



THE UNIVERSITY
of ADELAIDE



CRICOS PROVIDER 00123M

Australian Water School Webinar

Good governance for increased future water security

adelaide.edu.au

seek LIGHT

Water security equals:

- The ability to access sufficient quantities of clean water to maintain adequate standards of food and goods production, proper sanitation and sustainable health care (~2007).
- The capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability (~2013).

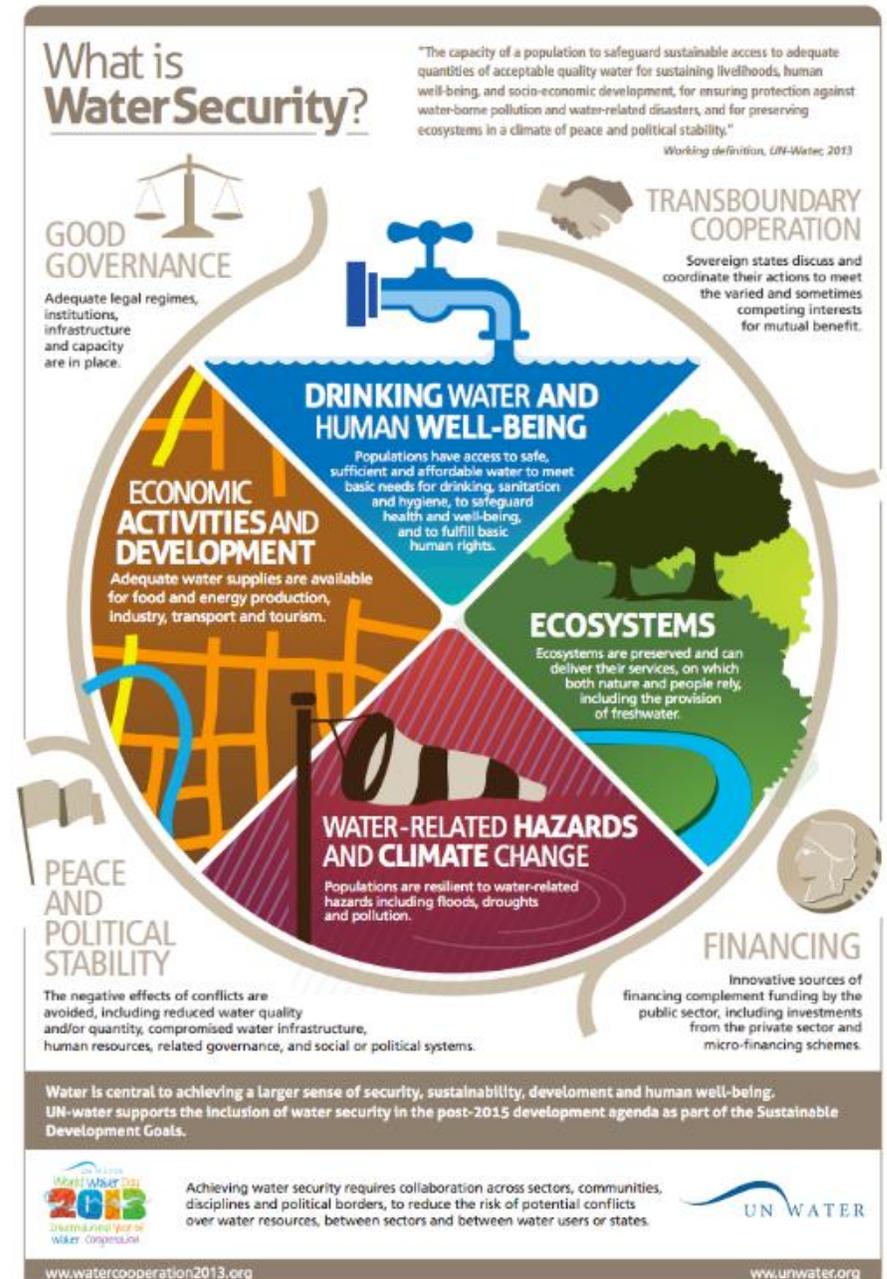


Figure 1.1: Global Risks of Highest Concern - for the Next 18 Months and 10 Years

