



Valuation of Water Supply Services in Australia's National Ecosystem Accounts

Assessing the economic value of Australia's water resources

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Introduction and Context



Purpose and Scope of the Presentation



Water Supply Valuation

The presentation covers valuation of water supply services in Australia's National Ecosystem Accounts released in 2025.

SEEA Ecosystem Accounting Framework

Focus on Australia's application of the SEEA Ecosystem Accounting framework for environmental and economic integration.

Applications of Surface Water Data

Assessment of surface water contributions to drinking, material use, and energy generation is a key focus.

Supporting SEEA Central Framework Revision

This work supports revising the SEEA Central Framework, specifically Issue D7 on water valuation.

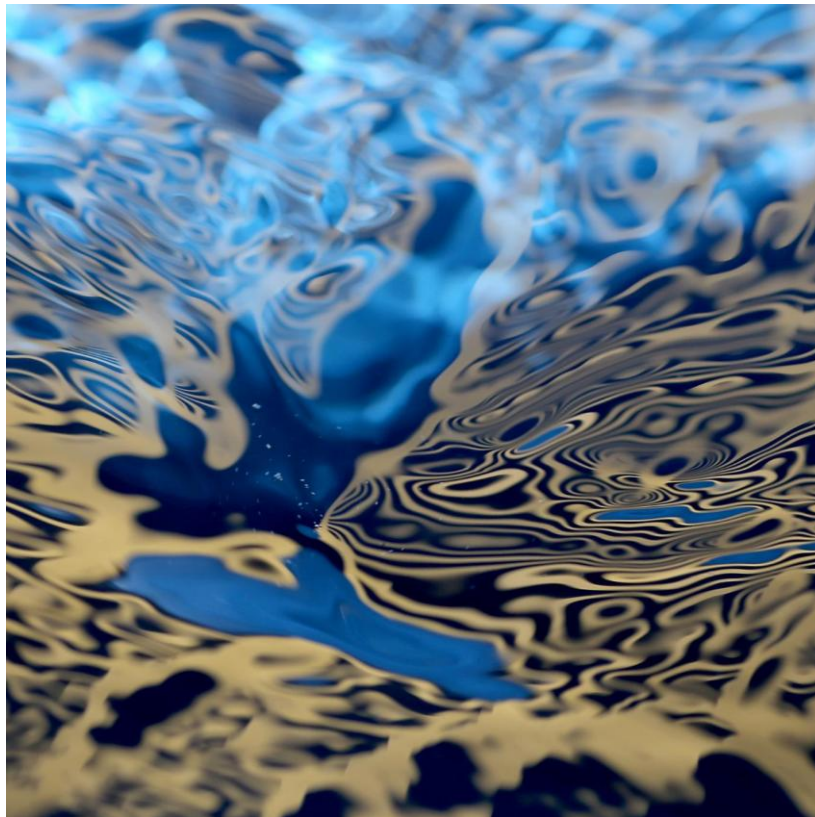
National Ecosystem Accounts - February 2025

Account component	Account types/ services	Ecosystem/realm	Metrics	Geographic reporting area
Ecosystem extent	Extent account	All	Area (ha)	National
	Change matrix	Pelagic marine	Length (km)	State
	Time series	Rivers and streams		SA2 IMCRA bioregion
Ecosystem condition	Condition account	Terrestrial ecosystems	Canopy moisture	National
	Change matrix	Rivers and streams	Vegetation productivity	State
	Time series	Mangroves	Bare ground cover	SA2
		Saltmarsh	Burnt area ratio	
			Surface water availability Mangrove canopy density Land Use Intensity	
Ecosystem service	Grazed biomass provisioning	Some Terrestrial ecosystems	Forage for sheep	National
			Forage for cattle Dollars	State
	Global climate regulation	Terrestrial ecosystems Some coastal ecosystems	Carbon retention	National
			Dollars	State
	Wild fish provisioning	Marine ecosystems	Finfish	National
			Crustaceans Molluscs Unspecified Dollars	IMCRA bioregion
Water provisioning	Rivers and streams	Megalitres Dollars	National State	
Coastal protection services	Mangroves Saltmarsh	No. dwellings protected	National	
		No. persons protected Dollars	State	
Thematic account	Biodiversity	All	Pests and weeds Threatened species index Threatened species status	National State SA2



Methodology and Data Sources

Physical Estimates of Water Supply



Data Sources for Water Estimates

Water supply estimates rely on ABS Water Account and WSSS census focusing on surface water abstraction and distribution data.

