The 2020 Basin Plan Evaluation is a legislated checkpoint 8 years after the introduction of the Murray–Darling Basin Plan. It provides an opportunity to assess how Basin Plan implementation is tracking, if outcomes are being achieved and areas for improvement. This snapshot provides an insight to how the climate challenge has impacted all outcomes of the Evaluation.

Climate

The climate of the Murray–Darling Basin is highly variable. It varies from the sub-tropical north to cool highlands to hot, semi-arid western plains.

This variation includes rainfall which ranges about 2,100 mm to less than 300 mm annually.

The climate variation means the Basin's rivers, lakes and wetlands are diverse. Some only flow during floods, while other waterways are plentiful year-round.

On average, 90% of rainfall in the Basin evaporates–some then soaks into soil and beneath the ground, leaving just a small percent to flow into streams and rivers.

The Basin Plan has already helped cushion the impact of a warming climate during extremely dry periods, through emergency releases of water for the environment, strengthening connectivity and flushing stagnant water.

Image: Lake Mulwala at sunset, NSW

Image: Macquarie Marsh, NSW

Major findings

- **The Basin's climate is changing**. While the climate has natural variability and is prone to extremes, evidence provided by both the CSIRO and Bureau of Meteorology identify the climate of the Basin is changing and the future is likely to be warmer, drier and include more frequent droughts and extreme weather events.
- The first 8 years of Basin Plan implementation has **tested the policy in extreme climate conditions.**
- **There have been large-scale floods,** resulting in both successful fish breeding and vegetation growth, as well as blackwater events.
- **The Basin has just experienced its driest 3 year period on record,** which saw record low inflows, towns running out of water, mass fish deaths, extensive bushfires and significant water quality issues.
- **Climate change is a Basin-scale challenge.** It will shift the fundamental characteristics and connectivity of the Basin for decades to come.
- **Adapting to the changing climate will increasingly be a focus for the diverse stakeholders** of the Basin. Some governments, industries and communities have already begun this process.
- **The CSIRO has developed a number of climate indicators and a range of scenarios depicting a future climate.** The CSIRO has indicated a scenario that water managers should consider in their planning, noting all other scenarios must also be considered. Scenarios can help everyone understand how the climate might play out in the Basin, and help improve the policy and management arrangements. The scenarios are in the Evaluation and the *CSIRO Climate scenarios for the Murray–Darling Basin*.

The Murray–Darling Basin Authority (MDBA) has partnered with the CSIRO to demonstrate a range of future climate scenarios the Basin could face. Scenarios can help everyone understand how climate change may occur in the Basin and improve the policy and management arrangements. This work complements the work being done by Basin state governments.

The 7 CSIRO scenarios outline the average amount of rainfall, dry spells, soil moisture, and the number of days where water stops flowing.

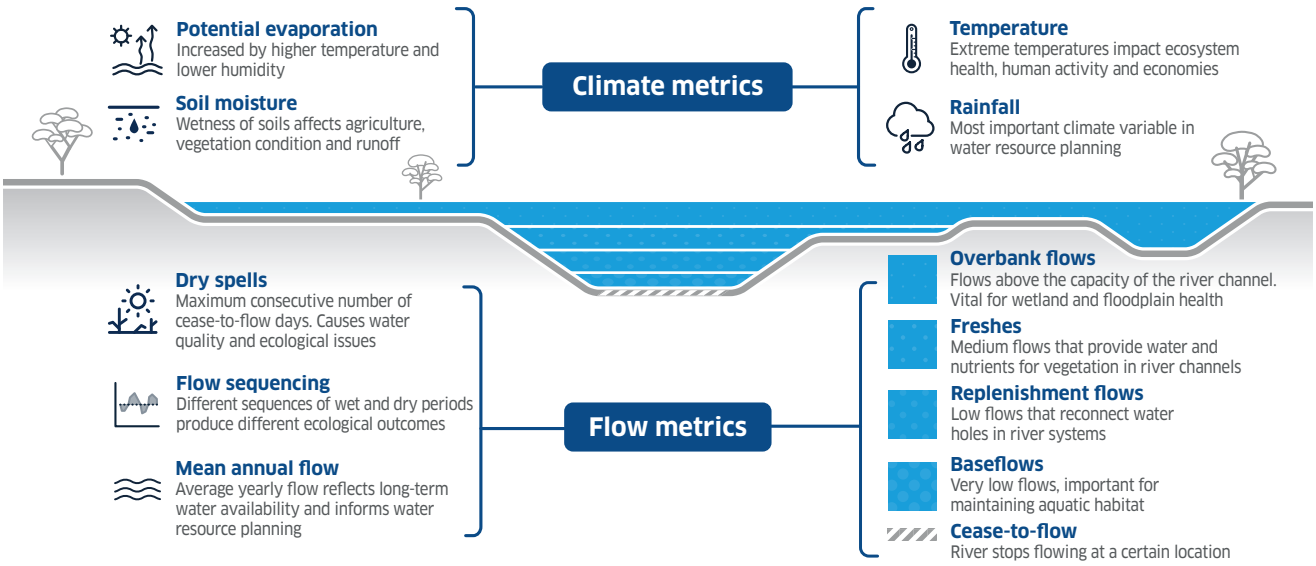
The more plausible scenario was scenario B which models a future where in 2050 to 2060 the Basin will be 2 degrees warmer and will receive 10% less annual average rainfall compared to the historical record.