Geopolitical risks

Interstate conflict

State collapse or crisis

Failure of national government

Terrorist attacks

Weapons of mass destruction

Environmental risks

Extreme weather events

Failure of climate-change adaptation

Natural catastrophes

Biodiversity loss and ecosystem collapse

Man-made environmental catastrophes

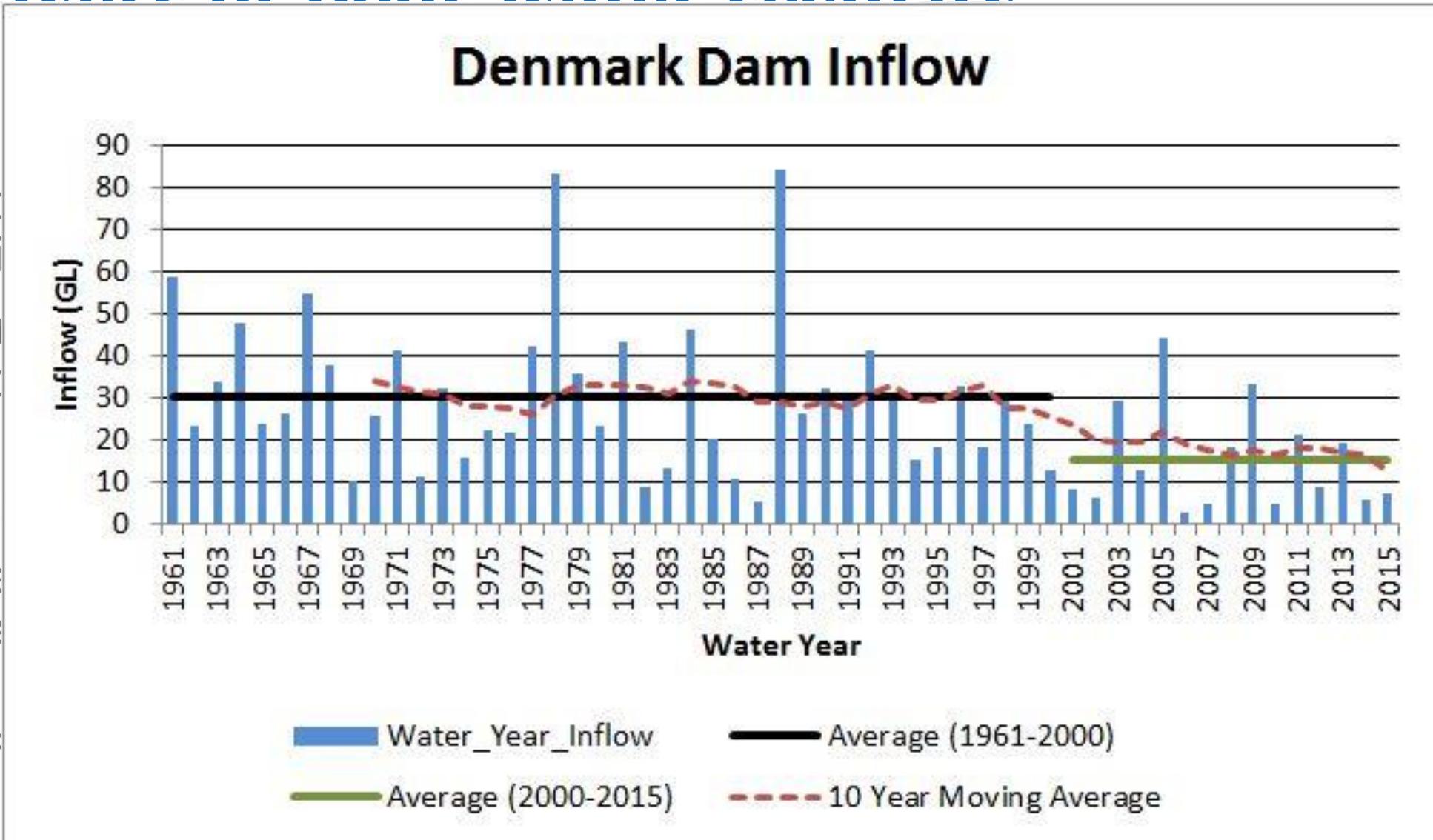
Source: Global Risks Perception Survey 2019

