

**Committee for Environmental Protection under  
the Government of the Republic of Tajikistan**



# **MANAGEMENT PLAN**

**for the Tigrovaya Balka Nature Reserve  
and the adjacent territory for the  
period 2022-2026**

**Committee for Environmental Protection under  
the Government of the Republic of Tajikistan**

Approved by  
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**MANAGEMENT PLAN**  
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**Reserve and the adjacent territory**  
**for the period 2022-2026**

Dushanbe, 2021  
Management plan structure

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## INTRODUCTION

This mid-term Management Plan for the Tigrovaya Balka Nature Reserve for 2022-2026, developed by the staff of the State Institution for Specially Protected Natural Areas (SI SPNA) of the Committee for Environmental Protection under the Government of the Republic of Tajikistan and the National Academy of Sciences of Tajikistan, with the participation of international experts from the IUCN, within the framework of the UNESCO project for the preparation of documents for the inscription of the Tigrovaya Balka Nature Reserve on World Heritage List. When developing the Plan, the «Instruction for the development of management plans for specially protected natural areas of Tajikistan», approved by the Head of the State Institution for Specially Protected Natural Areas on June 18, 2010, was used.

The Management Plan has been developed to ensure the improvement of public administration and planning of Tigrovaya Balka Nature Reserve in accordance with the Law of the Republic of Tajikistan “On Specially Protected Natural Areas and Properties” and the State Program on the Development of Specially Protected Natural Areas of the Republic of Tajikistan for the period 2021 – 2030. The international obligations of the Republic of Tajikistan on the conservation of biological diversity and other international documents have also been taken into account.

The Management Plan is designed to play an important role in informing the public about the activities of the Tigrovaya Balka Nature Reserve, as well as in promoting awareness among the population living in the reserve zone. The main objective is to foster a respectful attitude towards nature, form a sense of personal responsibility for the state of the environment.

The existing information on the resources of the Tigrovaya Balka Natural Reserve, the analysis of its activities, as well as the study and analysis of existing on-site problems served as the basis for drawing up the Management Plan. The specially conducted research, fund materials and developments served as the input data.

Interaction with the local population, regional and local government bodies, landowners and land users, scientific institutions, non-governmental environmental organizations was an important component of this work. For these purposes, the authors of the Plan conducted workshops with the of representatives of third-party interested organizations and the local population, at which the main directions and possibilities of further development of the Tigrovaya Balka Natural Reserve were identified. A consensus was reached on the issues under consideration.

**SECTION C: THE 5 YEAR PLAN, AND ANNUAL ACTION PLAN**

<b>MANAGEMENT PLAN 2022-2026 (- year period): Main Management Objectives and Activities to Address Threats</b>					
Task/Activity	Activity	Term, years	Expected results	Sources of financing	Monitoring
<b>PART 1. ACTIVITIES ASSOCIATED WITH THE RESERVE</b>					
<p><i>Program on conservation of the unique ecosystems of the reserve and its components</i>  <u>Program goal:</u> Implementation by the reserve of the functions of regional nature conservation, academic and research, and propaganda center for the preservation of ecosystems of the region and their components.  <u>Results Expected:</u> reduction of violations of the reserve's protection regime, improvement of the efficiency and quality of inspection activities ; reduction of violations of environmental legislation in the region, and application of the principle of sustainable nature management in the territories adjacent to the reserve.</p>					
<b>Task 1</b>	<b>8.1. Strengthening the infrastructure of the reserve and material and technical base by maintaining and developing the administrative and technical capacity and resources.</b>				
Activity 1.1	Purchase of individual motor vehicles, solar panels, and other equipment for the security service, provision of the security service with uniforms, night vision goggles, and communication facilities.	2022-2026	Reduction of the number of violations of the reserve's protection regime; improving the efficiency and quality of inspection activities; reduction of violations of environmental legislation	State budget and other possible sources	State Institution for Special Protected Natural Areas
Activity 1.2	Purchase of camera traps, office and other equipment	2022-2026	Improvement of the management efficiency of the reserve and ensuring monitoring of key species	State budget and other possible sources	State Institution for Special Protected Natural Areas
Activity 1.3	Barbed wire fencing of the protected area on the left-bank part of the reserve for about 40 km and the installation of border pillars with appropriate inscriptions.	2024	Increasing the degree of protection of the reserve (especially from grazing of domestic animals, felling)	Attraction of grantors, State budget	State Institution for Special Protected Natural Areas

Task/Activity	Activity	Term, years	Expected results	Sources of financing	Monitoring
Activity 1.4	Major overhaul of two gamekeepers' loges and the house for scientists	2023-2026	Improvement of the effectiveness of the protection of the reserve, improving the conditions for scientific work	State budget, other possible sources of financing	State Institution for Special Protected Natural Areas, NGOs
Activity 1.5	Purchase of 2 fire-protection pumps in the amount, 20 fire extinguishers/modern fire extinguishing equipment, and other fire-fighting equipment, as well as 2 duralumin boats	2023-2026	Strengthening of fire protection	State budget	State Institution for Special Protected Natural Areas
Activity 1.6	Repair of dirt roads in the right-bank part of the reserve on the Polvantugay section with a total length of 60 km	2022-2026	Improving the protection regime of the reserve	State budget	
Activity 1.7	Construction of 2 observation fire towers in fire hazardous areas and fitting them with communication means	2022-2026	Strengthening of fire protection	State budget, grantors	
<b>Task 2:</b>	<b>8.2. Maintenance and improvement of the ecological state of the reserve through the implementation of environmental protection measures and activities aimed at preserving biodiversity and restoring the environment</b>				
Activity 2.1	Improvement of the hydrological regime of the tugay ecosystems of the reserve by cleaning 1000 m of channels to deliver water to the lakes of the reserve annually	2022-2026	Scope of work performed by year-filling in the lakes with water	State budget and other non-governmental organizations	State Institution for Special Protected Natural Areas

