Securing Socio-Economic Stability and Data-Driven Resilience for Ungauged Namal Valley Watershed at Monsoon Margins

PI – Dr. Shabeh ul Hasson

Abstract:

Pakistan is rich in a variety of natural and human-managed watershed ecosystems. While glacier and snowmelt dominated large watersheds are national priorities owing to their water supplies to agrarian economy, small watersheds that are fed entirely by rainfall and support less resilient local communities are often overlooked. Such small rainfed watershed ecosystems are particularly unstable when situated at the extreme margins of prevailing pluviometric regimes due to their erratic behaviour. Subsequent repetitive flooding and water scarcity put the socio-economic development and human lives in the region on permanent stake. Thus, adopting international practices, deploying state-of-the-art sensing technology for data collection and employing a comprehensive hierarchical modelling scheme, this project aims to enhance the resilience of the watershed ecosystems to provide better opportunities for the socio-economic development of the locals within the impoverished ungauged watersheds. Namal Valley in Pakistan is chosen as a case study because the valley is perfectly located at the extreme margins of two different precipitation regimes, the westerly disturbances and the south Asian summer monsoon (SASM). Being located between the Potohar Plateau in the northwest and the salt range in the southeast, the valley is also frequently affected by hill torrents.