Transboundary basin management : Water allocations & trade-offs

June 15, 2016

A shared resource at risk

Domestic

Millions without drinking water and sanitation
80% urban sewage untreated
Demand to grow by 40% by 2025

Agriculture

- Largest water consumer; highest water footprint
- Demand to grow by 10% ~ 675 cubic km by 2025

Ecology

- No dedicated allocations for ecology
- Threatened habitats, declining aquatic biodiversity

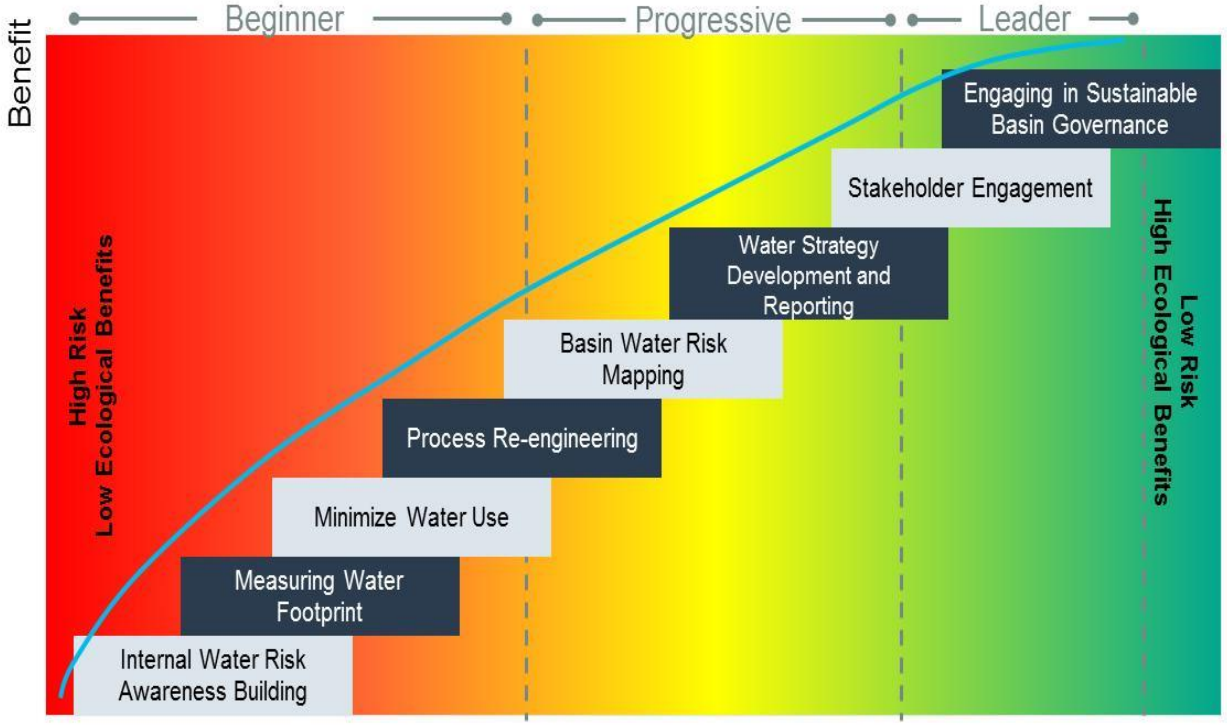
Industry

- Sector with highest demand growth
- Expected demand to be ~ 92 cubic km by 2025

Priority users

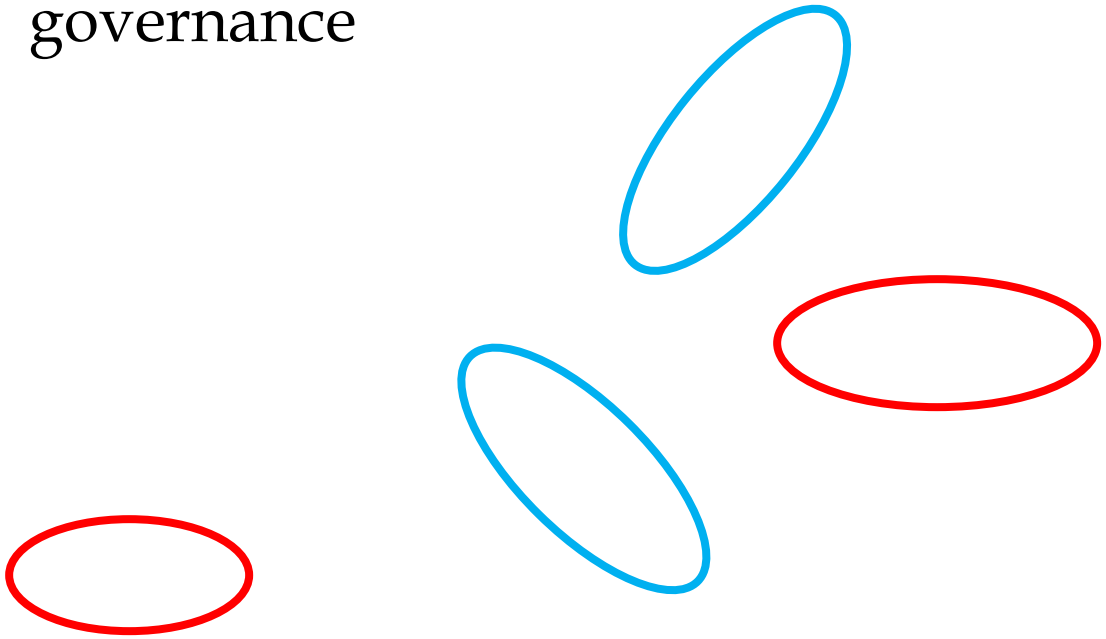
Multi disciplinary, multi stakeholder approach