United Nations Resolution 'Transforming our World: the 2030 Agenda for Sustainable Development' (2015)



Drivers of poor water security

- Inc
- dri
- Lin
- gro
- Po
- rig
- Me
- wa
- Cli
- inf



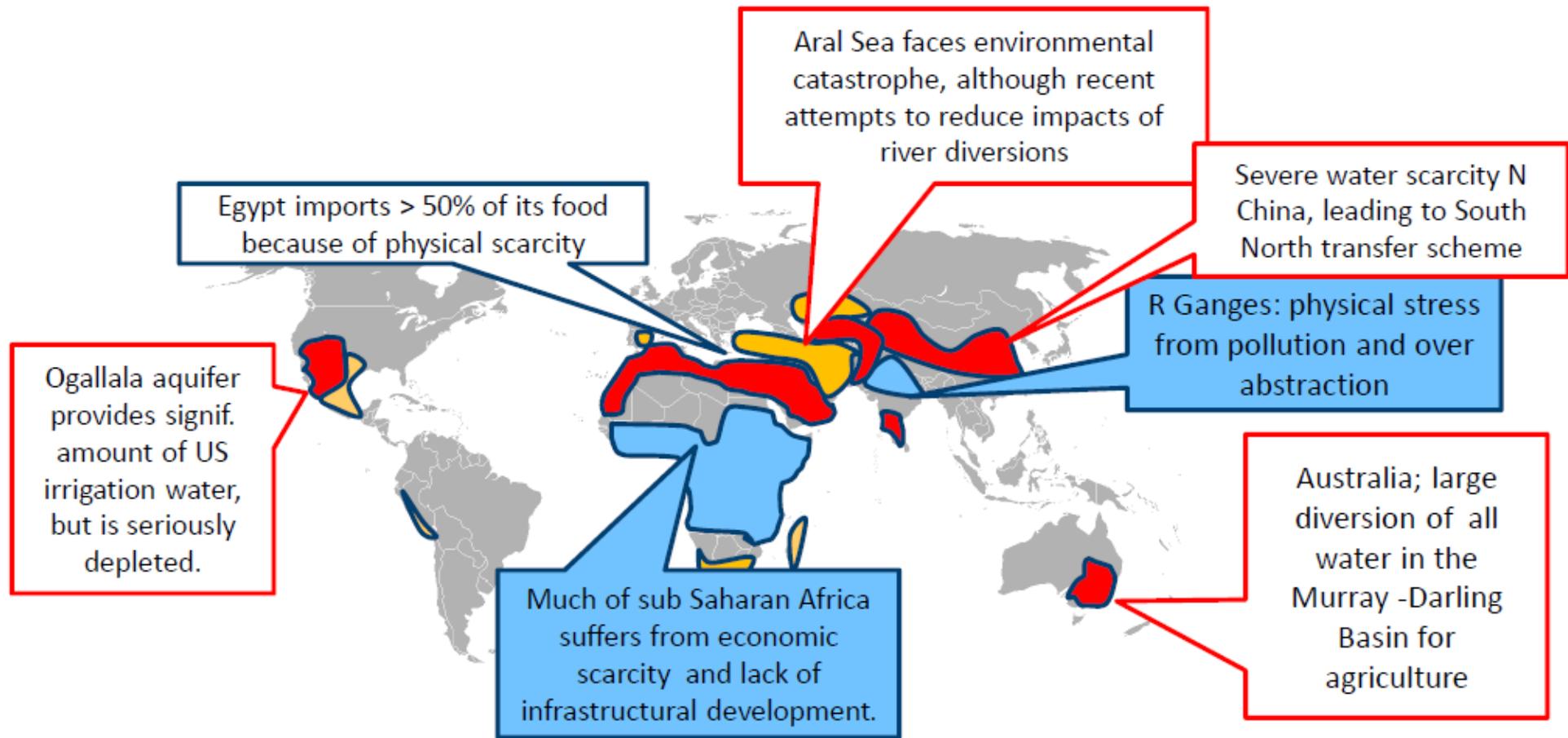
es:

Water is Unique from a Governance Perspective...