Scope of Water Supply Data

Groundwater and desalinated water are excluded; estimates focus primarily on surface water supply services.

Household and Material Water Use

Household supply is a proxy for drinking water and includes other domestic uses; material use covers agriculture, mining, and manufacturing.

Energy Use from Water

Surface water used for hydroelectric generation is non-consumptive and accounted as energy use in water supply estimates.

Monetary Valuation Methods



Market-Based Pricing

Market-based pricing was applied to drinking and material water uses using tradable water allocations to estimate prices accurately.

Volume-Weighted Price Adjustment

Prices were volume-weighted and adjusted for outliers to reflect more accurate water valuation in various regions.

Residual Value Method

The residual value method estimated water's contribution to hydroelectric production by subtracting other input costs from gross output value.

Energy Valuation Uncertainty

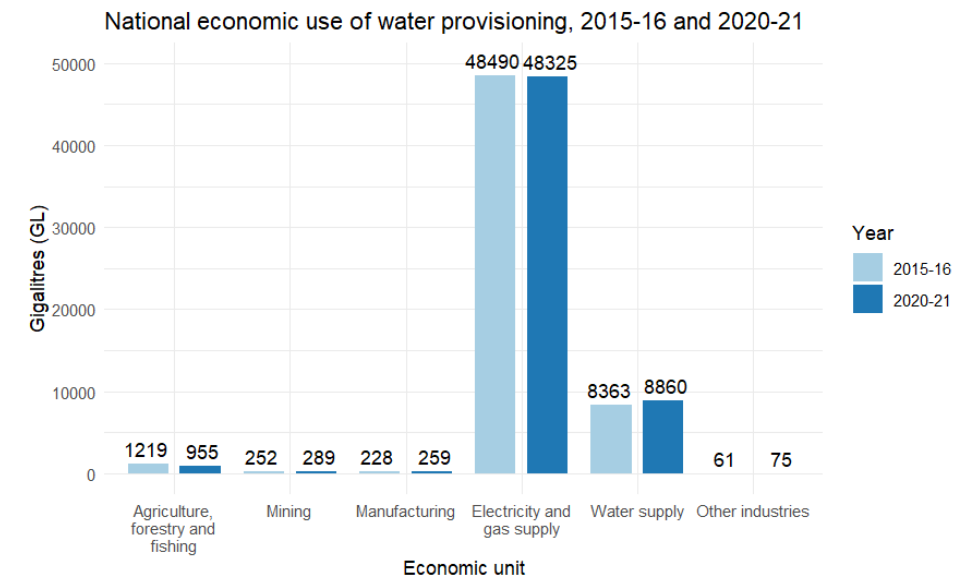
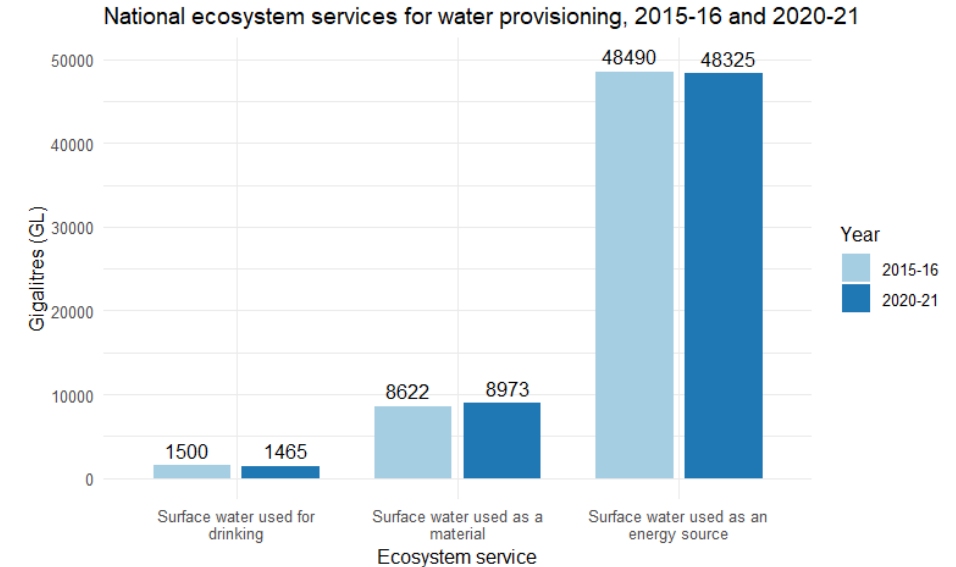
Energy valuation was tested but not published due to methodological uncertainties impacting result reliability.



