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***Optimal taxes and charges in the management
and use of water resources (with particular
reference to the MDB)***

Tony Webster and Thilak Mallawaarachchi

Contributed presentation at the 60th AARES Annual Conference,
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AARES Conference

3 February 2016

Canberra

Economic reforms

NWC view of reforms

- Specific areas of unfinished business that require further effort include:
 - legislative reform in Western Australia and the Northern Territory
 - further unbundling of water rights
 - greater specificity around the ecological objectives and outcomes of water reform, underpinned by an appropriate monitoring effort
 - scheduled water plan reviews based on a transparent process involving evaluation and public reporting
 - specific pathways to achieve Indigenous objectives through water planning
 - incorporation of all water uses within the one water planning framework

Key outstanding issues

- Move **regulated prices** from lower bound to upper bound
 - Implement full NWI cost recovery, including cost of capital, taxes, externalities
- Fully incorporate **externality costs** in water charges and water planning
 - Informed by an economic assessment
 - Greater use of prices rather than regulation
 - Legacy problem of gifted water rights
- Implement **cost recovery** for planning and management
 - In particular, MDBA and Border Rivers Commission
- **Transparency of pricing**
- **Subsidies** for irrigation infrastructure
 - Dealing with gifted assets
 - Just stop subsidising!!
- Better **integration of groundwater and surface water** management

How does economics help?

Efficient pricing suggests a combination of approaches

Resource exploitation	Resource type	Pricing
Water is consumed	Non-renewable	Resource rent tax
Water can be reused	Renewable	Cost recovery
Water can be reused but degraded	External costs	Shadow pricing

- The gifting of water entitlements to irrigators undermines the ease of implementing efficient pricing

Lessons from governance of common pool resources

- Unlike pure public goods, common pool resources face problems of congestion or overuse.
 - Common-pool resources may be owned by national, regional or local governments as **public goods**, by communal groups as **common property resources**, or by private individuals or corporations as **private goods**. When they are owned by no one, they are used as **open access resources**.
- They are sometimes governed by common property regimes based on self-management by a local community.
 - The natural occurrence of these regimes contradicts claims that common pool resources should be privatised or else face destruction in the long run due to collective action problems leading to the overuse of the core resource.

There are opportunities for better collaboration

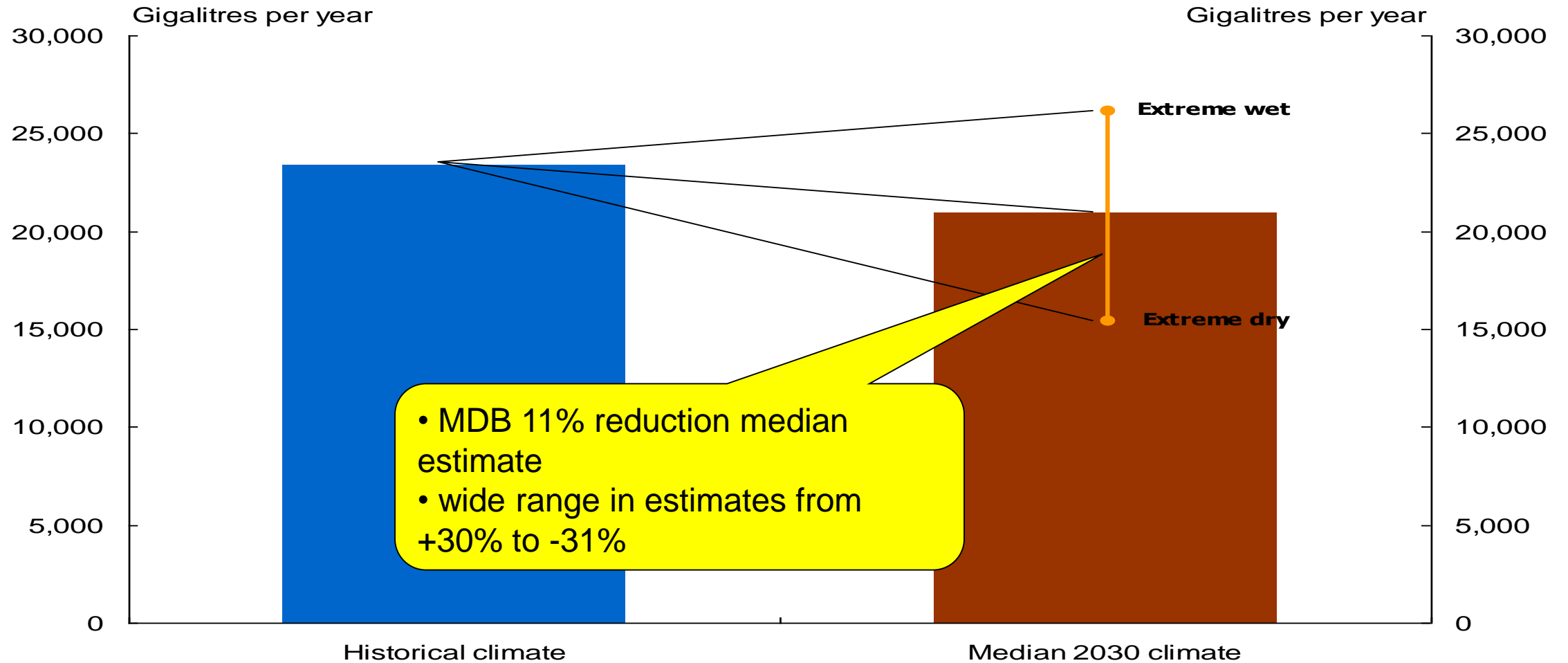
- Water planning still reflects **conflictive resource reallocation**
 - However, the objects of the *Water Act* aspire to optimisation
- The **management of environmental water** by the CEWH is subject to exactly the same objects in the Water Act as is the Basin Plan
 - Triple bottom line optimisation subject to the ESLT constraint
 - This means the CEWH should explicitly consider socio-economic outcomes
 - No coherent framework for trading environmental water at present. Since CEWH is the biggest water holder in most catchments, there is the very real prospect of political interference or bureaucratic mismanagement in the trade of entitlements or allocations—and a large risk of adverse outcomes for communities and/or the environment.
- There are options for **improved regional management** of CEWH water
 - Consideration should be given to the devolution of management within an over-arching planning framework
 - Should recognise the connectivity between agricultural and environmental water in planning — capacity sharing, joint benefits during conveyance, spatial co-benefits.

