



1 GL = 10^6 m³



Murray-Darling Basin, Australia: A Success Story In Trans-boundary Water Management

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Jobs go the way of receding Murray waters



Murray-Darling Basin

- 14% of Australia's land mass (1 060 000 km²)
- 2 million + people
- 20 major river valleys
- 75% of Australia's irrigation
- 50% of Australia's cropland
- 40% of national agricultural produce
- Agricultural produce \$15 bn (\$4.6 bn from irrigation)
- Manufacturing \$ 10 bn (70% based on Agriculture)



River Murray on World Scale



River	Length (km)	Catchment area (km ²)	Annual average discharge (billion (10 ⁹)m ³)
Murray	2 560	1 063 000	13.7
Nile (Africa)	6 690	2 802 000	88.5
Amazon (S. America)	6 570	6 150 000	5 518.8
Mississippi / Missouri (USA)	6 020	3 230 000	405.1
Yangtze (China)	5 980	1 827 000	1 014.7
Yenisey / Selenga (Russia)	5 870	2 619 000	565.7
Hwang Ho (China)	4 840	771 000	51.1

MDB- Highly variable Flows



COUNTRY	RIVER	RATIO MAXIMUM/ MINIMUM ANNUAL FLOWS
BRAZIL	AMAZON	1.3
SWITZERLAND	RHINE	1.9
CHINA	YANGTZE	2.0
SUDAN	WHITE NILE	2.4
USA	POTOMAC	3.9
SOUTH AFRICA	ORANGE	16.9
AUSTRALIA	MURRAY	15.5
AUSTRALIA	DARLING	4705.2

An evolving governance

Fed Water Act, 2007-8

+ States referral

Acts

Current worst
drought in
recorded
history

Fed min

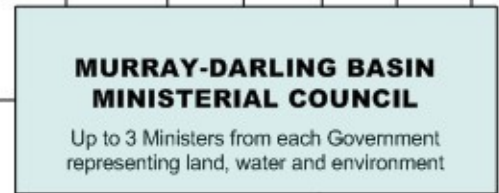
Murray-Darling Basin Authority

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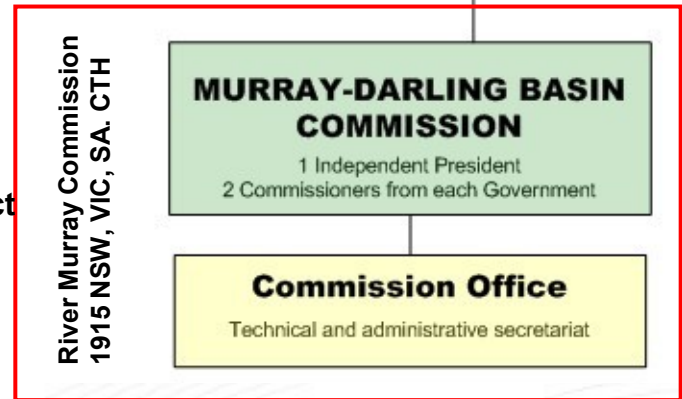
1983 drought

