UPSCAPE

Upscaling local water management interventions to inform larger-scale decision-making in the Cauvery basin, India

The challenge

As in many parts of Peninsular India, a key scientific challenge in the Cauvery basin is to understand how the many local small-scale water management interventions, such as check-dams, bunds and boreholes, affect water availability at the wider basin-scale.

UPSCAPE is a 3-year £2M research project. It is part of the Newton-Bhabha "Sustaining Water Resources Programme", funded jointly by the UK Natural Environment Research Council and the India Ministry of Earth Sciences. The project involves six organisations from India and the UK.

The aim

The Cauvery river basin in southern India is shared between the States of Karnataka and Tamil Nadu and has long presented water management challenges at local, regional and basin scales.

UPSCAPE will contribute to improving water management in the Cauvery basin through innovative research that will incorporate small-scale interventions into larger-scale decision-making.

A range of engagement activities will help the project to appreciate different stakeholders' needs and ensure that these are reflected in resulting policy guidance.

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The outcomes

- UPSCAPE will improve understanding of how small-scale anthropogenic drivers of change cumulatively impact on water availability at the basin-scale.
- UPSCAPE will develop novel methods for upscaling improved local-scale process understanding in basin-wide integrated water resources models.
- UPSCAPE will investigate the key hydrological processes operating in rural Peninsular India catchments, applying coupled surface and ground-water models to assess how local interventions affect water availability.
- UPSCAPE will explore how urban and peri-urban development in Peninsular India impact on groundwater recharge and surface hydrology.
- UPSCAPE will demonstrate how the new science and integrative systems-level modelling can be encapsulated into water resource management planning in Peninsular India.

Local water users (farmers, communities) will directly benefit from new understanding of the impact of small-scale interventions on the local hydrological conditions.

Basin authorities (e.g. Cauvery River Authority, Karnataka Government's Watershed Development Department) will benefit from new knowledge of how to upscale key small-scale processes to inform how the hydrological system functions at a basin-scale.

National institutes (e.g. Central Groundwater Board, National Water Development Agency) will benefit from improved hydrological modelling frameworks for large-scale Indian catchments.

The academic community will benefit from increased India-UK research collaboration and exchanges.

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The funders

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The project partners

Ashoka Trust for Research in Ecology and the Environment (ATREE)

British Geological Survey (BGS)

Centre for Ecology & Hydrology (CEH)

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)

Indian Institute of Science Bangalore

University of Dundee

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NERC SCIENCE OF THE ENVIRONMENT

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