Currently we plan for a very dry year to occur 1 in 10 years – under a warmer and drier climate scenario this will be 1 in 5 years. While this is the more plausible scenario, CSIRO advises all water managers to consider all the other scenarios in future planning.

In addition to this research, the MDBA has been working with the Bureau of Meteorology to model extreme events and how these events could affect water resources within the Murray–Darling Basin.

The future is always uncertain. But these scenarios allow us to understand the possible range of impacts from climate change and stress test our water management tools to understand what may need changes or improvements.

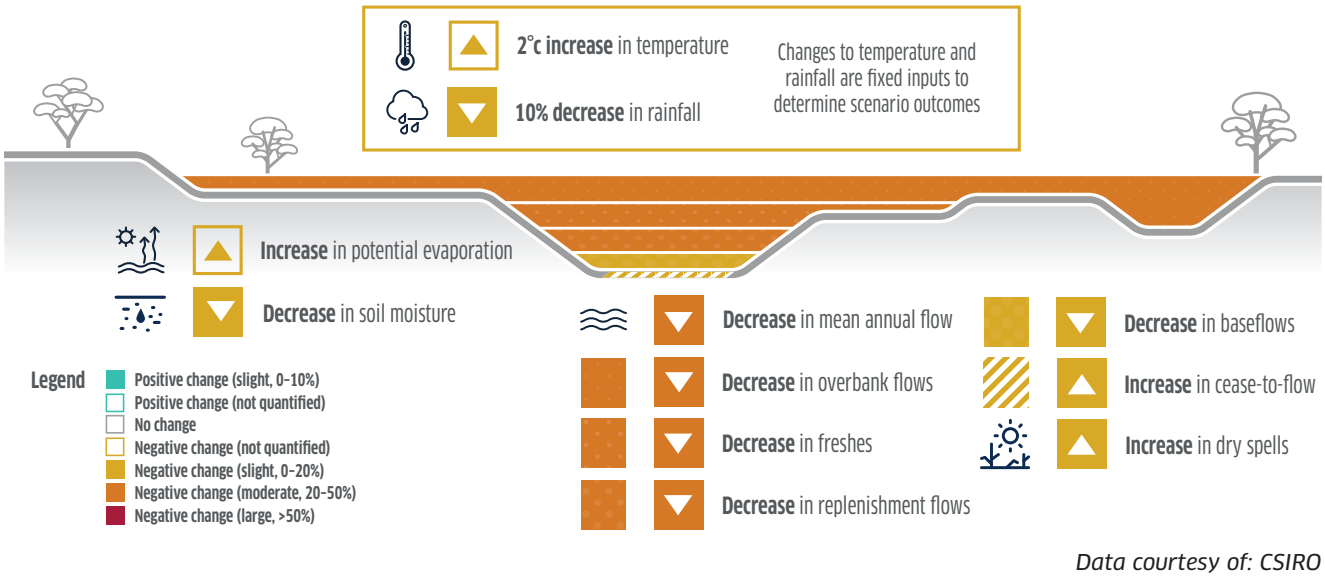
Factors that influence river health: key terms explained



Data courtesy of: CSIRO

Warmer and drier climate scenario

Guided by latest climate science projections (for 2046–2075). This scenario is compared to the historical record (1895 to present)



Data courtesy of: CSIRO

Image: Aerial view of Narran Lake, NSW

Recommendations

- **Basin governments should improve sharing of new knowledge, tools and innovations that are critical to support climate adaptation and water management.** Information and science on future water availability and trends must be shared widely to support businesses, communities and industries plan to be more proactive, adapt and diversify.
- **Basin governments and the MDBA need to prepare to adapt the Basin Plan in 2026 to incorporate future climate scenarios and trends.** This means improving existing tools and developing new frameworks for Basin-scale management. An agreed work program should be established and shared publicly.
- **Basin water users, managers, First Nations and community groups need to plan for the future climate.** As well as Basin-wide assessment, local climate opportunities and risks should be given attention along with implications, trade-offs and adaptation priorities.

MDBA commitment

The MDBA will facilitate the sharing and coordination of information on Basin climate adaptation. The MDBA will bring water managers together with communities, industries, First Nations and governments to explore strategies. The MDBA will focus effort and investment to improve access to science and evidence for all stakeholders to contribute to enhancing climate resilience and adaptation in the Basin.

Evaluating the Basin Plan

The 2020 Basin Plan Evaluation is a comprehensive and robust investigation of the Basin Plan including the implementation and progress towards achieving the plan's objectives. The Evaluation has drawn upon expertise and analysis from a wide range of sources – including from the science community, independent advisors, governments and communities. The MDBA has also built in several independent checkpoints to validate results and ensure that the Evaluation is a comprehensive assessment of implementation progress and outcomes at the Basin-scale.

Evaluation reports, summaries and data can be found on the MDBA website: mdba.gov.au/2020evaluation

Connect with us.
The MDBA has offices in Adelaide, Albury–Wodonga Canberra, Goondiwindi, Griffith, Mildura, Murray Bridge, Toowoomba, and regional engagement officers around the Basin.

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#1405-202012v13