Science Needs for Indian Water Security

India is of course not the only country facing acute water challenges but an increasing population, rising living standards, rapid industrialization and urbanisation are resulting in burgeoning water demands. When combined with changing hydro-climatologies across the Himalaya and Peninsular India, these pressures represent significant threats to water security.

Meeting these challenges will require not only better application of current knowledge but also a step change in our understanding of the region's hydrology. How, for example, in a country where over 80% of farmers are small and marginal, can we effectively model the catchment-scale impacts of local water management practices? Enhancing traditional decentralised irrigation approaches that use, for example, field bunds and check dams to store monsoon rains, may be a key part of the answer to future food security but we must understand their wider hydrological impacts if we are to design sustainable policy interventions.

With great challenges come great opportunities. Significant political interest in Indian river health is resulting in large-scale investments. The science community can have a lasting impact on their sustainability if we co-design research with policy makers and practitioners, co-developing new solutions.

India has the potential to be a hotbed of water science globally, providing challenging environments in which to develop and test new knowledge. Now, more than ever, there is need to harness hydrological advances as India grapples with the challenges of sustainable water management in a changing world.