- Growing competition for water
- Individual action focused
- Collective ownership, vision for the basin yet to be mainstreamed
- Spaces for conversations are opening up, but limited
- Spaces for collective action limited
- No realisation of the Shared risk



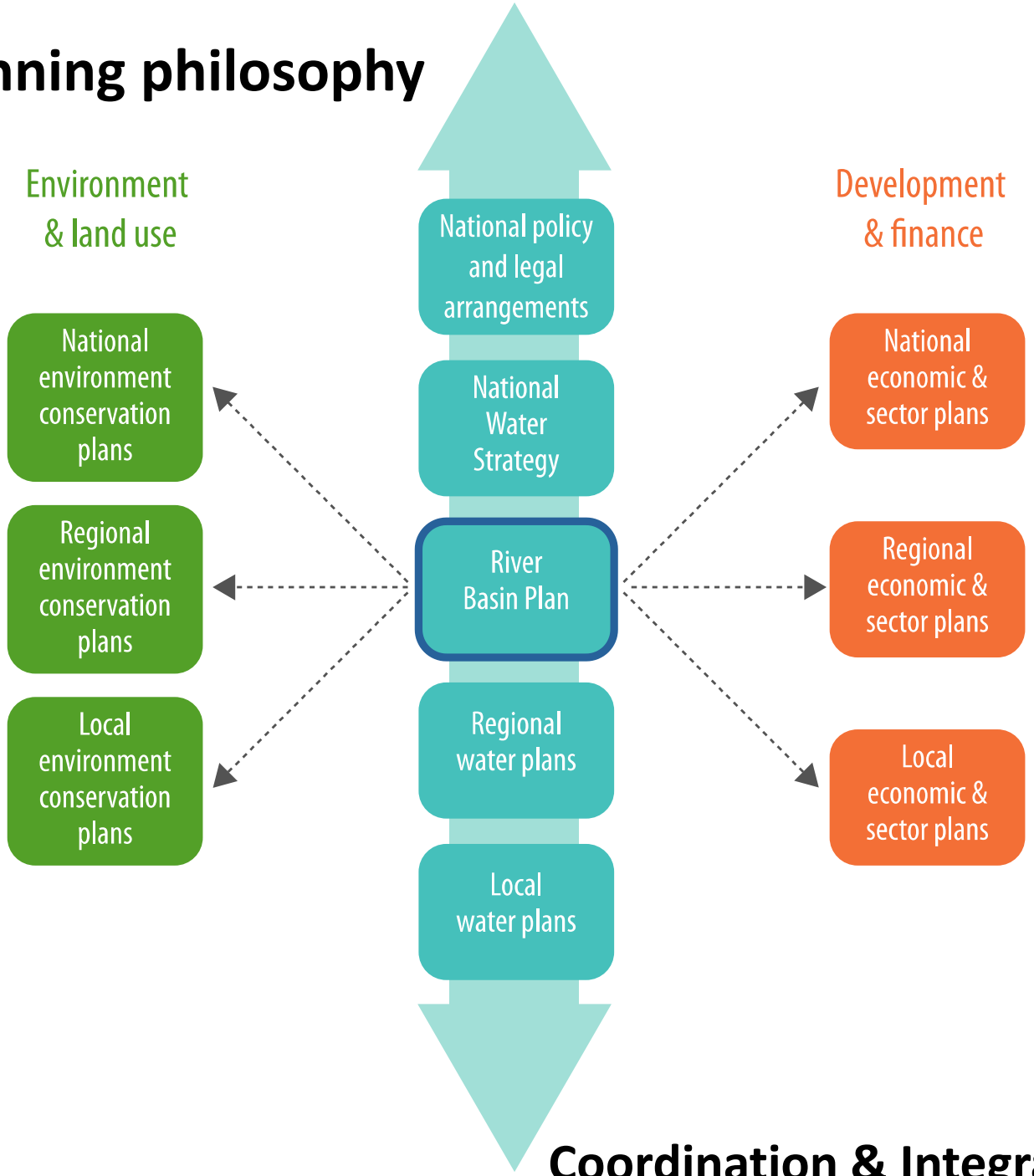
For a shared vision
Need to bring together and engage competing users