Task/Activity	Activity	Term, years	Expected results	Sources of financing	Monitoring
Activity 2.2	Restoration of forest saksaul plantations/maintenance of plantings made in 2009-2011 in degraded desert ecosystems on an area of 120 hectares annually.	2022-2026	Scope of work performed by year-desert land, overgrown with saksaul	State budget and other non-governmental organizations, donors	State Institution for Special Protected Natural Areas
Activity 2.3	Restoration of Asiatic poplar plantations in degraded areas of tugays, in the burnt-out areas	2022-2026	Scope of work performed by year-floodplain lands with Asiatic poplar regrowth	State budget and other non-governmental organizations, donors	State Institution for Special Protected Natural Areas
Activity 2.4	Annual biotechnical measures in the buffer zone (on the lands to be withdrawn from Dusti, Kabodien districts in 2023) to improve the habitats of wild animals: <ul style="list-style-type: none"> <li>• sowing grain on 2.5 hectares and obtaining at least 4 tons of grain for laying out in winter,</li> <li>• planting 3500 fruit trees,</li> <li>• preparation of 38 tons of hay for wild ungulates,</li> <li>• preparation of rich feed - 18 tons and laying out in winter,</li> <li>• arrangement of 70 feeding grounds,</li> <li>• laying out 60 salt licks.</li> </ul>	2022-2026	Increase in the number of valuable and rare species of wild animals	State budget	State Institution for Special Protected Natural Areas



Task/Activity	Activity	Term, years	Expected results	Sources of financing	Monitoring
Activity 2.5	Restoration of the population of rare and endangered species of fauna, such as the goitered gazelle, the Bactrian deer, the Tajik pheasant and the houbara bustard by strengthening protection and raising them in zoo nurseries in conditions close to their natural habitats, i.e. in the buffer zone of the reserve (on the lands to be withdrawn from Dusti, Kabodien, or Jai districts in 2022). Organization of permanent monitoring of the state of rare and valuable species of animals.	2023-2026	Achievement of optimal numbers and improvement of the status of populations of rare and valuable animal species	State budget	State Institution for Special Protected Natural Areas
Activity 2.6	Implementation of biotechnical measures to reduce the number of alien species in the lakes of the reserve, e.g. the snakehead	2022-2026	Decrease in the number of snakeheads	State budget	State Institution for Special Protected Natural Areas
Activity 2.7	<ul style="list-style-type: none"> <li>• Creation of mini-nurseries to grow rare plant species.</li> <li>• Organization of permanent monitoring of the state of rare and valuable plant species.</li> </ul>	2022-2026	Increase in the number of cultivated seedlings and planting stock for their subsequent introduction into the natural environment - enrichment and maintenance of the ecosystems of the reserve	Attraction of grantors, NGOs	State Institution for Special Protected Natural Areas
<b>Task 3;</b>	<b>8.3. Organizational measures to improve the state of natural ecosystems and fire-prevention measures.</b>				
Activity 3.1.	Expanding the protected area of the reserve, including the buffer zone, for up to 60 thousand hectares.	2023	Obtaining a land certificate	Attraction of grantors, NGOs	State Institution for Special Protected Natural Areas

Task/Activity	Activity	Term, years	Expected results	Sources of financing	Monitoring
Activity 3.2	<p>Drawing up operational plans for extinguishing forest fires and approving them in the hukumats of the districts.</p> <p>Carrying out the following fire-fighting measures annually:</p> <ul style="list-style-type: none"> <li>• installation of fire-prevention (mineralized) strips 90 km long,</li> <li>• reconstruction of 10 km of roads,</li> <li>• cleaning 20 km of roadsides from dry reeds in the early-spring period,</li> <li>• installation of 20 notices with environmental content.</li> </ul>	2022 - 2026	<p>Forest fire extinguishing plans</p> <p>Preparedness for the fire season</p>	State budget	State Institution for Special Protected Natural Areas, local bodies
Activity 3.3	<p>Fitting the fire and chemical station (FCS) with fire extinguishing means and ensuring the perfect operation of the FCS during the fire hazard season, the readiness of firefighting equipment, the availability of the necessary supply of fuel and lubricants, the presence of equipped fire shields in all gamekeepers' districts.</p>	2022 - 2026	Preparedness of the FCS for the fire hazardous season	State budget	State Institution for Special Protected Natural Areas, local bodies
	<p>Программа «Развитие научных исследований и экологического мониторинга»</p> <p>Цель программы: Развитие научных основ сохранения и восстановление экосистем заповедника</p> <p>Ожидаемые результаты: получение данных о компонентах экосистем; повышение мобильности, увеличение объема и улучшение качества работы; повышение объема информации о состоянии экосистем региона и их компонентах; улучшение возможности анализа данных; более полный и качественный сбор и анализ информации о состоянии и изменении экосистем заповедника для корректировки режима его сохранения.</p>				

