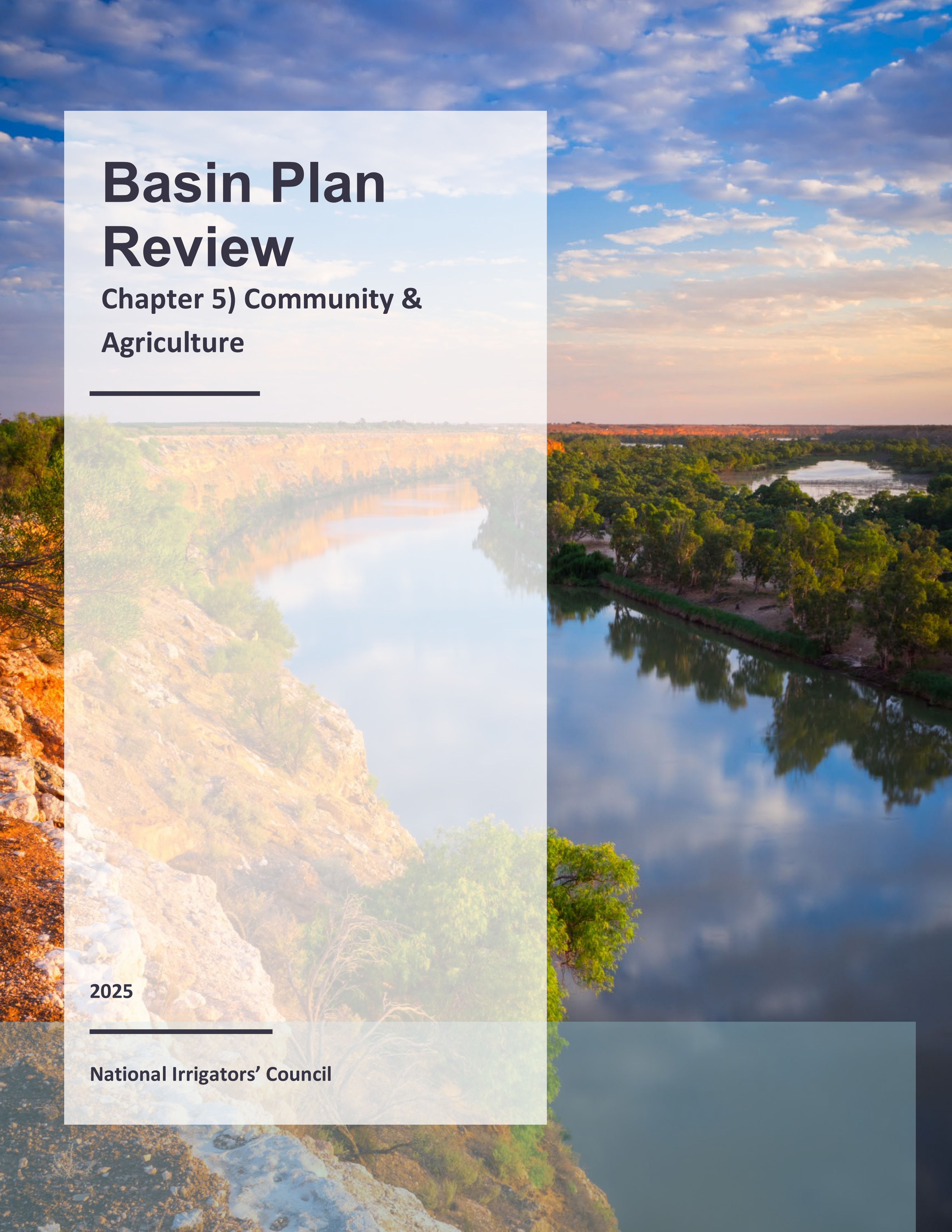


Basin Plan Review

Chapter 5) Community & Agriculture

2025

National Irrigators' Council

Chapter Overview

Key Findings

- Our key finding is that the Basin Plan has had significant, and observable, impacts on communities. This is more pronounced in smaller, more remote communities and those more highly dependent on irrigated-agriculture.
- It was an omission by the MDBA to not include socio-economics as a key theme of the Early Insights Paper for the 2026 Basin Plan Review. Socio-economics must be one of the lenses by which decisions on next steps for the Basin's water management are informed.
- It is critical to understand and assess cumulative socio-economic outcomes from water reform for not only farmers, but those living and investing in Basin communities. Governments have a regulatory responsibility to ensure efficient and best outcomes.
- Water reforms that reduce irrigation water supply and affordability, trigger ripple effects across communities. Less water for farming means fewer jobs, lower local spending, smaller schools, reduced services, and declining community participation. Economists call this the 'multiplier effect'.
- While the Basin Plan promised triple-bottom-line outcomes (environment, social and economic), it is challenging to see how this was ever feasible for a water recovery Plan. Rather, this was evidently a false expectation.
- The methodologies used for socio-economic assessment are poor, and often understate the true impacts, particularly at a community and industry level.

The Data

WATER	JOBS	BUSINESSES	EDUCATION	PRODUCTION
1 in 3 litres of irrigation water has now shifted out of agricultural production in the Murray Darling Basin, to the environment. This means on average 72 percent of river flows are for environmental purposes through rules and licences.	30% of the 10,801.5 FTE jobs lost across 40 southern Murray-Darling Basin communities from 2001 to 2016 were attributed to water recovery for the environment.	50% reduction in the number of agricultural businesses in the Basin between 2006-07 to 202-21, as businesses adapt to farmers with less water.	An entire class of high-school students has been lost on average in every NSW southern MDB region over the implementation of the Basin Plan.	Recovering an additional 760GL would have an average annual foregone production cost of over $850 million per year. This is an extra 17,500 hectares of high-value horticulture being dried off in a repeat of the Millennium Drought.

What this means

Now the Basin Plan water recovery has largely been complete (Bridging the Gap), and SDLs are complied with, this 'heavy lifting' has been done, and water management efforts can now pivot to focus on other management actions which have greater community support, and without the socio-economic impacts.

Recommendations

The key recommendation from this chapter is for socio-economics to be included as a key theme in the 2026 Basin Plan Review. This must include community-level impacts, as well as impacts to our agricultural sector.

Specific recommendations on how to improve how this is undertaken, include:

1. Replicate the 'community profile' process with communities – this will provide updates to the data (important since further water recovery has since occurred), and show longer term trends (important given lag impacts).

2. Evaluate Community Support packages and determine if the value of funding is adequate for the task - to stimulate economic development, undermined by water purchases. Create clearer expectations about the purpose of these programs – i.e. if they can feasibly offset the full impacts of water recovery, or not.

3. Provide Government investment into data collection of irrigated agriculture and water use to ensure a robust evidence-base to monitor changes over time. This should seek to reinstate the data collection processes which were removed, and undertake best endeavours to account for the years missed.

4. MDBA to work with agricultural commodity groups to improve understanding of the changes to industries over the course of the Basin Plan, including the reported drivers of change. This is critical to ensure true impacts are understood, and the various impactors (both positive and negative) are accounted for in how data is interpreted and explained.

5. Improve counterfactual analysis to be able to account for impacts caused by the Basin Plan. It is not satisfactory for communities that the impacts of the Plan are found to be 'not measurable', as the expectation has been that Governments are tracking / monitoring these impacts, so that decisions can be informed.

Chapter 5: Community and Agriculture

Contents

Photo: Farmers protest further water recovery in Canberra (2023)

Introduction

The removal of water from agriculture has flow-on impacts across communities and industries, beyond the individual farmer who sells their water. This includes:

- **Local community** – decreased employment and production in a community flows through to impact other businesses, and in turn, access to services such as education, health care and other local opportunities such as sporting teams.
- **Other farmers** – the reduction of the consumptive pool drives up the price of water, particularly in years of low water availability. In connected water markets, the impact scale can be large.
- **Specific industries** – water reforms have driven changes to the types of production, with impacts disproportionate across industries. In commodities where there is local manufacturing, the impact often extends to those industries such as factories and transport and logistics.
- **Consumers** – higher input prices for farmers drives up the price for outputs, which (among other factors) increases the prices consumers need to pay at checkouts.

This Chapter focuses on two-parts of socio-economics: (i) communities and (ii) the agriculture sector – noting they are related, but have distinct impacts to consider.

The objectives and outcomes for the Basin Plan, as listed in the legislation, includes optimising social, economic and environmental outcomes; improving water security for all; and productive and resilient water-dependent industries and communities with confidence in their future. This reflects a 'triple bottom line' approach, seeking to balance these outcomes.

5.02 Objectives and outcome for Basin Plan as a whole

(1) The objectives for the Basin Plan as a whole are:

(a) to give effect to relevant international agreements through the integrated management of Basin water resources; and

(b) to establish a sustainable and long-term adaptive management framework for the Basin water resources, that takes into account the broader management of natural resources in the Murray-Darling Basin; and

(c) to optimise social, economic and environmental outcomes arising from the use of Basin water resources in the national interest; and

(d) to improve water security for all uses of Basin water resources.

(2) The outcome for the Basin Plan as a whole is a healthy and working Murray-Darling Basin that includes:

(a) communities with sufficient and reliable water supplies that are fit for a range of intended purposes, including domestic, recreational and cultural use; and

(b) productive and resilient water-dependent industries, and communities with confidence in their long-term future; and

(c) healthy and resilient ecosystems with rivers and creeks regularly connected to their floodplains and, ultimately, the ocean.

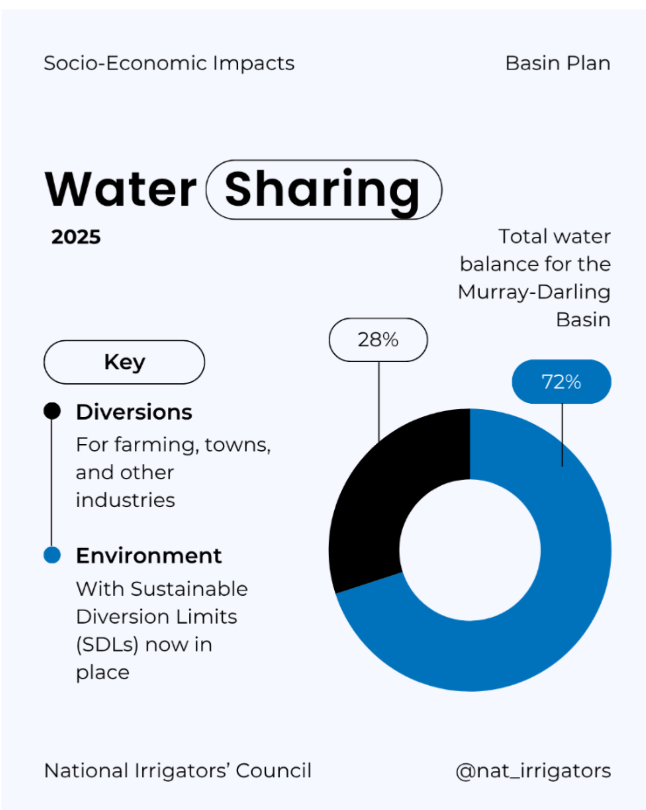
However, it is intriguing how such a Basin Plan, premised on the removal of water from agriculture, could ever achieve these objectives. Rather, it appears these objectives were at best aspirational, or more realistically a false expectation. Had the Basin Plan been upfront about the necessary trade-offs inevitable to a reform of this kind, it likely would have been more politically challenging to progress. These social and economic impacts have been well known:

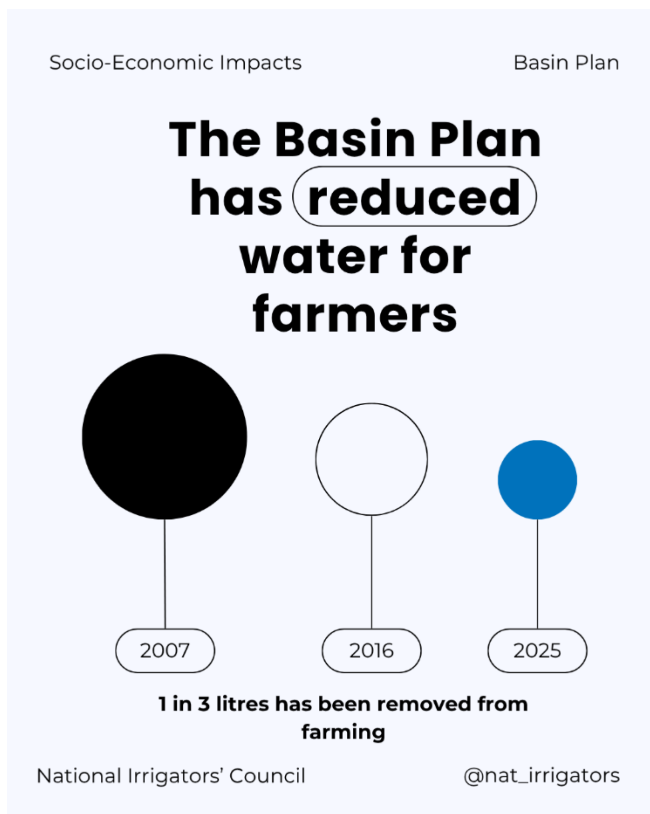
"In 2012, the MDBA prepared a Regulation Impact Statement (RIS) to outline the expected environmental, social and economic consequences of implementing the Basin Plan based on what was known at the time. The RIS recognised that there would be social and economic impacts from the water recovery required to meet SDLs."[1]

The consequences of this, has been two-fold, in that: community expectations of a triple bottom line have not been met, but also, the necessary measurement and management of such impacts has not occurred at the scale or frequency required.