Basin water governance

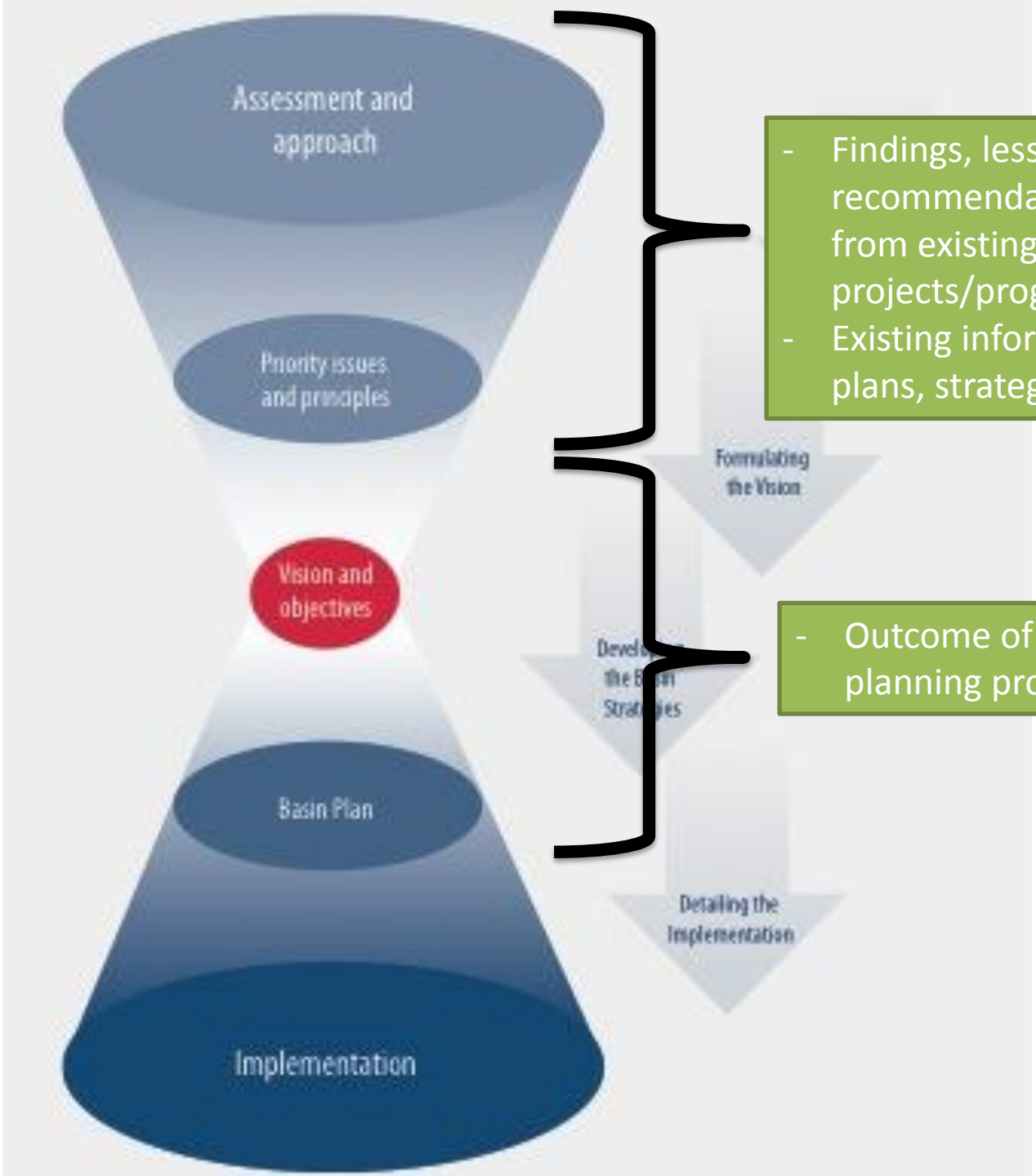


Development, supply chain and climate drivers

Basin planning philosophy

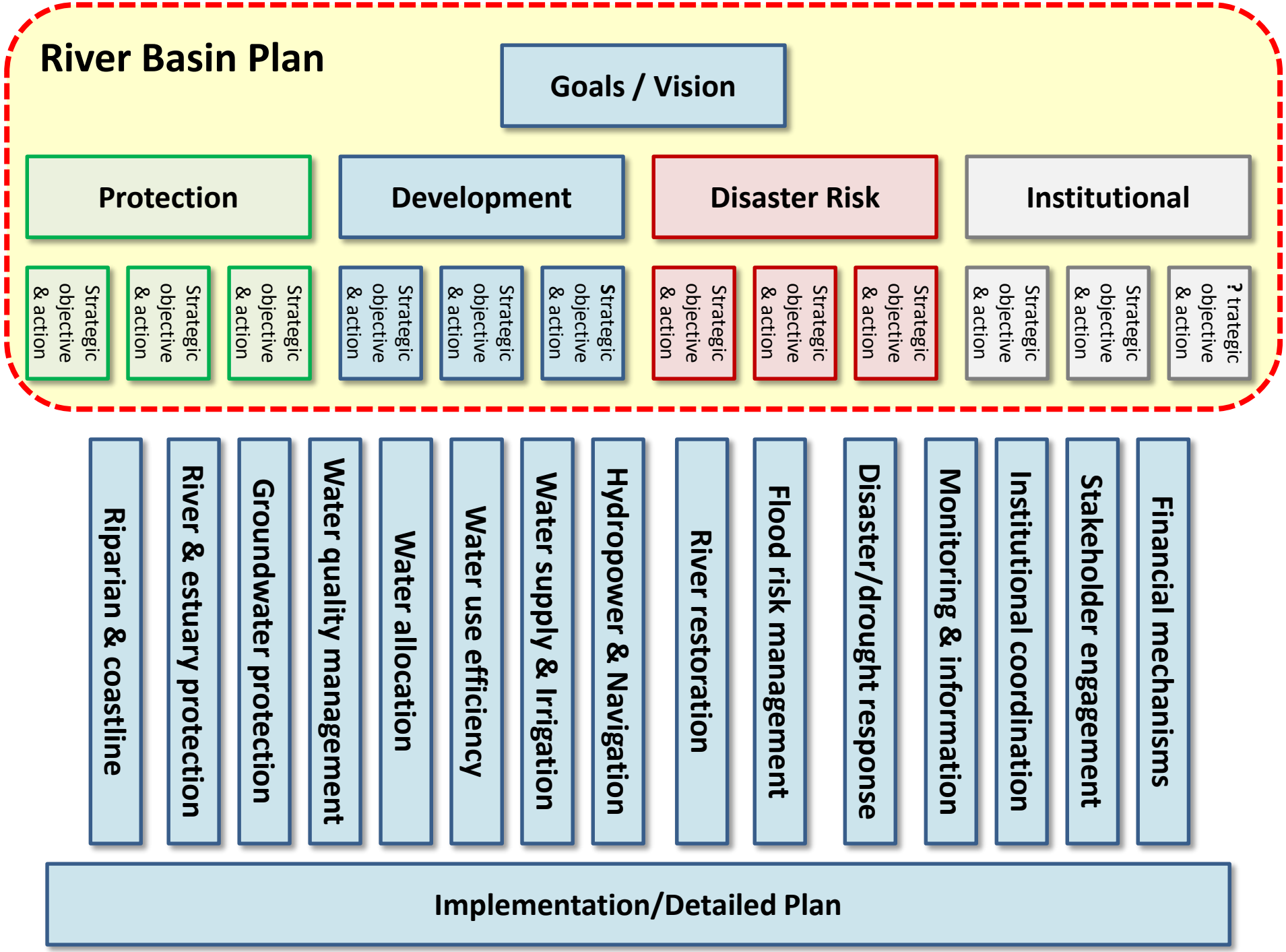


Coordination & Integration is key



- Findings, lessons and recommendations from existing projects/programmes
- Existing information, plans, strategies