- **UNIQUE:** Freshwater is a unique environmental resource
 - It is a renewable resource, although some groundwater sources are non-renewable
 - Hence use has to be assessed as whether it is sustainable or not does depletion rate exceed recharge
- **ESSENTIAL:** Society's survival and well-being
 - Economic development
 - Environmental health and sustainability
 - Very few substitutes for most uses
- **MOBILE:** Physical supply varies over time and space – highly mobile
 - *Water knows no boundaries*, be they political or jurisdictional boundaries
 - *Water is a cross-cutting resource* that cannot be neglected by any aspect of society
- Watershed is a critical planning unit to protect the environment and support development

Water's Problem Elements from a Governance Perspective...

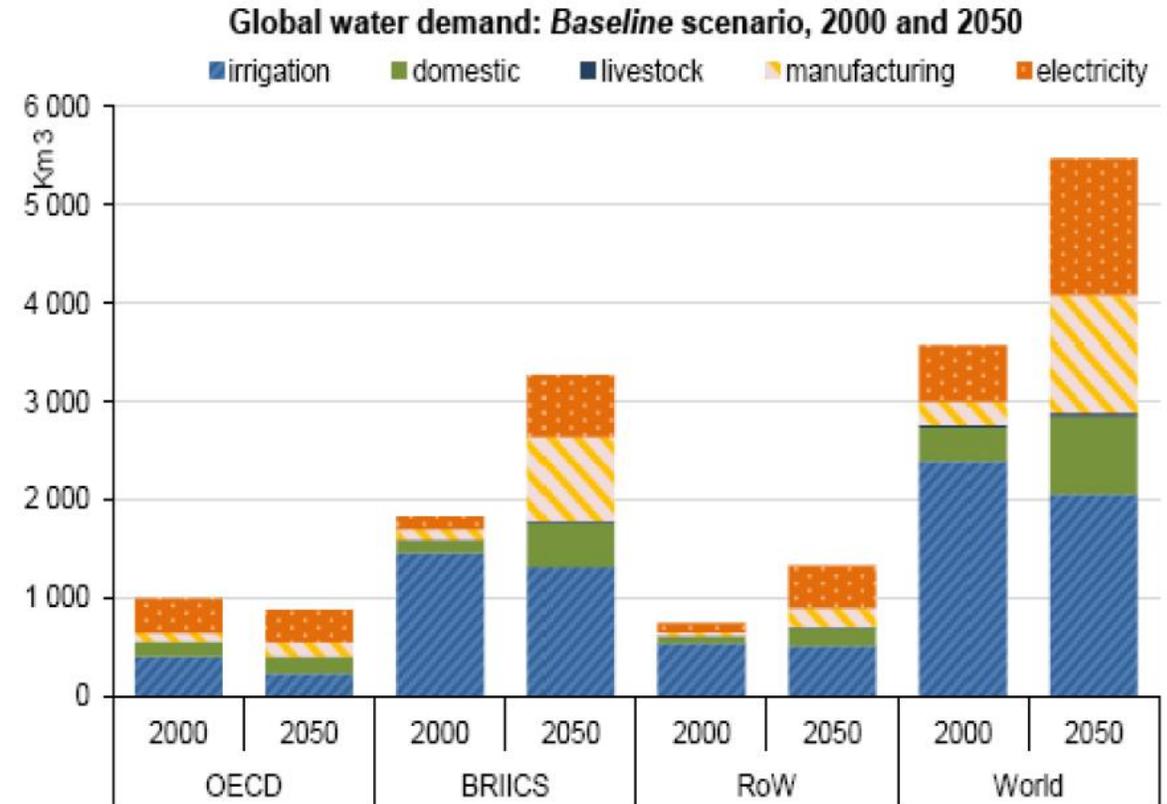
- Cost of Water
 - Urban water is delivered by capital-intensive natural monopolies
 - Water has a high mass by volume – expensive to transport
 - Hence, water is usually stored in-situ versus being transported over long distances
 - Large water storages have been built to overcome this, with large fixed costs and hence infrastructural expansion is lumpy
- Prices of Water
 - Most economically efficient method is to use marginal cost pricing for various competing users (hence agricultural price would be less than urban prices)
 - But prices typically omit scarcity values