Ultimately, an honest and upfront conversation with communities and industries is an essential step, which was largely missed in the Basin Plan. This has left communities feel unheard, lacking trust and confidence in the reform, and unfortunately a lack of consistent data (or management interventions) to track impacts and adjust accordingly to mitigate risks.

Background





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Community

Overview

The Independent Assessment of Social and Economic Conditions in the Basin is perhaps the most comprehensive recent work on social and economic to date. However, it too acknowledges the significant limitations in data, which impedes understanding the full extent and nature of impacts.

> *Commissioned social and economic condition research and our consultations highlighted that (a) there are significant gaps in information on the current social and economic conditions of Basin communities, and (b) Basin reporting is often based on out of date data. More and better information is needed, at a more local scale. These data limitations should be kept in mind when interpreting social and economic condition measures discussed in this section.*[2]

However, importantly, despite these data limitations the Assessment still found impacts from water reforms across communities, in both quantitative and qualitative data.

> *The cumulative effects of water reforms have flowed, and will continue to flow, through communities. In aggregate, the reforms outlined in this chapter have been significant and have considerably changed the operating environment since the 1990s. Further, the effects of these reforms are still playing out across the Basin.*[3]

The availability of data is a repeated theme across all socio-economic assessments to date. The most useful data has been the Murray Darling Basin Authority in-depth community profiles for the Northern Basin (2016) and the Southern Basin (2017) – as outlined below.

However, much has changed in Basin communities since then. Significantly, further water recovery from farmers has occurred, as well as floods and droughts, which all act to amplify the localised impacts of a future with less water. Further, while the data at a community level is critically important, there was no work done to aggregate these outcomes into trends or findings across communities.

[2] https://www.dcceew.gov.au/sites/default/files/documents/panel-report.pdf [40]
[3] https://www.dcceew.gov.au/sites/default/files/documents/panel-report.pdf [70]

We took a look at a select few communities, where a large percentage of water recovery has occurred, to see how they are performing and what trends exist. Critical to this analysis is understanding the scale of any further water reductions, which is currently unknown.

Our key finding is that the Basin Plan has had significant, and measurable, impacts on communities.

Methodological challenges (communities)

Understanding the full extent and nature of socio-economic impacts on communities from the Basin Plan has been hindered by a number of methodological challenges.[4] This is evident in the 2025 Basin Plan Evaluation, which found:

> *"Water reforms have had little to no discernible impact on community condition, wellbeing or cohesion. Even in highly irrigation-dependent communities, the contribution of the reforms was not measurable relative to other factors affecting social conditions; it is difficult to separate the Basin Plan from other factors that can influence community wellbeing.*
>
> *Even in highly irrigation-dependent communities, the contribution of the reforms was not measurable relative to other factors affecting social conditions."*

This finding was heavily criticised by communities, as it does not reflect the lived experience of those in the Basin. While the MDBA has clarified it was intended to refer to the measurability of impacts, it has been interpreted as there being 'no impact', which is evidently not the case. It also does not meet community expectations that a reform of this scale did not have ongoing measurement and reporting of these impacts, leading to this situation of findings of impacts being immeasurable.

Some of the methodological challenges for community impact assessment includes:

- **Accounting for flow-on or multiplier impacts** – analysis has tended to stop at the impact of the removal of water directly on the farmer, or at best the market, but there is limited assessments of how this then impacts the broader community – including the social impacts, such as on community wellbeing and access to services (education and healthcare etc).
- **Baseline** - establishing a baseline for assessments has been challenging, given serious drought years preceding the Basin Plan (Millenium Drought) which skews the data of 'before and after' analysis. For example, some findings may show little change before and after the Plan, but this is being compared to serious drought years before the Plan, and often good or moderate years after.

[4] This is in addition to methodological challenges more specifically on the impacts on the agriculture sector.

- **Scale of analysis** – the legislation requires the Basin Plan Evaluation to be done at a Basin-scale, which effectively smooths over the more localised impacts, at the community or industry scale. This is a problem when impacts are concentrated in specific communities and industries, which is not reflected in aggregated data. Even analysis at an LGA-scale can overlook specific community impacts, particularly in smaller communities.
- **Counterfactual** - establishing a counterfactual has proven difficult, such as accounting for productivity and efficiency gains of the industry, or production / water use, if environmental water recovery did not occur;
- **Piecemeal approach** – for example when the Minister (Federal) signs off on a tender round for having 'considered' socio-economic impacts (as required under legislation), the materials to support that decision assess that parcel of water, without consideration to the cumulative impacts and historic impacts already occurring
- **Accounting for recent water recovery** – there has been no studies to date on the impacts of recent water recovery, consider the cumulative impacts on communities and potential community or industry tipping points;
- **Comparisons to other areas of Australia** – some studies compare outcomes in the Basin to other areas of Australia to argue that changes are part of normal rural/regional demographic changes. However, we do not believe this is sound or good-practice to compare regions in this way. For example, the MDB has been a more productive region of Australia than elsewhere, in part, due to the significant investment in developing an irrigated agricultural sector.

NIC Analysis

The below analysis selects four case study towns, spread across the Basin:

- Dirranbandi (QLD, Northern Basin)
- Collarenebri (NSW, Northern Basin)
- Wakool (NSW, Southern Basin)
- Berri (SA, Southern Basin).

We identified the water recovery volume as of 2016/17 – this was due to data limitations, but is therefore an underestimation as further water recovery continues to occur, and there is typically also a lag time from water recovery to the full impacts being felt. We then identified socio-economic trends over time, typically based on 2021 census data (most recently available). Note: for various reasons, some towns have slightly different data sets, therefore this data is not intended to be comparable between towns, rather gives a general indication of changes over time in each town uniquely.

Community Snapshots

Socio-economic impacts

Basin Plan

Our method

The Murray Darling Basin Authority developed in-depth community profiles for the Northern Basin (2016) and the Southern Basin (2017). However, much has changed in Basin communities since then. We sought to update those for four communities.

1. Select four case study communities
2. Identify water recovery volumes (as of 2016/17 due to data limitations)
3. Identify up to date socio-economic data where available (typically based on 2021 census)
4. See for yourself

