

Development of Sustainable Agricultural Production Systems in Degraded Areas of Karakalpakstan

Ongoing



Duration

2022 - 2026



Beneficiaries

The project will benefit directly up to 15,000 farmers and agropastoralists as well as their households (up to 75,000 people).

It will also develop the capacity of up to 150 extension workers and establish or strengthen up to 15 farmers' cooperatives.



Objectives

The project will reduce smallholder farmers' vulnerability and enhance their adaptive capacity to prevent economic losses associated with land degradation. The project aims to:

- improve agricultural productivity through introduction of climate-resilient, biosaline and integrated modular farming systems to local communities;
- increase incomes through development of agri-business value chains;
- and enhance knowledge, skills and self-reliance through development of the capacities of local communities and relevant stakeholders.



SDGs



Countries

Karakalpakstan (a republic within Uzbekistan)



Funders

Abu Dhabi Fund for Development (ADFD)



Funding

5,000,000 USD



Soil and water salinization is a major constraint on agricultural production in the Aral Sea region.

Background

The shrinking of **the Aral Sea** in Central Asia is considered to be one of the planet's worst human-induced environmental disasters. It

was caused by excessive withdrawals of water by Soviet irrigation projects from the rivers that fed the sea, starting from the 1960s onwards. By 1997, the Aral Sea had declined to 10 percent of its original size. The shrinking of the sea was accompanied by soil and water quality degradation, due to poor water management and drainage in riparian countries, resulting in increased salinity affecting approximately half of the irrigated lands. Inadequate expenditure during the post-Soviet period on the operation and maintenance of the inefficient and outdated irrigation and drainage system further exacerbated the situation.

Besides **salinization**, contamination by heavy metals and chemical compounds released by agriculture, oil and gas industries has also dramatically affected the local ecosystems. The area is devoid of crop biodiversity in the agricultural sector as it has long been dominated by cotton and wheat. With declining soil and water quality, inadequate quantities of water, and weak water management, the area could not sustain even the fodder production, with adverse consequences for livestock production – an essential source of livelihood and food security for the region's



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ICBA works to introduce salt-, heat- and drought-tolerant crops to help rural farmers tackle various agricultural challenges.

rural population. Moreover, this vulnerable area of the region is expected to be among the most affected by climate change according to the Fifth Intergovernmental Panel on Climate Change (IPCC) Report (AR5).

Women and children have been the worst affected by this environmental and socio-economic disaster, as men's migration to cities and towns in and outside Uzbekistan in search of job opportunities has put more burdens on their shoulders, particularly farm labor, and increased their vulnerability.

Activities

The project will begin by diagnosing land degradation issues in each target area. The ex-ante assessment will include the biophysical characterization, crop diversity for food, feed, fruits and forages and flora diversity. The variation in agricultural production for the crops presently grown in Karakalpakstan will be quantified and causes of low and high crop production ascertained. This is a basic step towards identifying the suitable adaptation and mitigation approaches to increase productivity.

The project will introduce **climate-resilient crops, best management practices and integrated production models**, as well as establish an ICBA-run seed production unit to cater to farmers' requirements for quality seeds. Suitable technologies, models and approaches, including integrated agri-aquaculture systems and greenhouses, will be trialed at **three project sites**

to ensure a good fit with local agro-climatic conditions and socio-economic needs. The project team will assess the performance of existing irrigation infrastructure in the three project sites to ensure that it provides the basic needs of irrigation, drainage and safe disposal of collected drainage discharge. **GIS and remote sensing** will be used for determining zones under degradation and for soil salinity assessment, complimented by detailed field studies at the project sites. Capacity development will be undertaken through training of trainers and farmer field schools.

ICBA will also work with its partners to **develop agri-business value chains and nutrient-rich value-added products** for human and animal consumption.

Projected Impact

The project will bring marginal areas with degraded soils and poor productivity back into optimum production through introduction of **stress-resilient food and forage crops**. A community-based quality seed production system established by the project will make it possible to scale out the new cropping systems across the region. Farming systems will also be diversified through introduction of integrated crop-livestock and aqua-agriculture production schemes. **Capacity development of national agricultural research staff and farmers**, in particular women and young people, will ensure the long-term sustainability of the project outcomes. Ultimately, the project will increase food security and incomes of the rural households, resulting in improved livelihoods and strengthened resilience to the adverse impacts of climate change in the region.

Future Directions

Once the technologies and solutions are trialed and proven to be effective in the three locations, ICBA will be in a position to transfer this knowhow to other parts of the Aral Sea region. For this purpose, the center will build on its successful collaboration with partners such as the Ministry of Innovative Development of Uzbekistan and the Ministry of Agriculture of Uzbekistan to scale up the outcomes of the project.

The project will engage current and new local and international organizations to support national agricultural development policies, as defined in Uzbekistan's Agri-Food Development Strategy 2019-2030, and contribute to the country's efforts to improve food and nutrition security among vulnerable rural communities and achieve several Sustainable Development Goals, including No Poverty (SDG 1), Zero Hunger (SDG 2), Gender Equality (SDG 5), Climate Action (SDG 13) and Partnership for the Goals (SDG 17).

ICBA will leverage and mobilize partnerships and resources to support food, nutrition and water security efforts in Uzbekistan and other countries of Central Asia.

About ICBA

The International Center for Biosaline Agriculture (ICBA) is a unique applied agricultural research center in the world with a focus on marginal areas where an estimated 1.7 billion people live. It identifies, tests and introduces resource-efficient, climate-smart crops and technologies that are best suited to different regions affected by salinity, water scarcity and drought. Through its work, ICBA helps to improve food security and livelihoods for some of the poorest rural communities around the world.