

Counting our gains: Sharing experiences on identifying, assessing and communicating the benefits of transboundary water cooperation: Case Study of the Murray-Darling Basin



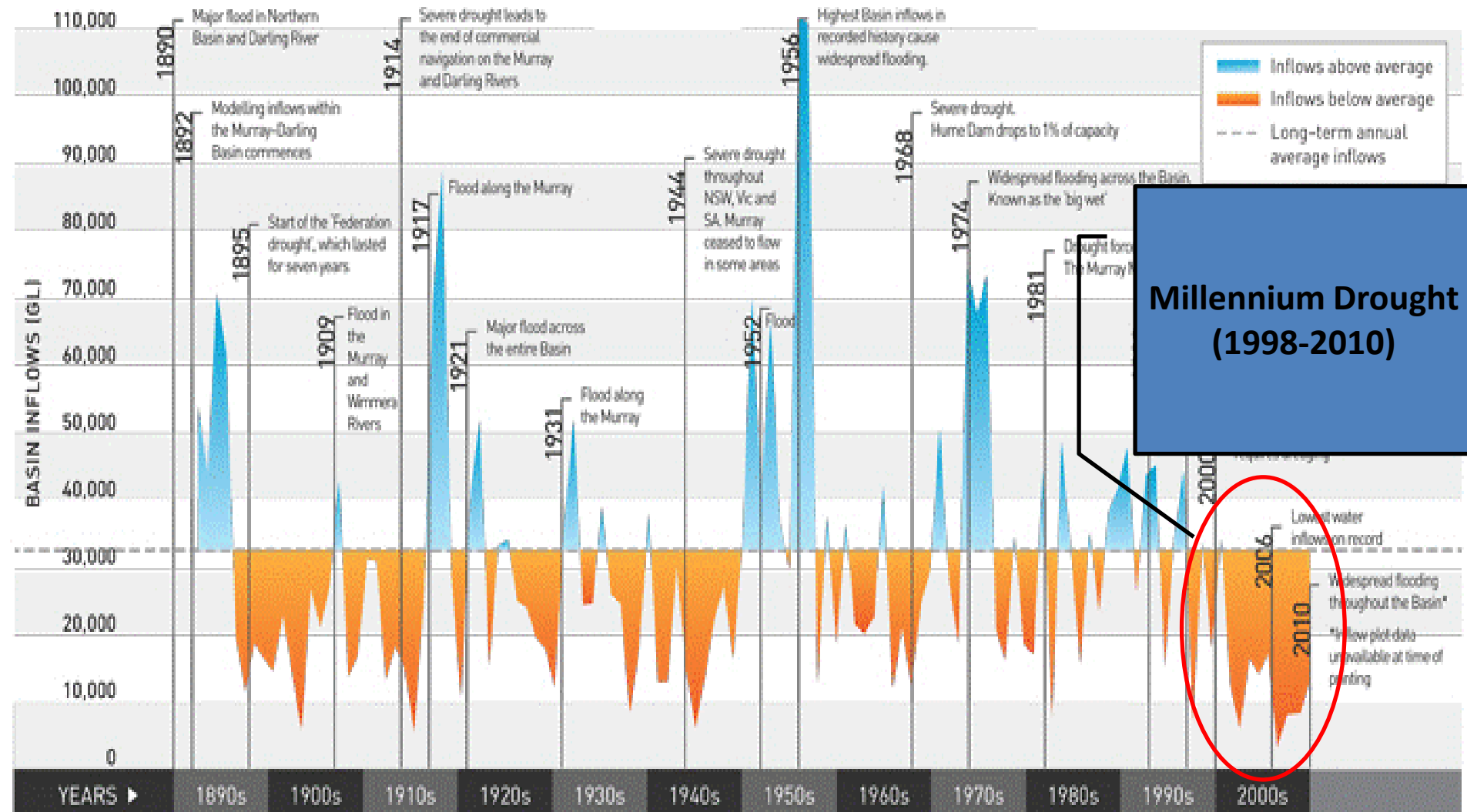
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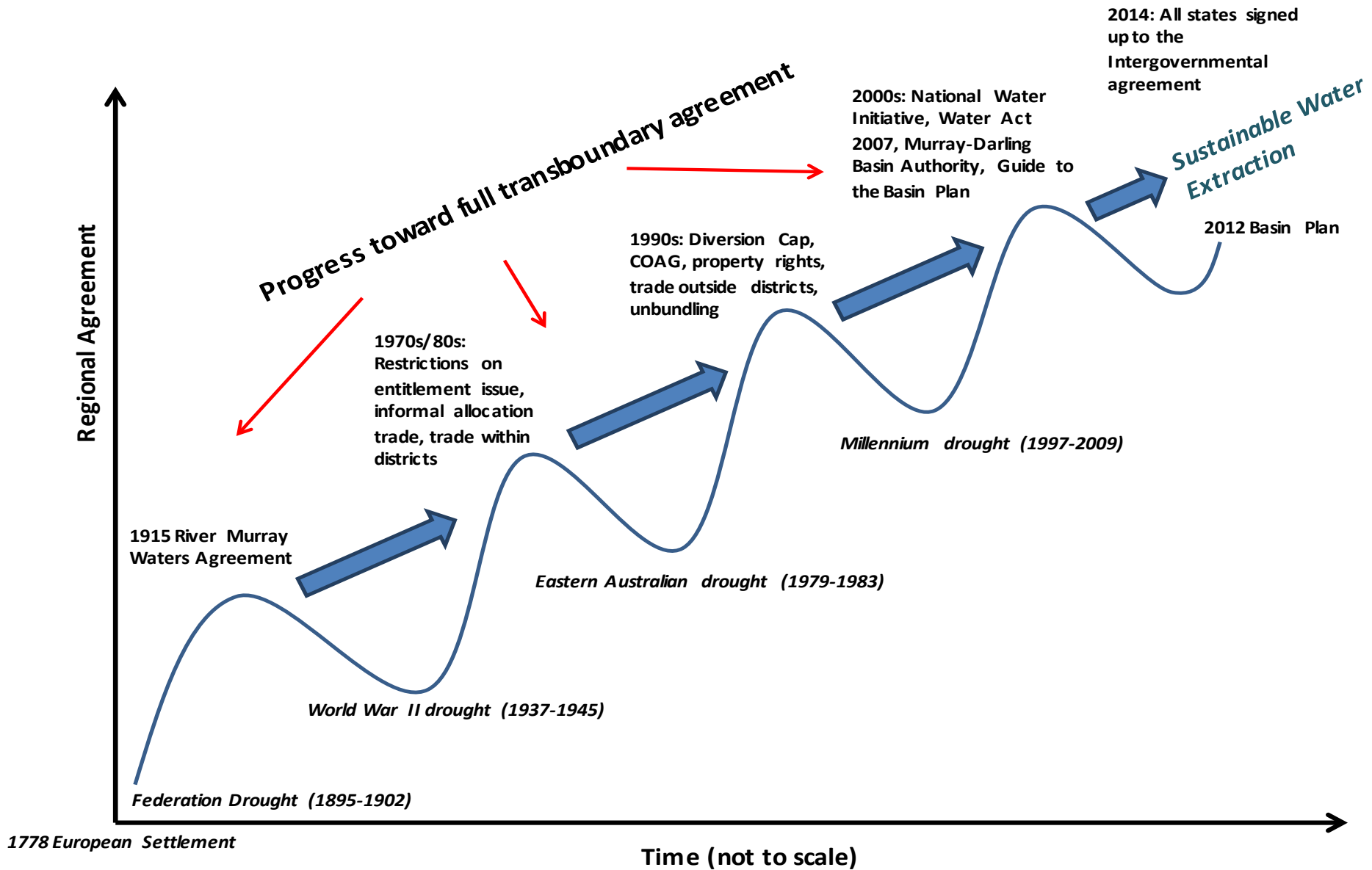
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Flows in the MDB over time