Key points

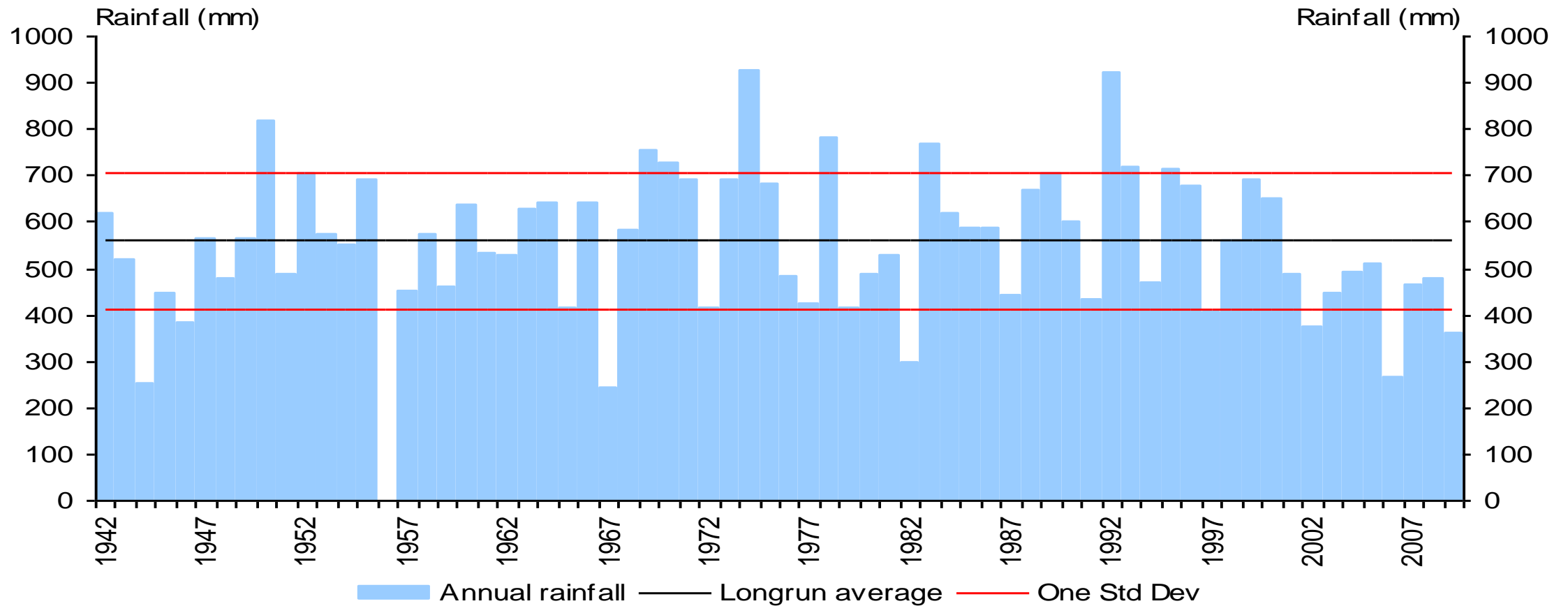
- Can borrow optimal taxation concepts from resource rent taxes
 - However, gifting of water entitlements makes taxation tricky
- Water is also more complex, depending on the level to which a user exploits the resource
 - where consumed, consider resource rent taxation
 - where reused, consider full cost recovery charges
 - where degraded, consider shadow pricing of external costs
- Alternative governance models from CPR literature hold the promise of more collaborative (less conflictive) outcomes