- Outcome of basin planning process


River Basin Plan
Goals / Vision
Protection
Development
Disaster Risk
Institutional
Strategic objective & action
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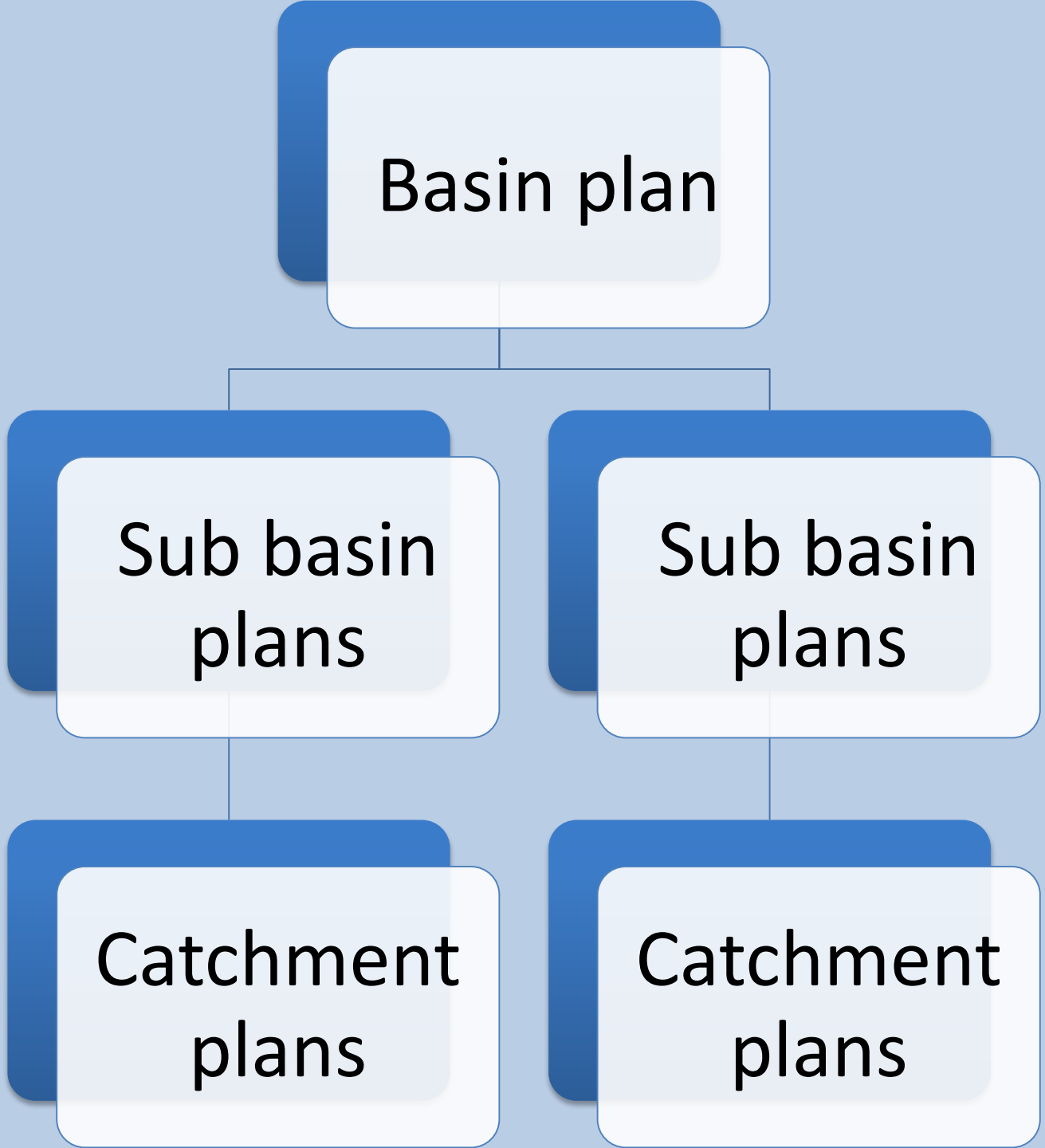
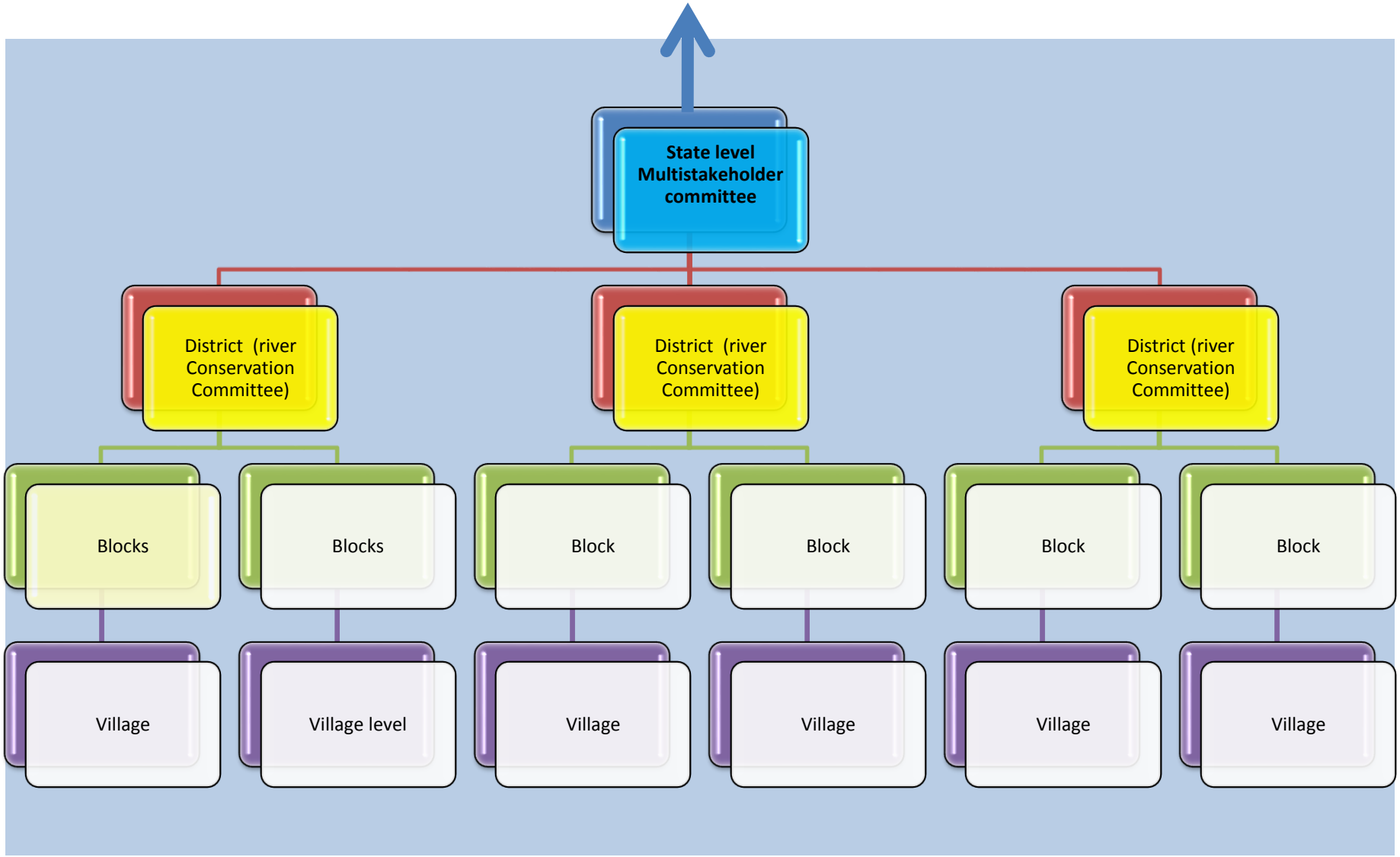
Financial mechanisms
Stakeholder engagement
Institutional coordination
Monitoring & information
Disaster/drought response
Flood risk management
River restoration
Hydropower & Navigation
Water supply & Irrigation
Water use efficiency
Water allocation
Water quality management
Groundwater protection
River & estuary protection
Riparian & coastline
Implementation/Detailed Plan