M-DB Acts 1992

RMA Act
1914



+



Federation drought 1901

Key Environmental Challenges



Blue Green Algae



Mouth Closure



Salinity

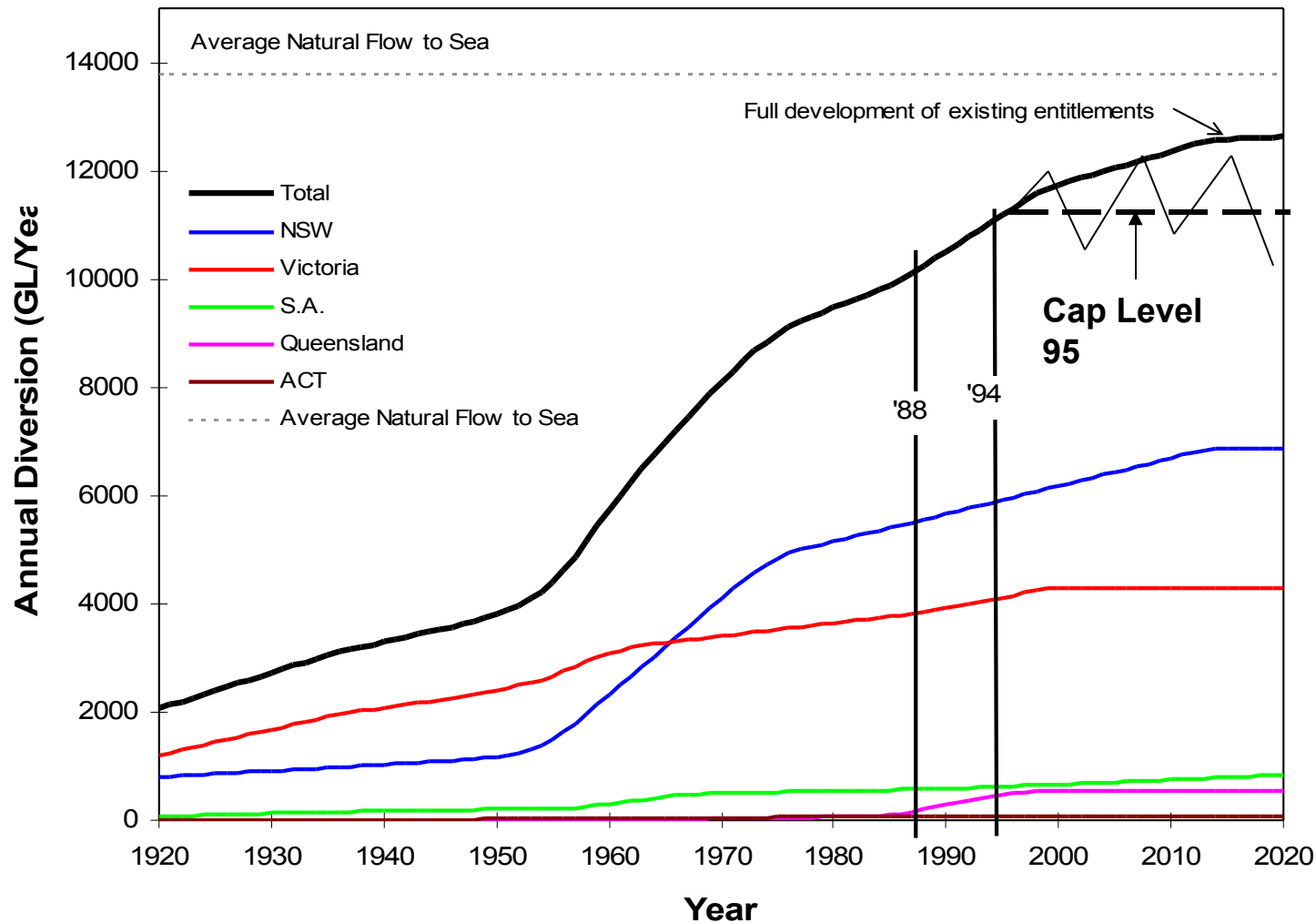


Drying of Wetlands

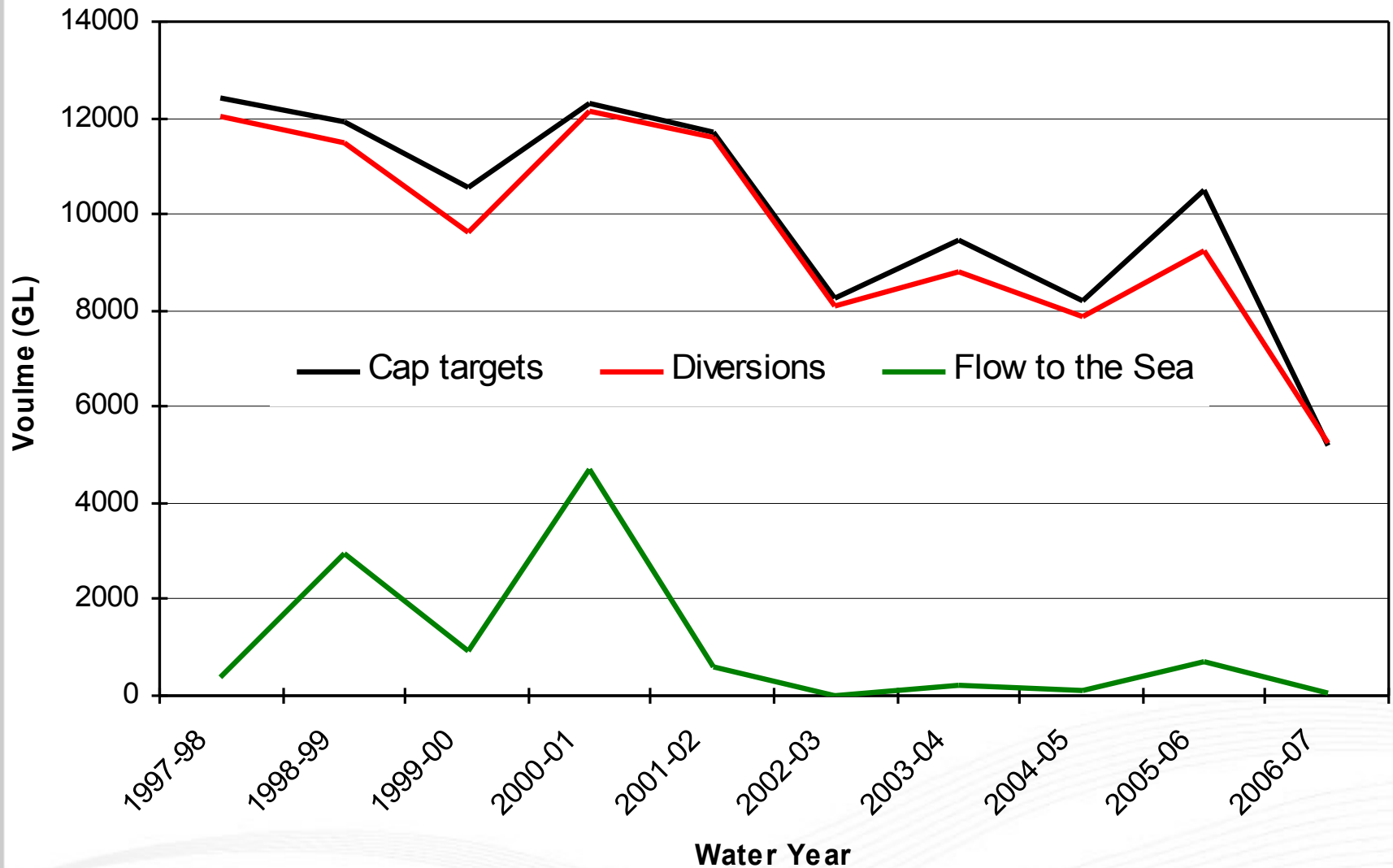
Key Policy Responses

- Cap on water diversions
- Basin salinity management strategy
- The Living Murray (environmental flow)
- Native fish strategy
- Sustainable rivers audit
- Inter-state water trading

Cap: Resp to Water Audit(95)



