ASSAR
Adaptation at Scale in Semi-Arid Regions

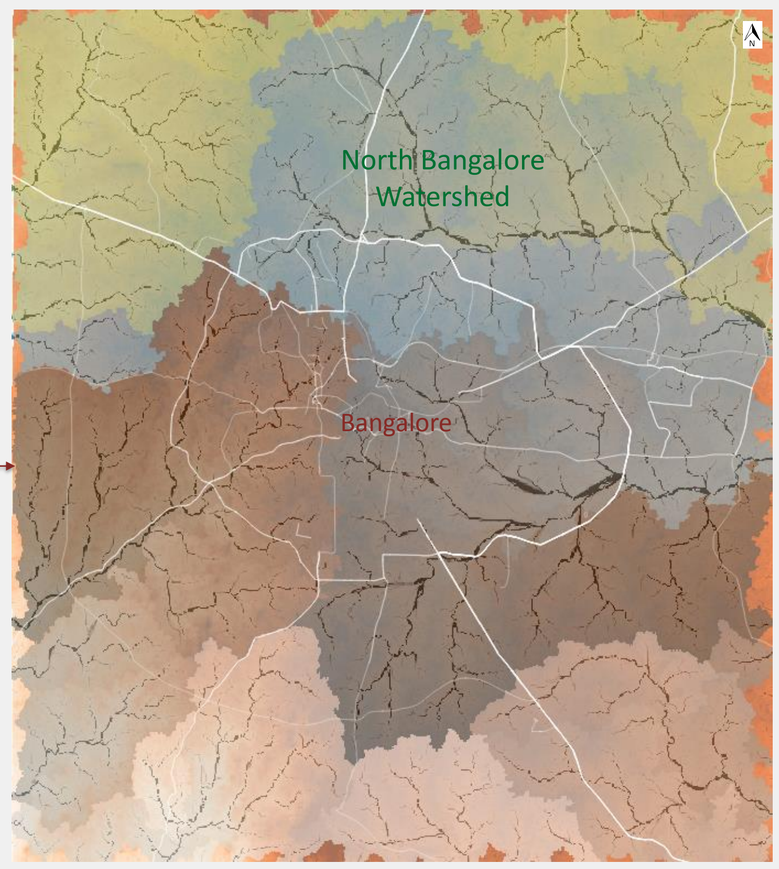
Conceptual framework for assessing ecosystem service pathways in an urban watershed

Ecosystem services in rapidly urbanizing areas

Semi-arid regions of India are witnessing increasing trends of urbanization as people move to cities for livelihood opportunities, and cities expand by enveloping adjoining rural areas. Without adequate institutional capacity to deal with rapid unplanned urbanization, many Indian cities are witnessing widespread degradation of crucial ecosystem services such as water provision, disaster protection, waste treatment and food production. Climate change is exacerbating these stresses by having direct detrimental effects on ecosystems themselves, and through indirect effects on the demand for ecosystem services.

The effects of climate change tend to be experienced differentially, determined by the ability of individuals or communities to access ecosystem services and to cope with the risks of climate change. Ecosystem service assessments need to consider not only the aggregated distribution of services, but also a disaggregated view of how services are accessed by individuals and communities.

Study area: Drainage network of a watershed in Bangalore

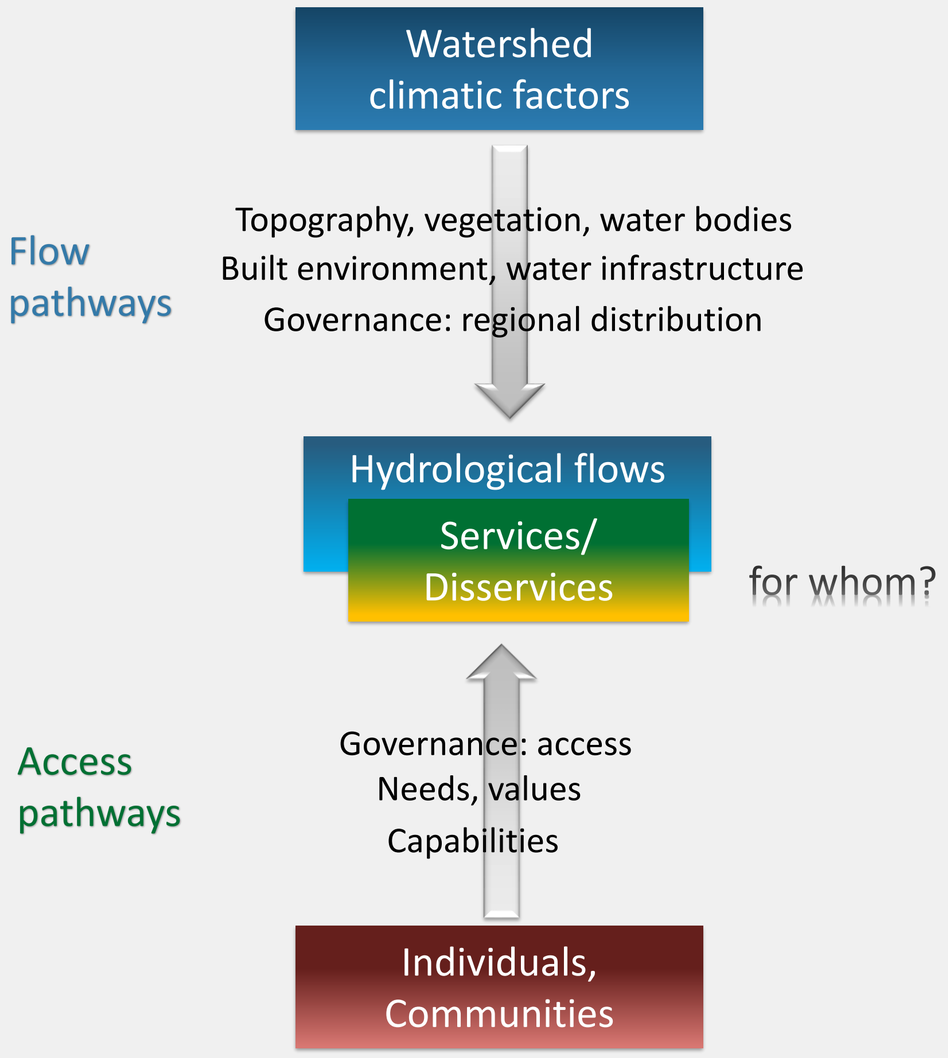


Watersheds draining the city of Bangalore and surrounds, with major roads shown as white lines. Study area is the North Bangalore watershed.

Rapid land use change around lakes: high-rise residential and commercial buildings replace agricultural villages

Stormwater drains carrying sewage are choked by solid waste, leading to increased risk of flooding in adjacent areas.

Framework for multi-scale assessment of ecosystem service pathways (focussing on hydrological services)



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Proposed application of the framework

Focus is centered on the pathways that lead to differential distribution of hydrological services and disservices to people and regions of North Bangalore. The framework is intended for application at multiple scales.

Flow pathways at the watershed scale:

- Geospatial analysis of the potentials for services and disservices from the flow of water through the network of drains and lakes of Bangalore.
- Identification of climatic and non-climatic factors influencing the distribution of hydrological services in the landscape.

Access pathways at the individual/community scale:

- A qualitative assessment of factors that determine access to services by selected communities.
- Identification of institutional and social factors that enable appropriation of services, or lead to marginalization.

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