Managing water resources in Australia – lessons of international relevance to WASH

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Australian Aid

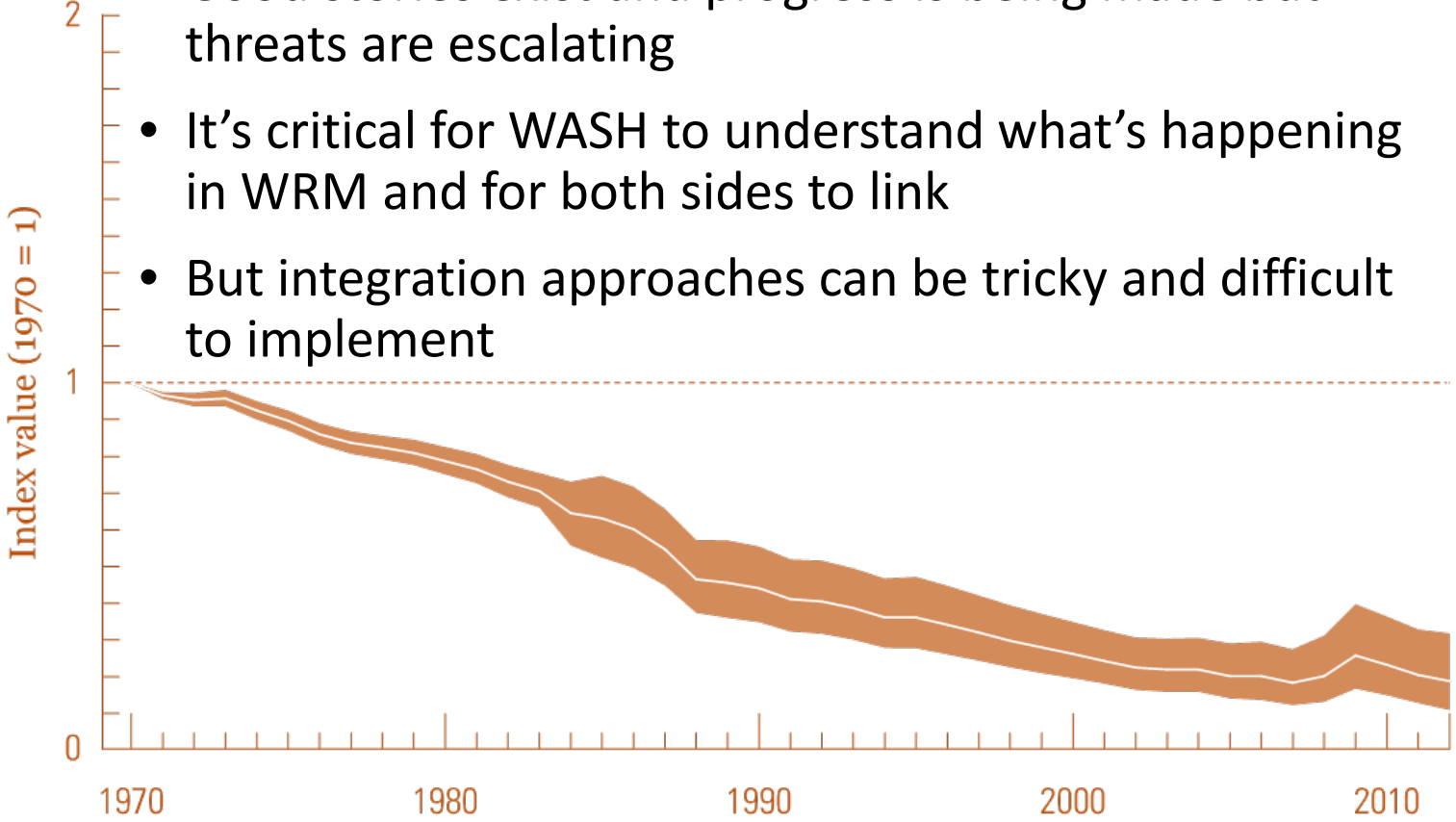
THE AUSTRALIAN WATER PARTNERSHIP

Outline

- Global water crisis
- Water challenges for WRM and WASH
- WASH & WRM integration - benefits and challenges
- Australian integration case studies
- The Australian Water Partnership

Global water crisis

- A humanitarian crisis
- Also an integral part of a broader ‘global sustainability mega-crisis’
- Good stories exist and progress is being made but threats are escalating
- It’s critical for WASH to understand what’s happening in WRM and for both sides to link
- But integration approaches can be tricky and difficult to implement



freshwater LPI shows a decline of 81 per cent (range: -68 to -89 per cent) between 1970 and 2012

Trend in population abundance for 3,324 populations of 881 freshwater species monitored across the globe between 1970 and 2012 (WWF/ZSL, 2016).

Key

Freshwater Living Planet Index

Confidence limits

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World Economic Forum - Global Risks 2018

Water has been in the top 5 global risks for ‘impact’ since 2012

WASH & WRM challenges operate at different scales

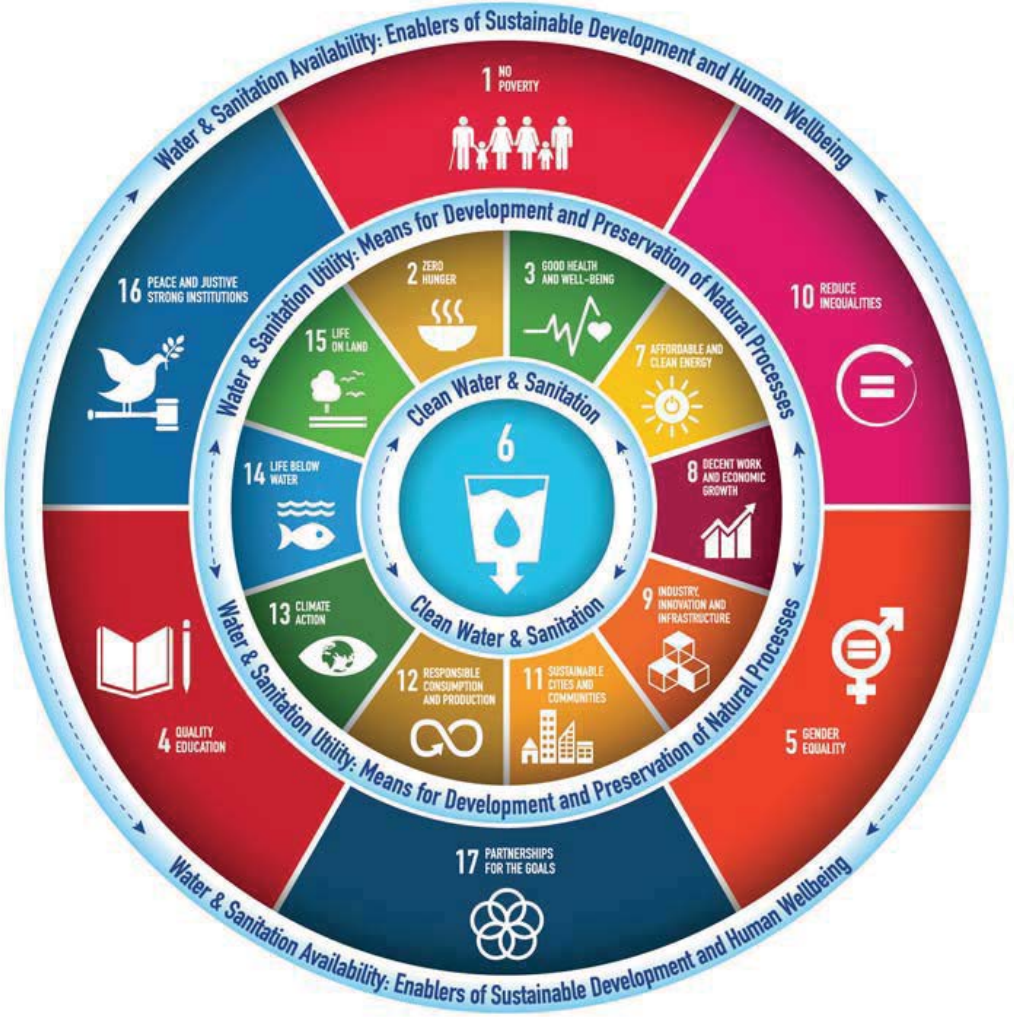
Water challenges for WRM & WASH

Global challenge	WRM	WASH
Climate change	Changing rainfall patterns, sea-level rise, melting glaciers	More unpredictable water supply, less habitable conditions
Extreme climate events & disasters (floods & droughts)	Heat waves, floods and droughts affect billions of people	Overwhelm local water supply & sanitation & whole communities
Water demand & scarcity	Water demand for power, industry, agriculture and people increasing rapidly leading to physical scarcity	Economic scarcity dominant now
Water infrastructure developments	Damaging river & wetlands + massive human displacements	Can cause huge changes at community level

Water challenges for WRM & WASH

Global challenge	WRM	WASH
Land conversion & land use	Alters hydrology and leads to point & non-point pollution	Affects local safety (e.g. landslides) and livelihoods
Pollution & water quality	Increasing rapidly on a global scale. Some successes in 1st world. Many $$	Most wastewater untreated and polluting downstream users
Human access to safe drinking water	Emerging solutions at large & small scale	SDG6: 663 million without safe drinking water
Inadequate sanitation	Emerging solutions at large and small scale	SGD6: 2.3 billion without adequate sanitation
Biodiversity & ecosystem collapse	Broad scale loss of ecosystem services. Mass extinction event.	Loss of ecosystem services strongly impacting communities

GLOBAL RESPONSE: SDGs and 2030 agenda



- **SDG6:** *Ensure availability and sustainable management of water and sanitation for all*
- Water at the core of sustainable development and SDG6 is inextricably linked with all other SDGs
- The Water Goal and targets cover the entire water cycle in an integrated manner
- **Practical integrated approaches critical to implementing SDG6**

Source: ESCAP, 2015 UN-Water Regional Expert Consultation on Water and Security in Asia-Pacific, 9-10 November 2015.