Task/Activity	Activity	Term, years	Expected results	Sources of financing	Monitoring
<b>Task 4</b>	<b>8.4. Organization and conduction of scientific research in the Tigrovaya Balka Nature Reserve</b>				
Activity 4.1	Keeping gamekeepers' records and carrying out phenological observations of indicator species of animals and plants and a systematic (annual) evaluation of the state of the wildlife based on the annual animal registration data and an inventory of rare plant species	2022 - 2026	Dynamics of changes in the state of fauna and flora	State budget and other possible sources	State Institution for Special Protected Natural Areas and of the NAST
Activity 4.2	<p>Conducting scientific research with the Institute of Zoology and Parasitology of the Academy of Sciences of the Republic of Tajikistan on the following topics:</p> <ul style="list-style-type: none"> <li>• «Study of the state of artiodactyls (the gazelle, the Bactrian deer) in the reserve and the development of measures to bring their number to the optimum.»</li> <li>• “Assessment of the state of the population of the Central Asian cobra, the blunt-nosed viper, and the carpet viper in the Tigrovaya Balka Nature Reserve.</li> <li>• “Study of the state of populations of the Tajik subspecies of pheasant and houbara bustard in the Tigrovaya Balka Nature Reserve.</li> <li>• “Study of the hydrological regime and hydrofauna of the floodplain lakes of the Tigrovaya Balka Nature Reserve.”</li> <li>• “Counting the number of waterfowl and near-water birds in Tigrovaya Balka Nature Reserve in winter.”</li> </ul>	2022 - 2026	Research reports and practical recommendations. Data on the state of ecosystems and their components	State budget and other possible sources	State Institution for Special Protected Natural Areas and of the NAST

Task/Activity	Activity	Term, years	Expected results	Sources of financing	Monitoring
Activity 4.3	<ul style="list-style-type: none"> <li>“Counting the number of the Bactrian deer by the roar of males in autumn during the rutting season.”</li> <li>“Monitoring the population of the alien species, i.e. the snakehead, in the lakes of the Tigrovaya Balka Nature Reserve and the development of recommendations for reducing its number.»</li> </ul> <p>Conducting scientific research with the Forest Research Institute on the following topics:</p> <ul style="list-style-type: none"> <li>“Study of the state and dynamics of changes in tugay forest complexes.»</li> <li>“Conducting a survey and determining the current sanitary state of forest plantations in the Tigrovaya Balka Nature Reserve.”</li> <li>«Проведение обследования и определение современного санитарного состояния лесных насаждений заповедника «Тигровая балка».</li> </ul>	2022 - 2026	Research reports and practical recommendations	State budget and other possible sources	State Institution for Special Protected Natural Areas and of the NAST
Activity 4.4	<p>Conducting scientific research with the Institute of Botany of the Academy of Sciences of the Republic of Tajikistan on the following topics:</p> <ul style="list-style-type: none"> <li>Determination of indicator species and succession processes in various ecosystems of the reserve</li> <li>Determination of the species composition of phytocenoses of low-grass semi-savannas, meadows and herbaceous bogs</li> <li>Determination of the main pests for indicator species in phytocenoses</li> </ul>	2022 - 2026	Research reports and practical recommendations	State budget and other possible sources	State Institution for Special Protected Natural Areas and of the NAST

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Task/Activity	Activity	Term, years	Expected results	Sources of financing	Monitoring
Activity 4.5	Implementation of scientific developments and prepared recommendations into the practice of environmental protection and scientific and educational activities	2022 - 2026	Research reports and practical recommendations	State budget and other possible sources	State Institution for Special Protected Natural Areas and of the NAST
Activity 4.6	Keeping the Nature Records of the Tigrovaya Balka Nature Reserve	2022 - 2026	Keeping the Nature Records of the Tigrovaya Balka Nature Reserve	State budget and other possible sources	State Institution for Special Protected Natural Areas and of the NAST
Activity 4.7.	Learning modern research methods: <ul style="list-style-type: none"> <li>• Invitation of specialists, holding seminars, business trips to exchange work experience, participation in scientific conferences, meetings</li> <li>• Invitation of foreign specialists</li> </ul>	2022 - 2026	Improving the quality of work Obtaining data on unexplored ecosystem components	State budget and other possible sources	State Institution for Special Protected Natural Areas and of the NAST
Activity 4.8.	Purchase of scientific equipment, tools	2022 - 2026	Increased mobility, volume and quality of work	State budget and other possible sources	State Institution for Special Protected Natural Areas and of the NAST

Task/Activity	Activity	Term, years	Expected results	Sources of financing	Monitoring
<b>Task 5</b>	<b>8.5. Осуществление экологического мониторинга состояния природных экосистем заповедника и прилегающих территорий (буферная зона).</b>				
Activity 5.1.	Development of monitoring guidelines for the reserve staff	2022 - 2026	Availability of prepared guidelines for monitoring	State budget	State Institution for Special Protected Natural Areas and of the NAST
Activity 5.2	Organization of an optimal network of permanent observation points and improvement of the primary data collection system (regularity, reliability).	2022 - 2026	The presence of a network of observation points – improvement of the quality and volume of information on the state of the region's ecosystems and their components	State budget	State Institution for Special Protected Natural Areas and of the NAST
Activity 5.3	Ensure the annual systematic observation of wild animals and the state of their habitat	2022 - 2026	Data on the state of wildlife populations	State budget	State Institution for Special Protected Natural Areas and of the NAST

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Task/Activity	Activity	Term, years	Expected results	Sources of financing	Monitoring
Activity 5.4	Monitoring the state of the hydrological regime of tugay complexes and the degree of mineralization of wastewater in the buffer zone of the reserve	2022 - 2026	Data on the state of the hydrological regime	State budget	State Institution for Special Protected Natural Areas and of the NAST
Activity 5.5	Continuous monitoring of the state of forest ecosystems and the presence of foci of insect pests and forest diseases	2022 - 2026	Data on the state of forest ecosystems and the presence of foci of pests and diseases of forest plantations	State budget	State Institution for Special Protected Natural Areas and of the NAST
Activity 5.6	Continuous monitoring by type of land use and the degree of direct negative impact on agroecosystems in the buffer zone of the reserve, and monitoring indirect impact on the protected area	2022 - 2026	Data on the state of land use in the buffer zone and the degree of its influence	State budget	State Institution for Special Protected Natural Areas and of the NAST
Activity 5.7	Annual comprehensive monitoring of the reserve's ecosystems (forests, waters, wetlands, deserts, etc.) and agroecosystems of the buffer zone	2022 - 2026	Monitoring data for adjusting the territory management system	State budget	State Institution for Special Protected Natural Areas and of the NAST