Valuation Results

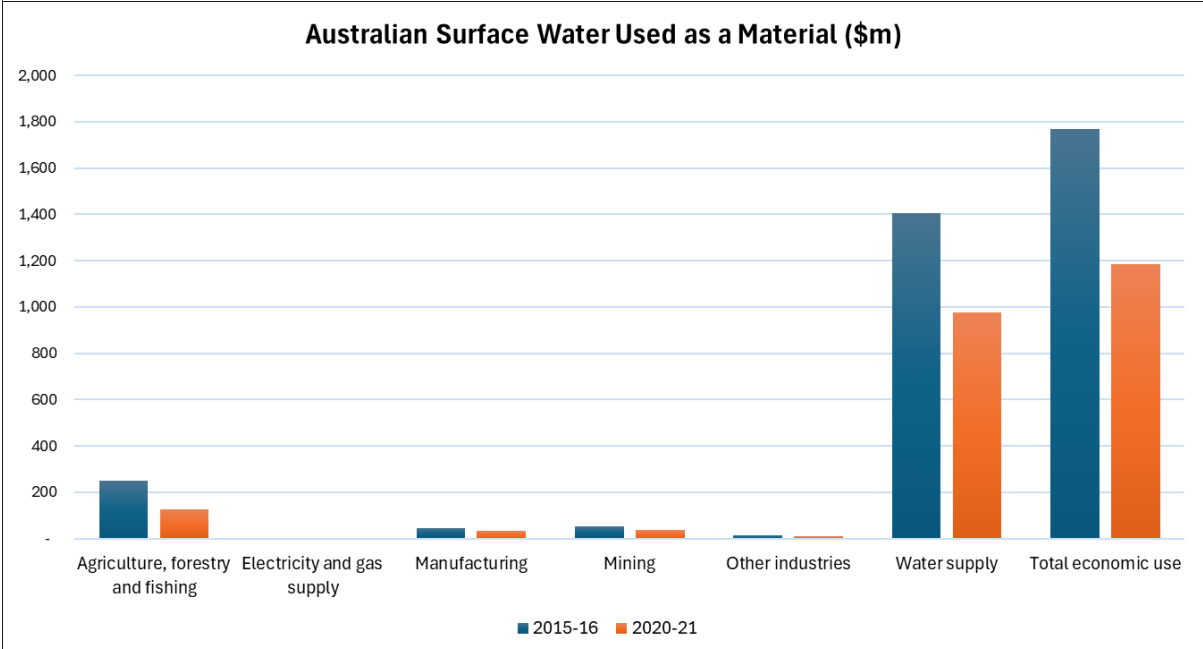
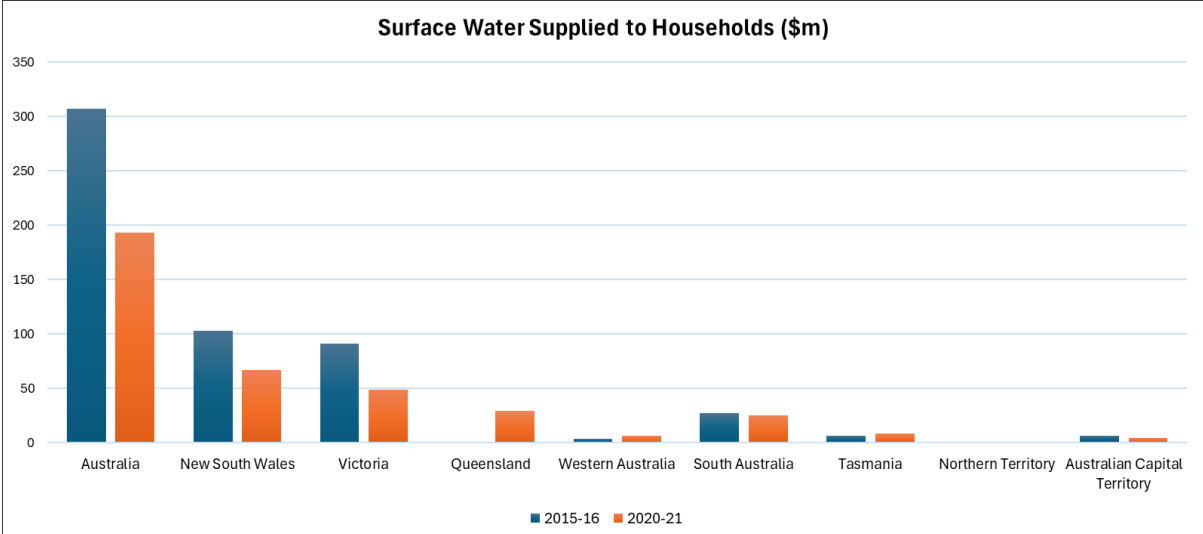
Water provisioning - Physical

