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WATER WISDOM AND SUSTAINABILITY: INSIGHTS FROM IRRIGATION SYSTEMS IN AFGHANISTAN

L'EAU DE LA SAGESSE ET DE LA DURABILITÉ:
APERÇUS DE SYSTÈMES D'IRRIGATION EN AFGHANISTAN



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Presentation outline

- 1. Historical Review**
- 2. Evolution of Irrigation Institutions**
- 3. Phases of Development**
- 4. Current Scenario**
- 5. Insights from Afghanistan**



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HISTORICAL REVIEW

- 5000 years ago (Arian civilization): irrigation expanded along Amu River
- Dams: 1) Khosh - 2000 years ago; 2) Hawang - 1400 to 1700 years ago; 3) Rustam - 1200 years ago.
- About 1000 years ago (*Ghaznaviz* civilization) built many Dams along Helmand and Ghazni Rivers and constructed hundreds of *Karezes* in the southern, western and eastern parts e.g. Band-e Sultan (1011 A.D.).
- Abdur Rahman (1880–1901) - dams and irrigation systems construction
- After 2nd World War - Afghan got financial resources from fur trade and provisioning of the allied forces in India - invested in hydraulic infrastructure planned in early 20th century to consolidate the nation.
- After 1950s - modern irrigation technologies introduced through bilateral and multilateral funding - mainly multi-purpose schemes
- During 1980s - war - infrastructures destroyed and those survived did not get O&M - damages + collapse of governance and institutions - depletion of technical and management capacity due to death and exodus
- Transitional Government in 2002 - reconstruction and reconstruction.

EVOLUTION OF IRRIGATION INSTITUTIONS

Mirab system evolved over time to take O&M of irrigation systems including emergency repair of canal through collective volunteer work as and when required. Currently about 65 % irrigation systems being operated by Mirabs.

1951 - 1973: Royal Government of Afghanistan - establishment of government institutions for irrigation - 2 institutions: Ministry of Public Works and Directorate of Land and Water of the Ministry of Agriculture.

1973 -1981: all water activities by Water and Power Authority under direct supervision of PM's office and later by Ministry of Water and Power.

1981 - 1989: irrigation activities by Ministry of Water Resources and Irrigation.

1989 - 2002: all water related activities by the Ministry of Water and Power

2002 – 2004: split to 2 institutions Ministry of Irrigation, Water Resources and Environment (**MIWRE**) and **MRRD**.

2004 onwards: 3 institutions - **MEW** for major water and irrigation related activities, **MAIL** for minor secondary irrigation systems and **MRRD** for minor irrigation systems in rural areas.



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RESOURCE MOBILIZATION & WATER DISTRIBUTION





PHASES OF DEVELOPMENT

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1. Community-led Development Era (5000 yrs ago to 1879): historic era when irrigation development was made through initiatives of local communities using locally available materials by mobilizing their own resources. Also developed social norms for water distribution. By 1850, these systems were dominant and integral part of the Afghan society.
2. State-supported Development Era (1880 - 1979): when support from the state for expansion of irrigation. Initiatives were made for planned development of irrigation. Multi-purpose schemes identified, studied and implemented using state, bilateral and multilateral funds.
3. Destruction Era (1980 – 1989): Period of war - developed infrastructures destroyed and no attention for O&M - subsequently resulting in damage.
4. Restoration Era (1990 – 2001): Period after war when the security situation in rural areas was relatively better. Local communities able to start restoration and rehabilitation through UN and NGOs.
5. Post Conflict Rehabilitation Era (2002 – the present): With the transitional Government in 2002, bi-lateral and multilateral donors, UN agencies and NGO's supporting reconstruction.



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CURRENT SCENARIO

Landscape - mosaic of 2 types of systems:

1. Traditional (Informal) irrigation systems: fed by rivers, shallow wells (*arhad*), springs or *karez* (*qanat*). Further divided into 3 categories: small, medium and large-scale. Constructed by the local communities using locally available materials and maintained in informal manner and water rights are determined accordingly.
2. Modern (formal) irrigation systems: Both with and without reservoirs - constructed using engineering design and construction techniques. Financial and technical support for rehabilitation from NGOs and UN agencies.
 - Currently, only about 50% of cultivable land have access to irrigation.
 - Irrigation by traditional systems more dominant.



- Traditional systems more sustainable than modern ones. Hence, key elements of traditional knowledge of resource mobilization, conflict resolution and water distribution of the *Mirab* system should still be preserved and build upon in modern irrigation systems.
- Institutional strengthening found to be an essential component of any irrigation development endeavour and work should be initiated from the inception of the irrigation development works.
- Systematic assessment of problems, consultation with *mirabs* and farmers, and planning based on river basin and sub basin helps minimize conflicts and leads to technically sound and sustainable projects.
- Cost-effective and labour-intensive designs of irrigation works is more suitable in the rural context. Hence, provide skills trainings to villagers during construction to sustain preventive maintenance.

- Rehabilitation projects best formulated and implemented with the participation of communities and supervision and monitoring at the provincial and local levels.
- The government and donors should not pay for work that would traditionally be done by farmers by *hashar* canal and *kerez* cleaning. Maintenance is an activity that has always been done by farmers and villagers with their own resources. Experience shows that if payment is given for these activities, traditional practices will be undermined, adversely affecting the sustainability of the irrigation systems.



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CONCLUSION

- Afghanistan has its own experiences of the development of its irrigation sector. Traditionally, it has its own indigenous system for addressing the irrigation operation and maintenance system through *Mirab* system. Moreover, it also has its own experiences of reviving its irrigation sector which was adversely affected by the conflict in the country. Hence, Afghanistan has a lot of rich experiences of in the field of irrigation that can provide valuable insights for others as well.