Task/Activity	Activity	Term, years	Expected results	Sources of financing	Monitoring
Activity 5.8	Comprehensive ecological and geochemical evaluation of the natural systems of the reserve and adjacent territories.	2022 - 2026	Availability of a comprehensive assessment of the state and forecast of the natural development of ecosystems	State budget	State Institution for Special Protected Natural Areas and of the NAST
<b>Task 6</b>	<b>8.6 Advanced training of scientific personnel and specialists in the field of environmental protection</b>				
Activity 6.1	<p>Preparation of training programs for scientific, engineering and technical workers of the reserve on the following topics:</p> <ul style="list-style-type: none"> <li>• "Rights and obligations of officials, engineers and gamekeepers of the reserve."</li> <li>• "Environmental monitoring within the framework of the national environmental monitoring system", 6 hours.</li> <li>• "Rules for conducting phenological observations of wild animals, taking into account their species characteristics", 8 hours.</li> <li>• "Wildlife census in the reserve", 8 hours.</li> <li>• "Keeping Nature Records", 2 hours.</li> <li>• "Museum affairs and modern opportunities for their further development"</li> <li>• Opportunities for the development of ecotourism in protected areas and the rules for working with ecotourists."</li> <li>• "Ecosystem approach to the management of specially protected areas"</li> </ul>	2022-2026	Availability of prepared programs to train researchers and engineers of the reserve	State budget and other possible sources	State Institution for Special Protected Natural Areas and NGOs



Task/Activity	Activity	Term, years	Expected results	Sources of financing	Monitoring
Activity 6.2	<ul style="list-style-type: none"> <li>• "Legislative and legal mechanisms regulating the nature protection activities for specially protected areas", 6 hours.</li> <li>• "The Red Book - Indicator Species of Flora and Fauna for the Reserve", 6 hours.</li> <li>• Sharing experience on nature reserve management with other reserves in Tajikistan, the CIS, and the Russian Federation.</li> </ul> <p>Annual classes and training seminars with scientific and engineering workers of the reserve on the basis of the Information Center at the reserve on the developed topics</p>	2022-2026	Improving the quality of work. Indicator - Number of classes conducted and number of employees trained	State budget and other possible sources	State Institution for Special Protected Natural Areas and NGOs
<p><b>Program on the Environmental Education Development Program.</b>  <u>Program goal:</u> to increase the public significance of the Tigrovaya Balka Nature Reserve and ensure its support as an object of national treasure by the general population.  <u>Expected results:</u> increased public awareness, raising awareness of the local population about the reserve, forming a positive opinion, raising awareness of the population about the local nature, increasing environmental education of visitors, use of environmentally efficient farming methods by the local population, organization of ecological paths in buffer zones</p>					
<b>Task 7.</b>	<b>8.7. Promoting awareness among the population, environmental propaganda and the development of educational excursion visits to specially prepared eco-educational paths in the buffer zone of the reserve.</b>				
Activity 7.1	Conducting trainings and short-term courses for trainers to work with the population on the basic rules of attitude to wildlife and sustainable nature management in the buffer zone of the reserve	2022-2026	Improving the quality of work. Indicator - the number of events held and the number of trained trainers	State budget and other possible sources	

Task/Activity	Activity	Term, years	Expected results	Sources of financing	Monitoring
Activity 7.2	Study of the possibilities for cognitive ecotourism, determination of excursion routes, determination of the procedure and rules for visiting excursions in the buffer zone of the reserve, development of tariffs for environmental excursions, coordination with the Committee for Environmental Protection under the Government of the Republic of Tajikistan	2022	Approved excursion routes, rules and tariffs for visiting ecological routes in the buffer zone	State budget and other possible sources	
Activity 7.3	Preparation of ecological routes (ecological paths) on the ground (in the buffer zone of the reserve), provision of technical equipment, information materials	2022-2026	Availability of the approved excursion routes	State budget and other possible sources	
Activity 7.4	Promoting awareness among the local population through interviews, training sessions and seminars on environmental protection, restoration of lost biodiversity and ecosystem approach in the use of natural resources.	2022-2026	Application of rational nature management in the territories adjacent to the reserve. Indicator - Number of events held and number of people trained	State budget and other possible sources	State Institution for Special Protected Natural Areas and NGOs
Activity 7.5	Updating the existing website of the Tigrovaya Balka Nature Reserve.	2022-2026	Greater access to information, increased awareness	State budget	State Institution for Special Protected Natural Areas

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Task/Activity	Activity	Term, years	Expected results	Sources of financing	Monitoring
Activity 7.6	Preparation and publication of an illustrated booklet on ecological routes	2022-2026	Advertising brochures about ecological routes in the buffer zone of the reserve	State budget and other possible sources	State Institution for Special Protected Natural Areas, NGOs
Activity 7.7	Popularization of the Tigrovaya Balka Nature Reserve through the media	2022-2026	Information about the reserve is regularly published in the media. Raising awareness of the local population	State budget and other possible sources	State Institution for Special Protected Natural Areas and NGOs
Activity 7.8	Regularly informing the local population about the activities of the reserve through local authorities	2022-2026	Improving the environmental education of the population and tourists	State budget and other possible sources	State Institution for Special Protected Natural Areas and NGOs
Activity 7.9.	Reconstruction of the reserve museum, creation of new exhibitions and exhibits	2023	Increasing the number of visitors, attracting tourists	State budget and other possible sources	State Institution for Special Protected Natural Areas and NGOs

