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Building a Sustainable Future for Karakalpakstan





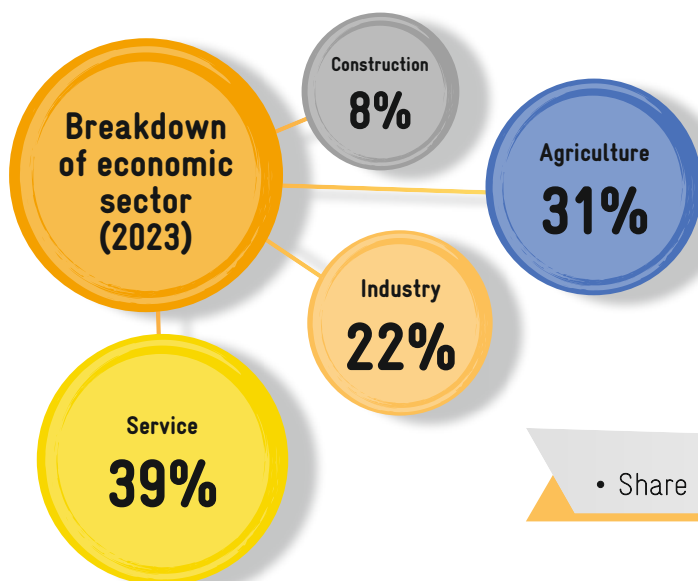
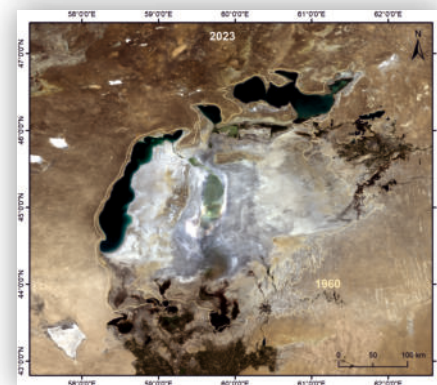
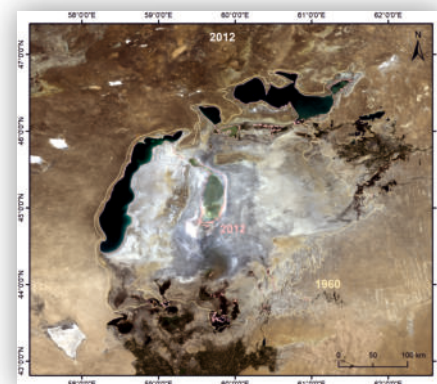
Building a Sustainable Future: GIZ in Karakalpakstan

The Republic of Karakalpakstan, an autonomous region within Uzbekistan, is of substantial economic, cultural and environmental importance. Located in the northwest part of the country, it borders Kazakhstan to the north and Turkmenistan to the south. Karakalpakstan comprises 16 districts with its administrative centre in Nukus.

The region is rich in natural resources, including gas and minerals. It contributes to agriculture, particularly in production of cotton and wheat. **Culturally**, Karakalpakstan is a region of immense historical significance, with a rich heritage, unique traditions, language, and arts.

Environmentally, Karakalpakstan is home to the remnants of the Aral Sea, once the world's fourth-largest lake. The environmental degradation caused by the diversion of rivers for irrigation has led to one of the most severe ecological crises in modern history.

Economically, Karakalpakstan focuses on the food industry, agricultural production and logistics. To foster the development of pharmaceutical and manufacturing industries several free economic and small industrial zones have been established.



