

The Pakhtaabad Canal Pilot Project (Uzbekistan and Kyrgyzstan)

An Overview of USAID Activities in Central Asia



Development Challenge

In Central Asia, the agricultural sector plays a vital social and economic role. 60% of Central Asians live in rural areas, and agriculture contributes to approximately 30% of the countries' GDP. Due to low rainfall, farmers are dependent on local irrigation canals for watering their crops. However, over 50% of irrigation water is wasted, mainly due to the inability of water managers to effectively measure, control and allocate water resources. This results in irrigation failure, shortages of water resources, declines in crop yields, and environmental degradation. Poor water control can also lead to excessive irrigation, which causes soil salinization, water logging, and decreased crop yields.

Since the end of the Soviet Union and centrally administered water and power systems, water use patterns have changed and equipment and infrastructure have rapidly declined. The modernization and maintenance of the entire water management system in Central Asia requires substantial investment that the region's governments cannot afford.

The Pakhtaabad Canal serves more than 20,000 hectares of irrigated land and about 100,000 farmers in Andijan, Uzbekistan and Jalalabad, Kyrgyz Republic. Although Andijan and Jalalabad are high-yield farming areas, ineffective water management has diminished irrigated land and reduced yields. Operation of the Pakhtaabad Canal was hindered by large gaps in the information available to canal operators. Without transportation and communication equipment, canal operators were not up-to-date on water distribution. Canal operators also had difficulty meeting water demand at the end of the canal because some of the control structures did not function and there was little information on actual water use along the canal. As a result, water was inefficiently utilized, lost, and often stolen without canal operators' knowledge. While some farms received more water than they needed, others received nothing.

USAID's Response

Improper management of water and energy in Central Asia has resulted in waste of limited resources and increased the potential for conflict among users. USAID's water activities bring people together to solve common water problems and give them the tools they need to resolve issues and better manage resources. USAID's comprehensive, large-scale pilot project on the Pakhtaabad Canal demonstrates how cost effective technologies and automation systems can improve water control and management along major existing watercourses. The pilot project was implemented by both USAID and the Ministry of Agriculture and Water Resources (MAWR) of the Republic of Uzbekistan support from January 2001 through August 2002.

The pilot includes low-cost, replicable evaluation and monitoring tools, such as locally made water level recording and gate positioning devices, and training for canal operators in their use. The pilot relies upon technology that is readily available throughout Central Asia, making the project easily replicable. Pilot projects like the Pakhtaabad Canal are models for the efficient collection, processing, distribution and storage of up-to-date information on water flow conditions that ensure optimal and equitable water distribution.

As Qodirjon Supurgibekov, Pakhtaabad Canal's Senior Engineer and Water Specialist, explains, "Now we have the opportunity to measure water automatically and distribute it rationally and in a timely manner. The automated approach also helps avoid weather-related problems. For instance, now we can quickly get information about rainfall and water-level changes on one part of the canal and can respond immediately. It is also easier to measure water for each farm. We used to use horses to get to each point on the canal and then inform the dispatch center about the level of water and other data on the situation on the canal, which caused delays in receiving information. The pilot project included a brand new radio communication system and computer technologies that help us operate the canal from a distance. It's always difficult to learn something new, but our staff obtained required skills from USAID's training programs and were motivated to continue developing their skills for operating the new systems."

In Uzbekistan, USAID also initiated an on-farm water management pilot project at a cooperative farm, which links the management of the automated Pakhtaabad Canal with farmers' irrigation needs. USAID is working with the farmers to develop demonstration models of good on-farm water management practices that reduce water losses and increase crop yields. The project includes installation of water control and measurement equipment to improve water distribution, installation of groundwater table depth indicators to improve irrigation scheduling and application of water to fields.

Benefits

Improved flow measurement and control will help reduce the potential for conflict over arbitrary water allocations and improve farm yields. By improving the timing and efficiency of water delivery for irrigation, the Pakhtaabad Canal is anticipated to show water savings of up to 5%, or an estimated \$200,000 annually. The climate in Uzbekistan requires more frequent irrigation (for example, six times for cotton) in order not to allow the crops to receive "water stress". Due to poor management of irrigation systems, it is very difficult to irrigate the crops that often. The flow control improvement in the Pakhtaabad Canal will allow water savings up to 5% and these water savings will allow farmers to improve irrigation precision, which helps to decrease the crop water stress and to increase crop production.

In addition, the water savings are expected to cover USAID's initial investment in the Pakhtaabad Canal demonstration (approximately \$400,000) in about two years.

In 2002, following USAID assistance, the amount of water flowing out of the Pakhtaabad Canal system was 100% greater than the amount during the previous four seasons, demonstrating significant water savings. More efficient water use and applications will, in turn, generate higher crop yields for the farmers and spur economic development. Initial data from the Pakhtaabad region for 2002 indicates that cotton yields increased and that at least some of that increase is attributable to better water management.

The Ministry of Agriculture, impressed with the effectiveness of the program, is planning to replicate the project jointly with other donors at 20 sites in 10 additional Oblasts in Uzbekistan. The Ministry will contribute by providing civil works similar to the Pakhtaabad Canal.

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Last updated: May 2003