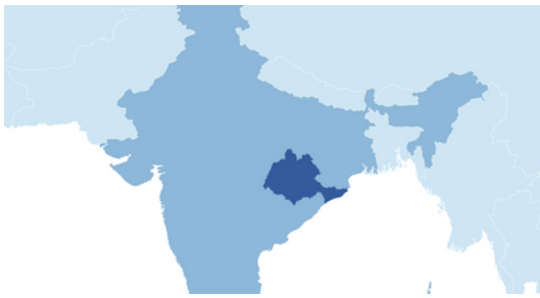
Mahanadi river basin – India

- 141,589 km²
- Mountainous borders surrounding a flat interior; tropical monsoon climate
- 54% agricultural land use, 37% irrigated crops
- Irrigation demand exceeds water supply
- Growing scarcity and floods (delta) under climate change
- Intersectoral and interstate conflict over water allocation between Chhattisgarh (upstream) and Odisha (downstream).



BARRIERS TO THE ADOPTION OF INNOVATIVE ADAPTATION POLICIES

Barriers	Example
Rigid regulations	Regulatory principles, e.g. interstate and intersector headwater priority, provide a conflicting and confusing framework which limits other possible beneficiary policies
Water (re)allocations can generate costs to third parties	Energy and industrial sector have some sort of priority use; inter-state headwater priority
Discretionary water allocation mechanisms	Frequent inter-state conflict, slow tribunals, different and often unwritten (groundwater) rules and overall conflicting on different levels
Limited institutional know-how on novel technologies and governance mechanisms precludes transformation	Lack of water rights reforms, harmonization between sectors and supply-side infrastructural development
Costs of transforming institutions to adopt novel policies and governance mechanism	Institutional fragmentation, slow water allocation from tribunal, week expertise in stakeholder inclusion, inefficient current policy, high cost for monitoring technologies (currently absent) and political costs for groundwater legislation
High information, bargaining and enforcement costs can limit the diffusion of new (re)allocation instruments	Intersectoral competition, confusing laws, lack of local institutions create uncertainty in water access, quality and quantity
Overselling of traditional policies, tendency to avoid high risk and lack of ex-post evaluation creates inertia to transformative changes	Overreliance on 'traditional methods', NBS and supply-side projects and difficulties in policy implementation
Public political or regulatory entity is co-opted to serve the interests and needs of a minor group	Large land-owners have advantage in groundwater abstraction; free water access, especially for industrial-energy sector; inequalities between farmers and industry-energy companies
Limited monitoring, as well as enforcement, and institutional capabilities	Lack of monitoring technologies and legislation for groundwater abstraction
Decision-making and people's awareness are strongly influenced by personal beliefs (based on experiences, memories, group dynamics etc.)	Policymaking heavily relies on hydrological models over economic ones; rain harvesting and other traditional techniques are applied with little or no scientific tools and validation

POTENTIAL INNOVATIVE ADAPTATION POLICIES

1. Development of inter-sectoral and inter-state water rationing frameworks
2. Modernization of irrigation infrastructure and control systems, such as improving efficiency
3. Reconfiguration cropping patterns based on water availability and climate forecasts