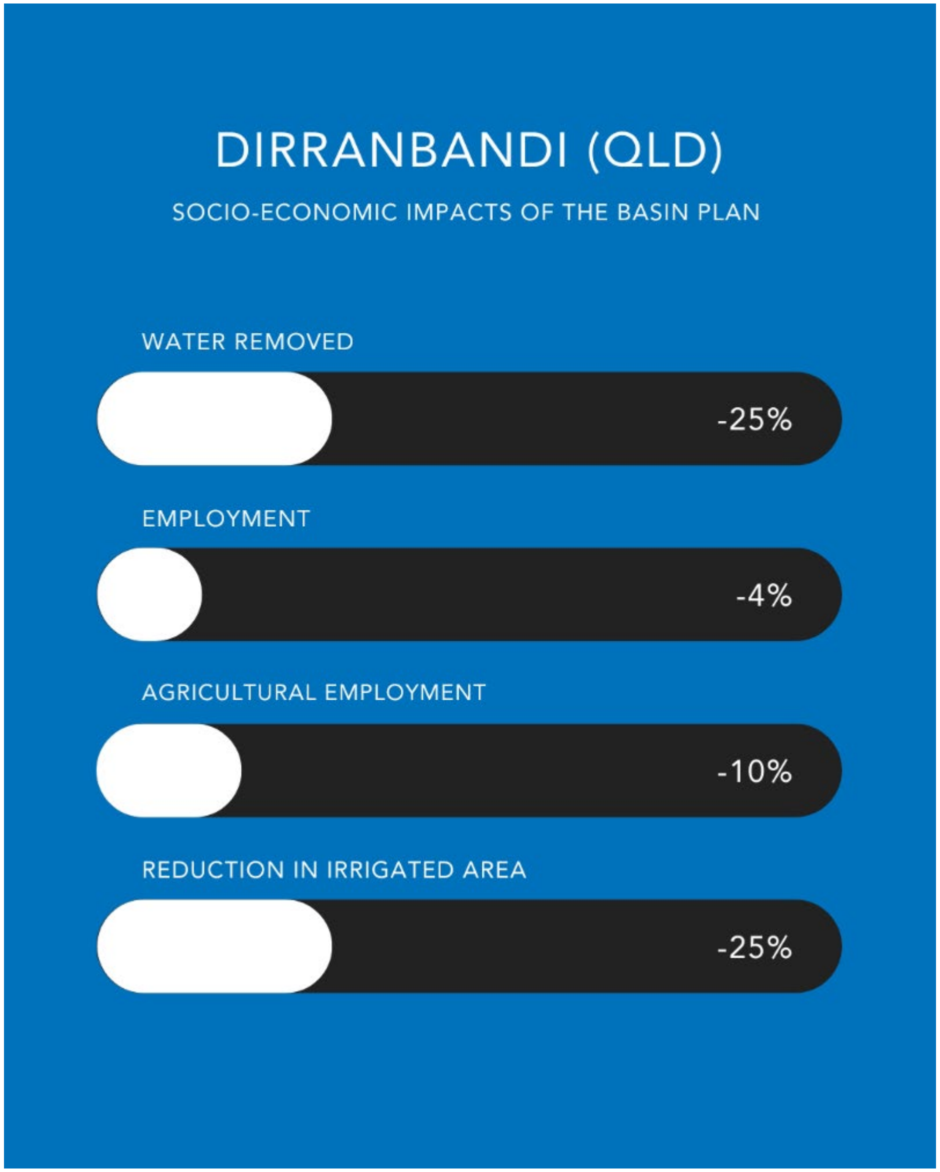
National Irrigators' Council

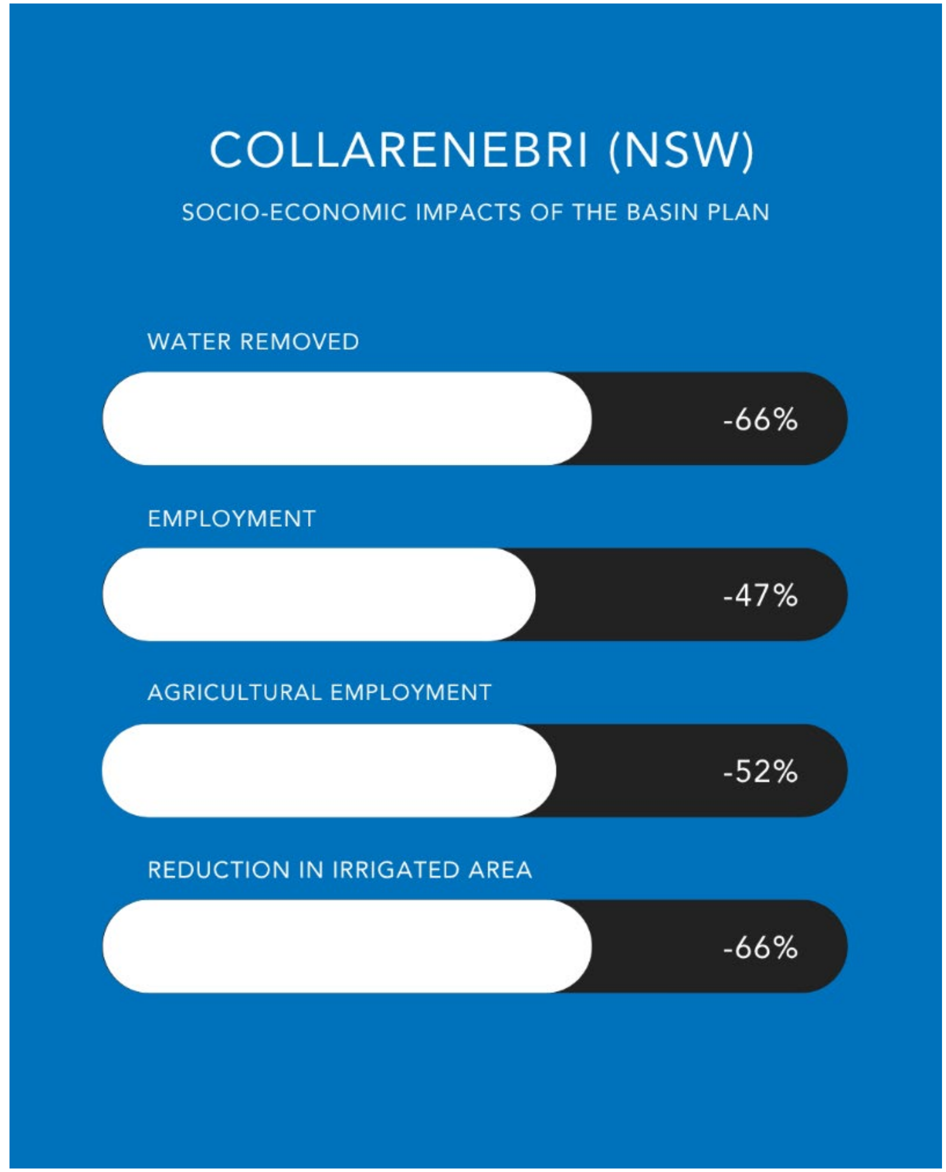
@nat_irrigators

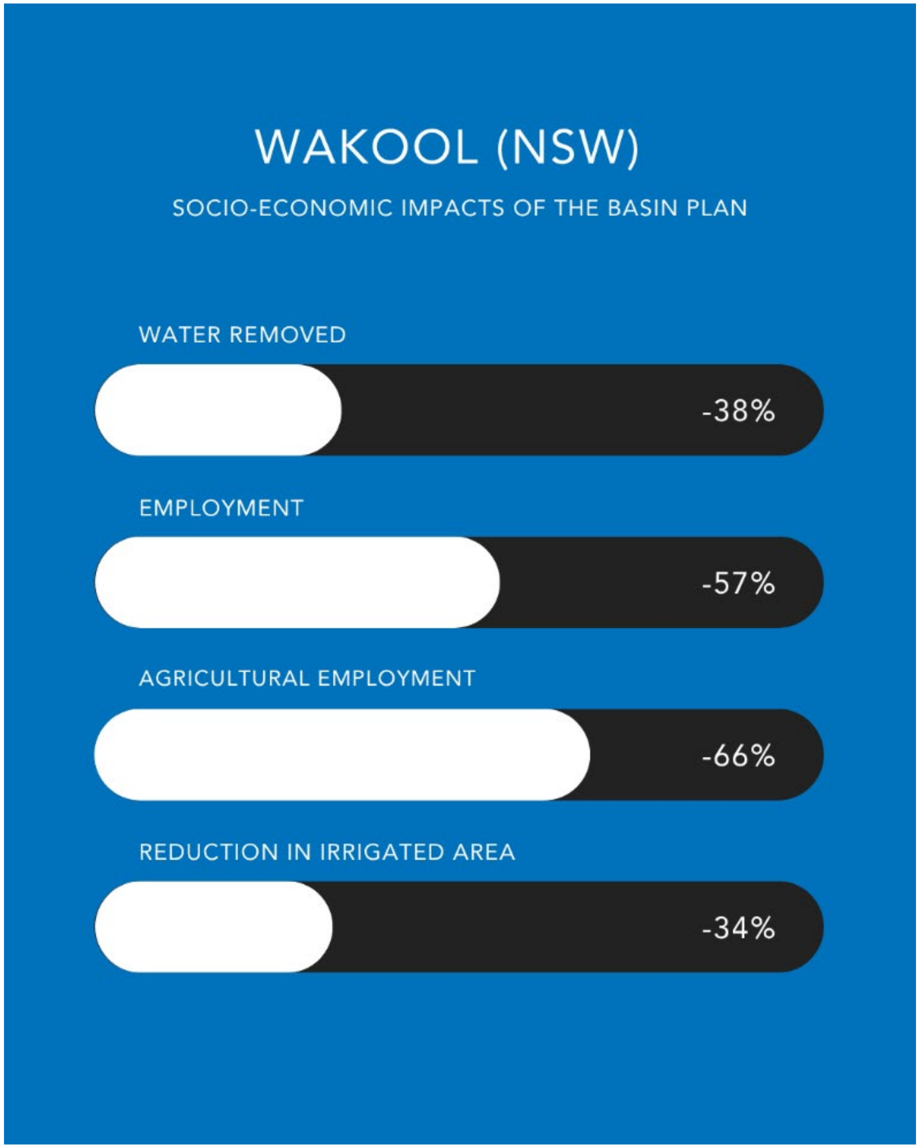
Note 1: Data sourced from MDBA community profiles (2016/17) and census data (2021), as available.

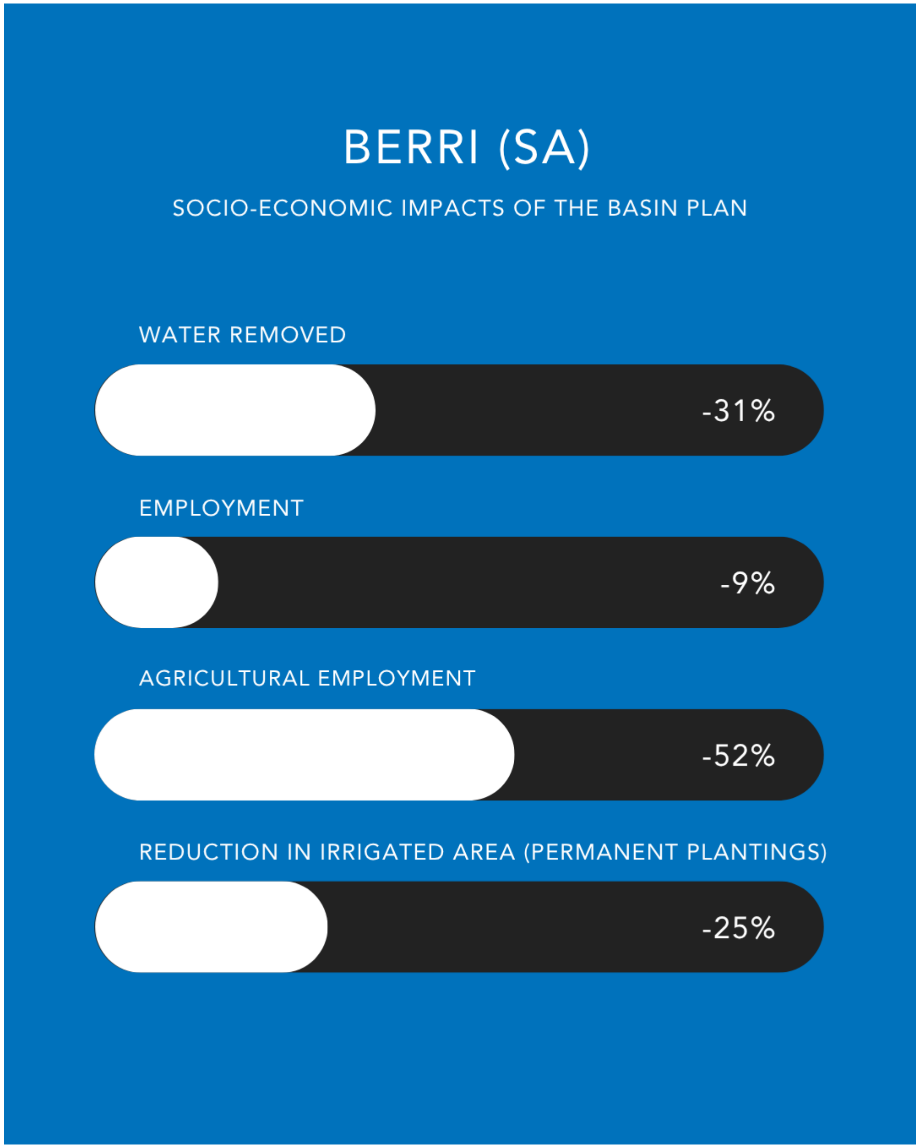
Note 2: For most of these towns, further water recovery has since occurred. There is also often a lag-time for impacts of water recovery to occur. These figures are therefore likely an under-estimation.

Note 3: There are limitations in available data, meaning each town may have separate data sources, methods and timeframes (they are not intended to be comparable, rather to show the extent of impacts in each town). Contact us for further information, and see the NIC website.


DIRRANBANDI (QLD)
SOCIO-ECONOMIC IMPACTS OF THE BASIN PLAN
WATER REMOVED
-25%
EMPLOYMENT
-4%
AGRICULTURAL EMPLOYMENT
-10%
REDUCTION IN IRRIGATED AREA
-25%


COLLARENEBRI (NSW)
SOCIO-ECONOMIC IMPACTS OF THE BASIN PLAN
WATER REMOVED
-66%
EMPLOYMENT
-47%
AGRICULTURAL EMPLOYMENT
-52%
REDUCTION IN IRRIGATED AREA
-66%


WAKOOL (NSW)
SOCIO-ECONOMIC IMPACTS OF THE BASIN PLAN
WATER REMOVED
-38%
EMPLOYMENT
-57%
AGRICULTURAL EMPLOYMENT
-66%
REDUCTION IN IRRIGATED AREA
-34%


BERRI (SA)
SOCIO-ECONOMIC IMPACTS OF THE BASIN PLAN
WATER REMOVED
-31%
EMPLOYMENT
-9%
AGRICULTURAL EMPLOYMENT
-52%
REDUCTION IN IRRIGATED AREA (PERMANENT PLANTINGS)
-25%

There are a number of findings from this analysis:

- These communities have seen a significant removal of water from the community, ranging from – 25% to -66%.
- There is a close alignment between the percentage of water removed, and the reduction in irrigated area.
- There were significant declines in agricultural employment over this period, ranging from -10% to -66%.

MDBA Community Profiles

Southern Basin

The MDBA published Community Profiles in 2018, to understand the changes in Basin communities from 2001 to 2016.[5] The profiles look at 40 irrigation-dependent communities, 5 communities with little or no irrigated agriculture, and the centres of Deniliquin and Shepparton-Mooroopna.

These profiles are largely based on information collected through the Australian Bureau of Statistics (ABS) across the 2001, 2006, 2011 and 2016 census. Information covers changes in the total population of the communities and main towns or urban centres, the workforce and economic structure, and indicators of social condition.[6]

Key overall findings (across the period 2001 to 2016) include:

- the average change in community population was a decrease of 8.7%
- the average change in total employment across the 40 irrigation- dependent communities was a decrease of 24.1%.

The full profiles can be found online, with a snapshot of findings below.[7]

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[5] Southern Basin community profiles | Murray–Darling Basin Authority
[6] community-profiles-guide-may-20180.pdf
[7] Southern Basin community profiles | Murray–Darling Basin Authority

Table 1: Data from MDBA Southern Basin Community Profiles (2001 to 2016), select case study communities

Community	Water recovery (GL) 2001-2016	Water recovery (% of available water) 2001-2016	Area Population (2001)	Area Population (2016)	% Change Area Population	Total area workforce (2001)	Total area workforce (2016)	Change in Total area workforce	Ag workforce % Change (2001 - 2016)	Ag workforce - FTE Loss (2001 - 2016)	Economic Structure % Ag (2001)	Economic Structure % Ag (2016)
Benerembah	13	6.30%	516	493	-4.50%	375	336	10.40%	-21.50%	52	64.00%	56.00%
Berri	9.6	23.80%	7739	7032	-9.10%	2828	2003	29.20%	-54.80%	399	26.00%	16.00%
Berrigan-Finley	31.7	5.60%	7116	5665	-20.40%	2626	1579	39.90%	-40.40%	396	37.00%	37.00%
Cobram	57.5	20.60%	15794	16948	7.30%	5547	4946	10.80%	-32.00%	616	35.00%	26.00%
Coleambally	9.9	3.60%	1226	1192	-5.80%	514	406	21.00%	-23.20%	64	54.00%	53.00%
Hillston	30.2	28.70%	1633	1298	-20.50%	678	410	39.50%	-41.50%	160	57.00%	55.00%
Hay	47.2	20.00%	4538	3986	-12.20%	1624	1221	24.80%	-41.90%	313	46.00%	36.00%
Lower Lakes	3.9	10.40%	3271	3594	9.90%	1123	839	25.30%	-38.80%	175	40.00%	33.00%
Loxton	10.5	16.90%	4724	5115	8.30%	1823	1642	9.90%	-47.20%	363	42.00%	25.00%
Mildura	10.8	16.90%	12600	16880	34.00%	4403	5443	23.60%	-26.60%	261	22.00%	13.00%
Murray Bridge	3.9	14.70%	14676	18608	25.80%	4467	5620	25.80%	-24.30%	198	18.00%	18.00%
Renmark	20.5	17.90%	9484	9069	-4.40%	3263	2779	14.80%	-42.70%	555	40.00%	27.00%
Wakool	88	34.50%	1569	854	-45.60%	537	249	53.70%	-61.50%	158	48.00%	40.00%
Wentworth	3.9	11.00%	1728	1474	-14.70%	557	383	31.20%	-30.20%	71	42.00%	43.00%

Northern Basin

The MDBA's Northern Basin Community Reports (2019) provide an overview of the social and economic conditions in 21 communities in the Northern Basin. [8] These were published in 2019, based primarily on the period of 2001 – 2011. It is important to note that since this time, further water recovery has occurred, and further flow-on socio-economic impacts expected.

Table 2: Selection of irrigation communities from the MDBA Northern Basin Community Reports

Community	Water recovery (% of available water recovered) 2001-2016	% Change Area Population (2001-2011)	% Change in total jobs (excl seasonal)	Irrigated Area (min)	Irrigated Area (max)
Bourke	17%	-20%	-17%	0	15307
Collarenebri	66%	-26%	-37%	0	17100
Dirranbandi	20%	-14%	-23%	0	30900
Goondiwindi	0%	5%	7%	5800	60500
Moree	8%	-17%	-13%	6753	64062
Mungindi	5%	-17%	-13%	560	24650
Narrabri	0%	-6%	-7%	3900	14500
Narromine	20%	-13%	19%	2200	14000
St George	7%	-7%	-19%	3300	29300
Trangie	20%	-20%	-22%	100	9300
Warren	30%	-9%	-20%	300	32200
Walgett	0%	-13%	-3%	0	5000
Wee Waa	2%	-4%	-13%	7900	38800

Key overall findings (across the period 2001 to 2016) include:

- Communities were exposed to water recovery differently, with some communities losing 66% of irrigation water, and others not being directly impacted.
- Communities experiences differ, however, there is a strong correlation between water recovery and changes to population and jobs.