- ▶ The electricity and gas supply industry continued to be the largest extractor of surface water with 48,325 GL used as an energy source in 2020-21 (down 0.3% from 2015-16)
 - Non consumptive use only
- ▶ Surface water used as a material rose 4.1% to 8,973 GL in 2020-21
- ▶ 1,465 GL of freshwater was extracted from rivers and streams for drinking in 2020-21 (down 2.3% from 2015-16)
 - Higher rainfall -> reduced demand for watering etc.
 - Victorian Desalination Plant provided 125 GL
- ▶ Water supply industry was the second highest user (based on point of extraction), up 5.9% to 8,860 GL
 - 16.5% was distributed to households for drinking
 - 83.5% was distributed to industry for use as a material, including Agriculture, forestry and fishing



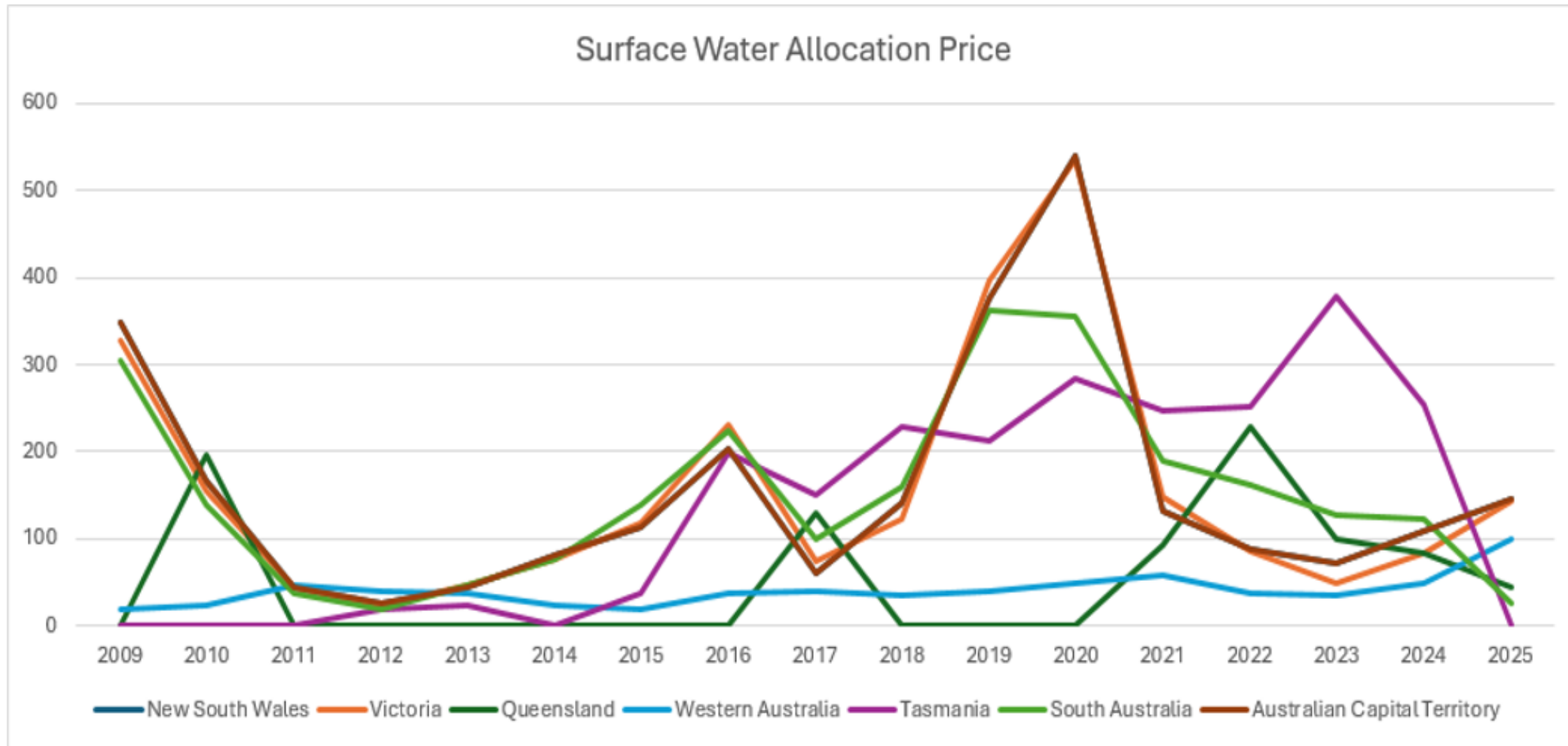
Water provisioning - Monetary

- ▶ \$193m value of surface water supplied for drinking in 2020-21
 - Down 37% from 2015-16 (physical was down 2%)
- ▶ \$1.18bn value of surface water used as a material
 - Down 33% since 2015-16 despite physical supply up 4%
- ▶ Decline in value between 2015-16 and 2020-21 due to climatic conditions:
 - Below average rainfall, runoff and stream flow in 2015-16 resulted in a decrease in water storage volumes.
 - Cooler and wetter conditions in 2020-21 replenished water storage volumes in catchments and reduced demand
- ▶ Values for surface water used as an energy source excluded due to negative values for Snowy Hydro and Hydro Tasmania



VWAP of surface water allocation prices

Figure 2: Volume-Weighted Average Price of Surface Water allocation prices by state/territory (\$/ML)



Implications and Recommendations



Challenges and Future Directions



Data Limitations

