this territory is covered by floodplain forest. The main tree species include Asiatic poplar, tamarisk, willow, and oleaster. About 167 plant species have been recorded in this area in total.

The protected zone is home to the Bukhara deer, wild boar, fox, jackal, badger, Tolai hare, long-eared hedgehog, muskrat, and jungle cat. Among amphibians and reptiles, the marsh

frog, dice snake, steppe ribbon snake, and Dione snake can be found. The ornithofauna is represented by more than 91 bird species, including the Amu Darya pheasant, sparrowhawk, black kite, barn swallow, white-winged woodpecker, roller, crested lark, hen harrier and others. The rivers are inhabited by such fish species as the shovelnose sturgeon, Aral barbel, common carp, catfish, white amur, and silver carp — about 15 species in total.

However, a number of **environmental challenges** are emerging as a result of reduced river discharge and climate change.

Reduction of natural flooding. Following the regulation of the Amu Darya River by the Tuyamuyun Hydroscheme, the river's hydrological regime has changed. Natural flooding of floodplain forests has ceased, leading to a decline in water levels and the gradual drying of these forests, including those within the former 'Baday-Tugai' nature reserve.

Unresolved issues of water supply. In the 1990s, as part of a World Bank's drainage project, a 40-km canal was constructed to deliver water to the reserve. However, water never reached the protected zone as it was diverted for irrigation of agricultural fields along the canal's. In 2023–2024, the Ministry of Ecology implemented a project to improve the habitat of the Bukhara deer and preserve riparian vegetation: a new 3-km canal was built, and two electric pumps were installed. Nevertheless, the canal has not yet been officially transferred to ownership of reserve's administration, which apparently prevents the allocation of funds for power supply. According to staff, at the time of the visit, water was supplied by only one pump (about 500 liters per second). Water is especially critical for the reserve in July–August, when Asiatic poplar disperses its seeds and natural forest regeneration depends on soil moisture.



A new canal and pumps to recharge reserve's ecosystems

It is necessary to ensure regular water supply to the nature reserve to prevent ecosystems from further degradation. Reasonable measures include:

- assess the reserve's demand and formally include in the water quotas;

- consider the possibility of additional use of groundwater, including arrangement of local dams on the edges of the territory since the current 3-km canal cannot meet the needs of the vast reserve;
- speed up the transfer of the newly constructed canal to ownership of reserve’s administration, which would allow for budgetary funding of operational costs.

Overpopulation of Bukhara deer and deterioration of food supply. Since 1976, when the first three deer were introduced into the reserve from Tajikistan, the population has grown significantly. Today, LASBR itself is engaged in resettling animals, although no large-scale relocations take place. Approximately 1,600 Bukhara deer are currently present—three times the permissible capacity - in the Baday-Tugai section. This has led to pasture degradation, especially under conditions of water scarcity. Vegetation recovery in such circumstances is extremely difficult. Reserve’s staff has proposed to partially relocate deer to the left bank of the Amu Darya, where the forage base is more reliable. However, this measure would require the construction of a 30-kilometer fence, which in turn demands substantial investments.



Bukhara deer enclosures



Degraded terrain showing the lack of forage base



Amu Darya’s bank, LASBR area near the pumping station



Panoramic view from the top of Chilpyk (Chypylik) Hill towards the southeast of LASBR protected zone. Arid landscape is in the forefront, which is typical of the transition zone between desert and floodplain forests. Beyond this boundary, green patches of forest, agricultural fields, and wetlands watered by the residual flow of the Amu Darya can be observed. A network of river branches and arms stretches on the horizon and forms a mosaic delta structure.

DAY 3 (29.08.2025): Nukus - Mezhdurechye Reservoir

Observations along the Nukus-Mezhdurechye reservoir route

Photo and video documentation was kept at designated stops along the Nukus–Mezhdurechye Reservoir route. For most of the way, well-established shrub vegetation was observed on both sides of the road because of presence of an irrigation network.

The South Aral region, including the Amu Darya River delta in Muynak district of the Republic of Karakalpakstan, represents one of the most vulnerable ecosystems in Central Asia. Here, at the junction of aquatic and desert ecosystems, a profound environmental crisis is unfolding. This crisis is driven by both anthropogenic pressures and climate change.