[8] Northern Basin review – social and economic condition reports | Murray–Darling Basin Authority

Analysis

This data shows the socio-economic impacts which have occurred at a local community level. This is the type of data which is not reflected in the Basin Plan Evaluation, which is done at a Basin-scale overall, smoothing over these localised impacts.

One of the strengths of the above analysis, is the process, which was undertaken working with communities to understand impacts. This process is just as valuable as the data as the end-product, as it gave communities a chance to feel heard, report their local experiences and observations, and to see genuine interest in authorities in understanding these impacts.

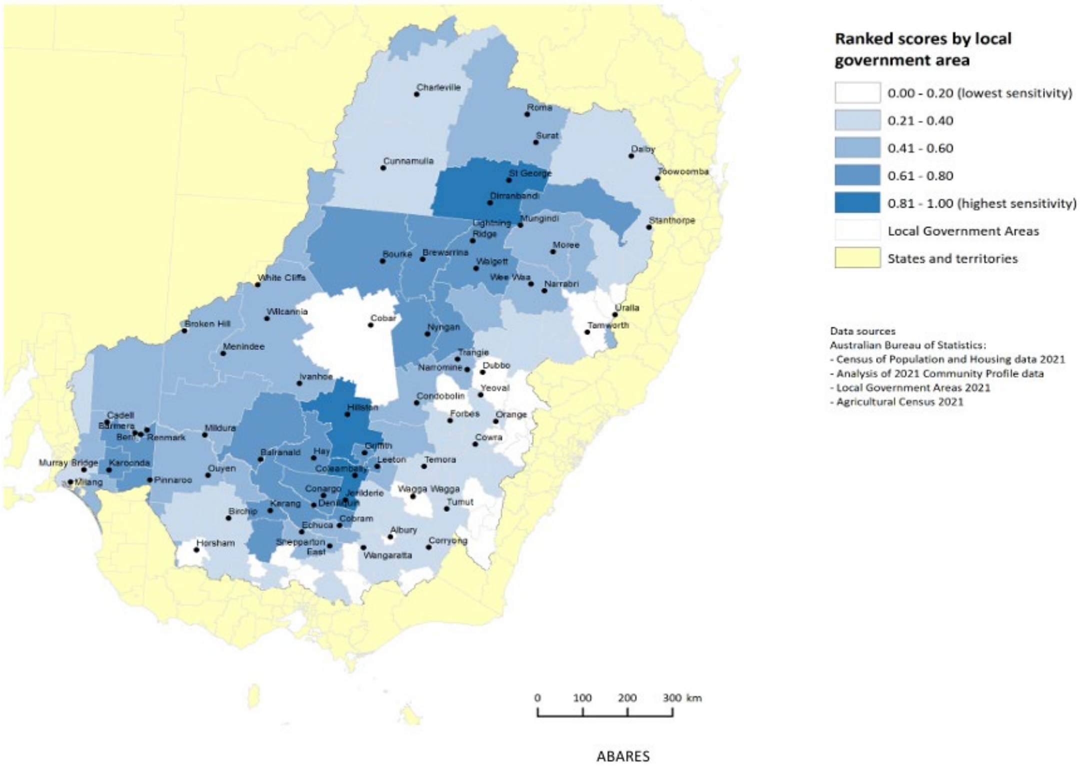
As we move into the 2026 Basin Plan Review, it is ultimately recommended that this process be repeated with communities. The above data (as collected by the MDBA) is now over a decade old (in some case 15 years). Updates are required to see more recent impacts over this period – noting (i) further water recovery has occurred since this time, (ii) to identify the lag impacts, given many impacts take time to occur after the removal of water, and (iii) to replicate this process to see greater trends over time.

Community vulnerability

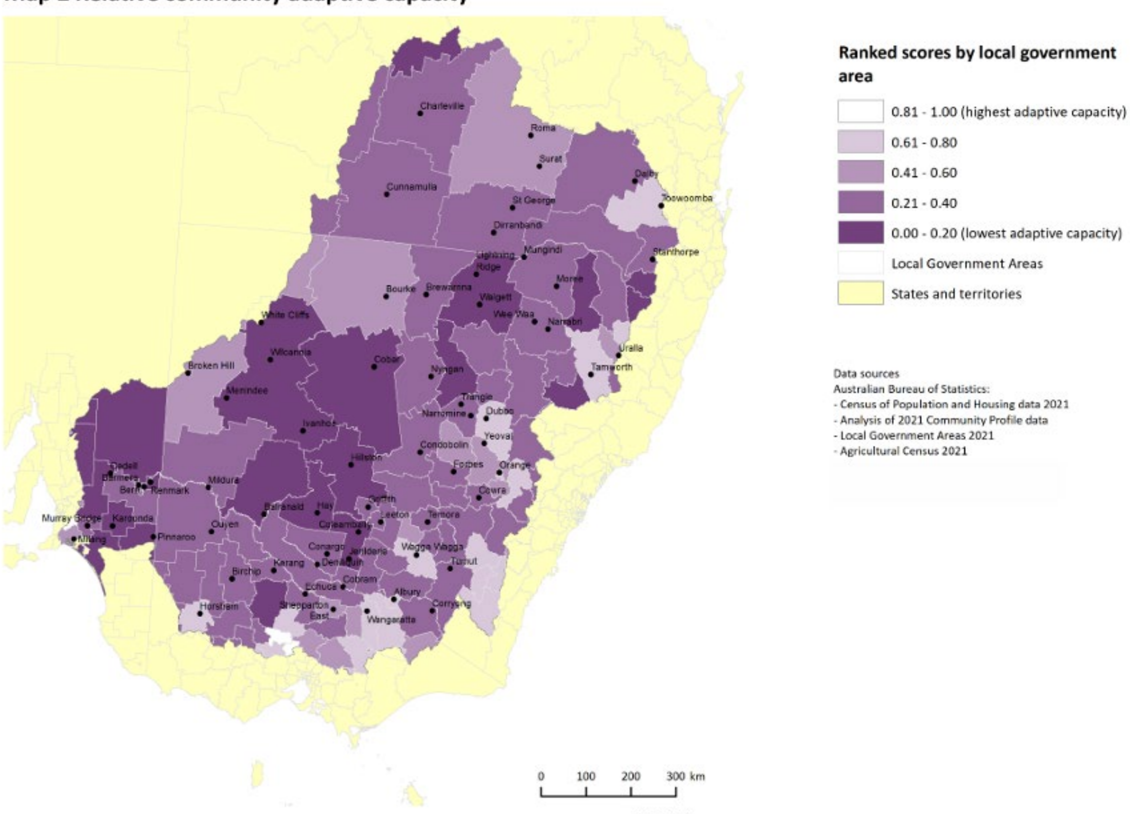
In 2024, ABARES was commissioned to measure the relative vulnerability of communities in the Murray-Darling Basin to changes in water availability.[9] This is an update of the baseline community vulnerability index using the latest census data. These findings are shown below.

[9] **Baseline relative community vulnerability and adaptive capacity—Murray-Darling Basin Revised-indicators-of-community-vulnerability.pdf**

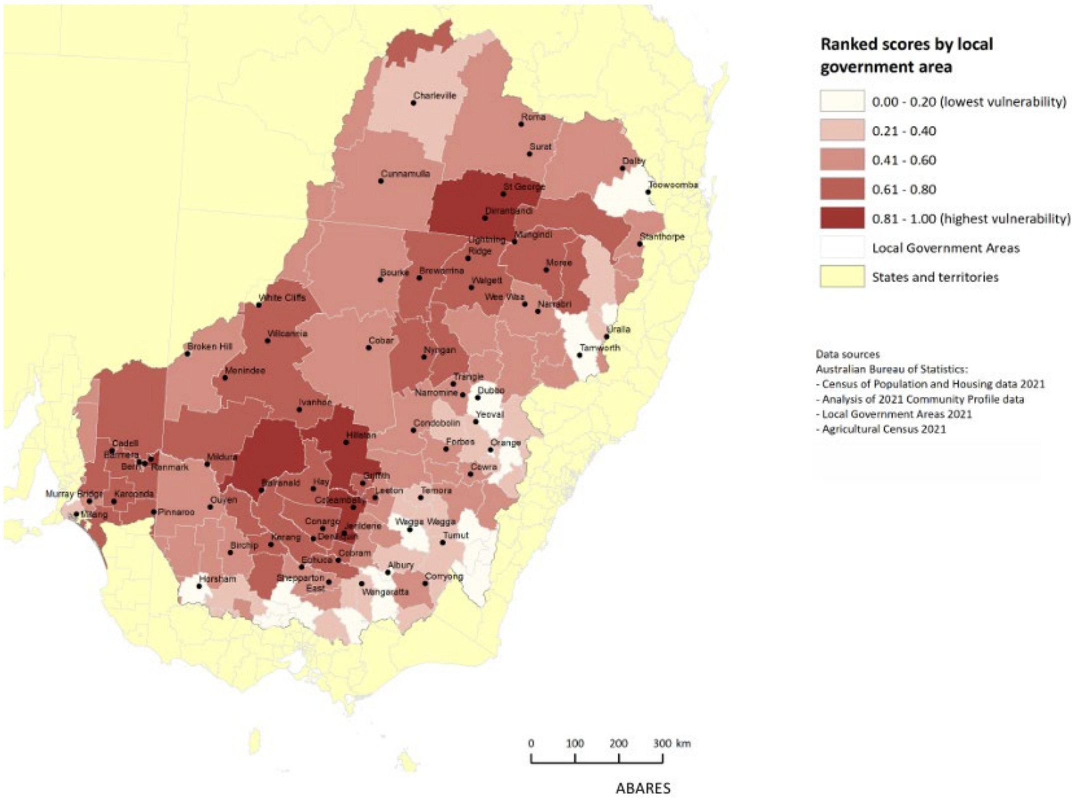
Map 1 Relative community sensitivity (to changes in water availability)



Map 2 Relative community adaptive capacity

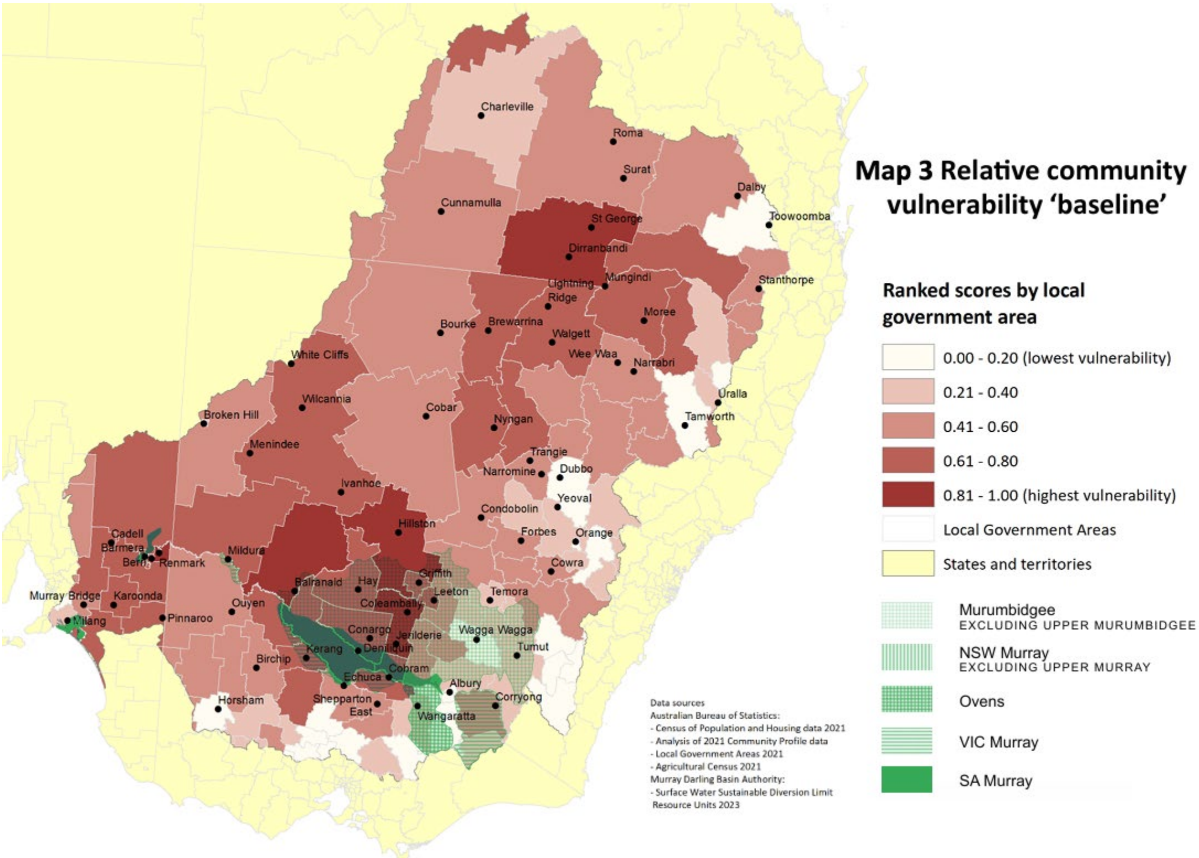


Map 3 Relative community vulnerability 'baseline'



Analysis

NIC has taken the above maps, and overlaid it with the EOI locations for the first round of additional water recovery following the RoR Act.