	Little/no water scarcity
	Physical water scarcity- not necessarily dry areas but those where over 75% river flows are used by agriculture, industry or domestic consumers
	Economic water scarcity- less than 25% rivers used, and abundant supply potential but not reaching the poorest people .
	Approaching physical water scarcity – More than 60% river flows allocated, and in the near future these river basins will have physical scarcity

Water risks requiring governance stem from:

- Drought
- Flooding
- Inadequate water supply/sanitation
- Ecosystem degradation/pollution
- Future uncertainty
 - Reduced quality
 - Climate change impacts
 - Population increases
 - Aging infrastructure
- We need to learn how to share water better!



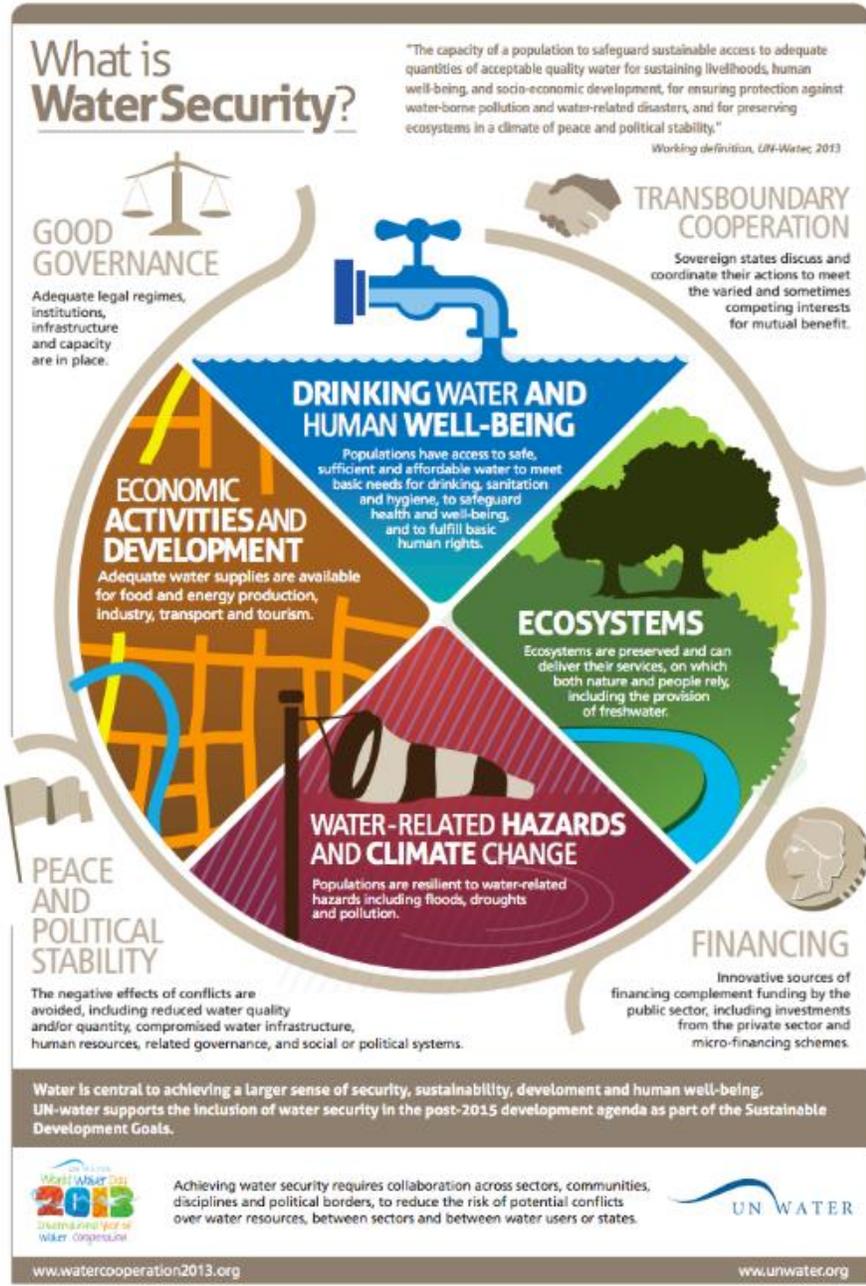
Note :BRICS = Brazil, Russia, India, Indonesia, China and South Africa; RoW = rest of the world