Many lakes and water bodies in the Amu Darya delta have become shallow or completely dried up. The remaining ecosystems are largely supported by collector-drainage water and the minimal river flow that reaches the delta after the demands of irrigated agriculture have been satisfied. This mode of water supply is highly unstable. Drainage water is typically highly saline and its quantity depends on the irrigation cycle rather than on natural hydrological processes. As a result, several trends are observed: (1) a significant decline in the biological productivity of water bodies and ecosystems as a whole; (2) the loss of floodplain forests and reed beds; (3) a reduction in flora and fauna diversity (including rare and endemic species); and, (4) the complete loss of ecosystem functions, from natural water filtration to maintaining a stable local climate.

Of particular concern is the rapid loss of biodiversity. In the past, the Amu Darya delta served as a key ornithological area, where rare and endangered bird species nested, including the mute swan, stiff-tailed duck, white and Dalmatian pelicans, pygmy cormorant and others. Today, the habitats of these species have been fragmented or completely lost. Dozens of endemic and local animal species are now under threat.

Mezhdurechye Reservoir: a strategic resource

A meeting with the Director of the Nukus branch of IFAS, A.M. Mambetkarimov, and Head of the Delta Administration, M.Zh. Kaipbergenov took place on the shores of the Mezhdurechye Reservoir.

The Mezhdurechye Reservoir is a central water body in the Amu Darya delta, playing a key role in water distribution for household needs of the city of Muynak and other settlements in the reservoir’s command area. Additionally, the reservoir recharges Muynak and Ribache bays.

The reservoir is also connected with Lake Maipost through eleven channels formed in place of a dam breach, providing floodwater discharge into the Amu Darya channel (Akdarya). In high-water years, the reservoir receives the bulk of river flow, on which other water bodies in the region depend. This makes it the most challenging hydraulic facility in the delta to operate. Critical situations are possible here during peak water.

The reservoir is located between the present course of the Amu Darya (Akdarya river) and the dried-up channel of the Kipchakdarya. Following the construction of a dam, water accumulation in the Akdarya channel led to formation of the Mezhdurechye Reservoir. Reservoir's design capacity is 450 million m³, with the useful capacity of 400 million m³. According to project specifications, the water surface area at full reservoir level is 36,000 ha, varying 4,000 to 34,000 ha depending on annual water availability. On the day of the visit, the actual water volume of the reservoir was 145 million m³.

As estimated by SIC ICWC, 8 km³ shall be supplied in average and high-water years and 3.5 km³ in low-water years from the Amu Darya to the South Aral region. However, in practice, for example, only 2.69 km³, or 34% of the required quantity, were delivered to the South Aral region in 2020.

It has now become clear that the complete filling of all lakes and water bodies in the Amu Darya delta is impossible. In this context, priority water bodies, regardless of annual water availability, should be the Mezhdurechye Reservoir, Muynak Bay and Lake Rybachye, conditions of which directly depend on water level in the Mezhdurechye Reservoir. Given limited water resources and strict water allocation quotas, it is essential to ensure water delivery to these water bodies first and foremost. Among them, the key water body is the Mezhdurechye Reservoir as it plays a critical role in supplying drinking water to the population of Muynak district. The Mezhdurechye Reservoir should therefore be regarded as the system-forming water body in the Amu Darya delta.



Director of the Nukus branch of IFAS, A.M. Mambetkarimov, and Head of the Delta Administration discuss the second phase of construction of the Mezhdurechye Reservoir



The old channel of the Kipchakdarya - one of the five arms that formerly flowed into the Aral Sea. Water in the channel is sustained by seepage from the Mezhdurechye Reservoir and inflow from groundwater. This arm joins the former main channel of the Amu Darya (Akdarya) near Porlytau village. According to the satellite data for July 2025, water is available along a stretch of approximately 2.4 km at the confluence of the Kipchakdarya and Akdarya.

III. Key results and findings

The Amu-Bukhara Main Canal remains a vital source providing water to population, agriculture and the nature. The team became aware of the current efforts taken to reconstruct pumping stations and clean canal's channel.

