

**Potable Water in Uzbekistan:
Groundwater Desalinization Systems in Remote Villages**
An Overview of USAID Activities in Central Asia



Development Challenge

Karakalpakstan is a semi-autonomous republic in Uzbekistan, lying just south of the Aral Sea, and is one of the most desolate parts of Central Asia. Karakalpakstan suffers from environmental degradation associated with drying up of the Aral Sea, which has had a devastating effect on rural livelihoods. Today, the local population has the lowest income levels in Uzbekistan. Severe droughts in 2000 and 2001 diminished the local cotton and rice crops, and most irrigation canals, which are often the only source of drinking water, dried up. The conditions were so difficult that the Uzbekistan government feared mass migration and resulting political instability.

Most rural communities in the Karakalpakstan region are scattered groupings of simple houses where the population survives on basic agriculture. For many of these communities, especially in the more remote areas, the lack of safe sources of drinking water is perhaps the most crippling impediment to improving the standard of living for local residents. Most people obtain water from shallow wells, open pits or irrigation canals, but water from these sources is contaminated and causes major health problems. During droughts, even the contaminated water from these sources becomes unavailable for drinking water, bathing and other basic human needs.

USAID's Response

Improper management of water and energy in Central Asia has resulted in waste of these limited resources and the potential for conflict among users of these resources. USAID water activities bring people together to solve common water problems and give people the tools they need to resolve issues and manage resources better. Funding for this program is provided by the U.S. Government through special supplemental assistance funding for Central Asia.

In response to the need for clean sources of drinking water, USAID is developing groundwater desalinization systems in remote villages as part of three potable water activities in Karakalpakstan. This desalinization activity is designed to improve access to clean, safe water for the poorest people living in the most remote areas in this region. Activity implementation is governed by a cooperative agreement among the Ministry of Macroeconomics and Statistics of the Republic of Uzbekistan, the Council of Ministers of the Republic of Karakalpakstan, and USAID's development partner. The agreement was fully executed on December 12, 2002 and received direct endorsement by the President of the Republic of Uzbekistan.

The groundwater desalinization systems activity includes installation of new potable water supply systems serving a population of up to 5,700 in three regions of Karakalpakstan. A small, autonomous water supply system will be installed in up to ten different rural communities scattered throughout the area. USAID's approach offers the lowest-cost water supply alternative in an area where supplying drinking water is an expensive undertaking.

Both the capital and operating costs of this system will be lower than the alternative expansion of the existing, Soviet-built centralized system. The technology chosen by USAID is designed to allow reliable operation after they are turned over to local operators, and to encourage replication in other rural communities throughout Central Asia.

At each site, the work will include drilling a deep well and the construction of a small desalination system, each with pumping equipment, reverse osmosis system, water storage tank, disinfection system and distribution piping. Water is lifted from the deep well to the surface and pumped under pressure through permeable membranes in the reverse osmosis system, where undesired salt will be removed and water will become suitable for human consumption. Clean water will then be lifted to an elevated steel storage tank and flow by gravity through a limited distribution system to standpipes located throughout each target community. The local population will come to the standpipes for a reliable source of clean, safe water.

Benefits

The main purpose of the desalinization project is provision of safe and clean potable water service to a population of 5,700 in remote areas of Karakalpakstan that is currently without access to safe drinking water. The new systems will reduce the incidence of waterborne diseases and improve overall health conditions. Since water is a political issue of highest priority in this arid region, the project will generate goodwill from the local population and help raise their standard of living, which is of critical interest to the Government of Uzbekistan.

The project will also stimulate local community participation to develop a sense of "ownership" in the new water supply systems. This will be accomplished through the creation of private community-level water consumer associations that will assume responsibility for operating and maintaining the system and collecting water user fees. Such associations, composed of the water users themselves will operate on democratic principles and will contribute to decentralization of the inefficient, state-owned regional water supply systems, empower local communities, and support the democratization process at the community level.

Finally, USAID's project will transfer new technology and skills to the area. The activity will demonstrate that desalination of saline groundwater is the most economical and reliable water supply technology for the area. It will demonstrate that the quality, reliability and cost of desalinated groundwater is superior in the remote areas to water supplied by the existing centralized water supply system.

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