Key Facts:

- Population: 2 million (2024)

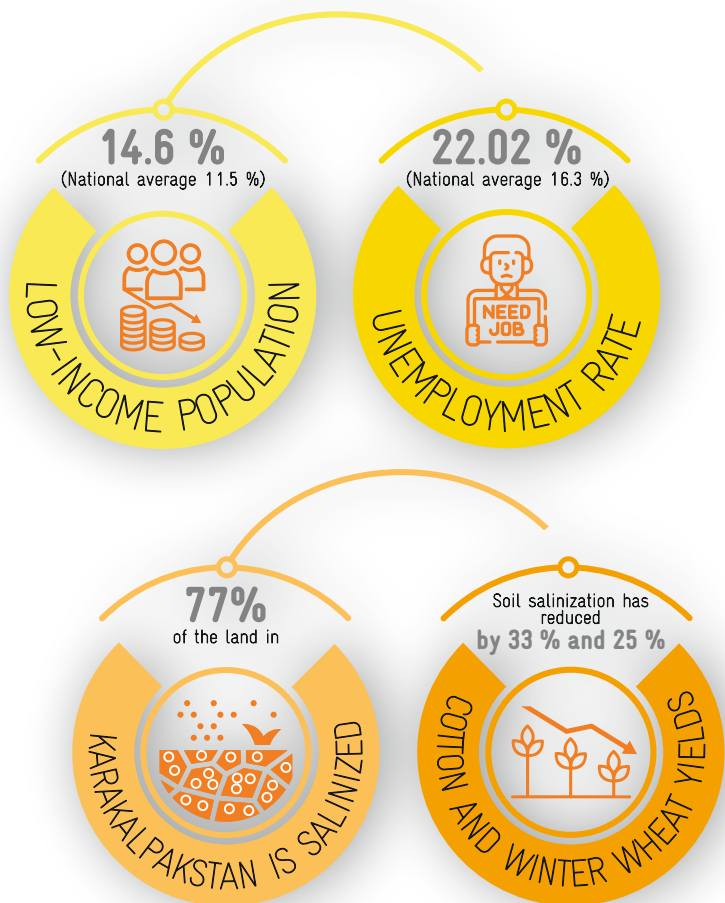
- Share of Agriculture in GRP is 30,4%

- Share of Karakalpakstan in GDP of Uzbekistan is 3,1% (2023)

Karakalpakstan faces significant challenges, including economic disparities and limited infrastructure, which hinder broader economic development. The Aral Sea disaster has resulted in reduced agricultural productivity, loss of biodiversity, desertification, and health issues due to dust storms carrying toxic salts from the exposed seabed. The Government of Uzbekistan has launched several development initiatives in Karakalpakstan. One important framework document is the "State Programme for the Development of the Aral Sea Region". The programme focuses on improving living conditions, infrastructure and economic opportunities for the local population. It includes investments in water management systems, healthcare facilities and educational institutions.

Cooperation between the Government of Uzbekistan and international development organisations plays a vital role in addressing the ecological crisis. This collaboration is highlighted through the Presidential decree on "Measures to create a climate-resilient agroecosystem and increase the resilience of agricultural producers to climate change risks".

For the past 30 years, the German Government has been a key partner for Uzbekistan, providing technical support through various projects implemented by GIZ. In Karakalpakstan these efforts have focused on building resilience across four key pillars:



- **Economic reforms and development**
- **Climate change adaptation**
- **A modern and robust healthcare system**
- **Professional education for a skilled workforce**



GIZ supports the Government of Karakalpakstan in elaborating policy documents and implementing development strategies to contribute to the economic reforms promoting **sustainable development in rural and urban areas.**



By introducing innovative irrigation techniques and promoting drought-resistant crops, GIZ is assisting farmers to **adapt to climate change and water scarcity.** These measures aim to increase agricultural productivity and reduce the sector's dependence on water resources.

To tackle health impacts, GIZ is supporting to **strengthen the healthcare system** in the Republic of Karakalpakstan and beyond. This includes initiatives to improve health technology management, to better respond to pandemics, and strategic support to roll-out the new health insurance scheme of the Ministry of Health and the State Health Insurance Fund.



Recognising the need for a skilled workforce in a changing economy, GIZ is investing in **vocational training programmes and supporting young entrepreneurs** to equip individuals with the skills needed for new employment opportunities. These programmes focus on sectors such as textile, tourism, and information technology, which have the potential to create job opportunities and drive economic growth in Karakalpakstan.



GlZ's support to economic reforms and development

In close cooperation with ministries and state agencies, GlZ is contributing to sustainable economic development in rural and urban areas of Karakalpakstan. GlZ targets key sectors, such as agriculture and agribusiness, tourism, handicraft, livestock, fishery and Information Technology (IT).