Jayran Nursery is a unique ecocenter directly relying on water from ABMC. One of the four lakes in its territory has almost completely dried up. The team found that no formal water quota exist for the nursery. This makes the ecosystem quite vulnerable. It is recommended to include the nursery's demand in annual water allocation quotas.

Tudakul and Kuyimozor reservoirs have been included in the Ramsar List of Wetlands of International Importance and are a key habitat for waterfowls. The team notes high anthropogenic load and the need for continuous monitoring.

Lower Amu Darya Biosphere Reserve (Baday-Tugai). An assessment of functioning of the artificial watering system for floodplain forests was made. It was found that the existing canal and pumping equipment require stable and guaranteed funding for proper operation. Additional problems identified include: (1) overpopulation of Bukhara deer, with numbers exceeding the permissible capacity threefold, and (2) degradation of the forage base, particularly under water scarcity. It is recommended to: include power supply for pump operation in the reserve's administration budget; consider solutions such as drilling wells and creating dams on the edges of the reserve; and, partially relocate the deer population to alternative sites, where the forage base is more reliable.

The Mezhdurechye reservoir and South Aral region are at the critically low level. The volume of the main water body in the Amu Darya delta is only one third of its design capacity. It is found that the South Aral region gets less than 35% of the recommended flow in dry years. Consequently, this largely undermines ecosystem sustainability and water supply.

Conclusions and recommendations

1. **Integration of environmental priorities into water management.** Water-dependent ecosystems in the Amu Darya River basin, particularly those located in runoff dispersion zones, face an acute deficit of reliable water supply. Incorporating environmental water requirements into water planning and allocation is essential, with explicit consideration of climate change and interannual flow variability. Particular attention should be paid to the sites of conservation status (e.g., UNESCO biosphere reserves, Ramsar wetlands), for which minimum sufficient water quantity must be ensured irrespective of annual hydrological conditions.

2. **Interagency interaction and planning.** Stronger coordination between environmental and water agencies is required to increase the effectiveness of implemented measures. It is

recommended to establish mechanisms of interagency cooperation (e.g., working groups, coordination platforms, joint allocation quotas) involving environmental, water management, and agricultural agencies at both national and basin level.

3. **Water allocation priorities.** Given the limited availability of water resources, full restoration of all lake systems in the Amu Darya delta is not feasible under current conditions. When water resources are constrained, a hierarchy of priorities must be established. Foremost, water supply should be secured for settlements and critical ecosystems (e.g., Mezhdurechye Reservoir and Muynak Bay), as stipulated in the new Water Code of the Republic of Uzbekistan.

4. **Monitoring of protected nature territories.** The Regulation on State Environmental Monitoring in the Republic of Uzbekistan, approved by Cabinet of Ministers' Resolution No. 737 of September 5, 2019, provides for the establishment of a Unified Geoinformation Database of the Environmental Monitoring System. This database:

- organizes information exchange with all sectoral information systems;
- integrates and analyzes consolidated data on environmental pollution levels and the use of natural resources;
- oversees the implementation of state environmental monitoring programs, as well as the development and consolidation of proposals for their adjustment;
- forecasts changes in the environmental situation at the national and administrative-territorial levels, and assesses damage to the environment resulting from anthropogenic activities;
- provides information on nature management, conservation, and environmental control;
- informs population and the general public about the state of the environment.

However, this system is not in open access. This limits its use as a source of data for the development of effective environmental measures, particularly in the context of economic and other activities related to nature use. In this context, it is necessary to enhance the Unified Geoinformation Database of the Environmental Monitoring System by (1) integrating a broader range of agencies and data sources, and (2) expanding open data access for government bodies, research institutes, NGOs, and the general public. A strong focus needs to be placed on setting up monitoring system on the dried seabed of the Aral Sea and in the surrounding Aral region.