PART II. INTERACTION WITH THE ADMINISTRATION OF THE TERRITORY ADJACENT TO THE TIGROVAYA BALKA NATURE RESERVE					
Task/Activity	Activity	Term, years	Expected results	Sources of financing	Monitoring
Task 8.	<b>9. Improvement of management on the territory of the buffer zone of the Tigrovaya Balka Nature Reserve in Dusti, Kumsangir, Kabodien and Shaartuz districts</b>				
Management task 8.	<b>9.8. Agriculture</b> <b>The task is to improve the efficiency of the use of land resources</b>				
Activity 8.1	<p>Conducting training seminars with farmers in Dusti, Kumsangir, Kabodien and Shaartuz districts on the following topics:</p> <ul style="list-style-type: none"> <li>• "Learning the rules to use water-saving technologies in the cultivation of agricultural crops:</li> <li>• "Norms and rules for the use of mineral fertilizers in the cultivation of agricultural crops in the context of the need to preserve protected biodiversity"</li> <li>• "Permissible pressure of grazing of livestock on the territory of the buffer zone of the reserve and measures to increase the productivity of pastures"</li> <li>• "Carrying out measures to increase the productivity of hayfields"</li> </ul>	2022-2026	Sustainable land management in the buffer zone of the reserve without factors of negative impact on nature	Grantors, State budget, other sources of financing	Hukumats of districts, Associations of dehqan farms, NGOs
Activity 8.2.	<p>Measures to regulate livestock grazing in the buffer zone of the reserve:</p> <ul style="list-style-type: none"> <li>• Determination of the productivity of pastures (cadastral assessment) in the buffer zone of the reserve. Determination of the capacity of pastures and permissible pressure thereon by season</li> </ul>	2022-2026	Improving the condition of pastures	State budget, other sources of financing (grantors)	Local executive authorities (Hukumats), Committee for Land Management, Ministry of Agriculture

Task/Activity	Activity	Term, years	Expected results	Sources of financing	Monitoring
	<ul style="list-style-type: none"> <li>• On site determination and marking of pasture boundaries, installation of boundary pillars and identification of permanent and temporary users</li> <li>• Control over the use of pastures and compliance with the norms of pressure thereon</li> <li>• Designing measures to ensure an increase in the productivity of pastures and compliance with pasture rotation</li> <li>• In connection with the possibility of irrigation of certain areas in the buffer zone, practice the creation of irrigated hayfields with the transfer of these areas for long-term lease to farms or individual entities</li> </ul>				
Activity 8.3.	Small grant programs for demonstration projects on the use of advanced soil and water saving technologies	2022-2026	Reducing the adverse impact on the reserve	Grants	NGOs, Hukumats, land users
Activity 8.4.	Organization of nurseries, gardens, greenhouses for growing productive crops	2022-2026	Improving the condition of land resources, reducing land degradation	Land users, grants, other sources of financing	WUA, Hukumats, land users
Activity 8.5.	Construction (acquisition) of small processing enterprises for processing agricultural products (fruits, vegetables), 3-4 in each district	2022-2026	Reducing the pressure on the reserve	State budget programs, grants	Hukumats, land users, NGOs

Task/Activity	Activity	Term, years	Expected results	Sources of financing	Monitoring
Activity 8.6.	Growing medicinal plants – demo plots – 4 in each district	2022-2026	Increase in incomes of the population and reducing the pressure on the reserve	Grants	Hukumats, land users
Activity 8.7.	Development of beekeeping, fish farms, seed production	2022-2026	Increase in incomes of the population and reducing the pressure on the reserve	State budget, other sources of financing	Hukumats, land users, academic institutions
Activity 8.8.	Carrying out anti-erosion measures (terracing, forest melioration, etc.)	2022-2026	Improving the condition of land resources	State budget, other sources of financing	Hukumats, State Committee on Land Resources, land users
Activity 8.9	Leaching of saline soils	2022-2026	Improving the condition of land resources	State budget, grants, other sources of financing	Hukumats, Ministry of Agriculture, State Committee on Land Resources, CEP
Activity 8.10	Development of a marketing network for agricultural products	2022-2026	Increase in income of the population and decrease in the degree of use of the natural resources of the reserve	State budget, grants, other sources of financing	Hukumats, Ministry of Agriculture

Task/Activity	Activity	Term, years	Expected results	Sources of financing	Monitoring
Activity 8.11	Reconstruction of interfarm and intrafarm irrigation systems	2022-2026	Improving the state of land resources, increasing agricultural productivity and reducing the pressure on the reserve	WUA, State budget, other sources of financing (projects, grants, credits, etc.)	Hukumats, WUA, land users, projects (CPM)
Activity 8.12	Introduction of cost-effective, energy-saving technologies for processing agricultural products (solar dryers, kitchens, etc.)	2022-2026	Reducing pressure on the resources of the reserve, increasing the income of the population around the reserve	ADF, State budget, other sources of financing (projects, grants, credits, etc.)	Hukumats, WUA, land users, projects (CPM), NGOs
Management task 8.2	9.8.2. Development of alternative energy sources				
Activity 8.2.1.	<ul style="list-style-type: none"> <li>• Installation of 2-4 solar panels on the territory of the buffer zone of the reserve in each farm of Dusti, Kabodien, Shaartuz districts</li> <li>• Installation of mini-hydroelectric power plants on the territory of the buffer zone of the reserve in the Kumsangir region</li> </ul>	2022 - 2026  2022 - 2026	Provision of the population with electricity	NGOs	State Institution for Special Protected Natural Areas and NGOs