Basin plan
Sub basin plans
Sub basin plans
Catchment plans
Catchment plans

River Basin organisation



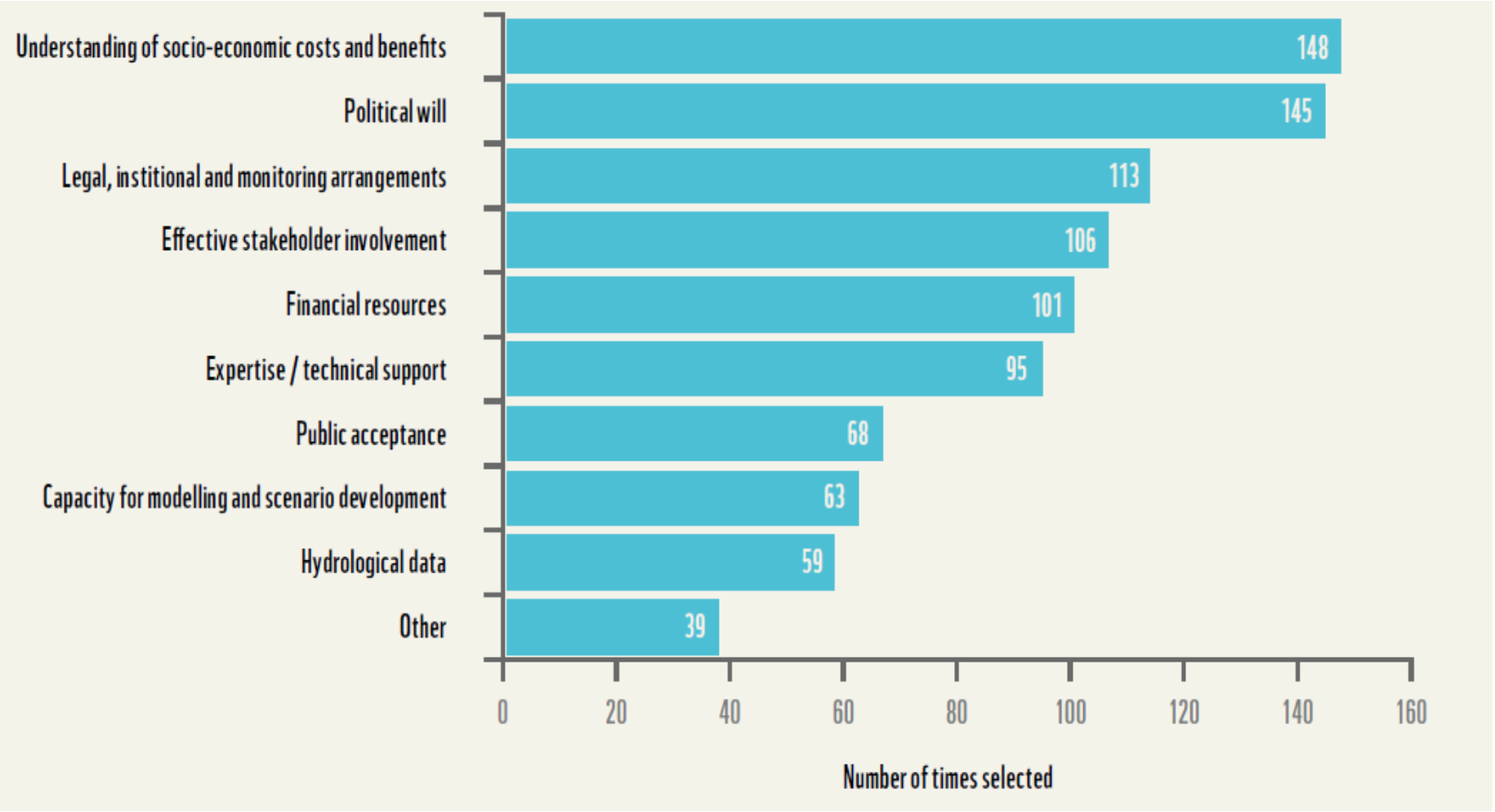
Integrating E-flows into basin plans

Draft National Water Framework Bill 2016:

- **Calls for integrated river basin development and management**
- Environmental flows adequate to preserve and protect a river basin as a hydrological and ecological system shall be maintained.

Temporal and spatial variations in quantity and quality of water required for freshwater and estuarine systems to perform their natural ecological functions (including material transport) and supports the spiritual, cultural and livelihood activities that depend on them (IITC 2012)

Implementation Challenge



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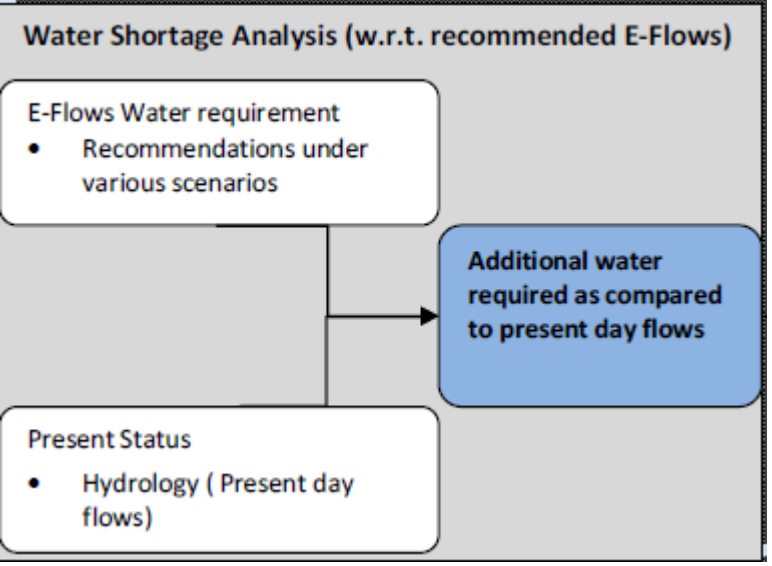
Future priorities	themes	Progress				
		Not yet considered	Initial thinking completed	Practical aspects considered	Some aspects in place	Fully operational
	Definetion of e-flows for India					
	Options analysis and planning to include e-flows					
	Aims and objectives of e-flows					
	Centralised coordination of e-flows					
	Public engagemet on e-flows					
	Training in e-flows methods					
	Research, date collection on e-flows					
	Centralised e-flows knowledge base					
	Preliminary e-flows assessments using desktop methods					
	Implementation of e-flows					
	Monitoring e-flows outcomes					

Source: Report of the Workshop on Environmental Flows for Strategic Planning for the Ganga Basin World Bank 2015