5. **Partnering with the private sector.** Given the state's limited financial and technical resources, a long-term, sustainable approach to managing protected areas requires new partnerships and funding. It is crucial to get the private sector involved by using partnership mechanisms (Public-Private Partnerships), corporate environmental responsibility (ESG), tax and reputational incentives. These may include:

- financing conservation activities and technical equipment (e.g., pumps for artificial watering of floodplain forests);
- engagement in the development of tourism infrastructure (visitor centers, observation platforms, eco-routes);
- advancement of compensation mechanisms for negative environmental impacts (e.g., in cases of mineral extraction or construction);
- support for environmental education and research within protected areas.

International examples from countries like Australia, India, and Kenya show that dedicated environmental funds, with both business and government participation, are a great way to supplement state efforts. For protected areas to be truly sustainable, we need to move away from a government-only approach. Instead, we should adopt a model of **shared responsibility** where businesses are not just resource consumers but active partners in conservation.

Next steps. The SIC ICWC team is preparing an analytical report and a documentary film for government agencies and partners. The material will include specific recommendations to improve the water supply for ecosystems in the Amu Darya River basin.

REPORT
on the field assessment mission of ecosystems and protected areas in the
Republic of Tajikistan

30 May 2025

On May 30, 2025, in line with the work plan, a field visit was organized to the Tiger Gorge National Reserve (“Besham Palangon” in local language).

The nature reserve is located in the southwest of Tajikistan, in Khatlon province (Jilikul, Kabodiyon and Qumsangir districts), near the border with Afghanistan. The distance from the capital city, Dushanbe, to the nature reserve is 308 km.

The nature reserve covers an area of about 50,000 ha and includes extensive ecosystem of floodplain forests along both banks of the Vakhsh River, the sites of the hilly sandy desert Kashka-Kum, the Buritau Mountains, as well as the foothills of the southern spurs of the Aktau Range — the Khoja-Kazian Mountains. It stretches 8–12 km in the latitudinal direction from the Kashka-Kum sand massif to the Khoja-Kazian mountain range, and 35–50 km longitudinally from the Panj River in the south to Jilikul settlement in the north. The Vakhsh River splits the territory into two unequal parts, with the larger left bank containing the main tugai forest massifs. Elevations range from 320 to 325 m above sea level, reaching up to 350 m in the Kashka-Kum sands and 1,000 to 1,200 m in the Khoja-Kazian Mountains.

The nature reserve was established to preserve the ecosystem typical of Central Asia's southern deserts and river floodplains, protect rare animal species, and support research.

Z. Yarullina, N. Shulepina, F. Kariyeva, R. Davlatov, and B. Rakhimov (trip organizer) took part in this visit.

Before the visit, Tajik colleagues helped with logistics securing official permits for foreign citizens to enter the border zone and for access to the protected area. Both permits (for Z. Yarullina and N. Shulepina) were paid.

Upon arrival, the staff of the nature reserve, including Deputy Director and Forestry Officer D.B. Begzhikov and Deputy Director for Science T. Kamilov made an introductory briefing and arranged a tour around the reserve’s museum.



The nature reserve has a staff of 57, including five forestry officers and 30 keepers, who work at 13 cordons, working in three-day shifts.

To prevent and quickly suppress fires, the nature reserve is equipped with four fire lookout towers—one standing at 33 meters and three at 12 meters.

For wildlife reproduction, the nature reserve maintains an incubator and enclosures for animals kept in semi-captive conditions.

There are 23 lakes, which are home to around 20 fish species. According to the staff, water scarcity is not an issue as the nature reserve is located in the basin's lowest point.

The team visited Lake Gulik, where one of Hydromet's monitoring stations is located. The station measures water level and salinity, and representatives noted that lake's salinity is increasing.



More detailed information on the nature reserve's status is available in the expert group's report, while N. Shulepina is currently preparing a journalistic review.

Overall, the reserve's territory leaves a positive impression.

At the same time, a number of challenges were identified:

1. The museum needs cosmetic repairs.
2. The staff (keepers) is insufficiently equipped with essential tools for their work, such as firearms, vehicles, uniforms, and communication.
3. The causes of increasing lake salinity or measures to prevent it are not studied.
4. The reserve's territory is affected by salinization, which is reducing the area of *Elaeagnus* vegetation.

This information will be included in the regional report and recommendations.