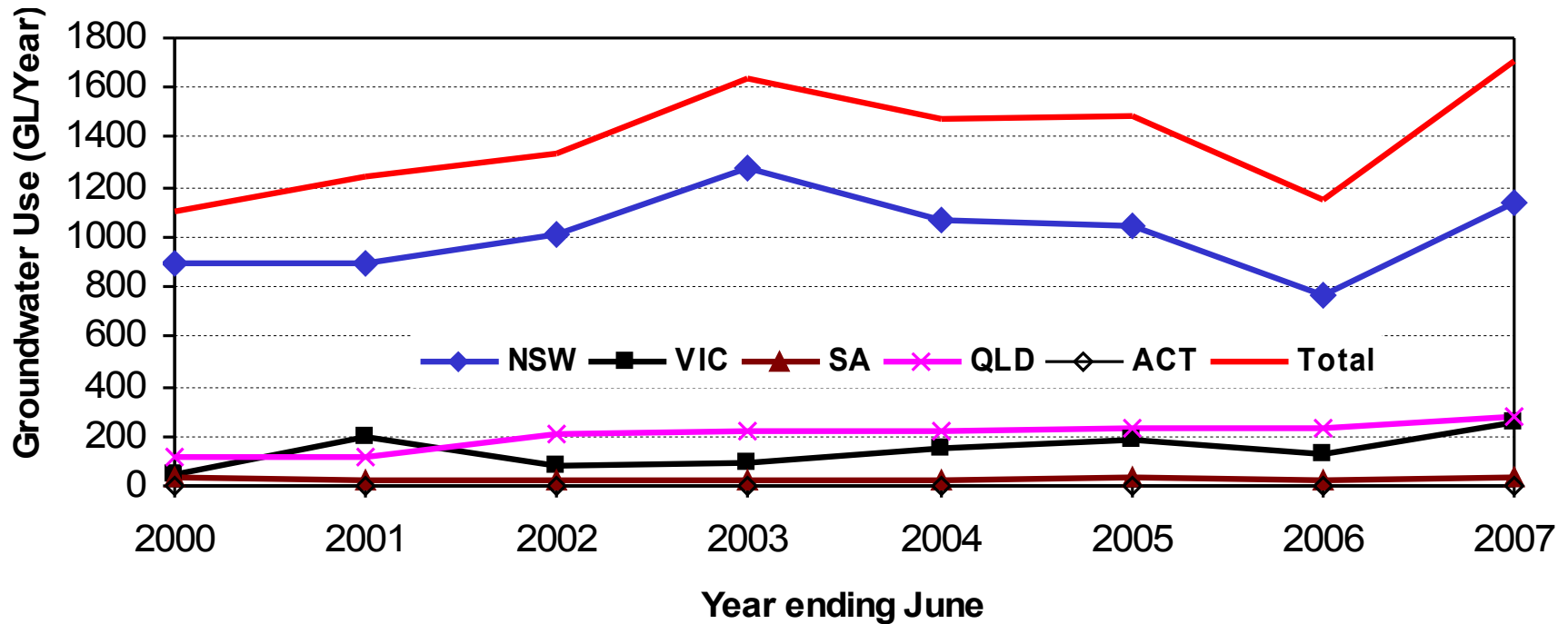
Cap compliance(97/98-06/07)



Cap compliance (Sch F)

- Management unit – cap valley (not State)
- Annual Audit by an Independent Audit Group (IAG)
- IAG determines breach of long-term cap
- If IAG so determines, Commission must declare the breach and inform the Council
- In case of breach the concerned State minister must report to the next meeting of the Council (and continue so thereafter until breach fixed):
 - Why the breach occurred;
 - action taken/proposed to bring the valley back into balance; and
 - How long it will take

Groundwater use (99/00-06/07)



Current Cap - Challenges

- Integrity of the Cap
 - Interceptions
 - Increase in GW Use
 - Farm dams
 - Plantations
 - Climate change
 - Bushfires
- Is the Cap sustainable?