Current data fails to clearly distinguish potable from non-potable water and lacks fine spatial detail of abstraction.

Regional Market Variability

Water market maturity varies significantly across regions, complicating unified valuation methods.

Future Improvement Strategies

Adopting replacement cost methods, enhancing spatial data infrastructure, and integrating geospatial models can improve valuation.

Stakeholder Collaboration

Engaging stakeholders is essential to refine water valuation and management approaches.

Lessons for SEEA Revision



Market-Based Pricing

Market-based pricing offers a transparent way to value water provisioning services effectively.

Residual Value Method

The residual value method is conceptually strong but needs standardisation for consistent application.

Spatially Resolved Data

Spatially resolved data is essential to link water use accurately to ecosystems and environmental impacts.

Guidance on Valuation Methods

Clear guidance is required on proxies, regulated prices, and replacement cost methods for valuation.

Conclusion and Discussion



Summary and Closing Remarks



Integration Feasibility

Australia's water service valuation shows successful integration with national statistical systems is achievable.

Economic Significance

Valuation highlights water services' critical economic role within Australia's environmental accounting framework.

Global Influence

Australia's approach informs and supports international efforts to enhance environmental-economic accounting globally.



Questions and Discussion

Invitation for Questions

The presenter invites attendees to ask questions regarding valuation methods and SEEA revisions.

Feedback Encouraged

Feedback is welcomed to improve Australia's ecosystem accounts and support global best practices.