Task/Activity	Activity	Term, years	Expected results	Sources of financing	Monitoring
	<ul style="list-style-type: none"> <li>Introduction of biogas plants in farms in 4 districts</li> </ul>	2022 - 2026		NGOs	
<b>Management task 8.3.</b>	<b>9.8.3. Improvement of forest resources and biodiversity in the areas adjacent to the reserve</b>				
Activity 8.3.1.	Creation of forest belts	2022 - 2026	Increasing the area covered by forests	State budget, grantors	
Activity 8.3.2.	Establishment of nurseries for fast-growing, highly productive forest species (poplars) - development of a forest management system based on local community management	2022 - 2026	Reducing the incidence of tree felling in the reserve	State budget, other sources of financing	Land users, ADF, Hukumats, NGOs
Activity 8.3.3.	Carrying out forest melioration activities	2022 - 2026	Improving the condition of natural resources	State budget	Hukumats, Ministry of Agriculture, CEP
Activity 8.3.4.	Strengthening slopes with trees	2022 - 2026	Increasing the area covered by forests, reduction of land degradation resources		Hukumats, WUA, CEP, other
<b>Management task 8.4.</b>	<b>9.8.4. Ensuring access to clean drinking water</b>				
Activity 8.4.1	Arrangement of 5-6 water pumps with drinking water for farms in the buffer zone of the reserve in the Kabodien region	2022 - 2026	Provision of the population with drinking water	State budget, grantors, other sources of financing	MMWR, Ministry of Healthcare, CEP, Hukumats



**Suggested measures to improve the use of water resources in the area adjacent to the Tigrovaya Balka Nature Reserve for the period 2022-2026**

Management task	Activity	Estimated scope of work	Expected result (to be filled in for tasks only)	Term	Responsible body (Performers)	Alleged sources of financing	Monitoring
Ensuring the discharge of quality water from collectors	Cleaning collectors from silt and overgrowth	No less than 20-25% of their length	Increase the volume of water course	Once a year	SDWM - State Directorate for Water Management - (district water management authorities) WUA - Water Users Association	State budget, water users	Water Resources District Inspectorate
Monitoring of water supplied to users and dehkhan farms	Conclusion of contracts between the SDWM and WUA or water Users	1 contract per WUA or each water user (dehkan farm)	Compliance with the terms of the contract	Once a year	SDWM, WUA	State budget, water users, grantors	Water Resources District Inspectorate
Channel monitoring	Security works of water metering facilities (WMF)	1 WMF per each WUA water outlet or dehkan farm	The reliability of the information received	During vegetation	SDWM of the Ministry of Water Resources	State budget, grantors	Water Resources District Inspectorate
Prevention of salinization of irrigated land	Compliance with the irrigation regime; preventing the rise of the groundwater level	Drains cleaning	Increasing crop yields	During vegetation	Water users	WUA, water users	Water Resources District Inspectorate

Management task	Activity	Estimated scope of work	Expected result (to be filled in for tasks only)	Term	Responsible body (Performers)	Alleged sources of financing	Monitoring
Rational use of water for irrigation	Compliance with irrigation techniques; training sessions for irrigators	All over the area	Reducing surface discharge and soil erosion	During vegetation	Scientific departments of the Ministry of Agriculture and Ministry of Water Resources	At the expense of projects, international organizations, grantors	Water Resources District Inspectorate
Creation of a water protection zone for main channels	Compliance with regulations and requirements for using water protection zones	Along the entire length of the channels	Avoiding water pollution	Once in 3 years	SDWM, local bodies	SDWM, local bodies, donors	Water Resources District Inspectorate
Water reuse	Avoiding pollution of water protection zones with industrial waste and polluted wastewater (approx. 300 km.)	Clean shores eco-campaign	Improvements in water quality	Once a year	WUA, water users	WUA, water users	Water Resources District Inspectorate
Improving the water quality of channels and rivers	Maintenance of the restored water supply system of the reserve	Clean shores eco-campaign	Improvements in water quality	Once a year	Local population, jamoats, CEP, WUA, IWRM, water users	State bodies, grantors, water users	Water Resources District Inspectorate

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Management task	Activity	Estimated scope of work	Expected result (to be filled in for tasks only)	Term	Responsible body (Performers)	Alleged sources of financing	Monitoring
Preserving water supply to lakes	Maintenance of the restored water supply system of the reserve	Regular cleaning of the system of channels and drains from channels to the reserve	Optimization of the hydrogeological network on the territory of the reserve	2022 -2026	Nature reserve, director, gamekeepers	State budget,	Water Resources District Inspectorate
Ensuring water filling of lakes	Creation of a rapid response system to identify potential threats	Rapid response systems	Optimization of the hydrogeological network on the territory of the reserve	2022-2026	Nature reserve, director	State budget, support of the IO	Water Resources District Inspectorate
Ensuring water filling of lakes	Lake level monitoring	8 monitoring points on representative lakes (RL) by lake (1 of 5)	Optimization of the hydrogeological network on the territory of the reserve	Annually	Nature reserve, director, gamekeeper	State budget, support of the IO	Water Resources District Inspectorate
Ensuring water filling of lakes	Monitoring of channels and branches of the lake level	8 monitoring points on supply channels (RL) on representative lakes (1 of 5)	Optimization of the hydrogeological network on the territory of the reserve	Annually	Nature reserve, director, gamekeepers	State budget, support of the IO	Water Resources District Inspectorate