GlZ supports sustainable **tourism** growth through enhancing regional promotion, diversifying the tourism offer, improving service quality and facilitating public-private dialogues. The efforts and initiatives are incorporated into the Tourism Development Strategy, which sets up a comprehensive framework for long-term tourism development. Along with the strategy, an Ecotourism Development Roadmap has been designed including needs, potential and demands focused on nature protection, biodiversity conservation, protected area management, community involvement and transboundary cooperation.



GlZ assists farmers in adopting climate-resilient methods that increase crop yields and water efficiency. In **agriculture and agribusiness**, interventions enhance responsible land use, intensive and environmentally friendly agricultural approaches, and efficient irrigation systems. Demonstration orchards and new irrigation systems have been established, equipped with modern machinery. Farmers and local communities advance their knowledge and techniques related to cultivation, harvesting and processing of rice, liquorice and sesame. GlZ has supported the Ministry of Agriculture in the elaboration of a new National Law on Cooperatives, integrating international best practices. Newly established cooperatives support local farmers in pooling resources, boosting agricultural productivity, sharing knowledge and accessing markets.



In the **livestock** sector, GlZ supports the introduction of international standards, which includes the promotion of an animal tracking system, modernising institutions, equipping laboratories, and improving health and safety regulations. Strengthening networks between German and Uzbek universities and offering training for veterinarians is key in achieving these goals.

The interventions in **fishery and aquaculture** concentrate on improved pond management, and intensive fish and fingerlings production, through better water management, feeding and disease control.

Since early 2022, GIZ has been supporting the Government of Uzbekistan in introducing a new, holistic approach to regional development planning. This initiative includes **participatory territorial development planning** in the Amudarya and Chimbay districts of Karakalpakstan by the end of 2024. The participatory planning process promotes drivers of economic growth, supporting locally led initiatives, implementing green and environmentally friendly solutions, and fostering dialogue between the public and private sectors.

Success story



The shrinking of the Aral Sea, once a large saltwater lake in Central Asia, has become a symbol of tragedy as a result of the misuse of natural resources over decades, enhanced by the effects of climate change. The year 2000 marked a tragic milestone with an immense decrease in the supply of fish, which depicts an essential source of nutrition for the local population.

Mr. Shukhrat Rajabov started to study fish production to tackle the challenge and consequently, in 2003, he opened a family-based fish farm "Antiqua". Shukhrat participated in trainings in intensive fish production, such as pond management and intensification, fish feeding and diseases. Implementing his learnings efficiently, over the course of 10 years (2012–2022), he managed to intensify his production per season

from 30 tons to 100 tons of fish per hectare, increasing the ponds area from 9 to 30 hectares. At the same time, he reduced water consumption from 200,000 m³ to 120,000 m³ per year which is 80 mln. litres of water saved.

It makes Shukhrat very proud, that his farm regularly used as a demonstration site for at least 10 fish farmers, who learn about improved fish feeding and production, water-saving pond intensification and management and can buy locally produced fodder and fingerlings at affordable price. He is happy to share his knowledge through advisory services so that capacities are trickling down to others in the region. In 2020, during COVID time, Shukhrat released 3 mln. carp fingerlings into the Amudarya river to increase the population of carps and support local fishermen.

Direct results:

- ✓ **140 job places** created in IT, agriculture, tourism and textile sectors
- ✓ In fishery production, the performance of each hectare pond is increased sixfold and **4 different types of production** technologies for intensive fish farming **were introduced** and widely spread.
- ✓ The number of international **tourists** and visitors in 2024 **increased by 6.4 times** compared to 2021.
- ✓ **1 Destination Management Organisation (DMO)** is established to coordinate and promote tourism activities, as part of the Strategy for Tourism Sustainable Growth in Karakalpakstan (2023–2026).