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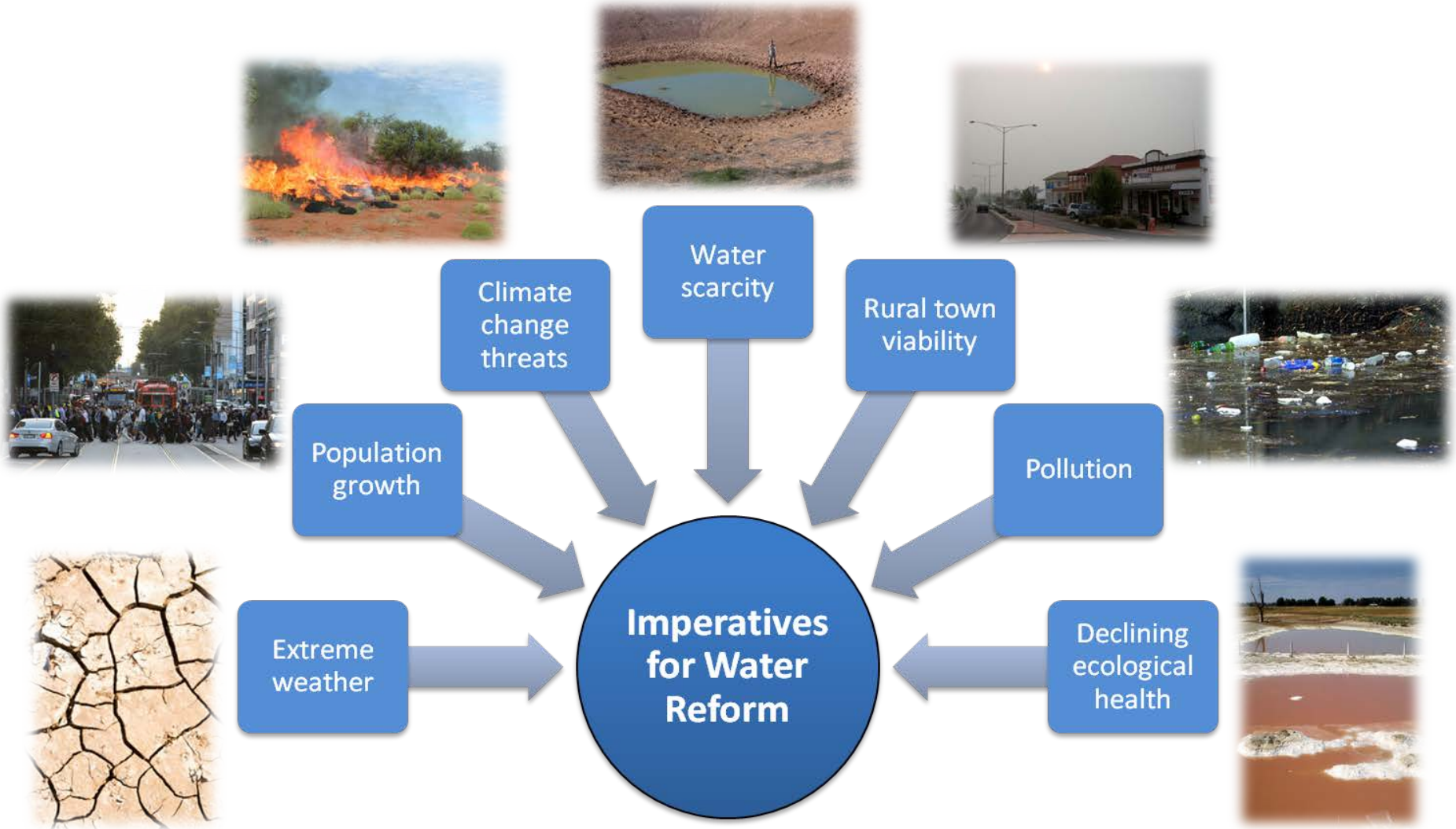
The case for integrating WASH and WRM

- **Interdependence** – most compelling reason for integration, both needed for success
- **Water, poverty and environment are deeply connected** – the poor are the most vulnerable to environmental risk factors such as unsafe water and climate change
- **Human communities living in close proximity to high endemism & biodiversity** tend to be impoverished with little to no access to improved WASH
- Watershed/catchment conservation **sustains freshwater resources on which safe drinking water projects depend**
- Watershed/catchment management is **key to developing climate change and disaster-resilient WASH infrastructure**
- Improving **access to WASH reduces wastewater pollution**
- WASH helps WRM **engage the local community**

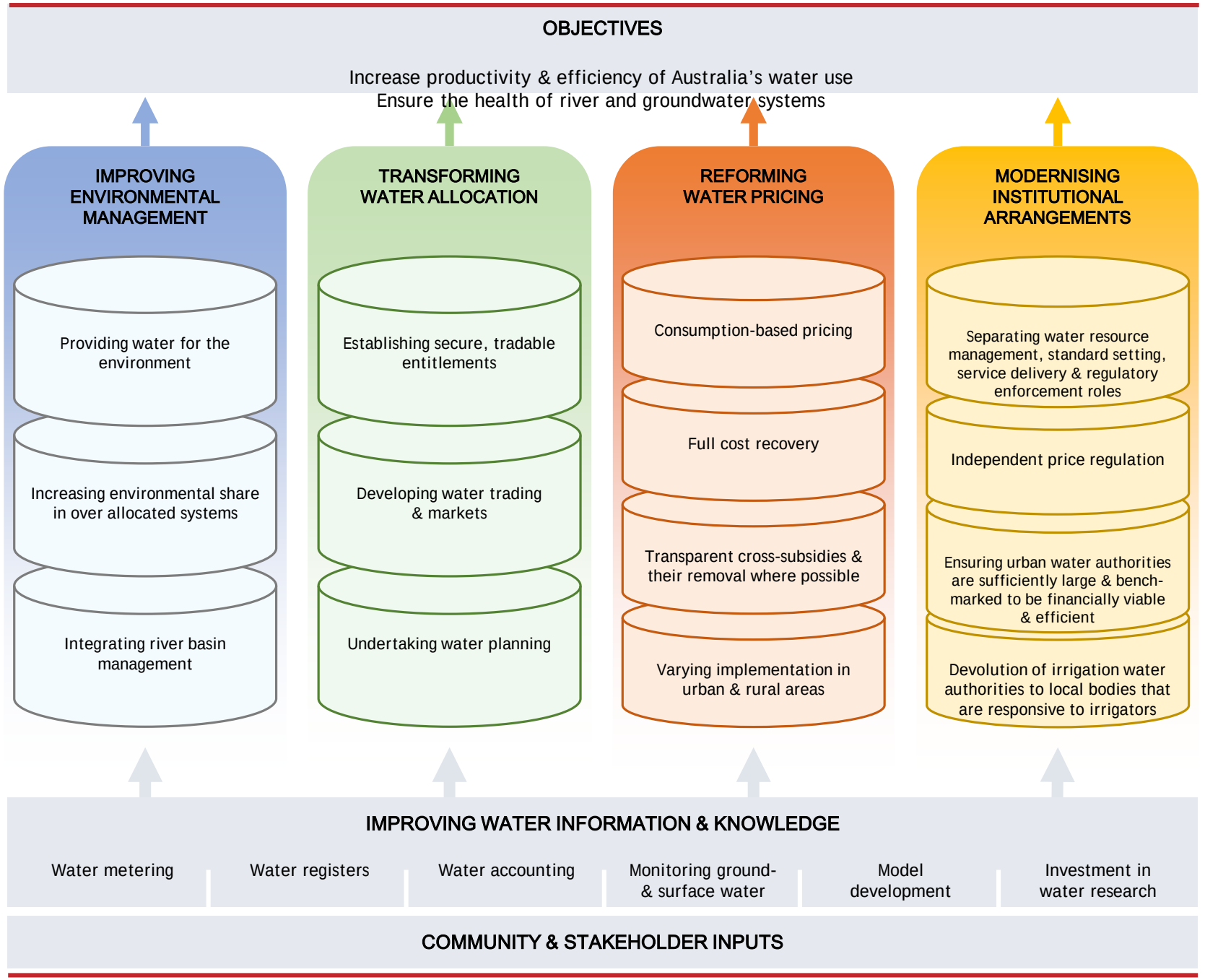
Challenges to integrating WASH and WRM

- **Geographic mismatch** between projects
- IWRM is often **too broad** and **all-encompassing to apply at the local level**
- Integrated projects:
  - require **more patience, sophistication, effort, strong relationships across sectors,** and **focus on governance**
  - run the risk of becoming **too large to manage**
  - Require more **complicated technical solutions**
- WASH projects can create momentum – organisations hesitate to divide and dissipate the attention and funding
- **Sector knowledge, language** and **culture differences**

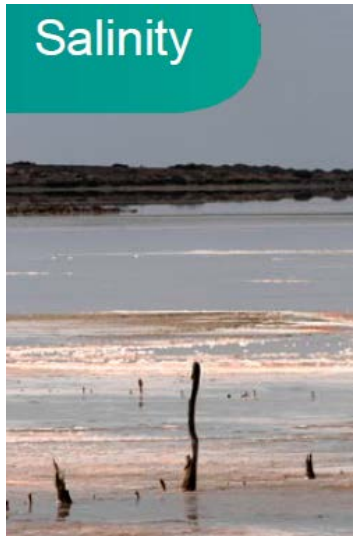
Australian experience in integration – water challenges