Management task	Activity	Estimated scope of work	Expected result (to be filled in for tasks only)	Term	Responsible body (Performers)	Alleged sources of financing	Monitoring
Ensuring water filling of lakes	Monitoring of collecting canals of the lake level	8 monitoring points on the supply collecting canals connected to the channels and branches (RL)	Optimization of the hydrogeological network on the territory of the reserve	Annually	Nature reserve, director, gamekeepers	State budget, support of the IO	Water Resources District Inspectorate
	Improving the capacity of officials, experts and specialists in the field of water quality and water resources management	Development and adaptation of training materials; Conducting seminars on monitoring the state of water supplied to water users and dehkan farms	Training materials, recommendations, practice in application	2022-2026	Nature reserve, director, water users	State budget, support of the IO	Water Resources District Inspectorate
Monitoring of the state of water supplied to water users and dehkan farms	Improving coordination of complex estimates, monitoring and sharing information on water quality	Development of Recommendations for water quality control and information sharing; creation of a common database on water quality and monitoring.	Improvement of coordination of integrated water quality evaluations, monitoring and information sharing; formation of a database on water quality; analysis of the results of evaluation	2022-2026	Nature reserve, director, water users	State budget, support of the IO	Water Resources District Inspectorate

Management task	Activity	Estimated scope of work	Expected result (to be filled in for tasks only)	Term	Responsible body (Performers)	Alleged sources of financing	Monitoring
Monitoring of the state of water supplied to water users and dehqan farms	Establishment of an accounting and reporting system to disseminate the results of monitoring programs at the national and international levels	Analysis of existing monitoring practices, use of mechanisms to improve monitoring practices	of water quality in the collector-drainage network Reporting systems for disseminating the results of monitoring programs	2022	Nature reserve, director, water users	State budget, support of the IO	Water Resources District Inspectorate

11. Socio-economic component

Activity	Expected results	Term	Categories of participants	Cost (thousand TJS)	Sources of financing
1. Communication of information to the population					
1.1. Conducting a survey on the level of awareness of the population on the results of the implementation of the Poverty Reduction Strategy and Environmental sustainability plan in particular, as well as activities implemented within the framework of the Concept of Environmental Sustainability of the Republic of Tajikistan.	Survey	2022 – 2026	Residents of settlements, schoolchildren, employees of government bodies, RECCA		State budget, grantors
1.2. Preparation of information materials on the experience of the population in solving environmental problems, rational use and conservation of biodiversity, as well as distribution of these materials.	Prepared, discussed and distributed information materials		Residents of settlements, schoolchildren, employees of government bodies, RECCA		
1.3. Conducting round tables to identify key issues for subsequent trainings.	Round tables.		Residents of settlements, schoolchildren, employees of government bodies		
1.4. Conducting training sessions to inform the population about the results of the implementation of the Poverty Reduction Strategy and Environmental sustainability plan in particular for the past period, as well as about environmental sustainability measures included in the PRS for the future.	Training session		Residents of settlements, schoolchildren, employees of government bodies.		

Activity	Expected results	Term	Categories of participants	Cost (thousand TJS)	Sources of financing
1.5. . Preparation of information materials on the experience of solving environmental problems, as well as introduction of measures for ensuring environmental sustainability by the population to the Strategy for the Development of the Republic of Tajikistan and the Development Plans for the respective districts, their publication in mass media.	Prepared information materials, activities included in the Strategy and Development Plans, published information.		Republican, regional, district level mass media.		
1.6. Conducting seminars on the results of 2-year work and identifying the main problems for implementation in the next year.	Seminars, key problems.		District, region		
1.7. Conducting round tables to inform the population about the progress of the PRS implementation in the field of ensuring environmental sustainability and identifying problems for subsequent periods.	Round tables, identified problems for subsequent periods.		Residents of settlements, schoolchildren, employees of government bodies.		
1.8. Preparation of information materials on the mechanism for problem solving and their publication in mass media.	Information materials.		Republican, regional, district level mass media.		
1.9. Conducting final seminars based on the results of work and identifying the main problems for subsequent periods.	Seminars, identified key problems.		District, region, republic		
1.10. Support for information and educational centers created with the assistance of WWF.	Operating centers, support for beneficiaries.		Residents of settlements, schoolchildren, employees of government bodies.		

Activity	Expected results	Term	Categories of participants	Cost (thousand TJS)	Sources of financing
2. Increasing the efficiency of the security service arrangement					
<p>2.1. Organization of coordination and joint work with other environment protection authorities and border service:</p> <ul style="list-style-type: none"> <li>- Drawing up annual plans for joint work with the National Security Committee, border service, CEP under the Government of the Republic of Tajikistan for 2022;</li> <li>- Organizing and holding jointly inspections and activities with the NSC, border service, directorates in charge of protected areas of district Hukumats.</li> </ul>	Decrease in violations of the protection regime for the wildlife and violations of environmental legislation throughout the territory	2022-2026	<ol style="list-style-type: none"> <li>1. Hukumats of districts</li> <li>2. CEP</li> <li>3. NSC</li> <li>4. Border Force</li> </ol>		State budget, grantors, raised funds
<p>2.2. Increasing mobility and efficiency of work through improved transport and communications:</p> <ul style="list-style-type: none"> <li>- Renovation of the vehicle fleet and water transport;</li> <li>- Purchase of necessary spare parts for existing vehicles.</li> </ul>	Increased operating efficiency		<ol style="list-style-type: none"> <li>1. Hukumats of districts</li> <li>2. Grantors</li> </ol>		
<p>2.3. Strengthening the prevention of violations and communication with the population by increasing the number of meetings, lectures, improving their information content, preparing visual materials.</p>	Reducing the number of violations of the reserve protection regime		<ol style="list-style-type: none"> <li>1. Hukumats of districts</li> <li>2. RECCA</li> <li>3. Mass Media</li> </ol>		
<p>2.4. Training and professional development of workers of Hukumats.</p>	Increase in quality of work		<ol style="list-style-type: none"> <li>1. 1. Hukumats</li> <li>2. 2. RECCA</li> </ol>		