GIZ's support to climate change adaptation



The escalating impacts of climate change affect the labile ecosystem and the communities of Karakalpakstan significantly through the degradation of natural habitats, increasing water scarcity and the disruption of local economies dependent on environmental stability. GIZ is supporting initiatives that protect Karakalpakstan's ecosystems by promoting responsible tourism practices, minimizing waste, conserving water and supporting local businesses.

Through the support of ecotourism sites, such as the RAMSAR Convention Wetland of the Sudochoye Lake, nature protected areas provide ecological and financial benefit to the communities. GIZ enhances regional cooperation on protected area management. This has resulted in a cooperation agreement between Kazakhstan and Uzbekistan on wildlife monitoring and management on the Ustyurt Plateau.

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The rangers in three protected areas in Karakalpakstan have enhanced their skills in nature conservation practices, supported by the integration of the Spatial Monitoring and Reporting Tool (SMART) patrol data collection system. This advanced technology enables rangers to effectively patrol protected areas, record illegal activities, document wildlife traces, and monitor flora and fauna.



The digital data collection allows for rapid analysis and reduces paperwork. It strengthens cross-border relationships, improves biodiversity conservation and enables the tracking of endangered species' migration patterns. With GIZ support, the South Ustyurt National Park has been designated as a transboundary hotspot by the Central Asian Mammals Initiative (CAMI) of the UN Convention on the Conservation of Migratory Species of Wild Animals (CMS).

Climate change also affects the built environment, particularly in urban areas like Nukus. High energy consumption, coupled with significant CO2 emissions, is a pressing issue in the city, especially within residential and public buildings. GIZ supports with improving energy efficiency in buildings via thermal renovation of one pilot residential building. This renovation includes upgrading insulation, windows, and the heating system. GIZ aims to demonstrate the potential for large-scale energy efficiency improvements, attract future investments from Europe, and set a precedent for similar projects across the region. These efforts are aligned with the Global Covenant of Mayors (GCoM) climate plan and local government targets, which prioritize reducing energy consumption and greenhouse gas emissions.

Success story



Together with the International Innovation Centre for the Aral Sea Basin, entrepreneur Dauletiyar Jiemuratov created the first earth pond artemia cultivation on land formerly categorised as unusable in Central Asia in Khojeli, Karakalpakstan.

Artemia, the sole species surviving in the Aral Sea, is a major export product for the region. The export volume has decreased from 2,775 tonnes in 2021 to 790 tonnes in 2023 due to rising salinity levels. When salinity exceeds 200gr/l, artemia populations are threatened, leading to income loss for local communities.

Sustainable land management practices that prevent soil degradation and salinization are promoted. This includes the use of degraded land and saline water

sources to cultivate brine shrimp artemia, turning previously unproductive land into a valuable resource. This environmentally friendly practice provides an alternative income source for farmers.

Dauletiyar is proud that farmers who have lost their land due to shortage of water or soil salinity can find a new source of income. Businesses focused on artemia cysts export can invest in artemia cultivation in artificial ponds, create additional job places for local communities considering the ecological aspects of the region. With the knowledge gained from a study tour to Vietnam, Dauletiyar has successfully adopted these techniques in Karakalpakstan sharing the knowledge with other farmers together with scientists.

Direct results:

✓ **1,343 people**, including 28% women, **enhanced their capacities** through 72 measures focused on **resource efficiency and climate change adaptation**.

✓ **162 people**, including 16% women, **are capacitated to operate the Earth Observation and Geographic Information Systems (GIS)**. The widespread use of these technologies has improved territorial planning and resource efficiency.

✓ **202 people**, including 59% women, **are equipped with skills** and knowledge **in licorice cultivation** and sustainable wild licorice collection contributing to responsible resource use and compliance with the Fair Wild certification standards.

✓ **245 people**, including farmers, researchers and policymakers, **are engaged in crop diversification efforts**. Mungbean was introduced into the traditional wheat-cotton rotation, enhancing soil fertility and offering farmers an additional income source.