What can be seen is that water recovery was/is being sought from regions irrespective of their vulnerability.

Considering the relative vulnerability of these communities that were initially targeted for the additional 450 gigalitres of environmental water, one would have assumed that the Australian Government would be assessing the cumulative recovery in these regions. We are not aware of any effort to consider the impacts of either previous water recovery, or the more recent purchases. Evidence of tender results suggests there is a strong concentration of purchases in some valleys, which could also suggest an imbalance in the Commonwealth Environmental Water Holders portfolio.

While it is helpful to have the vulnerability mapping data – if it is not used to inform decision-making – these communities remain highly vulnerable. Non-strategic and un-monitored purchases, have the real potential to significantly structurally alter these communities and industries.

Other community impacts

As outlined above, impacts occur well beyond the farm-gate. With less agricultural production and employment, economic stimulus in a community lessens and population declines, and with it, there becomes less teachers in town, less doctors and access to other services. This impacts the welfare and living standards of the community overall. This is not just for the farming sector, but across all aspects of the community, including both Indigenous and non-Indigenous.

Bourke Shire Council:[10]

The township of Bourke, and the surrounding Shire, is a community in the Basin that has been significantly impacted as a result of the implementation of the surface water diversions Cap (the Cap) and from the water buy back . It has been estimated that up to 60% of the local economy has been impacted as a result of the implementation of the Cap process with a further 10% of the economy impacted through the water buyback process. Both these processes have resulted in both economic and social reduction.

A further permanent reduction in water is likely to permanently constrain any economic and social recovery of Bourke and entrench and significantly worsen existing high levels of social disadvantage, particularly among its large indigenous population.

Case study: Education

The NSW Irrigators' Council 'Rural Schools Report' (2023) outlines the socioeconomic impacts of water reform on schools in the NSW southern Murray-Darling Basin.[11] The report opens with an excerpt from Finley High School Principal at an address at Deniliquin water rally:

So what has the Murray Darling Basin Plan have to do with school principals? In truth, heaps ... our students are the group of people that will be most affected by whatever the final decision is in regard to the Basin Plan – the full effects of these proposals will fall on my children's heads and their children – we must not forget this. It also affects our staff – their future employment is at stake, the value of the homes that many of them purchase is at stake. This is my second stint at Finley High.

In 1990 when I was first appointed there as a Head Teacher the student population was 720. Currently our enrolment is 450 – a decline of close to 40%. In the Deniliquin area of schools known as South West Riverina this enrolment decline is similar across all schools. What has this meant for schools – less students means we can give students less options in terms of curriculum choice, recruiting staff is more challenging.

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10 https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/MDBAWaterBill2023/Submissions [Bourke Shire Council]

11 https://www.nswic.org.au/wp-content/uploads/2023/11/2023-10-25-Final-Report-The-Socioeconomic-Impacts-of-Water-Reform-on-NSW-Schools.pdf

Because there is uncertainty of employment, the pool of quality students in each year group continues to get smaller and this can have a critical impact on student outcomes. We have any number of schools that are so critically small now that they are absolutely in danger of closing or of not being able to deliver a quality education – this is not some emotive throwaway line, it is the honest truth.

The report finds that school enrolment in every region of the NSW sMDB declined over 10 years during Basin Plan implementation by more than the maximum class size of 30 students. Put simply, an entire class of high-school students has been lost on average in every NSW sMDB region over this period. More starkly, the difference for Albury, Deniliquin and Griffith regions is comparable to losing two classes worth of students.

Specifically, the percentage change over 10 years for high schools in these regions were: Albury (- 11.7%), Deniliquin (- 18.2%), Griffith (- 25.9%), Hume (- 10.5%), Narrandera (- 5.5%) and Wagga Wagga (- 5.8%).

The most significant periods of decline were:

- Albury region high schools – the average 646 enrolments per high school (2014) declined to 570 (2022).
- Deniliquin region high schools – the average 383 enrolments per school (2014) declined to 313 (2022).
- Griffith region high schools – the average 203 enrolments per school (2015) declined to 143 (2022).

Qualitative analysis suggests water reforms played a major contributing role in this decline (alongside other drivers). The impacts of water reforms on farm production (and therefore declining employment in towns, changing population demographics, declining economic prosperity, and declining community services) are identified as key contributing factors to falling student enrolments.

Case study: Jobs

The NSW Irrigators' Council *'Job Impacts from Water Recovery for the environment in the Southern MDB'* Report[12] (2023) makes a number of key findings:

- Thirty per cent (3261) of 10,801.5 FTE jobs lost across 40 southern Murray-Darling Basin communities from 2001 to 2016 were attributed to water recovery for the environment.
- Job losses due to environmental water recovery as a proportion of total jobs lost by State: NSW 21% o Victoria 30% o South Australia 45%

[12] **2023-04-19-Jobs-impacts-socio-economic-report.pdf**

- In 11 communities, more than 24% of each community's water entitlements were recovered for the environment. In six communities, 20-24% of each community's water entitlements were recovered for the environment.
- In 15 communities, most in NSW and South Australia, the impact of water recovery may be underestimated due to the prevailing social and economic conditions.
- Mildura (Victoria), Mirrool (NSW) and Murray Bridge (SA) were the only communities to gain jobs (24%, 7% and 26% respectively), but jobs growth would have been 5-7% higher (Mildura and Murray Bridge) and 1.5% higher (Mirrool) if not for water recovery.
- Several Riverland communities offset the impact of local water recovery by buying entitlement from communities elsewhere in the southern Basin to replace what they lost.
- Job losses due to water recovery were relatively high in several small communities, such as Wakool (NSW), where the impacts on local business, sports and services are magnified.
- Only 7% of water sellers surveyed in 2012 sold water entitlement to raise capital for on-farm investment, and only 10% sold what they considered to be entitlements surplus to their need.
- Sixty per cent of surveyed sellers sold water entitlement under duress to generate cashflow, mostly to reduce debt or increase farm viability under pressure in the Millennium Drought and the fallout from the 2008 Global Financial Crisis.[13]

New South Wales

Community	IIO	FTE jobs lost to water recovery	% job losses due to water recovery out of total job losses
Benerembah (east of Griffith & Darlington Point)	Murrumbidgee Irrigation	9	24%
Hillston (north-west of Griffith)	Murrumbidgee Irrigation	19	10.2%
Mirrool (north-east of Narrandera)	Murrumbidgee Irrigation	-	-
Tabbita (MI)	Murrumbidgee Irrigation	2	1.6%
Wah Wah (west of Griffith)	Murrumbidgee Irrigation	10	6.5%
Yanco (Leeton)	Murrumbidgee Irrigation	175	40%
Coleambally	Coleambally Irrigation	26	24%
Hay		122	30%
Berrigan-Finley	Murray Irrigation	40	3.8%
Wakool	Murray Irrigation	102	35%
Deniboota (Bunnaloo, south-west of Deniliquin)	Murray Irrigation	49	25%
Denimein (north of Deniliquin)	Murray Irrigation	9	10%
West Berriquin	Murray Irrigation	20	12%
Coomealla (western NSW Murray)	Western Murray Irrigation	33	11.3%
Wentworth		32	16%
Total		**648**	**20.7%**

[13] 2023-04-19-Jobs-impacts-socio-economic-report.pdf

Victoria

Community	Irrigation district	FTE jobs lost to water recovery	% job losses due to water recovery out of total job losses
Cobram	Goulburn Murray Irrigation District (GMID)	166	27.3%
Kerang-Cohuna	Goulburn Murray Irrigation District (GMID)	118	34.9%
Kyabram-Tatura	Goulburn Murray Irrigation District (GMID)	307	28.4%
Pyramid Hill-Boort	Goulburn Murray Irrigation District (GMID)	51	7.6%
Rochester	Goulburn Murray Irrigation District (GMID)	203	30.4%
SIA (Arcadia Downs, Wunghu, Tallygaroopna)	Goulburn Murray Irrigation District (GMID)	117	12.9%
Swan Hill	Goulburn Murray Irrigation District (GMID)	281	28.1%
Merbein	Sunraysia (Lower Murray Water)	150	100%
Mildura	Sunraysia (Lower Murray Water)	-	-
Red Cliffs	Sunraysia (Lower Murray Water)	190	31.6%
Robinvale	Sunraysia (Lower Murray Water)	-	-
Colignan (btw Robinvale and Mildura)	Sunraysia (Lower Murray Water)	101	31.7%
Cullulleraine		–	-
Total		**1684**	**29.9%**

South Australia

Community	Irrigation area	FTE jobs lost to water recovery	% job losses due to water recovery out of total job losses
Berri	Riverland	243	27.6%
Loxton (Riverland)	Riverland	155	79.9%
Morgan (Riverland)	Riverland	9	8.4%
Renmark (Riverland)	Riverland	74	13.3%
Cobdogla-Barmera (Riverland)	Riverland	177	31.1%
Waikerie, west of Riverland	Mid-SA Murray	107	40.5%
Blanchetown (south of Riverland)	Mid-SA Murray	3	3.8%
Swan Reach (south of Riverland)	Mid-SA Murray	43	30.9%
Mannum	Lower-SA Murray	36	100%
Murray Bridge	Lower-SA Murray	-	-
Tailem Bend (south of Murray Bridge)	Lower-SA Murray	32	28.3%
Lower Lakes	Lower Lakes	50	17.7%
Total		**929**	**45.25%**

Community support

There has been a range of community support programs over the course of Basin Plan implementation. However, a common theme of these programs is that they have been inadequate, poorly designed, and poorly targeted.

Critically, while valuable, it is important to understand that community support programs are not capable of fully offsetting the impacts of water recovery from irrigation-dependent communities. This must be understood, so decision-makers don't have a false expectation that Government can buy more and more water out of a community, and simply offset that impact.

The Sefton Inquiry provided analysis on these programs:

> *Based on available evidence and community consultation, the Panel is concerned that much, and probably most, past funding to support Basin communities impacted by water reform, was not effectively targeted. We are concerned that current funding is not enough to support communities to transition through water reforms in ways that will help sustain and develop those communities.*[14]

The Productivity Commission's five year assessment of the Basin Plan found little evidence that the $100 million of transition assistance provided through the Murray–Darling Basin Regional Economic Diversification Fund and the South Australia River Murray Sustainability Program were well targeted to communities. The Productivity Commission also found little evidence that the programs were effective in supporting regional communities to transition through Basin water reforms.[15]

> *Programs believed to have provided community assistance have not done so.*[16]

This is not to discount the importance of community support and transition programs – they indeed have a very important role and when done well, can be great stimulus for communities. However, much greater work is required to design and fully support programs that can have a meaningful difference in communities – which will require rethinking the sheer size of investment that may be required. Further, it is critical that decision-makers do not consider these programs a full offset for the impacts caused by water reform. These are no quick fix, if a fix at all.

[14] https://www.dcceew.gov.au/sites/default/files/documents/panel-report.pdf [73].
[15] Ibid.
[16] Ibid.

Recommendations

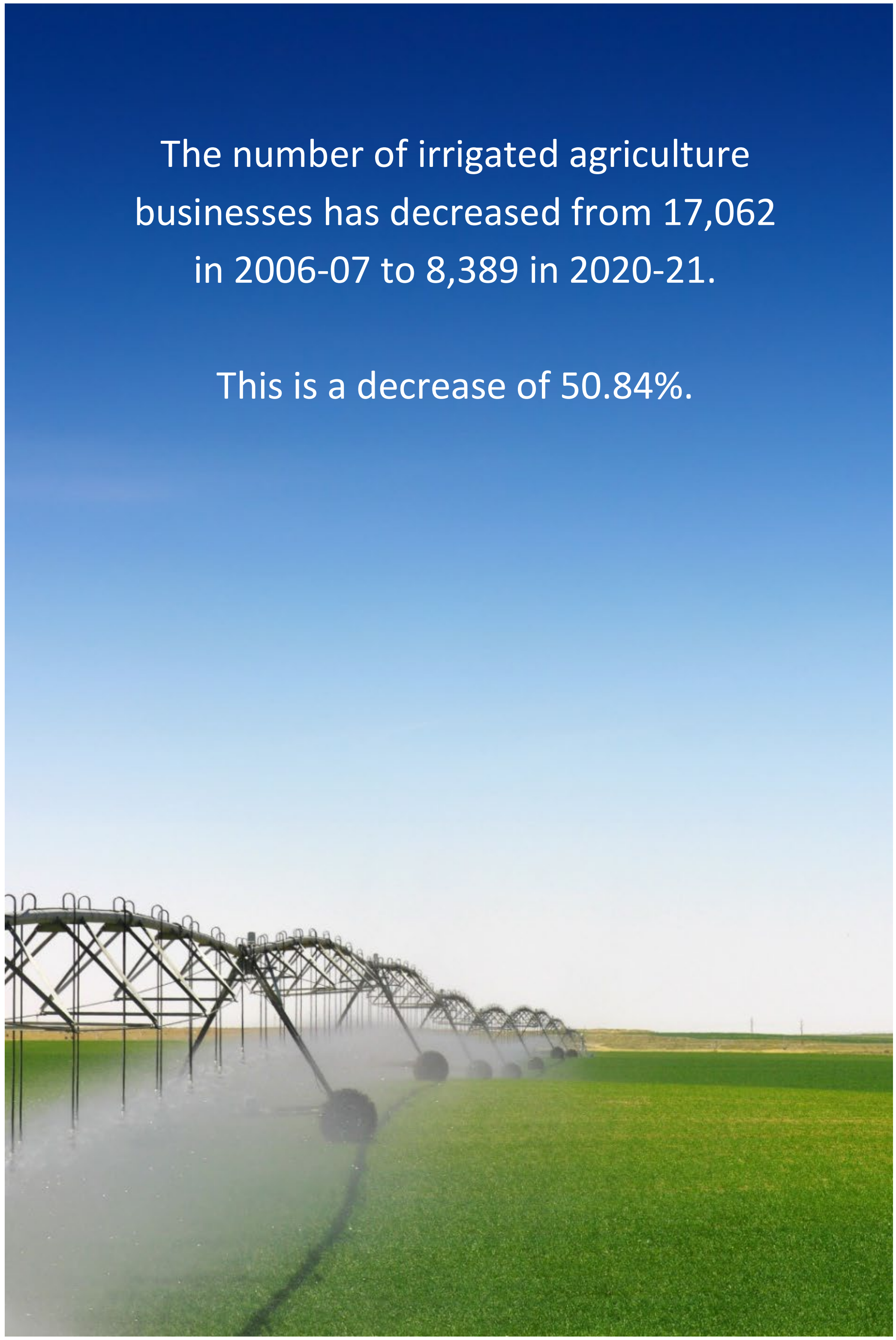
1. Replicate the 'community profile' process with communities – this will provide updates to the data (important since further water recovery has since occurred, and show longer term trends (important given lag impacts).
2. Evaluate Community Support packages and determine if the value of funding is adequate for the task - to stimulate economic development, undermined by water purchases.