Activity	Expected results	Term	Categories of participants	Cost (thousand TJS)	Sources of financing
3. Ensuring nature protection and regulation of nature management in the region.					
3.1. Strengthening co-operation between environmental agencies, business entities, law enforcement authorities, and border service.	Reducing violations of environmental legislation in the region	2022-2026	1. Hukumats of districts 2. Law enforcement authorities 3. CSOs 4. Business entities		State budget, grantors, raised funds
3.2. Cooperation with local population to ensure sustainable nature management in the territories adjacent to the reserve.	Application of sustainable nature management practices in the territories adjacent to the reserve				
4. Improvement of spatial planning					
4.1. Conducting a survey of the territories adjacent to the reserve to prepare materials for adjusting the boundaries of the Tigrovaya Balka Nature Reserve in accordance with the developed proposals for zoning	Optimization of the reserve area	2022	1. Hukumats of districts, 2. Committee for Land Management 3. Ministry of Economic Development of the RT 4. Government of the RT		State budget, grantors, raised funds

Activity	Expected results	Term	Categories of participants	Cost (thousand TJS)	Sources of financing
5. Ensuring socio-economic development and sustainability					
5.1. Improving socio-economic conditions of the population to eliminate the negative impact on biodiversity of the reserve:					
<ul style="list-style-type: none"> <li>- measures for stable supply of electricity and provision of the population with various types of fuel</li> <li>- introduction of alternative energy sources</li> <li>- measures to provide the population with drinking water;</li> <li>- measures to repair the existing non-operating pumping stations;</li> <li>- cleaning feed ditches and water discharge lines,</li> <li>- construction and repair of roads</li> </ul>	Development and implementation of activities within the framework of the District Development Plans ( for all activities described in the section)	2022-2026	Hukumats of districts, Business entities Government of the RT		State budget, grantors, raised funds
5.2. Sustainable use of human resources, creation of new jobs, increase of incomes of the population:					
<ul style="list-style-type: none"> <li>• increasing land productivity ,</li> <li>• improving the economic situation of households by introducing alternative activities,</li> <li>• restoration of local species of fruit trees and shrubs; organization of new orchards and fruit tree plantations; expansion of orchards;</li> <li>• organization of a workshop for fruit processing and production of pomegranate juice</li> <li>• development of new types of activities                             <ul style="list-style-type: none"> <li>- tourism, birdwatching, wildlife photography, etc.</li> </ul> </li> </ul>	Development and implementation of activities within the framework of the District Development Plans ( for all activities described in the section)	2022-2026	Hukumats of districts, Business entities Government of the RT		State budget, grantors, raised funds

Activity	Expected results	Term	Categories of participants	Cost (thousand TJS)	Sources of financing
<p>5.3. Improving the efficiency of agriculture, carrying out melioration activities</p> <p>Hydraulic engineering:</p> <ul style="list-style-type: none"> <li>• leaching of saline lands ;</li> <li>• complex reconstruction of irrigation systems (CRIS);</li> <li>• mechanization of irrigation and introduction of new water-saving technologies (drip, sprinkler, subsoil irrigation, etc.);</li> </ul> <p>Anti-erosion:</p> <ul style="list-style-type: none"> <li>• terracing ;</li> <li>• forest melioration;</li> <li>• deep grounding ;</li> <li>• strip farming;</li> <li>• drain spraying;</li> <li>• snow retention and regulation of snow melting;</li> <li>• minimization of technogenic impact on soils.</li> </ul> <p>Agrotechnical</p> <ul style="list-style-type: none"> <li>• scientifically grounded cotton-lucerne crop rotations;</li> <li>• use of organic and mineral fertilizers;</li> <li>• development of seed production and production of new varieties of seeds;</li> <li>• subsoiling</li> </ul>	<p>Development and implementation of activities within the framework of the District Development Plans ( for all activities described in the section)</p>	<p>2022 - 2026</p>	<p>Hukumats of districts, Business entities Government of the RT</p>		<p>State budget, grantors, raised funds</p>
<p>Agrotechnical</p> <ul style="list-style-type: none"> <li>• scientifically grounded cotton-lucerne crop rotations;</li> <li>• use of organic and mineral fertilizers;</li> <li>• development of seed production and production of new varieties of seeds;</li> <li>• subsoiling</li> </ul>	<p>Development and implementation of activities within the framework of the District Development Plans ( for all activities described in the section)</p>	<p>2022 - 2026</p>	<p>1. Hukumats of districts, 2. Business entities 3. Government of the RT</p>		<p>State budget, grantors, raised funds</p>

Activity	Expected results	Term	Categories of participants	Cost (thousand TJS)	Sources of financing
Ecological reclamation <ul style="list-style-type: none"> <li>• Application of biological methods of plant protection</li> <li>• Introduction of elements of adaptive landscape farming</li> <li>• Introduction of environmentally friendly technology</li> </ul>	Development and implementation of activities within the framework of the District Development Plans ( for all activities described in the section)	2022-2026	1. Hukumats of districts, 2. Business entities 3. Government of the RT		State budget, grantors, raised funds

Abbreviations used in the table:

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|--|---|
| SDWM - State Directorate for Water Management<br>GWL - Groundwater level<br>FL - fuels and lubricants<br>OFN - On-farm network<br>IO - International organizations | WUA - Water Users Associations<br>WTF - Water treatment facilities<br>IFN - Inter-farm network<br>RL - representative lake<br>DF - dehkan farms |
|--|---|