GIZ's support for a modern and robust healthcare system

In response to the pressing health challenges, GIZ is working to improve healthcare access and quality in Karakalpakstan. The health projects work in the following areas:

Pandemic response: GIZ supported activities in the Republic of Karakalpakstan to strengthen the local health system to better respond to pandemics. This includes enhancing surveillance, improving emergency response mechanisms (incl. telemedicine), and providing training and other capacity development measures to healthcare workers, with a specific focus on laboratories. By improving the infrastructure and protocols in laboratories together with renowned institutions like the Robert-Koch-Institute and the Technical University of Munich, GIZ supports the Republic of Karakalpakstan to be able to better respond to current and future health threats.

Health technology management: The maintenance of medical equipment is essential to ensure and maintain high standards of patient care. Thus, hospital managers were trained to effectively oversee equipment management and prioritize maintenance needs. Quality improvement trainings were also conducted, leading to enhanced performance and safety of medical devices.

Health financing: Currently, Uzbekistan is implementing holistic health financing reforms to achieve universal health coverage in line with the Sustainable Development Goal 3. Against this background, a state health insurance scheme has been piloted already in Syrdarya region in Uzbekistan. GIZ provides strategic technical and advisory support to the Ministry of Health and the State Health Insurance Fund to roll out the new health insurance mechanism to other regions, for example to the Republic of Karakalpakstan.



Success story

Effective laboratory services are crucial for any pandemic response, as they play a key role in the accurate identification of pathogens, monitoring of epidemiological trends, and evaluation of treatment outcomes. The COVID-19-pandemic posed unprecedented challenges for public health institutions and international organizations worldwide. In this situation, GIZ provided critical support to the sanitary epidemiological service's laboratories in the Republic of Karakalpakstan.

In September 2021, GIZ facilitated the deployment of the German Epidemic Preparedness Team (SEEG) of the German Government to Karakalpakstan, recognizing the need for enhanced proficiency in PCR diagnostics for COVID-19. SEEG laboratory specialists conducted the first-ever training on basic PCR diagnostic procedures and quality assurance in Karakalpakstan during the pandemic, marking a significant milestone for laboratories in the area. Following SEEG's recommendations, GIZ equipped the central virology laboratory with essential tools such as a deep freezer for the proper storage of samples and an autoclave for pathogen elimination and waste management. These improvements laid the basis for a more robust and reliable laboratory infrastructure.



In 2022, GIZ expanded its support to district-level laboratories including hands-on PCR training in Muynaq, one of the most remote towns in Karakalpakstan. This outreach ensured that even the most isolated communities had access to quality PCR diagnostics.

The efforts continued into 2023-2024 with GIZ collaborating with national reference laboratory experts to deliver trainings on quality assurance and biosafety. Additionally, Uzbek virology specialists were sent to the Robert Koch Institute in Berlin for specialized training in COVID-19 subtyping.

As a result of GIZ's capacity-building efforts, approximately 40 laboratory specialists in Karakalpakstan are now proficient in PCR diagnostics, quality assurance, and biosafety. Since the inception of GIZ's technical assistance, these laboratories have detected around 9000 cases, significantly contributing to the region's pandemic response.

Direct results:

- ✓ **Telemedical consultations** between the Emergency Medicine Centers in Tashkent and Nukus **are now available** to improve the quality of emergency care for patients.
- ✓ The pandemic responsiveness of the Republic of Karakalpakstan has been strengthened with **more than 350 healthcare professionals being trained** in infection and prevention control, PCR diagnostics, waste management, respiratory support and laboratory quality management.
- ✓ **Medical and technical staff** from the Karakalpak branches of the Republican Training and Production Centre for Servicing Medical Equipment (RTPCSME), the Republican Research Centre for Emergency Medicine (RRCEM), and the Republican Perinatal Centre (RPC) **have been capacitated in health technology management** to maintain medical equipment adequately, expand its life cycles and ultimately assure patients' safety.

GIZ's support for professional education for a skilled workforce

To support economic development and meet the growing demand for skilled workers in Karakalpakstan, GIZ strengthens professional education and training in key sectors such as textile, leather, tourism, and IT. The approach focuses on expanding access to relevant training opportunities that respond to labour market needs and prepare people for employment.