Policy implications of climate uncertainty

Climate change in perspective



Annual rainfall in Wagga



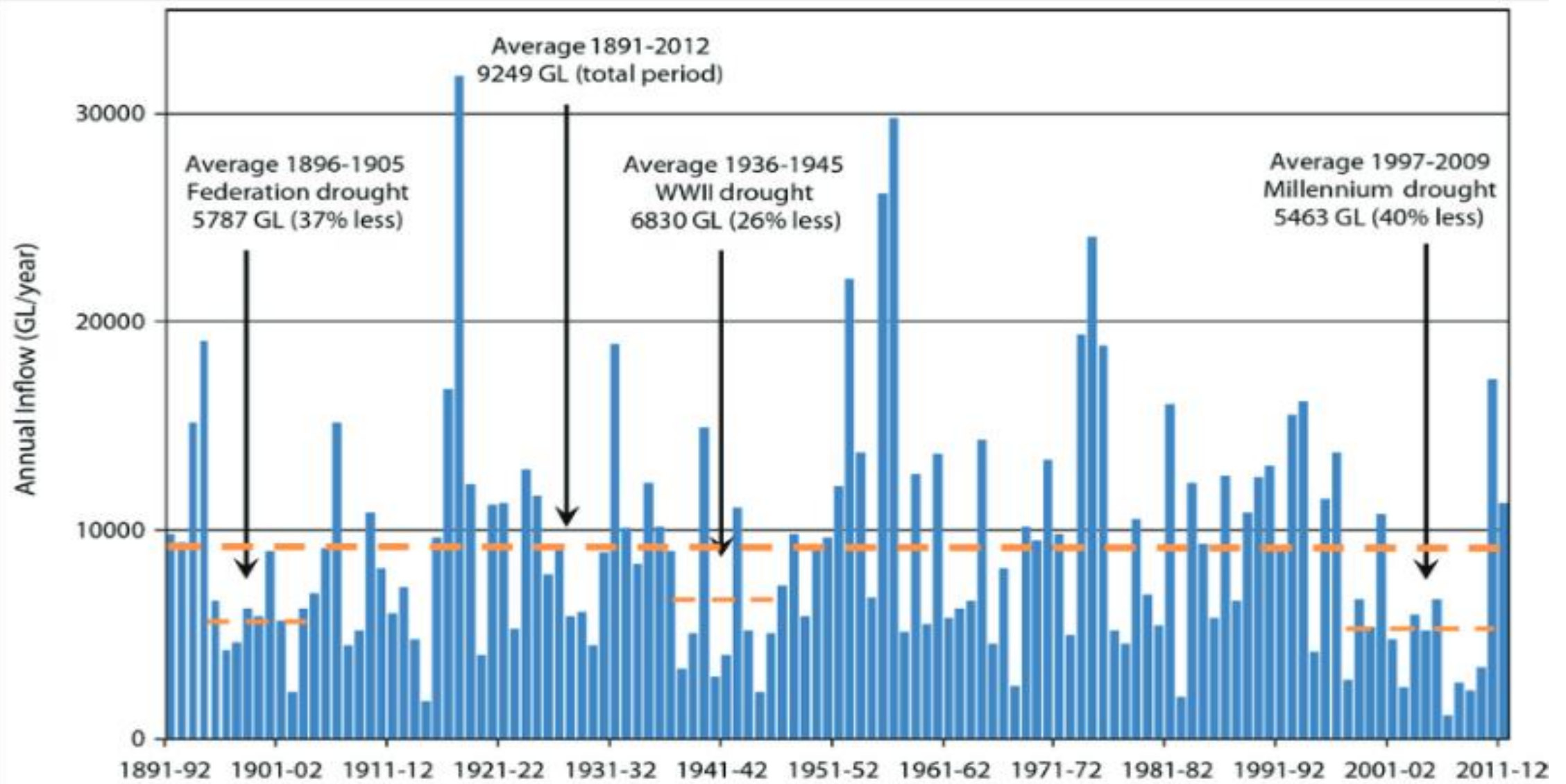
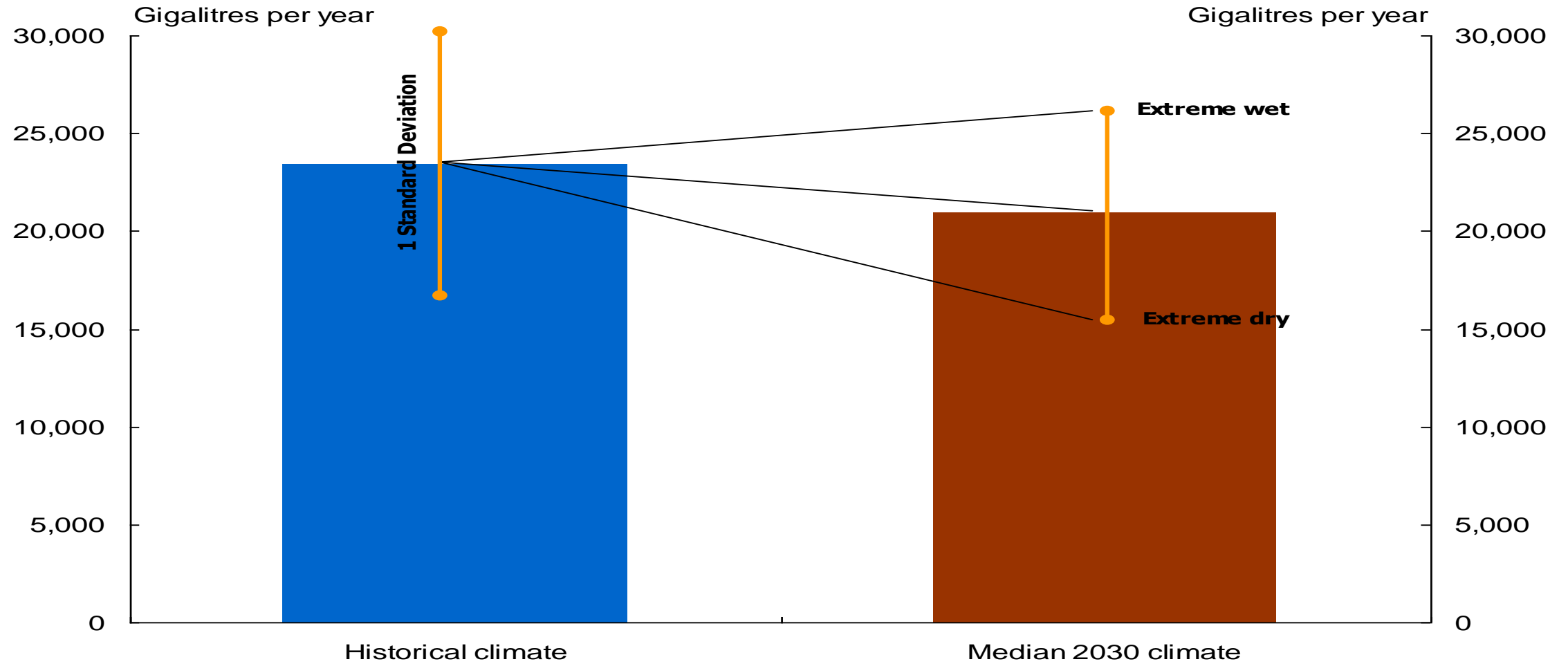


