

# **Sustainability of Al-Abila Dam in the Western Desert of Iraq**

Ammar Adham , Shwan Seeyan , Rasha Abed, Karrar Mahdi , Michel Riksen and  
Coen Ritsema

## **Abstract**

Water scarcity is a major problem in the arid climate of Iraq's Western Desert and people struggle to manage the precarious water supply. Harvesting rainwater is one sustainable method that can be used to increase the supply of water. Rainwater harvesting systems (RWH) are considered to be sustainable "if they can continue collecting, utilising, and consuming natural water resources for maximum livelihood development". This study assessed the sustainability of the Al- Abila dam in Iraq's Western Desert by determining its level of functionality in harvesting water and using it effectively. The reliability of the water supply and its potential productivity and water use efficiency were investigated as well. The balancing storage at the end of each runoff shows that dam storage of this magnitude is insufficient to fulfil the water demand. This research highlighted constraints that have affected system functioning or sustainability and provided suggestions and recommendations for risk-managed rainwater harvesting system installation methods and designs. The water conveyance factor and adequacy of the system were low, with 60% conveyance losses. This research helps policymakers to conduct large-scale, high-level assessments and answer basic problems about small earth dam development and management in Anbar's Western Desert