Agriculture

The removal of water from agriculture, has significant impacts on the sector.

While there have also been positive developments to the sector (such as to productivity and water use efficiency), this does not remove the impact that has occurred from water reform – it only masks it to an extent. The impacts have been felt differently across sectors, as outlined below.

Due to a number of methodological challenges, it is our view that the impacts of the Basin Plan on the agriculture sector remain unknown (or at least not formally documented and quantified).



Methodological challenges (agriculture)

Understanding the impacts of the Basin Plan on agriculture is not straight-forward. Attempts to assess impacts to date, has shown a clear challenge to develop an accurate counter-factual of agricultural sector outcomes in the absence of water reform, in order to properly determine the impacts of reform. It is also evident that impacts across the agricultural sector are different, varying between commodities, and geographic locations, and over time.

Specific challenges include:

- **Lack of consistently collected and reported data** - The ABS has historically provided data on 'Water Use on Australian Farms'. This was discontinued after 2020-21, and has been collected / presented differently over time, making comparisons of data incredibly challenging. Gaps and inconsistencies limit the ability to track trends over time or assess cause and effect. The lack of recent data also means lag effects are not visible from earlier water recovery, nor immediate effects of more recent water recovery.
- **Ability to account for water-use efficiency** – growers have invested significantly in water-use efficiency, supported by targeted R&D efforts. As a result, most commodities in the Basin have experienced major gains in water productivity (i.e. more output per unit of water). While positive, this masks the potential production losses resulting from reduced water availability, making it difficult to isolate the impact of reform. However, there is no consistent collection and presentation of water use efficiency data for industries over-time that can be overlayed with other data to tell this story.
- **Ability to account for other productivity improvements** – broader productivity gains across the agricultural sector, driven by technological advances, genetic improvements, improved management practices, and economies of scale, generally mean many sectors may be experiencing growth, despite water reform. This means it is challenging to determine a counterfactual of how much more growth / production / value would be achieved in the absence of water reform – and thus determine the impact of the reform. Many studies over-simplify the analysis and say the agriculture sector is growing or stable, which may be true in general terms for some sectors, but does this is no assessment of the impact of reform.
- **Areas of irrigation production –** a key input into the above issues, is the collation and mapping of irrigated areas and type of crop. This input could help to provide a baseline for counter-factual analysis.
- **Indicators** – indicators used may not reflect actual impact – for example, Gross Value of Irrigated Agricultural Production (GVIAP) is commonly used to assess the impact of water reform, but this indicator reflects market value rather than production volume, profitability, diversity or other factors like employment in the sector. GVIAP can rise due to price increases even if water availability or production declines, obscuring the real economic effects on farmers. It also aggregates the outcomes across irrigated agriculture, not reflecting the

different experiences of different commodities. Other common indicators are 'turnover', but again, this does not accurately represent the impact of reform, as it does not reflect profitability (which is a key issue given profit squeezes from higher water prices).

- **Accounting for climate** - a large driver of annual changes to the agriculture sector is climate variability. Therefore, longer term trendlines are needed to show true impacts over time. If the period of analysis has more 'good years' towards the end of the assessment period, this will naturally mask impacts, particularly if the beginning of the assessment period was drier years. This is evident with Basin Plan analysis as the baseline of 'pre reform' is typically the Millenium Drought, a very low baseline.
- **Water shifting between commodities –** farmers determine what to produce with a water allocation, based on a range of factors, primarily market conditions (to which water availability and affordability is a large factor). Water reform has shifted water use to the highest-value use (by design) – this means value overall may have increased, but various sectors have been impacted differently (and value does not necessarily reflect production).
- **Separating reform impacts from other drivers –** it is methodologically difficult to isolate the specific effects of water reform from other confounding factors without robust counterfactual analysis. Other factors include: climate variability (especially drought), commodity price fluctuations, trade policy changes, and input costs all impact agricultural outcomes.
- **Lag effects and adjustment timelines –** the full effects of water reform may take many years to manifest, particularly for industries reliant on long-term investment or with limited capacity for short-term adaptation. Shorter-term assessments may therefore understate or mischaracterise the true impact. Most of the data currently available excludes consideration of the more recent recovery efforts of the Australian Government.
- **Indirect impacts –** many of the impacts to the agricultural sector go beyond just the direct buybacks (i.e. a farmer selling their water), but stem from the indirect impacts (i.e. changes to the water market from government intervention driving up higher water prices, or from a loss of confidence or certainty for businesses).
- **Cumulative impacts –** the impacts to the agricultural sector stem from cumulative impacts of reforms, including but not limited to the Basin Plan. Within the water sector alone, the period of implementation of the Basin Plan has also involved other water reforms, including to metering, pricing, licensing and other areas. Considering and tracking cumulative impacts is critical given the high-risk communities identified by ABARES community vulnerability assessments as part of the amended regulatory impact statement. Recent analysis (post the Sefton's Report) has shown no evidence of the cumulative impacts being considered.
- **Assumptions in modelling and forecasting –** many impact assessments rely on economic models (e.g. CGE models, input-output models, ABARES farm models) that require assumptions about farmer behaviour, market responses, and climate conditions. These assumptions are often not transparent or may not reflect real-world behaviour, leading to uncertainty in estimates.

- **Flow-on effects** – it is difficult to draw a line in terms of where impacts to agriculture start and stop – assessments tend to stop at the farm gate, but this misses many flow-on impacts - for example, to employment within agriculture (beyond the farmer, such as to contractors), dependent industries (such as fertiliser suppliers), local processing (i.e. cotton gin or rice mill), and related industries such as freight.
- **Lack of food-systems perspective** - there are also few, if any, assessments that look at the impacts to Australian food security (in terms of availability and affordability for consumers), Australia's food sovereignty (i.e. maintaining our agricultural capabilities), or potential impacts on our trading partners (and thus macroeconomic impacts, and international relations considerations such as security and defence).

It's important to emphasise that the farmer determines what to use their water entitlements and allocations for. That choice is not relevant to water resource management, as that same volume of water is diverted / used from the water source, irrespective of how it is then used (i.e. what is grown with that water). The decision for the farmer comes down to the best value product that can be produced with the megalitres of water (and other inputs) they have available – i.e. it is determined by the market. This is, in part, by design. Water management planning from the late 90s (from the National Water Initiative) intended to drive water to the highest-value use. This adds additional complexity to commodity assessments as water use can change between commodities, vary from year to year, and for other reasons.

Given these challenges, it is our view that the impacts of the Basin Plan on the agriculture sector remain unknown (or at least not formally documented and quantified).

2025 Basin Plan Evaluation

This section presents key insights from the 2025 Review of the social and economic impacts of the Basin Plan, published as part of the 2025 Basin Plan Evaluation. It is noted that there are a number of challenges and limitations of this data, as explored in the below sections.

GVIAP

The most recent ABS data show a gross value of irrigated agriculture (GVIAP) in the Basin of $9.8 billion in 2020–21 (in 2023–24 dollars), compared with $9.3 billion in 2012–13 and $7.7 billion in 2007–08. This represents a 6% increase since the Basin Plan was introduced in 2012–13 and a 27% increase since water recovery commenced in 2007–08. However, looking across all years from 2005 to 2021, the overall trend in real GVIAP in the Basin was flat.[17]

[17] 2025 Review of the social and economic impacts of the Basin Plan

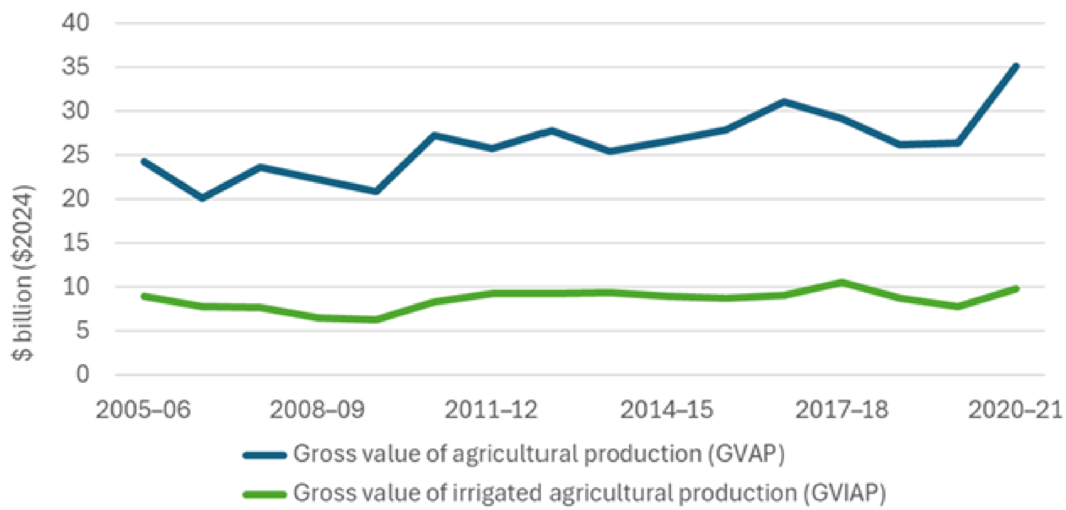


Figure 3 Gross value of agricultural production (GVAP) and gross value of irrigated agricultural production (GVIAP) in the Murray–Darling Basin in 2024 dollars. Source: MDBA calculation using ABS data. Adjusted for inflation using June quarter consumer price index for each financial year. Data for 2005–2018 are from ABS (2019). Data for 2018–2021 are from ABS (2023b), aggregating natural resource management (NRM) regions.

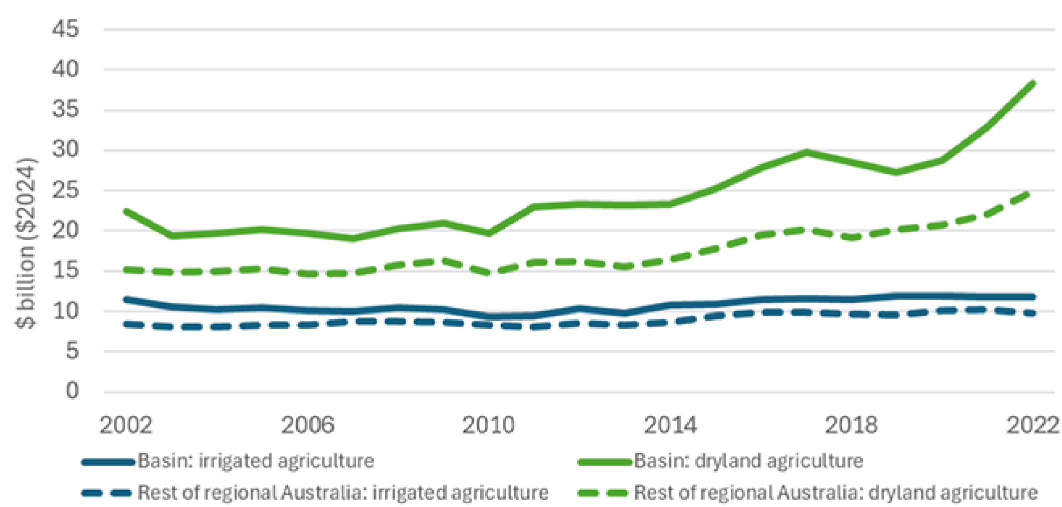


Figure 4 Dryland and irrigated total agricultural turnover, in 2024 dollars, for the Basin and RoRA, 2002–2022. Source: MDBA calculation using MJA (2025) data. Inflation adjustment is based on the June quarter Consumer Price Index (CPI) in each year.