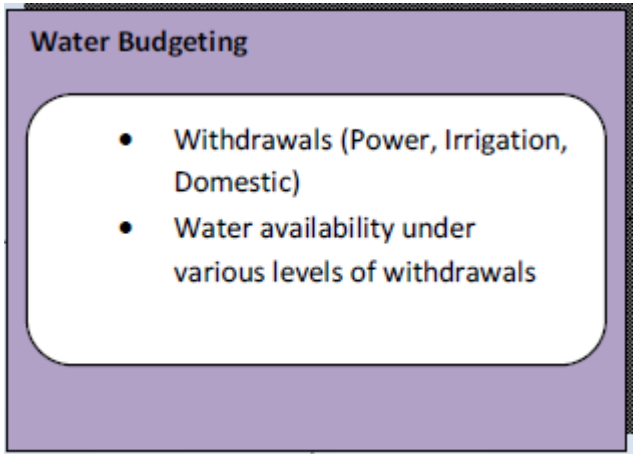
Key issues

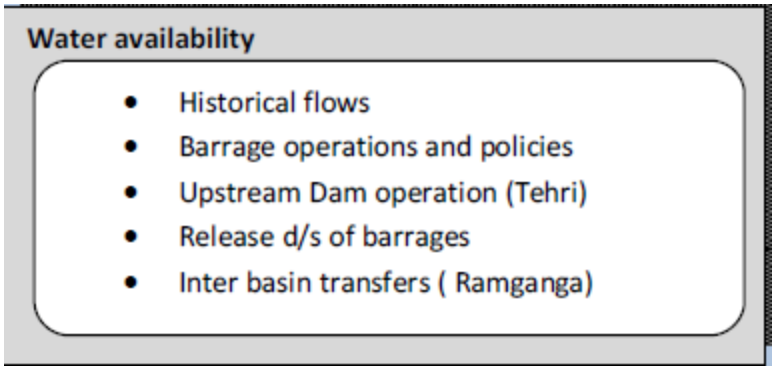
- What are the costs, benefits and trade-offs of using environmental flows for riverine ecosystem rejuvenation?

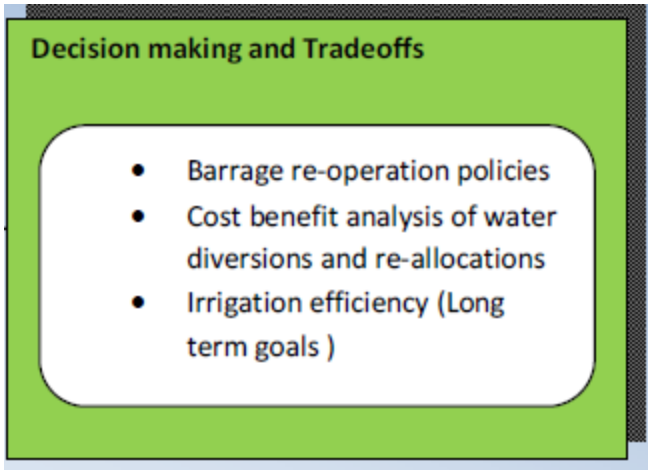
- What strategies (investments, policies…) need to be adopted to manage the trade-offs and to implement environmental flows?



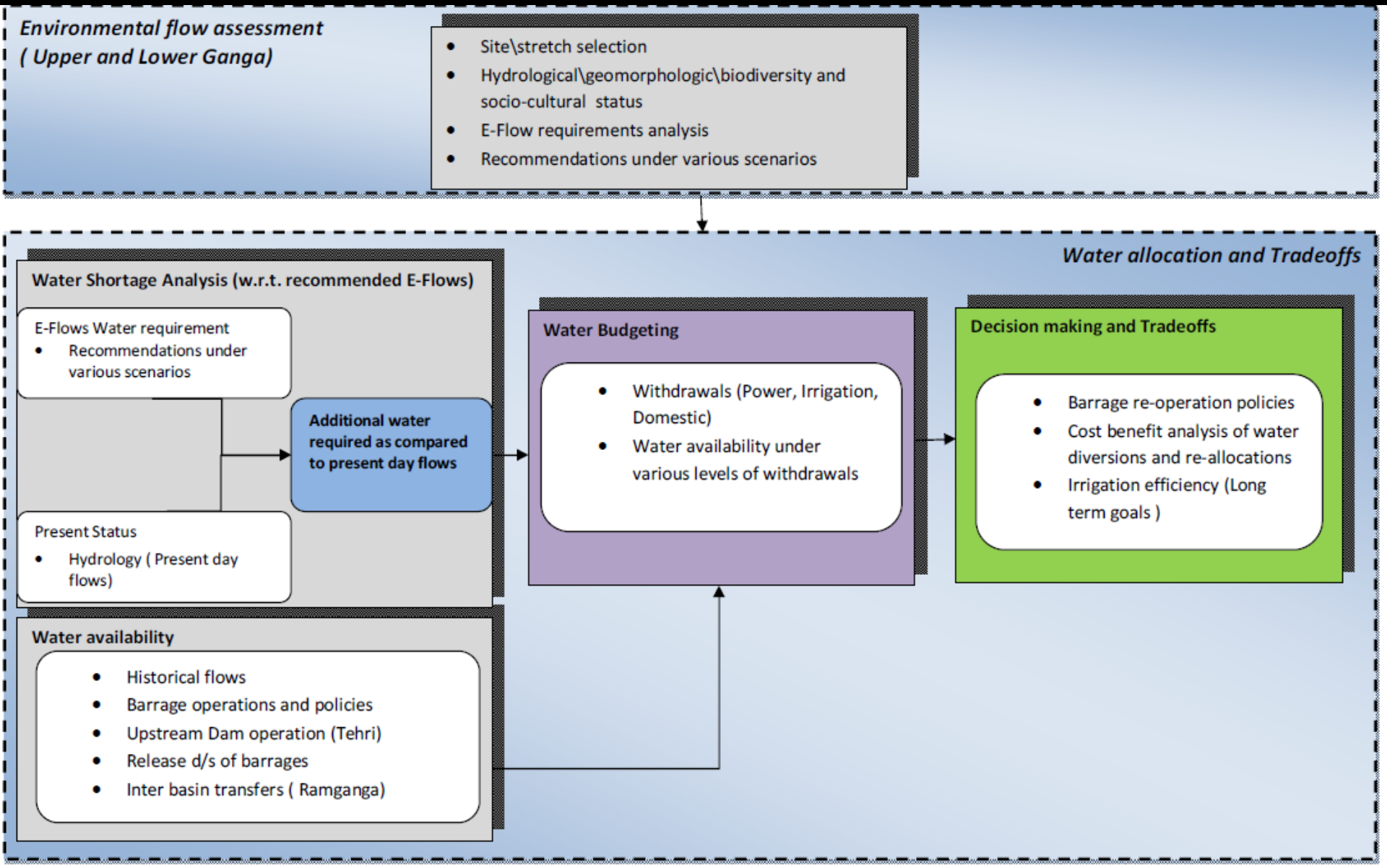
matrix of various values of inflows ,withdrawals and remaining water that can be used for satisfying E-Flows requirements under various scenarios