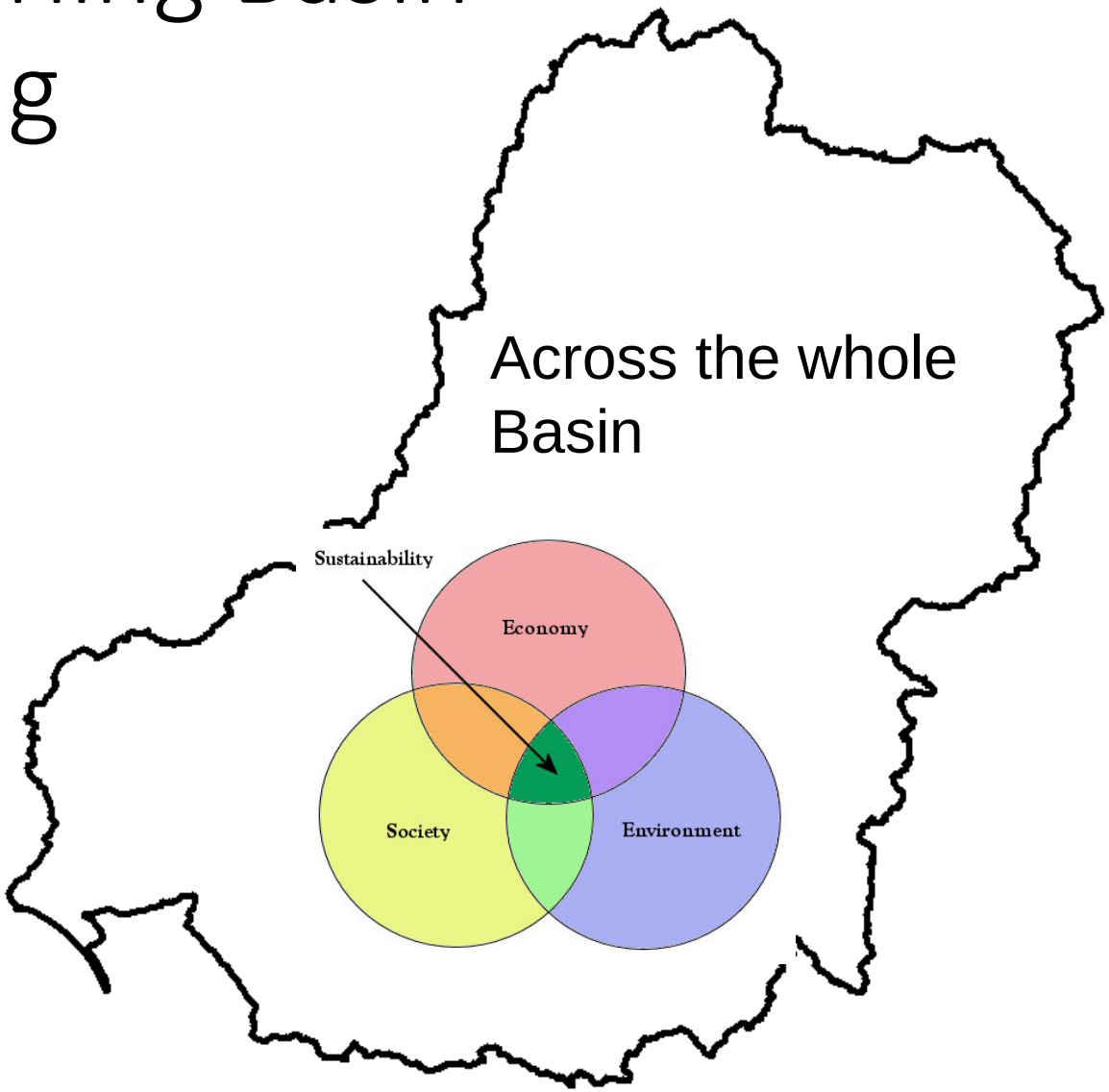


Australian water reform since 1990 (policy-led)



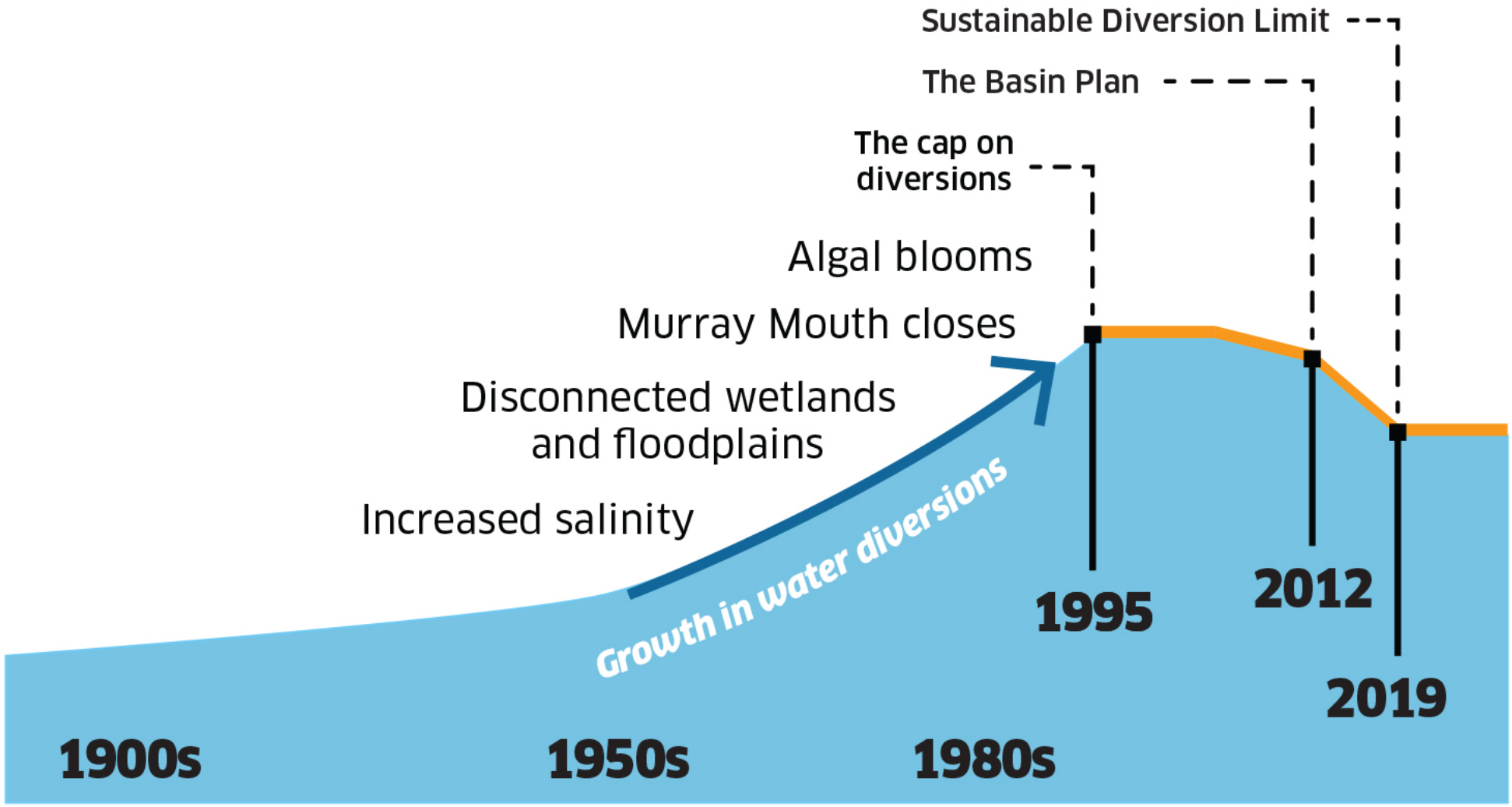
Case Study 1:Murray-Darling Basin – integrated basin planning





Not just stopping at state borders

Case Study 1: Water over-use the main driver



Case study 1: the MDB integration challenge

Optimising water allocation between:

- Critical human water needs
- Irrigated agriculture
- Environment
- Urban
- Hydropower
- Manufacturing

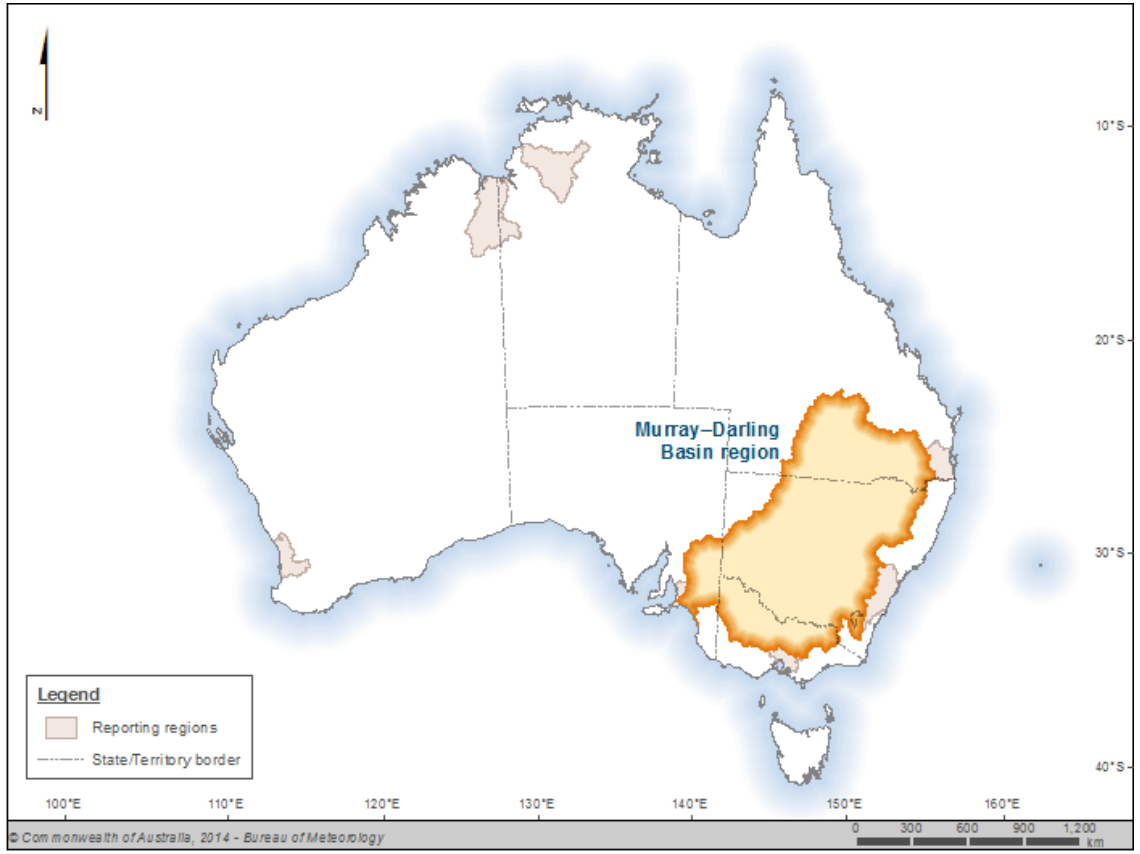
Taking account of:

- Climate change and variability
- Groundwater-surface water interactions
- Salinity and water quality
- Cultural, aesthetic, spiritual & recreation needs

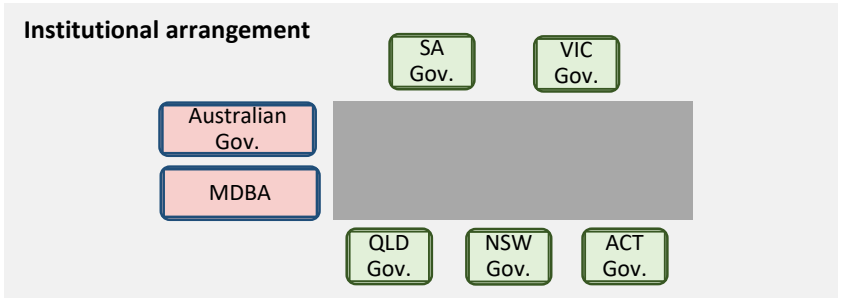
Utilising

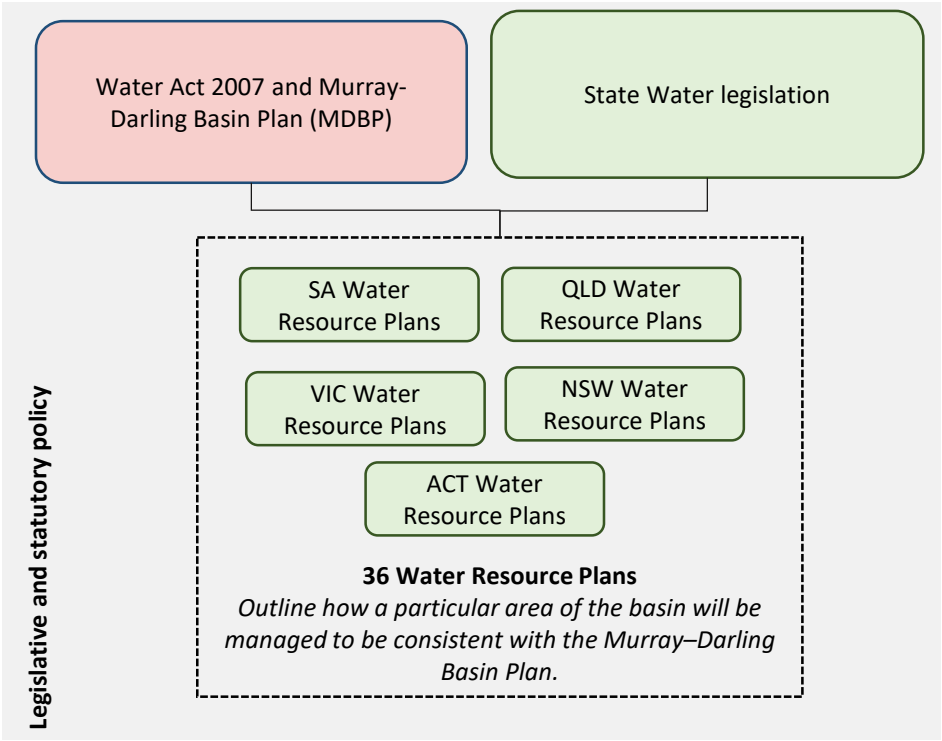
- Master planning (“The Basin Plan”)
- Water plans for all catchments
- Separation of water & land rights
- Water entitlements and allocations
- Water markets
- Sustainable diversion limits
- Environmental watering
- Cultural flows
- Irrigation modernization (for WUE)
- Flow constraints management
- Modelling for management
- Monitoring & compliance
- Stakeholder engagement

