Irrigation and Agricultural Water: Challenges and Opportunities for Tajikistan

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TAJIKISTAN

- Population: 8.6M and growing
- Agriculture employs 75% of the population
- Major crops: cotton, wheat
- Feed the Future value chains: vegetables, orchards, dairy
- Ample water but mountainous: 7% arable land
CENTRAL ASIA RIVER BASINS

- Two Rivers: Amu Darya and Syr Darya
- The Amu Darya river provides the majority water of for Tajikistan and northern Afghanistan
- Rivers are critical for irrigation and hydropower
CLIMATE CHANGE VULNERABILITY: TAJIKISTAN

• Droughts are predicted to be more frequent and intense—especially in the ZOI—as a result of higher temperatures

• Water flow is expected to change over time, quantitatively and temporally, with the melting of glaciers and changes in the degree and timing of snow fall and snow melt
WATER MANAGEMENT: TAJIKISTAN


- 1991: Soviet Union collapsed ending subsidies for agriculture / irrigation.


- Top down and grassroots approaches.
USAID AND WATER USER ASSOCIATIONS

Establishment and Strengthening of Water User Associations (WUAs)

Institutional Development:
- 60 WUAs created by USAID using hydrological boundaries
- WUAs registered with the Government

Infrastructure Improvements:
- 49 WUA offices built
- 1261 Water gates installed/refurbished
- 64 km irrigation canals cleaned
- 160 km drainage ditches cleaned
- Heavy equipment purchased
USAID AND WATER USER ASSOCIATIONS

Current work focuses on capacity building, but challenges remain

Capacity Building:
• Needs assessments / training
• Organizational management
• Fee collection / fundraising

Challenges:
• Lack of funding
• Urbanization / other water uses
• Maintaining infrastructure
• Soil salinization
• Changing agricultural landscape
FEED THE FUTURE TAJIKISTAN

OTHER AWM ACTIVITIES / TECHNOLOGIES:

- Drip irrigation
- Plastic mulch
- Improved greenhouses
- Improved varieties
Irrigation and Agricultural Water Management Challenges and Management Needs in Afghanistan
• Agriculture is the single most important sector of the Afghan economy

• Climate change: high-impact and low response

• Decreasing water availability

• Agriculture in Afghanistan is undergoing a significant transformation
NATURAL CHALLENGES

• Arid climate
• 40-45% of the country is rangeland
• 30-40% is mountains that are water towers of the country
• Water availability from aquifers is declining
• Afghanistan is not a water-scarce country, but the water is not uniformly distributed
• Natural Disasters (flood, drought, landslides)
• Poverty
RAMIFICATIONS OF CONFLICTS

• Irrigation systems have deteriorated significantly as a result of conflict

• Afghanistan: 3.1 million hectares reduced to about 1.7 million hectares

• The average land per person: 1.5 ha as compared to 3 ha in 1960s

• Forests have declined from 4% of the total surface area to 2.63% (1.7 million ha)

• Outmoded agricultural practices and lack of inputs

• Approximately 33% of Afghans are food insecure

• Influx of refugees has had a significant impact
CLIMATE CHANGE IMPACTS

- Mean annual temperature has increased by 0.6°C since 1960, which translates to an average increase of 0.13°C per decade
- Precipitation has decreased by 2% per decade
- Snow cover is reduced
- 33% of the total pasture and agricultural land area in the country has been degraded
- Frequent droughts and floods
INSTITUTIONAL CHALLENGES

• Climate change is not a priority in the country

• General level of awareness on climate change in Afghanistan is low

• Afghanistan does not have a platform for coordinated action on climate change adaptation

• Inadequate financing

• Institutional arrangements for water resource management

• Lack of reliable data

• Lack of capacity
WHAT IS THE GOVERNMENT DOING?

- Bringing 2.26 million ha of land under improved irrigation
- Establishing community associations to sustain the investment
- Shifting from institutional view to farmer-centric view
- Establishing agricultural research institutions
- Soil conservation
- Food grains management
- Climate-sensitive natural resource management
Climate-smart agriculture is a new area. Major interventions are land leveling, tillage, crop rotation, soil cover and water-saving technologies. USAID developed a smartphone app applying remote sensing of land use and crop production. USAID introduced Purdue Improved Crop Storage (PICS) bags. USAID introduced the use of plastic mulch. USAID-trained extension agents on conservation agriculture and demonstrated planting in rows and minimal tillage practices.

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USAID AND CLIMATE CHANGE

USAID/OAG office has 18 active projects. The following focus on irrigation, natural resource management, and climate change and water data management:

- Strengthening Watershed and Irrigation Management (SWIM): Support stable, agriculture-led economic growth by increasing the sustainable and productive use of water and improve water resource management
- Rehabilitation of Afghanistan Irrigation Networks: Increase crop productivity by expanding development and improving management of approximately 25,000 ha of irrigated agriculture land
- Kandahar Food Zone (KFZ): Rehabilitation of Irrigation Infrastructure and Improved Irrigation System Management
- SERVIR HKH project: Establish a water data management unit
MAJOR TAKEAWAYS

• **More sophisticated understanding of the links**

• The greatest loss to human life and economic damage over the last few decades has not been because of terrorism but because of natural disasters from floods, seasonal water shortages and drought

• **Strong commitment of the international community**

• **Climate-smart agriculture is a new area that needs more support**
THANK YOU

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"Kabul can be without gold, but not without snow“ Afghan proverb