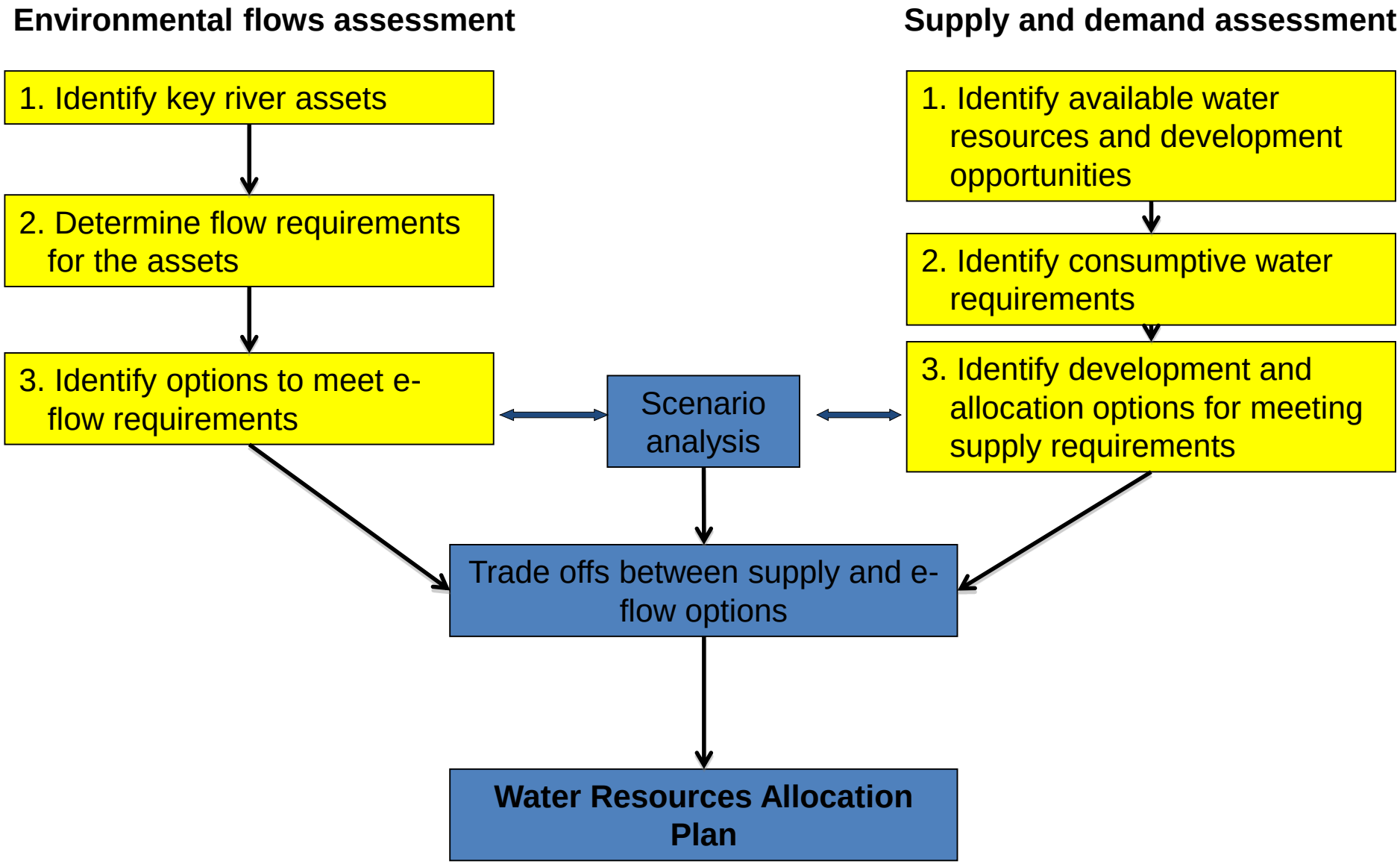






Trade off analysis





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Key lessons

- E-flows are central to water planning and allocation process
- EFA is an evolving science. Capacity building on E-Flows at different levels needed
- Need to collaborate on documenting the cost-benefits, trade-offs and demonstrating E-flows
- Framework to integrate E-flows and trade-off management in basin management plans

An nationwide approach for E-flows assessment

An approach for Cost benefit tradeoff analysis

Illustrating how e-flows can be embedded in basin plans

Case study of small basin under allocated

A big basin over allocated

- Developing a framework (social, institutional and technical for E-Flows
- Proof of concept demonstration to assess costs-benefits and tradeoffs

Recommendations for integrating e-flows in basin plans

THANK YOU

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