This involves modernisation of the legal and organisational framework for vocational education at regional and national levels, while fostering stronger collaboration between educational institutions and the private sector. Key components of this support are the implementation of dual training – a combination of theory and practice in the workplace, along with the development of modern, sector-specific curricula.

As a result of project activities, students and unemployed youth have improved access to skills development and employment opportunities. In Karakalpakstan, eight new occupational standards, curricula and teaching methods for the textile and leather industries have been developed with active participation of business representatives. To enable students to acquire practical skills and hands-on experience, 16 educational institutions are equipped with training rooms in cooperation with the private sector. This cooperation has resulted in the establishment of public-private partnerships – a foundation for dual education, as well as Social Partnership Forums in cooperation with the Chamber of Commerce and Industry in Nukus.



Together with the IT Park Karakalpakstan, free courses on Social Media Marketing (SMM), graphic design, mobile app development, and robotics have been developed for young people in the region. These programmes provide participants with in-demand digital skills, helping them become more competitive in the job market.

GIZ supports the economic growth of Karakalpakstan by providing short-term courses on green textile production and entrepreneurship skills for employees of small and medium-sized enterprises. Modern equipment has been provided to the Monocentres, where unemployed people can take short-term courses ranging from welding and hairdressing to computer classes, programming, design and accounting.

Career guidance activities for school students are piloted in cooperation with local businesses to help young people move into further education or employment, with the developed model to be evaluated and implemented nationwide as good practice. In higher education, practical training rooms are established at Nukus State University to enhance hands-on learning in tourism and hospitality.



Inclusive education and employment opportunities play a special role in the implementation of all activities in the region. The Association of People with Disabilities of Karakalpakstan is equipped with a specialised sewing workshop, empowering the institution to provide people with disabilities and low-income families with employment-oriented education and a sustainable source of income.

Success story

From a young age, Nurlan was fascinated by computers, architecture and design. Limited physical abilities did not hinder him from doing his own thing professionally, although the way was not always an easy one. In his youth, Nurlan learnt from repair workshop masters how to fix electronic devices like smartphones, and later graduated from the Karakalpak State University with a Bachelor's degree in Architecture. Despite his enthusiasm and qualifications, Nurlan faced difficulties finding a stable job. At first, Nurlan worked part-time, but this did not guarantee sufficient income.

In 2023, he took a decisive step to upgrade his skills by enrolling in a Computer Aided Design and Architecture (Autocad 3D) course at the Nukus Monocentre. This advanced training marked a turning point in his career, leading to a researcher position at NUKUS ARCHITECT-PROGRESS PROJECT LLC. Along with financial stability, Nurlan found the most important of all: recognition and the opportunity to apply his professional competencies.

GIZ Uzbekistan supported the Monocenter in Nukus in offering state-of-the-art courses in informatics, programming, design (3D Max Auto Cad), and accounting for unemployed or underemployed persons.



- ✓ The "Ishga Marhamat" **Monocenter in Nukus** is equipped and **capable of providing enhanced services**, offering retraining courses in programming, design and accounting for unemployed men and women.
- ✓ The **Vocational School in Khodjeyli District offers two modernised professions** in the Dual Education format in cooperation with textile companies. With 60% of training conducted on-site, the school enhances practical skills development, significantly improving employment prospects for young people. Moreover, the Khodjeyli VET school is part of a network of 15 VET institutions involved in developing and implementing six textile-related professions in dual format.
- ✓ **Secondary School Nr. 2 in Nukus is now capable of providing Career Guidance measures** for pupils through partnerships with local companies in IT, banking, textile, wood processing and other sectors. The newly equipped textile workshop offers hands-on activities helping to gain essential practical skills.

Conclusion: A Sustainable Future for Karakalpakstan

GIZ's multifaceted approach is a long-term investment into building a sustainable future for Karakalpakstan. By empowering local communities, promoting sustainable practices, and fostering innovation, GIZ is helping to create a resilient and prosperous region. Through collaboration, innovation, and a commitment to sustainable development, it is possible to restore the region's environment, revitalise its economy, and improve the health and well-being of its people.



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