Sector Impacts

The *2025 Review of the social and economic impacts of the Basin Plan* does present some information on commodity trends, but does not properly assess the impacts of the Basin Plan on these outcomes. Key information contained in that review is captured below.

Rice

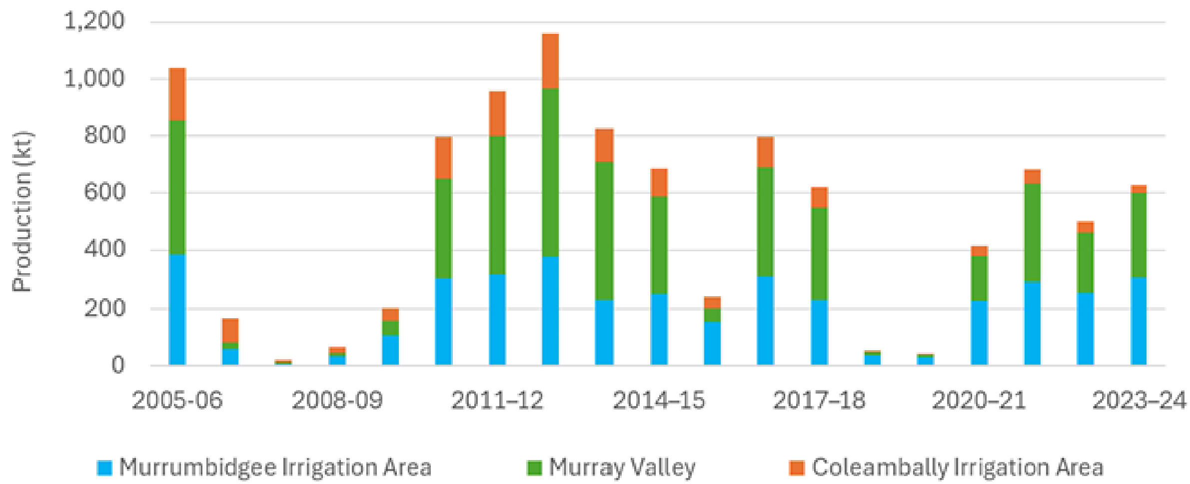


Figure 7 Murray–Darling Basin rice production. Data source: Rice Marketing Board NSW (2025), annual reports for financial years 2010, 2013, 2018 and 2024 – statistical summary.

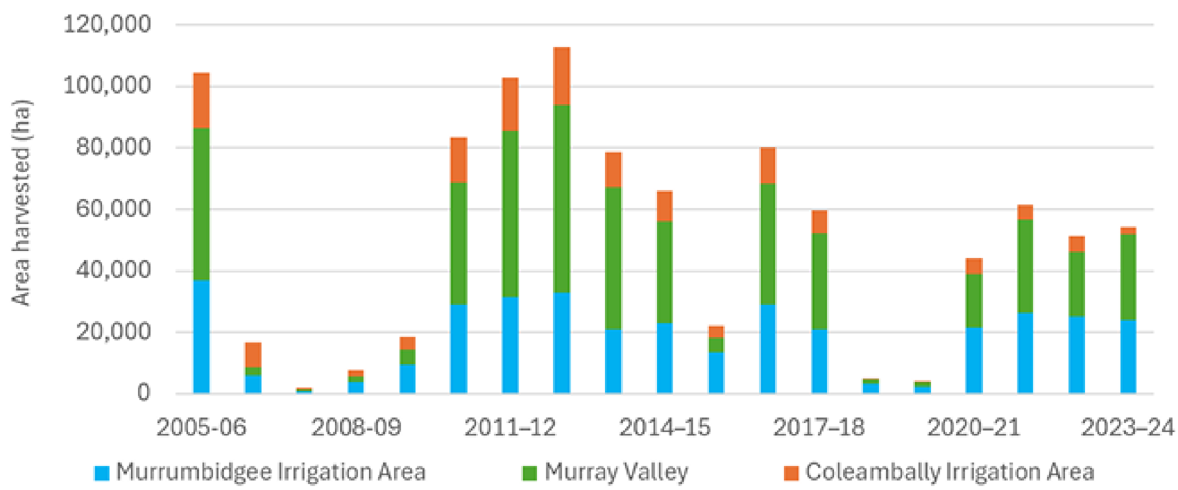


Figure 8 Murray–Darling Basin rice area harvested. Data source: Rice Marketing Board NSW (2025), annual reports for financial years 2010, 2013, 2018 and 2024 – statistical summary.

Cotton

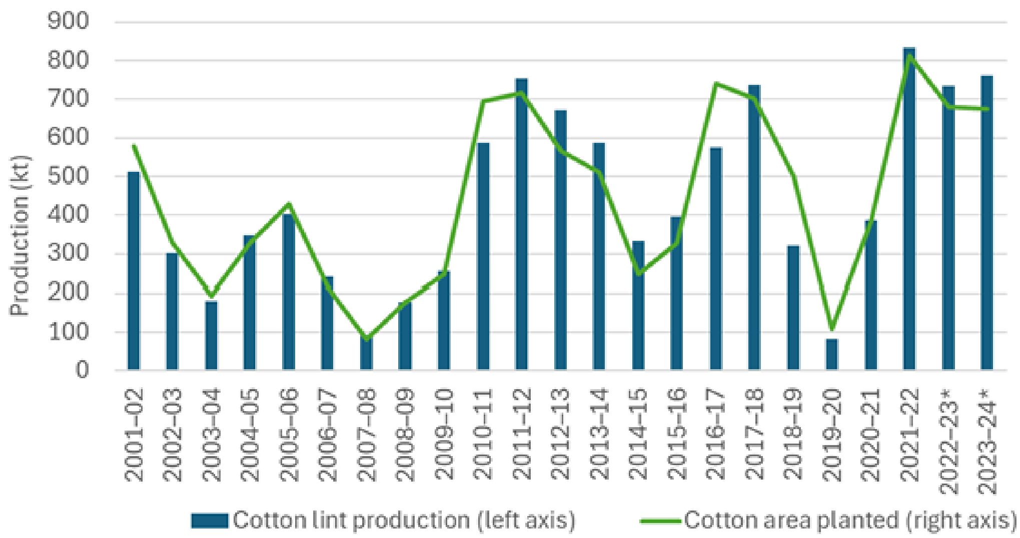


Figure 9 NSW cotton production and area planted. *ABARES estimates. Data source: ABARES (2024a).

Dairy

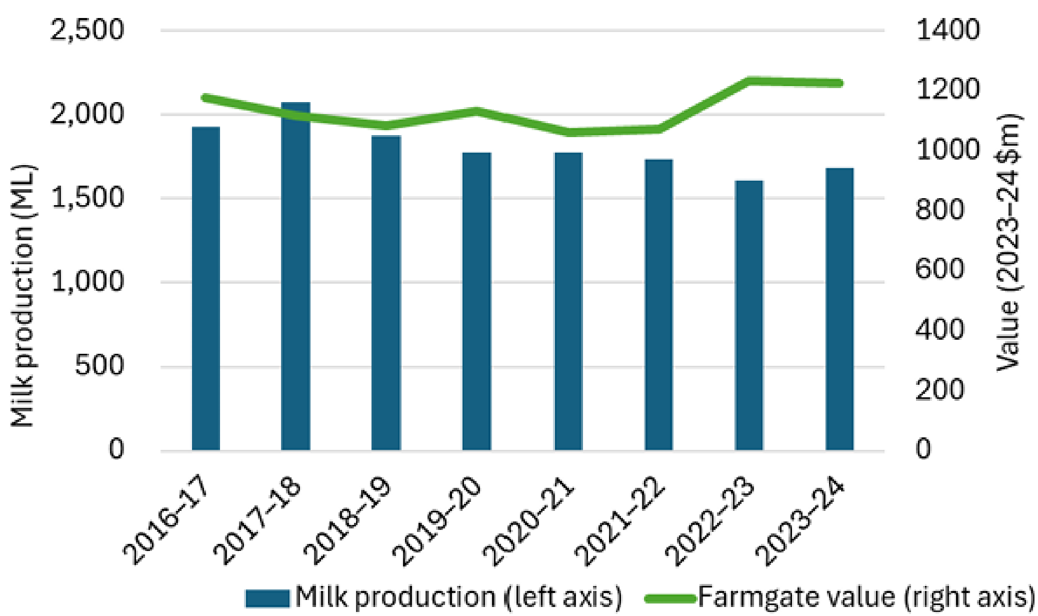


Figure 10 Milk production and farmgate value (in real 2023–24 dollars) in the Murray region of the Basin. Years are financial years. Data source: Dairy Australia (2024), appendices of 2017–2024 reports.

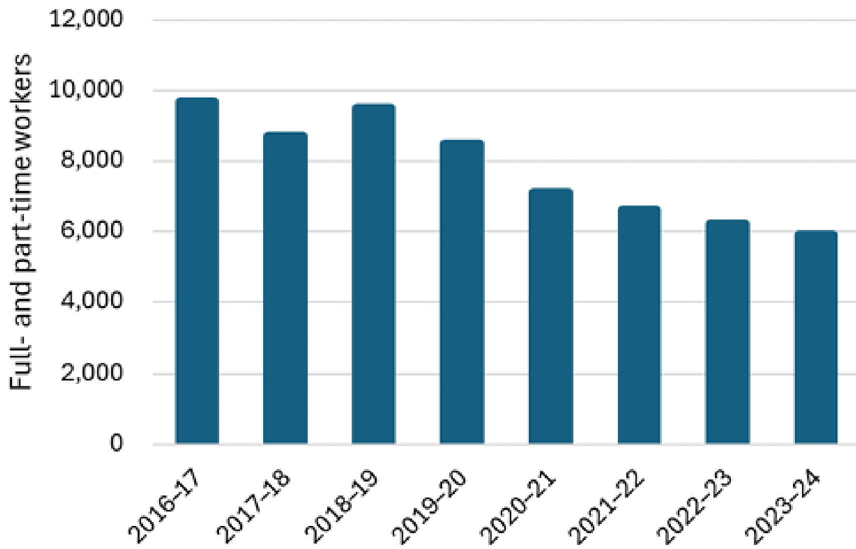


Figure 11 Direct employment in the dairy industry in the Murray region of the Basin. Years are financial years. Data source: Dairy Australia (2024), appendices of 2017–2024 reports.

Horticulture

"Mapping of irrigation areas in the southern connected Basin shows that perennial horticulture has continued to expand in the lower Murray–Darling region (SunRISE Mapping and Research 2022; 2023) and around Griffith in the Murrumbidgee Irrigation Area (MIA). ABS (2022a) data show an increase of 137% (in 2024 dollars) in the GVIAP of fruit and nut trees in the Basin between 2000–01 and 2020–21.

Data show that the expansion in perennial horticulture (for example, grapes, fruit and nut trees and citrus) has been dominated by almond plantings, which grew in the southern connected Basin by 542% over 2003–2023 from 7,330 ha to 47,035 ha (SunRISE Mapping and Research 2022, 2023)."[18]

Analysis

The socio-economic findings of the 2025 Basin Plan Evaluation were heavily criticized by communities and the agriculture sector. This is due, in part, to many of the above methodological challenges. As a result, many of the findings did not reflect the lived experiences by people in the Basin, resulting in low-confidence.

[18] 2025 Review of the social and economic impacts of the Basin Plan

While the above analysis is helpful to show trends of production in key commodities over time, it does not provide analysis of the relative impacts of the Basin Plan. The above analysis also reflects many of the methodological challenges in data outlined above.

The problem with this, is that it paints a picture of the agriculture sector being not significantly impacted by the Basin Plan – which is not correct, and does not reflect the experiences reported by farmers operating businesses over the course of this reform.

For example, the finding that looking across all years from 2005 to 2021, the overall trend in real GVIAP in the Basin was flat, does not reflect a 'no impact' scenario. To the contrary, given the shift in commodity production over this time period to higher value commodities (i.e. more value for every ML of water), as well as productivity gains, a 'flat' trend over this period is more likely to reflect very significant impacts to the agriculture sector overall, particularly to some commodity sectors. There is no counterfactual presented of what this outcome would have been in the absence of water recovery, and further, looking beyond 'value' to the other measures of agricultural sector prosperity.

Examples are outlined below.

