

## **Integrated Water Resources Management to Ensure Water Security of Arial Khan River Catchment**

**Authors :** Abul Kalam Azad

**Abstract :** Water security has become an increasingly important issue both at the national and international levels. Bangladesh having an abundance of water during monsoon while the shortage of water during the dry season is far from being water secured. Though water security has been discussed discretely at a different level but a holistic effort to ensure water security is yet to be made. The elements of water security such as sectoral demands of water, conflicting requirements amongst the sectors, balancing between demand and supply including the quality of water can best be understood and managed in a catchment as it is the standard functioning unit. The Arial Khan River catchment consists of parts of Faridpur, Madaripur, Shariatpur and Barishal districts have all the components of water demands such as agriculture, domestic, commercial, industrial, forestry, fisheries, navigation or recreation and e-flow requirements. Based on secondary and primary data, water demands of various sectors have been determined. CROPWAT 8.0 has been used to determine the Agricultural Water Demand. Mean Annual Flow (MAF) and Flow Duration Curve (FDC) have been used to determine the e-flow requirements. Water Evaluation and Planning System (WEAP) based decision support tool as part of Integrated Water Resources Management (IWRM) has been utilized for ensuring the water security of the Arial Khan River catchment. Studies and practice around the globe connected with water security were consulted to mitigate the pressure on demand and supply including the options available to ensure the water security. Combining all the information, a framework for ensuring water security has been suggested for Arial Khan River catchment which can further be projected to river basin as well as for the country. This will assist planners and researchers to introduce the model for integrated water resources management of any catchment/river basins.

**Keywords :** water security, water demand, water supply, WEAP, CROPWAT

**Conference Title :** ICCEE 2025 : International Conference on Civil and Environmental Engineering

**Conference Location :** Istanbul, Türkiye

**Conference Dates :** February 10-11, 2025