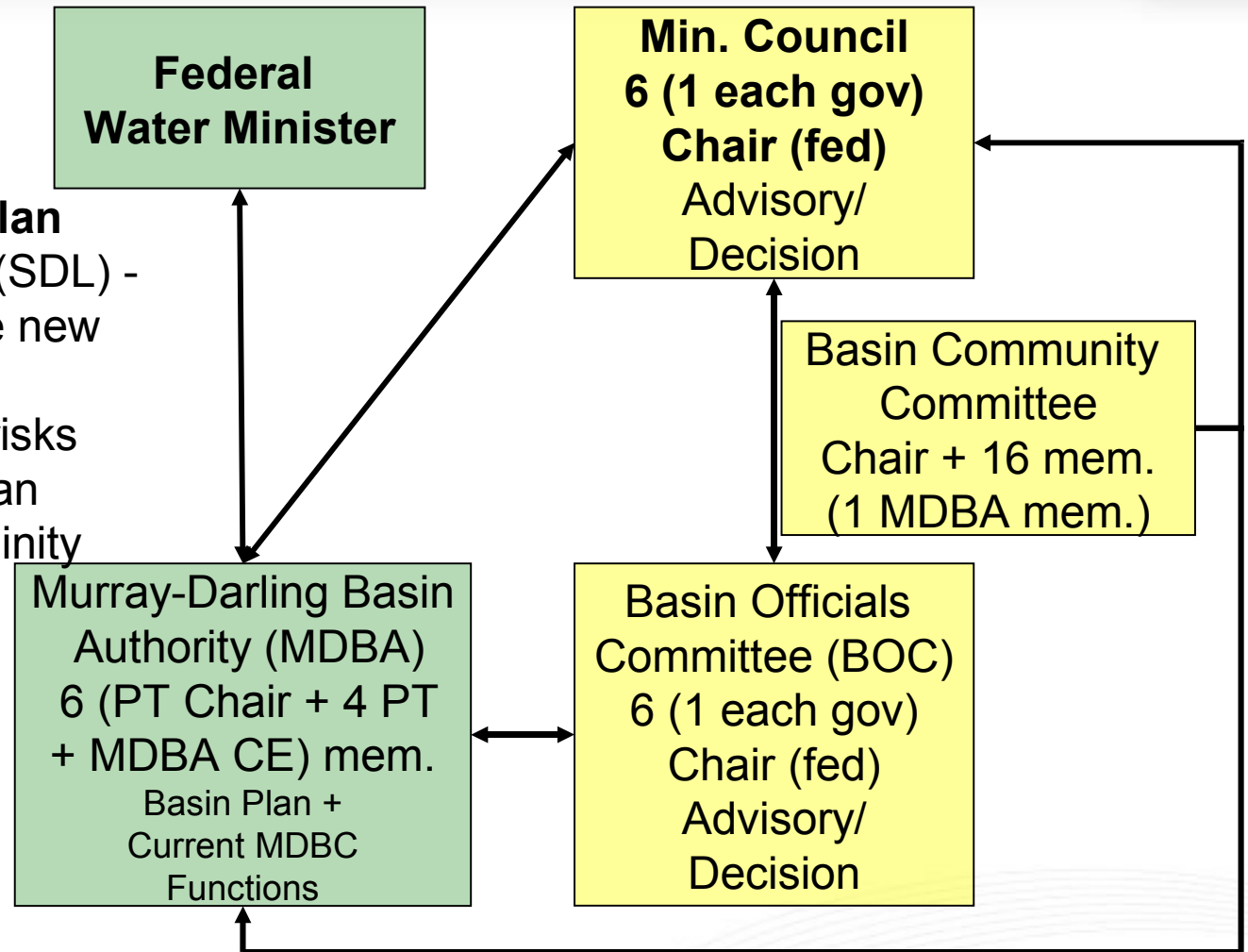
PRELIMINARY ESTIMATES ONLY	
Key Process	Most Likely Change in System Inflows by 2023
Climate Change (GL/year)	-1100
Reafforestation (GL/year)	-330
Growth in Groundwater Use (GL/year)	-510
Construction of Farm Dams (GL/year)	-250
Impact of 2002-03 bushfires (GL/year) ²	-430
TOTAL IMPACT (GL/year)¹	-2550
TOTAL IMPACT % - Most Likely	-11%

¹ Impacts of reafforestation, groundwater, bushfires and farm dams have been factored down by the climate change reduction before totalling to avoid double counting.