Figure 1. Annual total inflows into the River Murray showing the long-term average, and average inflows during three extensive droughts (taken from CSIRO, 2012a).

Climate uncertainty well within bounds of volatility



Climate uncertainty and investments

- Climate change presents particular challenges for investments that depend on climate related inputs, such as rainfall, because it adds additional uncertainty.
 - Large NPV gains in deferring capital investments
 - However, society is generally risk-averse when it comes to water security, leading decision makers to prefer early implementation, even if there are significant financial implications.
- The case for delaying large water augmentation projects therefore needs to be strong, with reliable back-up water sources and management policies available in the interim.
- Introducing risk aversion into project evaluation modelling changes the analysis markedly.

Summary

- NWI is a work in progress—many issues outstanding
 - Full cost recovery for water supply
 - Explicit treatment of externalities in water planning and water abstraction charges
 - Cost recovery for planning and management
- Gifting of assets has created significant problems
 - Private ownership of water entitlements undermines efficient pricing
 - Infrastructure subsidies undermine efficient water use and asset replacement
- Lessons from common pool resource
 - Collective action versus omnipotent bureaucracy
- Policy implications of climate uncertainty
 - A management regime that deals with climate volatility can deal with climate uncertainty
 - Introducing risk aversion into project evaluation modelling changes the analysis markedly

Discussion