Case study 1: Interjurisdictional arrangements

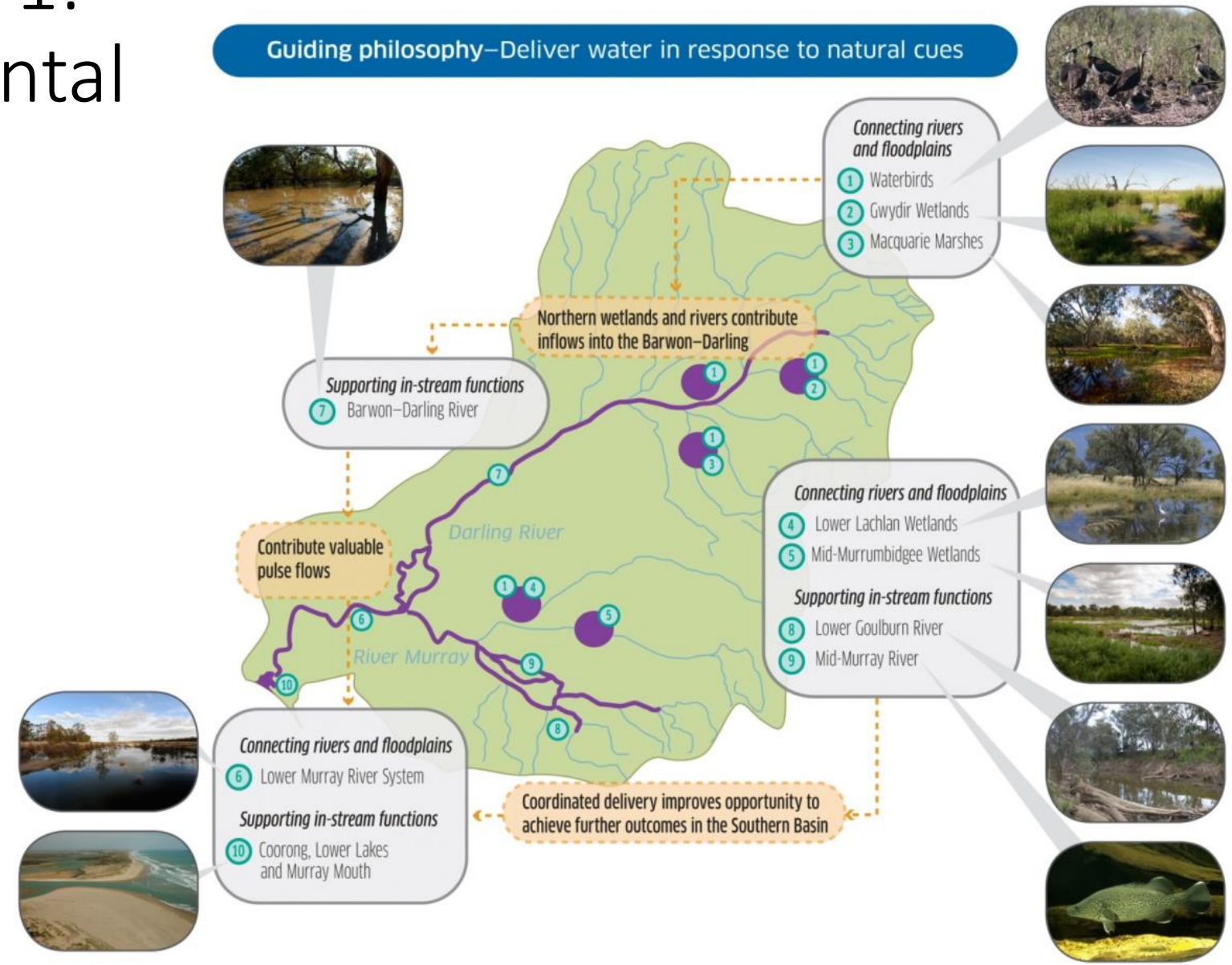


National legislative and regulatory approach





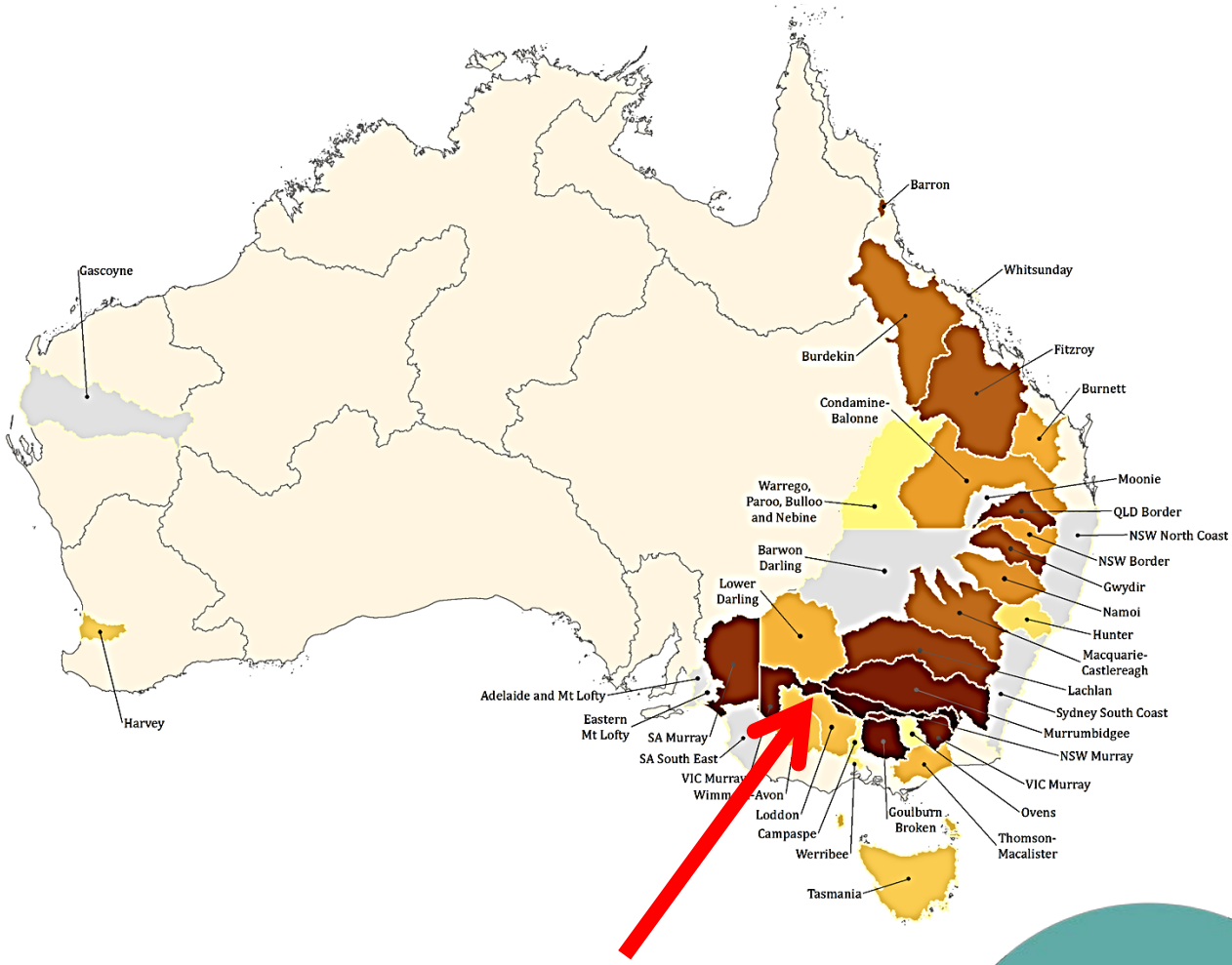
Case study 1: Environmental Watering



Case study 1: Water use efficiency via better technology

Case study 1: Integration through water markets

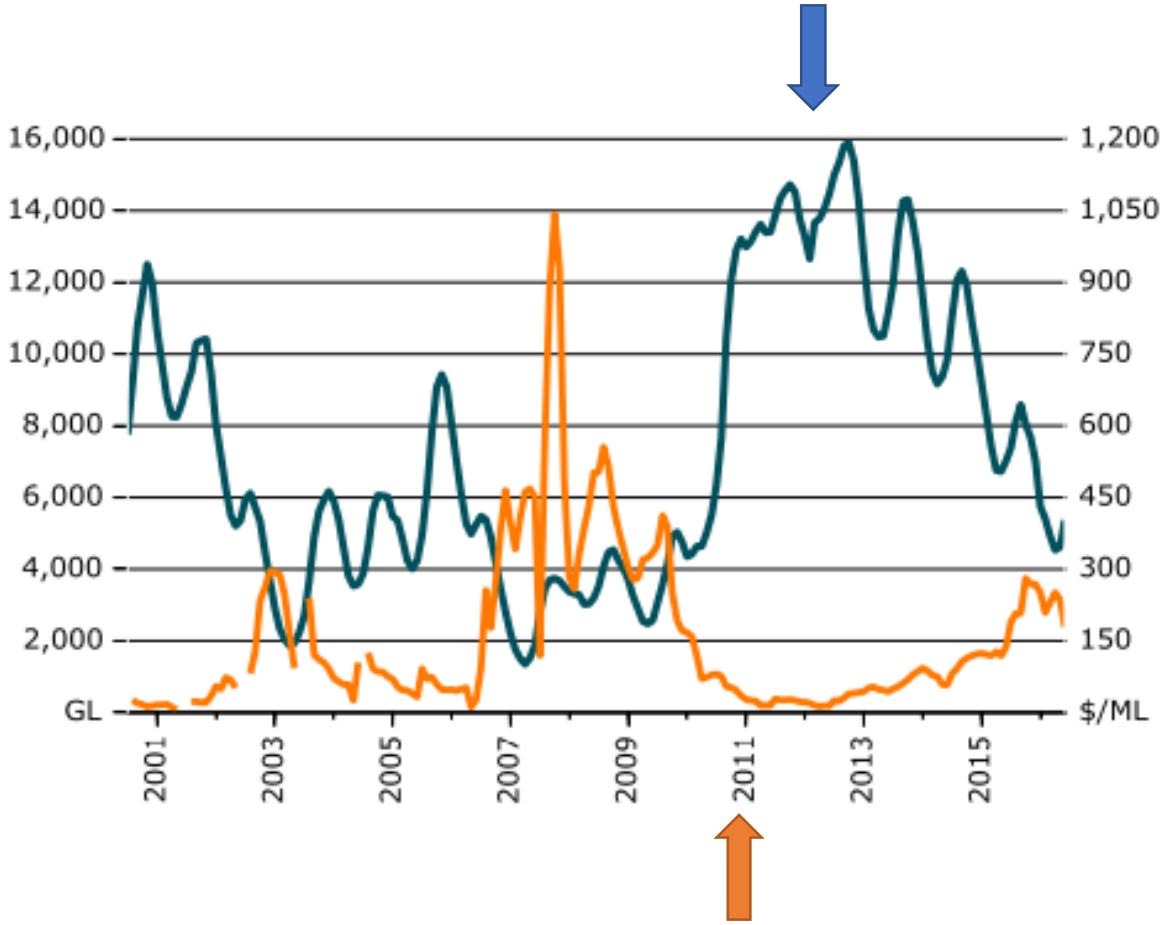
- Separate water and land rights
- Establish water entitlements for all water users
- Establish a water market
- Provide annual allocation of water against for each entitlement (%) based on water available
- Allow permanent and temporary trading under specified rules
- Products differ in reliability – high/medium/low



Most water trading is in the southern Murray-Darling Basin

Case study 1: Market sets the price

Water stored in dams



Price of water allocations

- Moves water to highest value uses
- Allows adaptation to drought – choice to buy or sell
- Frees up market entry and exit
- Government can purchase water for environment

	Water applied (estimate, GL)		Revenue* ($m, real)	
2005-06	7,370 (6.0 MAF)	53 %	5,522	21 %
2008-09	3,492 (2.9 MAF)		4,349	

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Case study 1: Stakeholder engagement

Principles

1. Understand your stakeholders first and their worldviews and agendas
2. Plan it! Pays off to invest in this
3. Start the process as early as possible
4. Communicate and consult often and openly
5. Remember they're human – not always rational, reasonable, consistent or predictable!
6. Relationships are key - commit energy and time to building trust
7. Simple, but not easy – requires subtle skills such as being empathetic, listening, genuinely caring
8. Compromise when you can. Seek win-wins. Manage the 'losers'.
9. Understand what success is, manage expectations
10. 'Sell' the responsibility to engage and develop stakeholder ownership of the solutions

"NSW and Victoria say move to disallow 18% cut in northern basin target could 'kill off' plan"

"Scientists and economists condemn squandering of $4bn on projects that have failed to improve the river's health"