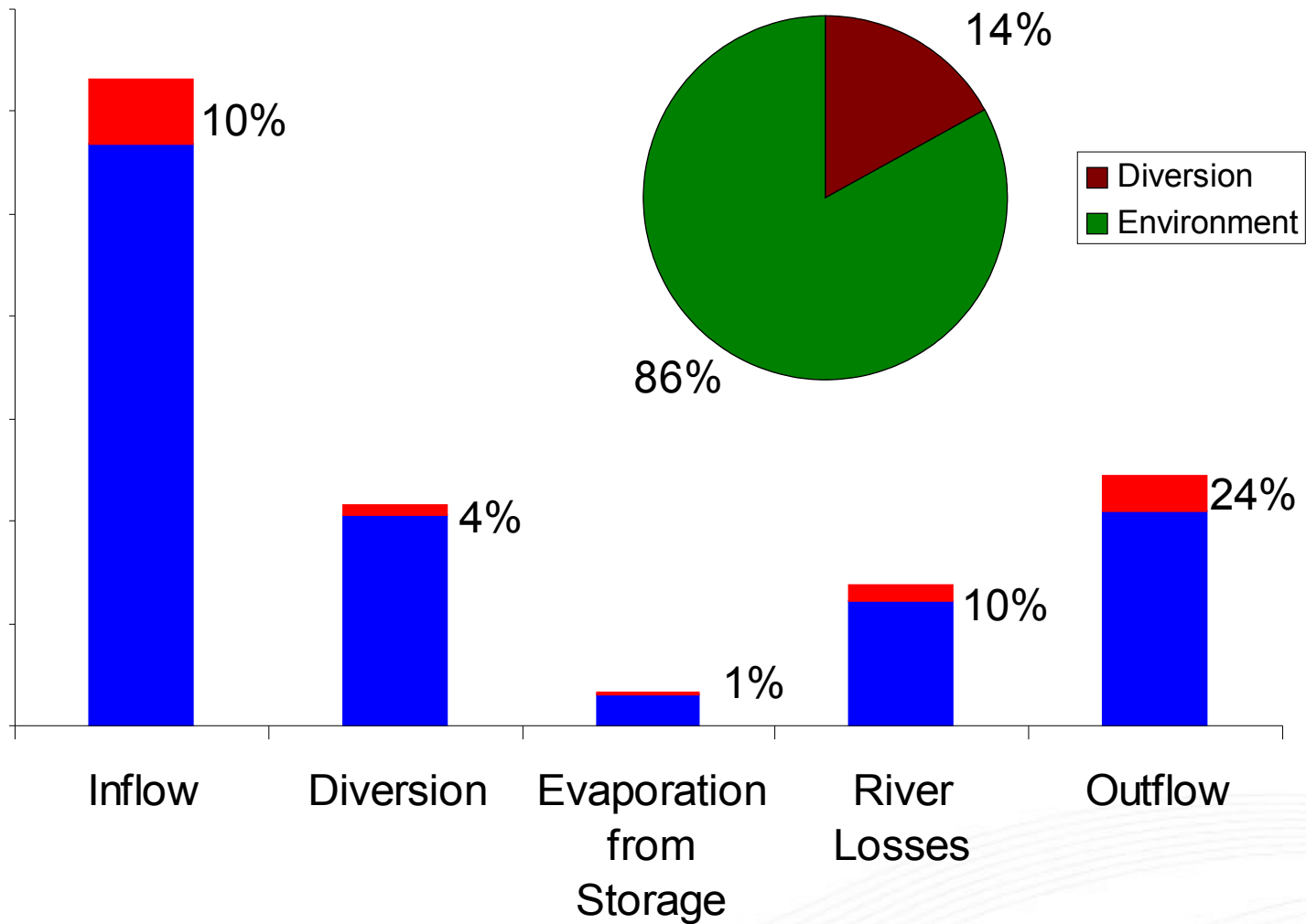
New Governance (2007-08)

Elements of Basin Plan

- Sust. Div Limits (SDL) - GW and SW, the new Cap
- Identification of risks
- Env. watering plan
- Water quality/salinity mgt plan
- Water trading



BAU -10% reduction in inflows



Challenges for new Cap

- Legal/institutional
- Policy
 - What is sustainable diversion?
 - Pain sharing
 - Compensation
- Technical
 - New models
 - New monitoring and reporting system

Conclusions

- MD-B – food bowl of Australia
- Multi-jurisdictional and evolving governance
- Several environmental challenges
- Cap – a historic decision
- New Cap/new governance
- Legal/Policy/Technical challenges



Thank you