Classifying water governance players

	Political	Economic	Social	Environmental
Global	<p>World Bank funds mega-projects to improve supply. Has become more environmentally conscious. This group also has businesses and TNCs</p> <p>UN Millennium Development Goal called The Water Target: "<i>Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation</i> " , another is Ramsar Convention</p> <p>World Health Organisation</p> <p>Asian Development Bank , Latin American Bank</p> <p>Global Environmental Facility</p> <p>International Water Resources Institute</p> <p>Food and Agricultural Organisation</p> <p>Gates Organisation</p> <p>Transboundary organisations (eg Mekong River Commission, Nile River Basin Commission, Murray-Darling Basin Authority)</p>			
	<p>G8 Summits: 2002 Evian action Plan, focus on water, and 2009 L'Aquila summit increased aid to poorer countries to help MDGs, + highlighted need for more integrated management</p>		<p>The role of NGOs such as Water Aid or GLOWS has been crucial in managing water supplies</p> <p>Countries such as India, have mounted successful massive community-led campaigns on things like elimination of open defecation</p> <p>Government Health Agencies from national to local scale</p>	<p>WWF, Nature Conservancy and Friends of the Earth campaign for full Environmental Impact Assessments of major projects likely to damage the environment</p> <p>This group will include many scientists and researchers. They also buy water or water and land.</p> <p>At a local scale NIMBY groups will campaign</p>
National	<p>Government owned water companies, eg China</p> <p>CEWH – Commonwealth Environmental Water Holder</p>	<p>TNCs – Transnational Corporations (Viendi and Suez RWE which owns Thames Water, American Water Works Companies providing technological fixes)</p>		
Local	<p>Local institutions, eg: Subak in Bali, state based organisations</p>			
Individual	<p>Over 7 billion consumers (2017)</p>			

Encouraging Cooperation: changing perceptions

- Type 1:**
Increasing Benefits
To the river
- Type 2:**
Increasing Benefit
From the river
- Type 3:**
Reducing Costs
Because of the river
- Type 4:**
Increasing Benefits
Beyond the river