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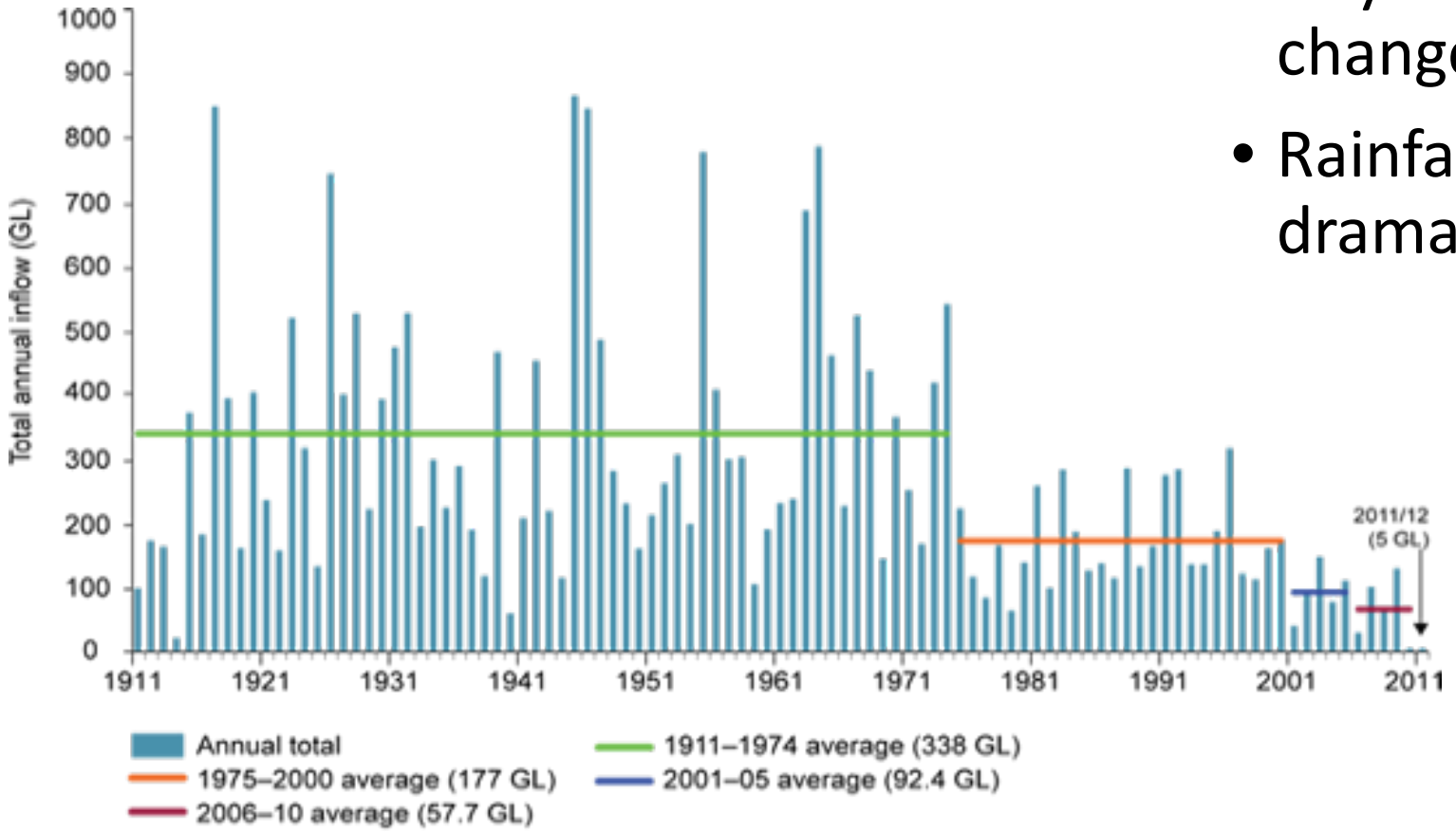
Case study 2: Perth's integrated water supply response to climate change



- City most affected by climate change world-wide
- Rainfall and runoff dropped dramatically since 1970s

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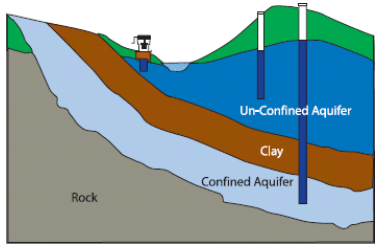
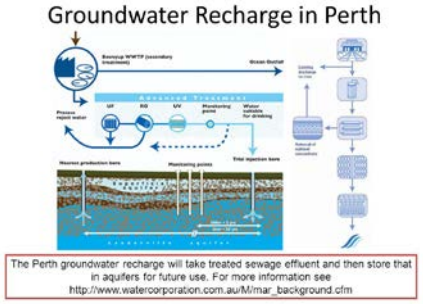
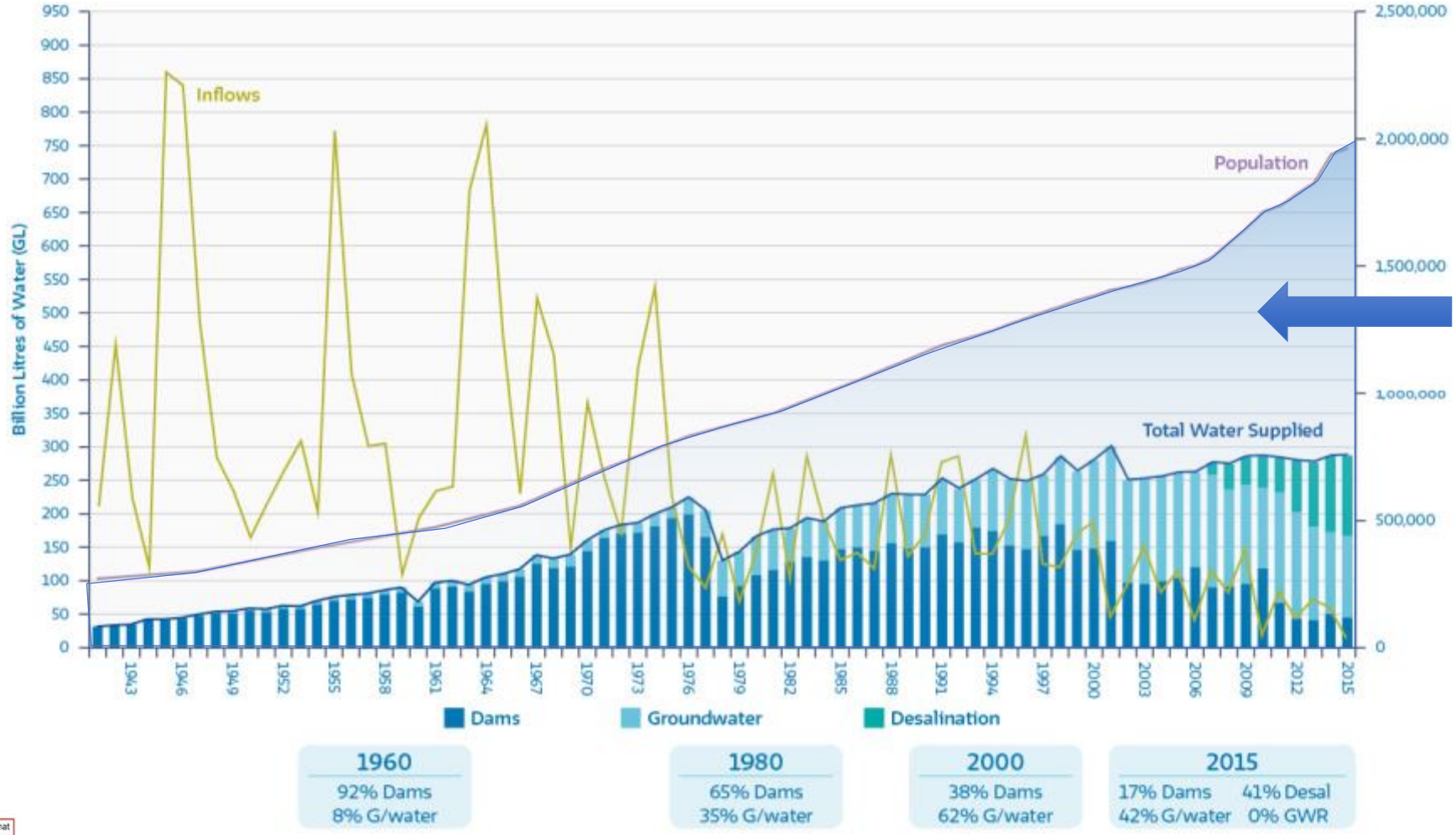
Case study 2: From dams to groundwater to desal to MAR!



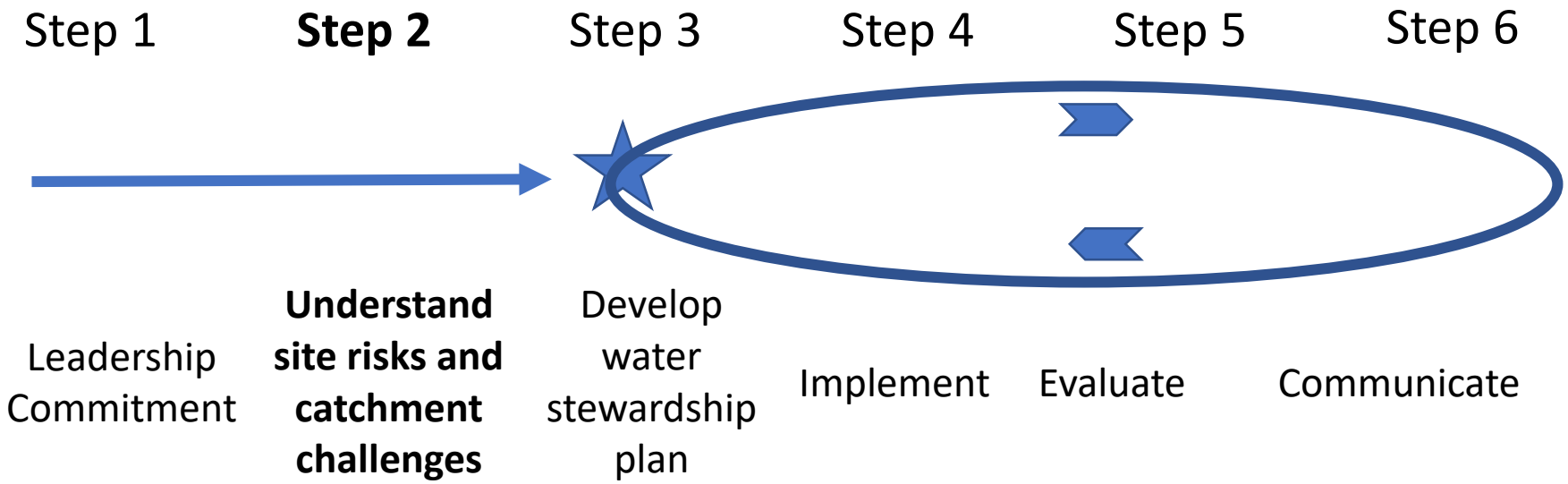




Demand management

Case Study 3: Alliance for Water Stewardship (AWS) – integrating industry and catchment processes

