



# A Source of Peace – Transboundary Water Management in Central Asia

## Re-using drainage water at Khanhovuz Irrigation Scheme

### Context

Khanhovuz Irrigation System is one of the largest in Turkmenistan. It combines two transboundary watercourses: the Karakum canal, fed by the Amudarya river, and the Tejen river. The total irrigated area exceeds 200,000 hectares and about 120,000 people living in this region depend on agricultural production for their livelihoods. The system consists of the Khanhovuz water reservoir, the Khanhovuz main canal, and a part of the Tejen river that takes water from the main canal. Irrigation water is often used inefficiently and, as a result, the irrigation system generates large quantities of drainage water.

The Khanhovuz drainage network has not been properly or systematically maintained for several years. In over 10 years,

However, the problems of irrigation water deficit and increasing land salinisation remain. Uncontrolled drainage into country oases has resulted in widespread salinisation – so-called white spots. More and more pastures are degrading and productivity is in rapid decline. Furthermore, this deterioration is spreading beyond the Khanhovuz area. The drainage water contains very high concentrations of salt, often exceeding 10 grams per litre. For this reason, the drainage water cannot be used to irrigate the salt-sensitive agricultural crops that are traditionally produced in Turkmenistan like cotton, wheat, and sugar beet.



White salinisation spots appear around the Khanhovuz Irrigation System as a result of uncontrolled drainage

Drainage water could, however, be an alternative water source for salt-tolerant plants on light soils that are naturally well drained. Planting salt-tolerant shrubs and trees close to collection drain networks could help significantly increase pasture productivity. Growing crops that can be fed to cattle or used in the pharmaceutical industry would also serve as an alternative source of income for the local population.

Partners:	Ministry of Nature Protection of Turkmenistan, Ecological Monitoring Centre under the Research Institute of Deserts, Flora & Fauna
Project term:	Oct. 2009 – Dec. 2011
Budget:	194,400 Euro

no research has been carried out on the effectiveness of water use and the volume of production loss. Neither the quantity and quality of drainage water nor its environmental

impact have been monitored.

The drainage water produced by the Khanhovuz Irrigation System is diverted via a well-developed collector network into the main drainage water collector that runs across the Karakum desert. From there, the drainage water flows into a natural depression at Gara-Shor. A large-scale state project, the Golden Age Lake, is also being developed to deal with the drainage water emanating from the Khanhovuz Irrigation System.

## Objective

The project's primary objective is to use drainage water to increase soil productivity in the Khanhovuz Irrigation System area. Improved farming conditions will secure the livelihoods of people in the region. To that end, a system to monitor the ecological status of drainage water will be introduced. Using this, staff at the provincial Nature Protection Agency and the Ecological Monitoring Centre can assess the possible use of drainage water as an alternative water source for irrigating salt-tolerant plants on light soils.



Entrance to Khanhovuz Irrigation System

## Measures

Firstly, maps will be produced of Khanhovuz Irrigation System's drainage network, land use and salinisation im-

pacts. Staff at partner institutions can then use these maps for conducting field research. Furthermore, tools and methods will be developed to improve the monitoring of the drainage water system and the use of drainage water for irrigation. Strategies on how to re-use drainage water most effectively can then be devised and field tested to determine the most useful methods. The project also provides the portable, standard analytical equipment and chemicals required for water quality monitoring.

All of these technical measures are complemented by capacity building activities for ecological monitoring institution laboratory staff and include, for example, developing better laboratory practice.



View of Khanhovuz Irrigation System

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