opportunities

water quality,
characteristics, soil
n, biodiversity

hydropower &
production, flood-
management,
tal conservation &
y

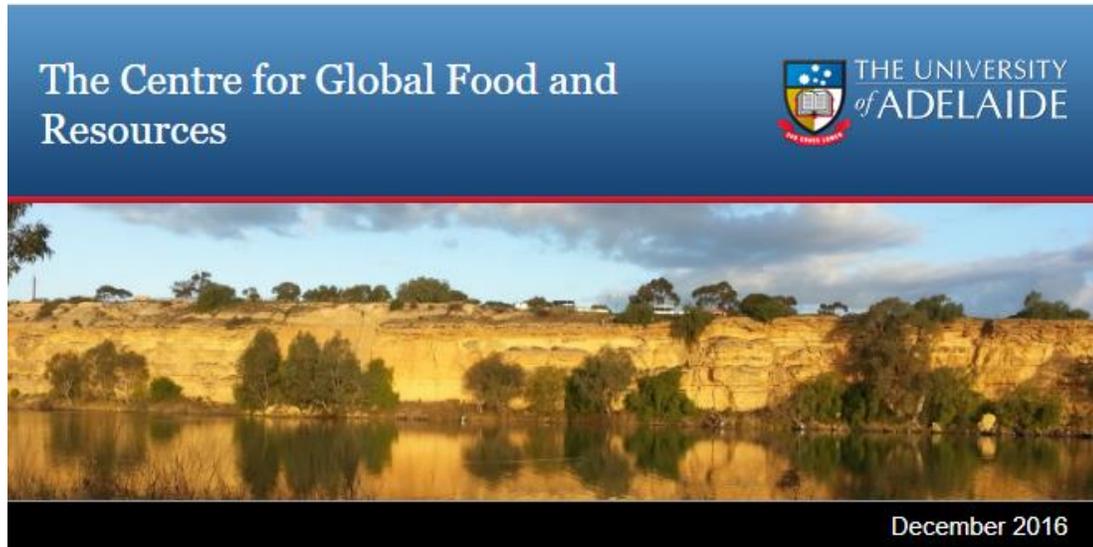
to cooperation &
it, from dispute; from
gy self-sufficiency to
duced conflict risk &
enditure (+/-)

of regional
ire, markets &

Water Governance – Solutions “5 P’s”: Topic 3

- 1. Projects** } *Supply Augmentation Strategies*
 - 2. Preachments**
 - 3. Police**
 - Economic Strategies* { **4. Price**
5. Property rights
- Demand Management Strategies*

Water course at UoA for more info:



Water Security and Governance

(AGRIBUS 7064)

- Flexible delivery
- Part of Masters/Certificate courses
- Short-course; delivered in 5 weeks
- Excellent insight, contacts and knowledge

- Some useful references:

- Adamson, D., Loch, A., 2014. Possible negative feedbacks from ‘gold-plating’ irrigation infrastructure. *Agricultural Water Management* 145, 134-144.
- Adamson, D., Loch, A., Schwabe, K., 2017. Adaptation responses to increasing drought frequency. *Australian Journal of Agricultural and Resource Economics* 61, 385-403.
- Adamson, D., Loch, A., 2018. Achieving environmental flows where buyback is constrained. *Australian Journal of Agricultural and Resource Economics* 6, 83-102.
- Loch, A., Wheeler, S., Boxall, P., Hatton-MacDonald, D., Adamowicz, W., Bjornlund, H., 2014. Irrigator preferences for water recovery budget expenditure in the Murray-Darling Basin. *Land Use Policy* 36, 396–404.
- Loch, A., Adamson, D., Mallawaarachchi, T., 2014. Role of hydrology and economics in water management policy under increasing uncertainty. *Journal of Hydrology* 518, 5-16.
- Loch, A., Boxall, P., Wheeler, S.A., 2016. Using proportional modelling to evaluate irrigator preferences for market-based water reallocation. *Agricultural Economics* 47, 387-398.
- Ward, F.A., Michelsen, A., 2002. The economic value of water in agriculture: concepts and policy applications. *Water Policy* 4, 423-446.
- Ward, F.A., Pulido-Velazquez, M., 2008. Water conservation in irrigation can increase water use. *Proceedings of the National Academy of Sciences* 105, 18215-18220.
- Wilson, P.I., 2015. The Politics of Concrete: Institutions, Infrastructure, and Water Policy. *Society & Natural Resources* 28, 109-115.
- Wheeler, S.A., MacDonald, D.H., Boxall, P., 2017. Water policy debate in Australia: Understanding the tenets of stakeholders’ social trust. *Land Use Policy* 63, 246-254.
- Wheeler, S., Loch, A., Crase, L., Young, M., Grafton, R.Q., 2017. Developing a water market readiness assessment framework. *Journal of Hydrology* 552, 807-820.

Thank you!

Contact:

Dr Adam Loch

adam.loch@Adelaide.edu.au

+61 8 8313 9131



THE UNIVERSITY

of ADELAIDE

THE CENTRE FOR GLOBAL
FOOD AND RESOURCES