6-Step process to achieve international standard



4 Outcomes

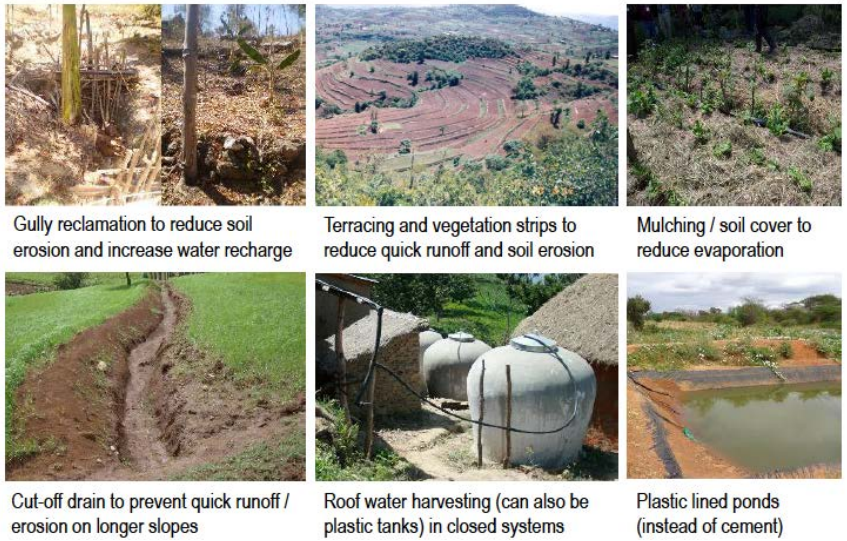
1) Sustainable Water Balance
2) Good Water Quality
3) Good Water Governance
4) Healthy Important Water-Related Areas

AWS Asia-Pacific (www.waterstewardship.org.au)

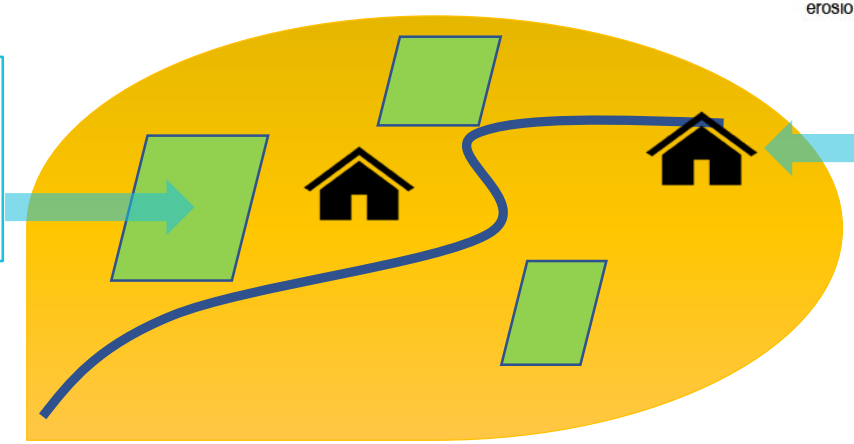
Case Study 3: Alliance for Water Stewardship (AWS) – Indonesia

Field level observations

Technologies at field, sub-catchment & household level



Farm plan including water stewardship principles integrated into GAP



Community plan focusing on water resource protection for improved access to WASH.

Olam

AWS Asia-Pacific (www.waterstewardship.org.au)

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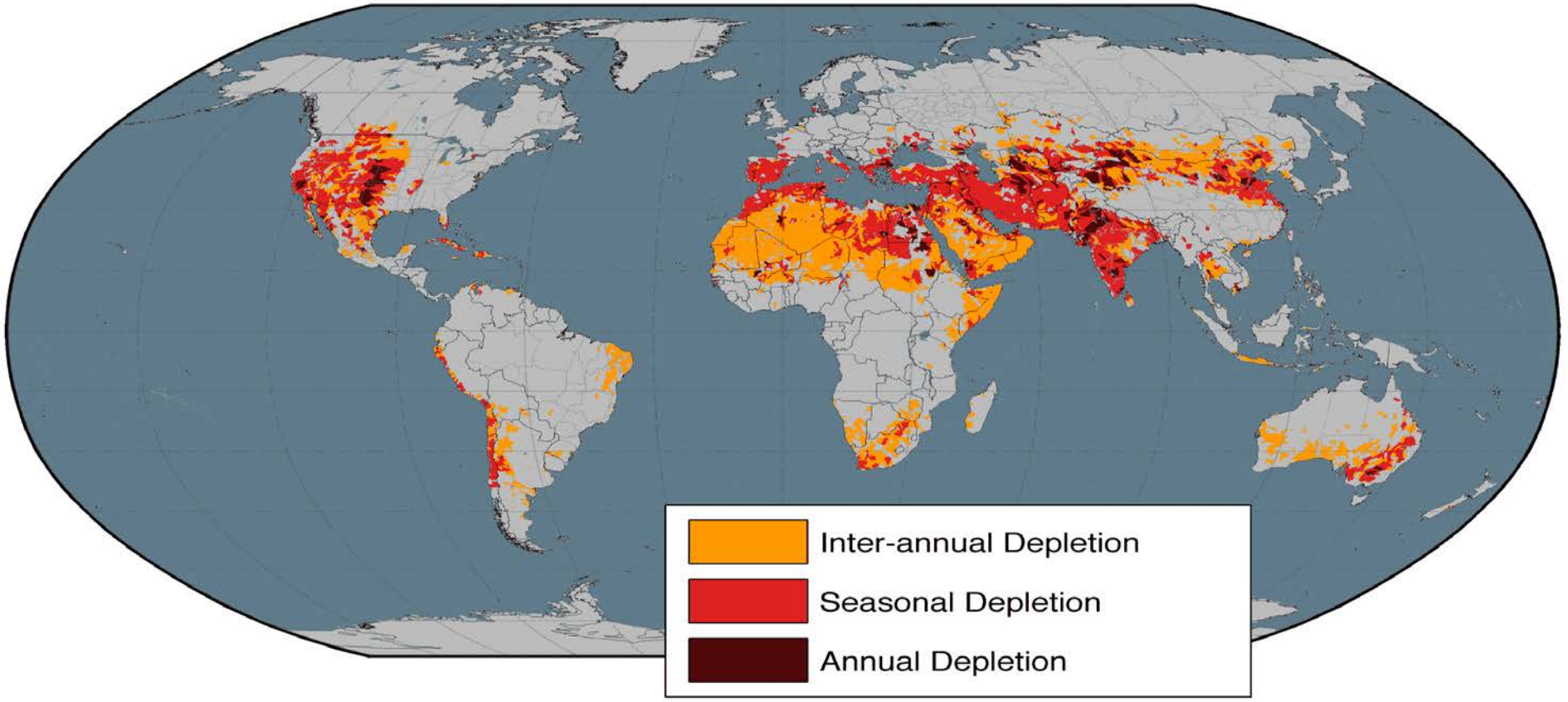
Case study 4: WaterGuide – using Australia's experience to tackle water scarcity



Water shortages are occurring in 1/3 of the planet's watersheds and aquifers
1/2 of the world's population is affected
3/4 of the world's irrigated acreage is affected

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Case study 4: WaterGuide – six elements of water management

- Jordan
- Iran
- Mexico
- Senegal
- Philippines

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Case study 4: WaterGuide in Iran

79.11 million

Population

93,300 GL

Total annual water use

4,449 (l/d)

Water availability *per capita*

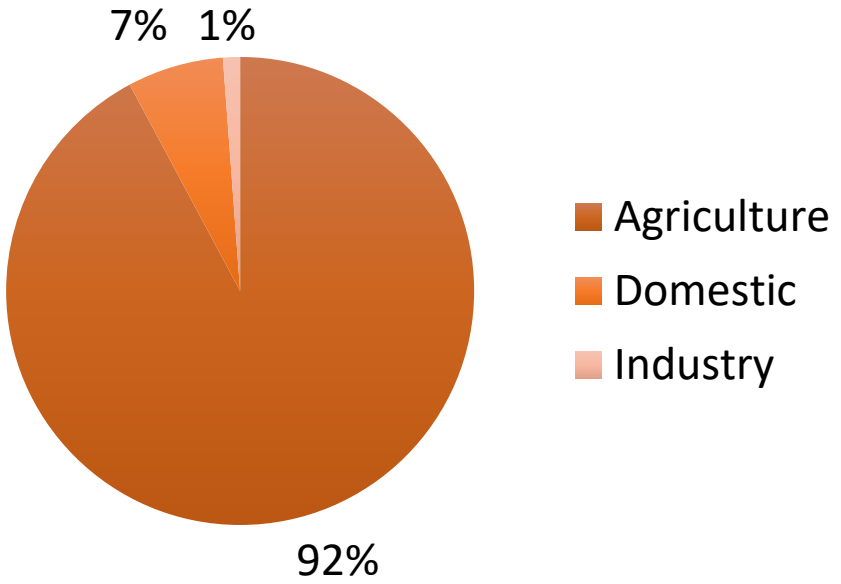
6,407,307 ha

Agricultural area under irrigation

24

Number of Ramsar wetlands

Water use by sector



Stakeholders

- Ministry of Energy
- Urmia Lake Restoration Program
- Department of Environment
- Iran Water Resources Management Company
- Ministry of Jihad-e-Agriculture
- Provincial Water Authority

Priority areas for collaboration

- Environmental water management
- Water trading

International ‘Integration’ Frameworks

Framework	Relevance to WASH
SDGs: new sustainability agenda	SDG6
IRBM: Integrated River Basin Management	Helps understand WASH objectives and impacts at the catchment level
AWDO: Asian Water Development Outlook	Focus on water security with household water access and sanitation as one of 5 pillars
WWC Roadmaps: to implement SDGs	Comprehensive water management approach – good to be aware of
IWRM: Integrated Water Resources Management	Well established globally but sometimes hard to make practical for WASH
Nexus: water-food-energy-envt-climate-Int. Dev.	Paradigm shift to be aware of

