

Livestock farming in the desert? How the NEXUS approach can enhance adaptation to climate change in Turkmenistan

By Aksulu Kushanova. How can ancient wells be restored and old pastures be reintroduced for farming? This demonstration project, initiated by the Nexus Regional Dialogues Programme in Central Asia in joint collaboration with the United Nations Development Programme in Ashgabat, developed solutions to enhance the water, food and energy security in remote desert areas of Turkmenistan.

In Turkmenistan, livestock farming is a traditional way of farming and a strategic sector of the country's economy to ensure food security. In the desert areas of the Dashoguz Veloyat (region), sardobs (*Persian word meaning "cold water"*), which are ancient wells in desert areas known from the 10th century A.D, are used for water storage on pastures for breeding livestock. Built from loam and later on bricks, sardobs collect the underground or rainy water in a special hole that can reach up to 5 meters down. The volume of the collected water reservoirs varies from 60 to 500 cubic meters. Climate change and external environmental factors interrupted this ancient technique of farming due to very dry periods, a decrease in rainfall and the decay of sardobs. Thus, the shepherds stopped grazing their livestock in this area, since the sardobs were not functioning anymore and water was unavailable for their livestock. As a consequence, farmers, solely let their livestock graze on local pastures which are close to villages, which further speeded up the process of desertification in the area. As water is scarce in the region, restoring and maintaining the sardobs is economically more meaningful than the transportation of water, which would overall be four times more expensive.



©CAREC. Degraded pasture heavily utilized for livestock farming in Turkmenistan, Dashoguz Veloyat.

The rural population in Turkmenistan relies heavily on livestock breeding as their sole employment source. There are no industrial sites nearby and poor road conditions hardly allow daily transport movement. Most of the families cannot afford to buy livestock. The local farm “Garalkum”, belonging to the state association of livestock breeders and associated with the Ministry of Agriculture of Turkmenistan, serves as the largest holder of livestock in the entire district with around 32,000 sheep and 1,700 camels. It leases livestock to the families, which has to pay off the lease with the animal yield. For example, for 100 leased livestock, a family will return 40 extra livestock units and the rest livestock yield keep for themselves. Afterwards, the whole family is engaged in the value-chane of breeding with men staying in dessert pastures and women making the home products and selling them in city markets.

Demonstration project of the Nexus Regional Dialogues Programme for restoring sardobs

Therefore, the Nexus Regional Dialogues Programme in Central Asia, funded by the European Union and the German Federal Ministry of Economic Cooperation and Development and implemented by the Regional Environmental Centre for Central Asia (CAREC) in partnership with the International Union for Conservation of Nature (IUCN), the Executive Committee of the International Fund for Saving the Aral Sea (IFAS) and UNDP/GEF assisted the restoration of two old sardobs and the installation of solar panels and pumping stations. The local farmers proactively helped with transportation, field works and

built the shepherd house. The project was setup in the remoted desert area called Esenaman land plot, which belongs to the “Garalgum” livestock farm.

How did the sardob system get restored?

The first step was to reconstruct the sardobs and setting up a fence to protect against future damages, incurred by animals. Then, the construction of the shepherd house followed by the installation of solar panels, which are providing the much-needed energy for the operation of the pumps were set up. At last, a strategy was developed on how to sustainably manage the livestock farm in the area, securing the future potential of the pastures and maximizing its ability to feed livestock.

Following one year of implementation of the pilot project, the local livestock farm “Garalkum” moved to the remote desert pastures in the area, now with the prospect of having water and energy access. The local farmers will now be able to utilize 50,000 ha rich of feed in the radius of 30-35 km and stay for 3-4 months longer than previously. Meanwhile, the previously used pastures will projectably be restored in the next 3-4 years.

"This is the traditional way of living with livestock breeding passed from generation to generation. This is what we are good at and love to do!"

- Local Farmer-



©CAREC. Sardob before the restoration.



©CAREC. Installation of the solar panels to secure water and energy access.



©CAREC. Sardob after the restoration.

Even one sardob restoration matters for water-energy-food security. 30% of the livestock farm of “Garalkum” pasture is watered located nearby the villages, while there is no access to rich pastures further 70 km from the villages able to accommodate up to 150 000 livestock units. Currently, livestock farm “Garalkum” has around 40,000 livestock heads. Hence, there is a big potential to boost the breeding output when water and energy access is provided at large scale. As such, two restored sardobs are able to supply water to around 2,400 unit of sheep.

For countries like Turkmenistan, where up to 80% of the territory are deserts, these kind of pilot projects help ensuring the socioeconomic and environmental security. Due to the livestock overgrazing, the rate of pasture degradation affects up to 50% of all of Turkmenistan’s pastures. It is estimated that one sardob allows the prevention of land degradation in the size of 2,700 up to 7,500 ha. For the last decades the contribution of agriculture, forestry and fisheries to the country's GDP has decreased from 33% in 1990 to just 9% in 2015, which might also be explained by increasing land degradation and deteriorated water-energy access in remote areas.

The pilot project practically demonstrated how the interlinkages between water, energy and food contribute to the economic and social provision and security, and, if scaled up, can show even more substantial results at the national level.