(Source: MDBA 2012)

Water Policy over time in the MDB



2012 MDB Plan

- The development and implementation of the MDB plan has caused significant unrest.
- MDB Plan was passed into law in 2012, with all states finally signed up Feb 2014.
- Overall objective of the Plan is to coordinate water policy across 4 states and one territory
- Target set at 2,750 GL reduction in consumptive use
- 450 GL of additional water for the environment is also to be recovered through infrastructure investment expenditure, bringing total water recovery to 3,200 GL
- The Commonwealth has committed billions of dollars since 2007-08 to funding water recovery. Most of this money is targeted at irrigation infrastructure investment



Assessing the net benefits of the Basin Plan

- The specific environmental and social benefits were:
 - Improved flow regimes
 - Improved management of Basin Water
 - Anticipated environmental outcomes at indicator sites
 - Estimated changes in ecological condition
 - Tourism, recreation and fishing
 - Floodplains
 - Water and land quality improvements
 - Cultural, spiritual and environmental non-use values associated with a healthier Basin
- The costs of the Plan included:
 - Administration costs
 - Reduction in agricultural production (jobs)

Methodologies applied:

- Large amount of different studies done (of varying quality):
 - Baseline socio-economic circumstances (profiling using population and census data)
 - Economic modelling and analysis
 - Local profiles and assessments
 - Surveys of farmers to suggest exit probabilities
 - Indicators of community vulnerability & adaptive capacity
 - Effects of change in water availability on indigenous population
 - Lit. review of willingness to pay studies for water improvements, use & non-use values
 - Attempt at Cost-benefit analysis – a regulatory impact statement was written



Category of benefit from the Basin Plan	Unit(s)	Expected benefit, by water recovery scenario	
		2,800 GL/y	
Use values (Estimated annual benefit AUD\$m/per annum)			
Tourism benefits	Increase in tourism expenditure, \$m/y	162	
Floodplain agriculture	Incremental economic value	65 (Present value total)	
Recreational and commercial fishing	Increase in consumer & producer surplus, \$m/y	9.3	
Recreational boating	Increase in total surplus	42 (Present value total)	
Avoided costs—salinity	Avoided cost, \$m/y	10	
Reduced risk of blackwater events	Recreational benefits, \$m/y	5 -10	
Reduced risk of cyanobacterial blooms	Recreational benefit, \$m/y	5-11	
Reduced risk of acid sulphate soils	Avoided cost (\$m/y)	9	
Reduced risk of river bank collapse	Avoided cost, \$m/y	24	
Non-use values			
Cultural, spiritual and environmental benefits associated with healthier Basin	Indicative estimates, used benefit transfer method \$m	3,000 to 8,000 (PV total)	

Category of cost from the Basin Plan	Unit(s)	Water recovery scenario		
		2,400 GL/y	2,800 GL/y	3,200 GL/y
Forgone gross regional production in Basin	\$m/y	-\$443 (-1.3%)	-\$513m (-1.5%)	-\$585m (-1.7%)
Foregone agricultural profit	\$m/y		-\$109 to -160m/pa (-5.6 to -8.2%)	
Commonwealth administrative costs	Qualitative assessment	The Authority has estimated the net additional administrative costs for the Commonwealth, Basin States, and irrigation infrastructure operators to be in the order of \$100 million per year.		
States admin costs	and indicative estimate,			
Irrigation infrastructure operators admin costs	\$m/y			

Source: Regulatory Impact Statement, MDBA (2013)

Evaluating Benefits and Costs

Difficulties with Estimating Net Benefits from the Plan

- The range of benefits and costs were reported in a Regulatory Impact Statement
- All values were estimated by consultants, and were dependent upon the scientific scenario analysis
- Some benefits are expressed in terms of increase in expenditure; others in incremental net economic value; and others in consumer and producer surplus.

Estimating Net Benefits

- Going on the estimates provided, non-use values were significantly higher than the use values (up to 1.7 times higher)
- Ignoring non-use values and only including use values and costs, this provides a ratio of benefits to costs from 0.9 to 1.1
- Including all non-use value estimates, the ratio ranges from 2.4 to 3.0
- Given the huge uncertainty around the non-use values, it is highly likely that they are large enough to indicate net social benefits from the Basin Plan

Key Lessons from Australia

- Money, money and more money was used by the Commonwealth to encourage the development of a transboundary agreement
- Much money was also wasted on consultation and consultancies, many of which were of dubious quality
- In order to estimate benefits and costs of water reallocation, it is perhaps better to focus on a smaller number of high quality studies, and to give those studies enough time to analyse the impacts of water reallocation
- A sound understanding of hydrological considerations; the link between surface water use and groundwater use; sustainable use and environmental needs, and institutions must be in place to enforce monitoring and compliance and to ensure high quality policy



Other insights from Australian water reform for other countries

1. Droughts or crises are critical to encourage cooperation and coordination of water reform, and to drive through institutional change in the form of transboundary agreements.
2. Water reforms are driven by a complex interaction of multi-layer, path-dependent influences, with reforms building upon many previous waves of institutional reform.
3. Adaptation of farmers is most enhanced in situations where there is diversity of production, property rights in water, ability to trade water, and an ability to choose different forms of production or crop choice
4. Involve and consult all stakeholders in the process as early as possible, and keep communication lines open.
5. It is possible that no water management plan will ever reach a 'sustainable extraction point' at any one point in time; hence this reinforces the need for flexible and adaptive institutions and policies to allow incorporation of future changes as necessary.
6. An overall authority is needed to coordinate reform and encourage cooperation for water reform that crosses boundaries.
7. An agitator country/state plays an important role in demanding reform.
8. Effective water policy needs high quality environmental, hydrological and socio-economic information, and preference should be given to long-term research rather than short-term consultancy.