Australian Water Partnership and WASH

Vision: “Australia: water partners for development – enhancing the sustainable management of water”

Mission: “Make a difference by mobilising Australian water expertise to address demand”

*Pacific young water professionals program – **gender equality in action***

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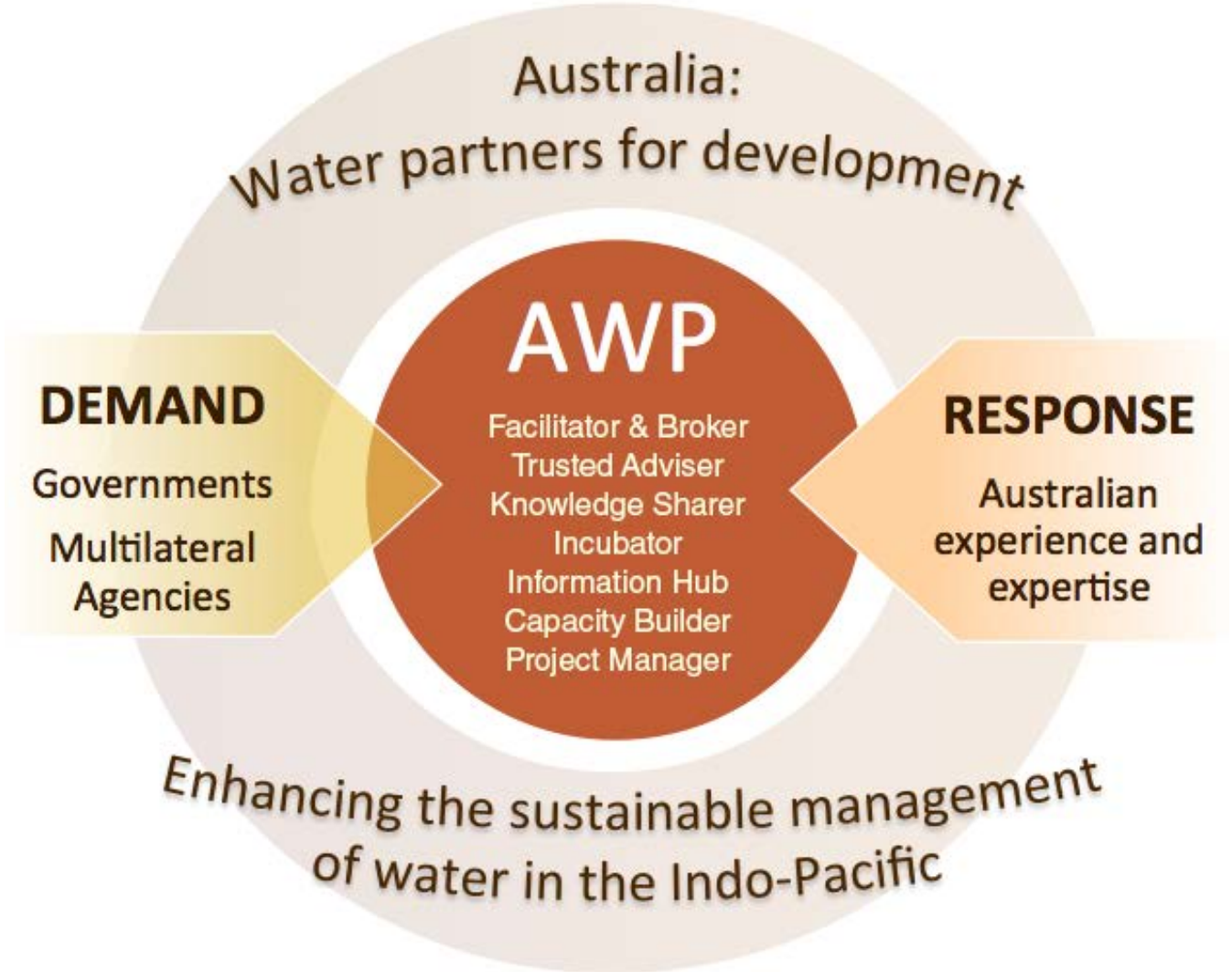
AWP Operational Model



AWP: Myanmar State of Basin Assessment – integrated environmental, social & economic baseline

Environmental

Social

Economic

SOBA packages

1 – Surface water resources

2 – Groundwater & WISDM

3 – Geomorphology & Sediments

4 – Biodiversity & Fisheries

5 – Socio-economics *(demographics, sector development, macro economics)*

6 – Local Consultations

7 – Ecohydrology & water quality

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Ayeyarwady River is the life blood of communities

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AWP: Twinning Vietnam – Australia water utilities




= Asset management + water safety plans + non-revenue water + Community engagement + PPPs + WQ technologies + relationships

AWP: Designing and re-designing water sensitive urban design in India

The Partnership will focus on two parallel projects:

- Building Australia's world-leading water sensitivity practice into the development of the green field city of Amaravati.
- A pilot project demonstrating how alternative approaches to drainage infrastructure can be retrofitted in the existing city of Vijayawada.

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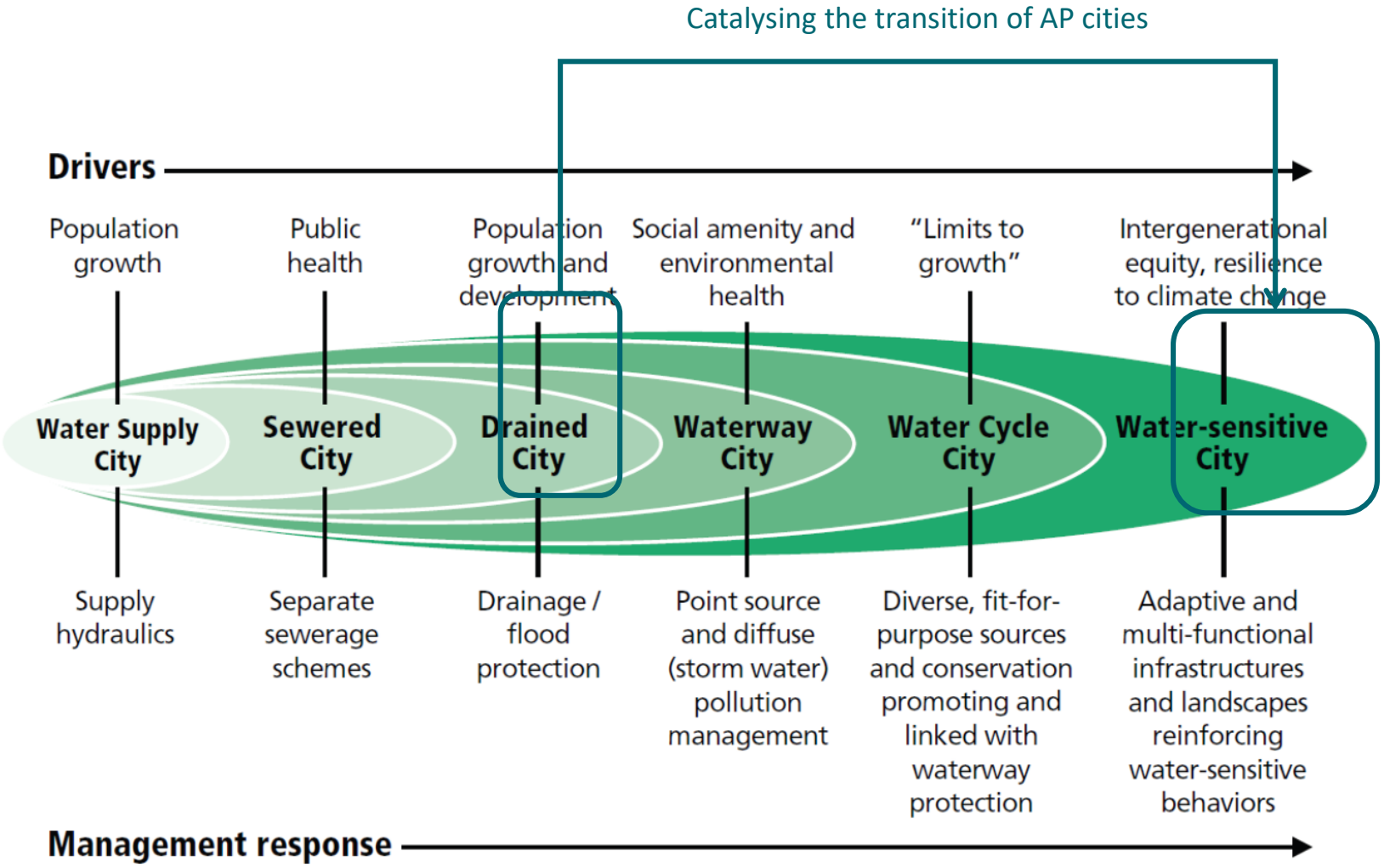
AWP: Leap-frogging the evolution of the ‘water city’ in India



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Gender equality and social inclusion across Australia and the Indo-Pacific

AWP & Australian Water Association - Channeling Change across Australia and South East Asia

Case Study Lessons

- **Case 1: MDB Plan** – markets can optimize across multiple uses and values; ongoing effective stakeholder engagement is critical
- **Case 2: Perth water supply** – water supply options can change radically in short time under climate change and adaptation needs both new and integrated supply options
- **Case 3: AWS** – linking industrial sites to catchments through the global water standard has strong parallels for WASH-WRM integration
- **Case 4: WaterGuide** – shows sophisticated water management can be broken down to simpler steps and smaller scales to match stage of development and specific needs

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