Table 3: Analysis of 2025 Basin Plan Evaluation Findings

Evaluation Finding	Analysis
Factors other than the Basin Plan account for at least 95% of observed outcomes for overall agriculture and irrigated agriculture turnover in the southern Basin over 2009–2022. *Most of the changes in economic conditions in the Basin are due to factors other than water recovery.*	This does not reflect community experiences and observations on the ground. The methodology for this finding is queried. It is recommended that this work is compared with qualitative data to hear from communities about their experiences of reform, and drivers of change.
Agricultural production continues to grow in the Basin. The gross value of agricultural production has grown 49% since 2007.	While this may be true, this must consider the counterfactual of how much more it would have grown without the impacts of the Basin Plan. A large driver of this has been productivity gains, and a shift to higher value commodities (driven by water markets). This must also consider the baseline to which this is being measured – the Millenium Drought.
In real terms, the gross value of agricultural production (GVAP) in the Basin in 2020–21 was about $35.1 billion, compared with $27.8 billion in 2012–13 and $23.6 billion in 2007–08. This represents an increase of 26% since Basin Plan adoption in 2012 and 49% since 2007.19 This	As acknowledged in the report, this is being compared to the baseline of the Millenium Drought. This presents a misleading indication of the impacts of the Basin Plan.

increase was measured against a low base at the end of the Millennium drought. The Basin's GVAP grew strongly in 2020–21 after a period of contraction following the Tinderbox drought. Agricultural business turnover has also grown in real terms, from just over $29 billion in 2010 to around $53 billion in 2022 (in 2023 dollars).	This data also ceased to be collected in 2021, meaning more recent water recovery, and lag impacts, are not accounted for.
Marsden Jacob Associates (2025) reported that agricultural businesses in the Basin have continued to grow in terms of real business turnover at an average rate of about 2.2% a year.	Turnover is not an appropriate indicator. Profitability would be more accurate, including analysis of impacts of input prices (i.e. water prices), and what declines in profitability will then mean for on-farm decision-making, such as employment, investment, etc. While the finding of 2.2% still does represent billions of dollars, this appears significantly smaller than expected. We seek further information on the modelling of this and the methodology used, to ensure this figure is accurate.

Literature review

There has been several reports looking at specific aspects of the impacts of the Basin Plan on parts of the agriculture sector – however – to date, there has been no one overarching comprehensive piece of work that looks at the data at the appropriate scales. Noting, as with community profiles, often Basin-scale agricultural data will smooth out the localised impacts and benefits, and not tell the full story.

Water Use on Australian Farms

As above, the ABS has historically provided data on 'Water Use on Australian Farms'. This was discontinued after 2020-21, and has been collected / presented differently over time, making comparisons of data incredibly challenging. However, arguably, it does remain the best available information on water use in Australian agriculture.

Number of Irrigated Agriculture Businesses

Despite the limitations, a number of findings can be drawn by compiling this ABS data over time. For example, the number of irrigated agriculture businesses has decreased from 17,062 in 2006-07 to 8,389 in 2020-21. Between those years, **this is a decrease of 50.84%.**

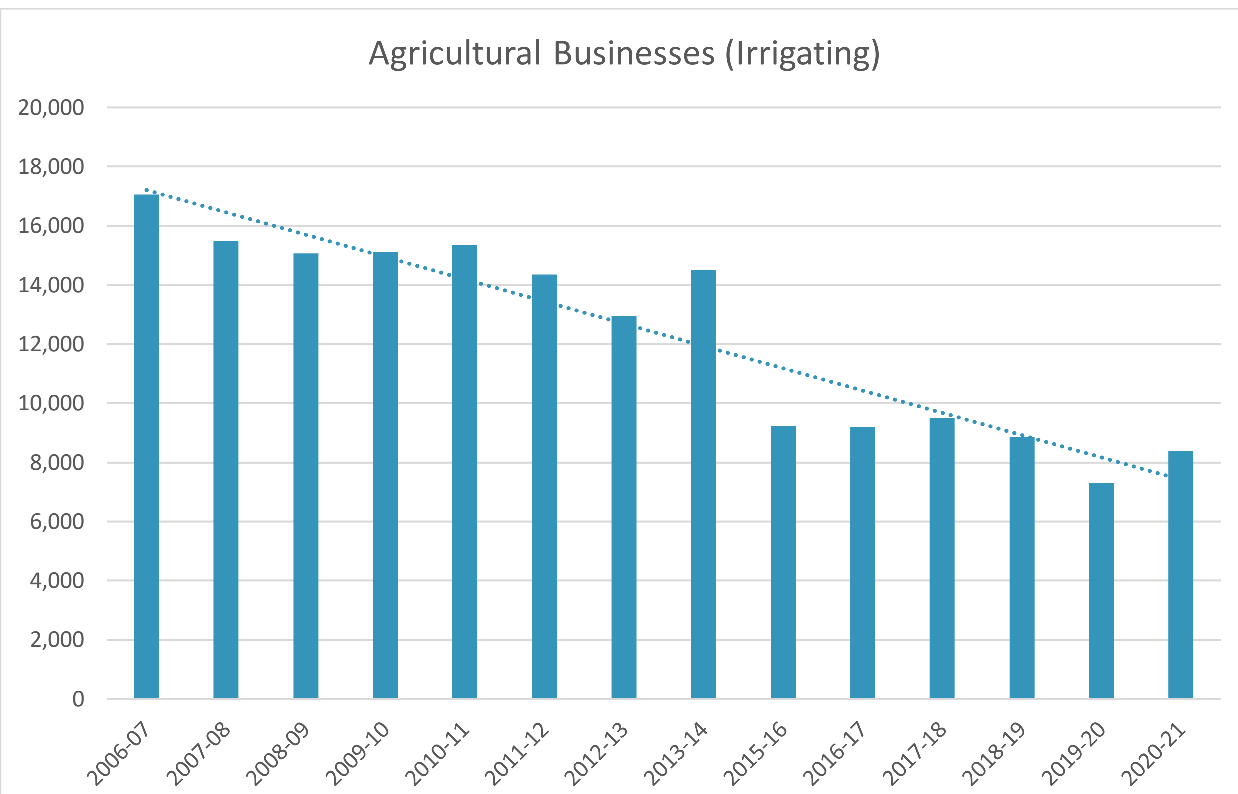


Figure 1 NIC Analysis of ABS Data on Irrigated Agricultural Businesses

Sefton Inquiry

The Independent Panel Assessment of Social and Economic Conditions in the Basin commissioned ABARES to undertake modelling on water market scenarios, including potential future prices, trade flows and irrigation sector outcomes. Findings include:

Water use in the dairy and rice sectors is modelled to decrease on average by 14% and 15% respectively in the future market scenario (relative to the current market scenario). In dry years, more significant decreases are predicted for these sectors in order to meet horticultural water demand, with dairy and rice decreasing by up to 55% and 32% respectively. Average water use declines by around 18% in the Goulburn–Broken region and around 7% in the Murrumbidgee in the future market scenario. Impacts on the gross value of irrigated agricultural production (GVIAP) – GVIAP is modelled to decrease for dairy (by 9%) and rice (by 13%) in the future market scenario (relative to the current market scenario). Fully mature almond plantings would drive a substantial increase in production and gross value (around 23% for both) for the sector. Overall, the total GVIAP across all sectors is modelled to increase on average by 0.8% in the future market scenario and decrease by 4.1% in the future market (dry) scenario.

Frontier Economics: Victoria

In 2022, the Victorian Government commissioned Frontier Economics to examine the social and economic impacts of Basin Plan water recovery in Victoria[19]. It found:

"*If an additional 760 GL in total (372 GL for 'Bridging the Gap' plus 388 GL for Efficiency Projects) were to be recovered via buyback, in line with the CEWH's existing portfolio, the average annual cost in foregone production would be over $850 million per year. It would also result in an extra 17,500 hectares of high-value horticulture being dried off in a repeat of the Millennium Drought. This is equivalent to more than the combined total of 12,640 hectares of irrigated perennial horticultural plantings in the First Mildura, Merbein, Red Cliffs, Robinvale, and Nyah Irrigation Districts in 2021*."[20]

"At the time of the 2017 review, it was apparent that the 2010-11 and 2011-12 La Niña years had masked the impacts of water recovery through buybacks, which mostly took place from 2009-10 to 2011-12. Those wet conditions resulted in high allocations and a large store of carryover that sustained annual water use in excess of water entitlement volumes for four years in a row. Dairy farmers and rice farmers largely reverted to their pre-drought farming systems in those four years. However, the brief dry period in 2015-16 alerted them to how much the consumptive pool had been

[19] Social and economic impacts of Basin Plan water recovery in Victoria
[20] Social and economic impacts of Basin Plan water recovery in Victoria

reduced and what this meant in terms of access costs. They then made permanent changes to their farming systems in the recognition that there could be no permanent return to pre-drought farming systems. The high allocation 2016-17 season gave them breathing space to bed these systems down before the descent into the low allocation 2018-19 and very low allocation 2019-20 seasons. The Basin Plan has changed the characteristics of water use in the southern-connected Basin. Horticulture, with its relatively fixed water demands now accounts for a larger proportion of the smaller consumptive pool. In the dry conditions of 2019-20, when Victorian Murray allocations failed to reach 100%, more than 300GL was traded into the lower Murray to support horticulture — supported by trade out from the Goulburn and from interstate. This resulted in high allocation prices and immense pressure on non-horticultural irrigators looking to use water in Victoria and interstate. It has also increased the risk of horticultural properties being dried-off during severe droughts."

"The socio-economic impacts of the Basin Plan in Victoria are apparent in the Goulburn Murray Irrigation District (GMID) — reducing water use and milk production in the order of 50% in recent years. In a repeat of the Millennium Drought, the socio economic impacts of the Basin Plan will also affect the horticultural industries of the Victorian Mallee and surrounding areas — requiring an extra 25,000 hectares of high value horticulture to be dried off due to the reduced consumptive pool."

"The buyback of the long-term annual average of 450GL of water entitlement would significantly reduce the consumptive pool available to irrigators and other water users. If this purchase was broadly in line with the current composition of the CEWH portfolio:
• this is expected to reduce annual water use in northern Victoria by 216GL (with NSW water use reducing by 197GL and SA by 37GL).
• the estimated area of reduced irrigation due to this recovery is more than 50,000 ha in northern Victoria (and a total of nearly 95,000 ha across the southern MDB).
• The consequent economic impact is expected to be in the excess of $500m annually in terms of the gross value of foregone irrigated production across the southern MDB.
• Northern Victorian gross value of agricultural production (the change of irrigated production net of increased dryland production) would be expected to decline around $270m annually, with agricultural employment contracting by approximately 900 farm jobs. In addition to this, there would be associated job losses in up- and down-stream industries, as well as in irrigation dependent communities."

Dairy Australia Report

In 2025, Dairy Australia published a report (commissioned from Ricardo) on the Impact of Water Buyback on the Southern MDB Dairy Industry.[21] Findings include:

[21] https://adpf.org.au/wp-content/uploads/2025/06/250610-Impact-buyback-sMDB-dairy-industry-report-final-stc.pdf

- Milk production in the MDB has fallen by approximately 25% since 2012, driven by farms exiting the industry, shifting land uses, and water availability constraints
- ABARES estimated a reduction in dairy water use of between 3% to almost 8%, while Ricardo's upper-end buyback scenario resulted in a 16.5% reduction. These values reflect a material decrease in water availability for dairy farmers and will contribute to potentially significant water allocation price increases, particularly in dry years.
- The 302 GL buyback scenario results in a 7-8% reduction in consumptive water availability, and price increases of around 17.5%. The 683 GL scenario results in a 16% reduction in consumptive water availability, and price increases of around 40%.[22]
- Overall, annual milk production in the sMDB could decline by between 3% (approximately 60 million litres) to 15% (approximately 270 million litres).

ABARES: The impacts of further water recovery in the southern Murray–Darling Basin

ABARES examined the impacts on irrigated agriculture of using buybacks to meet outstanding recovery under the 450 GL (gigalitre) target for enhanced environmental outcomes. DCCEEW provided three buyback scenarios in the southern Murray–Darling Basin (MDB) with recovery volumes of 125 GL, 225 GL, and 325 GL.

Findings include:

- *Buybacks reduce the supply of water available for irrigation, increasing water allocation prices. In the 225 GL buyback scenario, average water allocation prices across the southern MDB are estimated to increase by $45/ML (10%).*
- *Lower average water use reduces the gross value of irrigated agricultural production. In the 225 GL buyback scenario, the average value of irrigated production is estimated to decrease across the southern MDB by $111 million/year (2%).*

[22] *A range of water recovery scenarios are plausible and there is a great deal of uncertainty in the quantity, timing and types of entitlements that could be purchased by the Commonwealth. Ricardo has based this assessment on two plausible scenarios: one of 302 GL, which is similar to the upper-end of the ABARES analysis, and a higher scenario of 683 GL which is considered plausible if the government recovered a large proportion of the 450GL target through buyback as well as a significant shortfall against the Sustainable Diversion Limit Adjustment Mechanism offsets or supply measures.*

Table 1 Summary results for the southern Murray–Darling Basin

Variable	Baseline scenario (No further recovery)	125 GL buybacks	225 GL buybacks	325 GL buybacks
Average water allocation prices ($/ML)	474	498	519	545
% change in average water allocation prices		5.0	9.5	15.0
Average water use (GL/yr)	3,748	3,675	3,616	3,571
% change in average water use		-2.0	-3.5	-4.7
Average GVIAP ($b/yr)	6.87	6.81	6.76	6.72
% change in average GVIAP		-0.9	-1.6	-2.2

Note: Values reported in $2022–23 dollars. "No further recovery" includes all water recovery as of October 2023, but no additional recovery. Water recovery volumes expressed as long-term average annual yield. GVIAP denotes gross value of irrigated agricultural production.

However, it is emphasised that this only considers the additional 450 GL, not the cumulative impacts from prior reform.

Recommendations

3. Government investment into data collection of irrigated agriculture and water use to ensure a robust evidence-base to monitor changes over time. This should seek to reinstate the data collection processes which were removed, and undertake best endeavours to account for the years missed.

4. MDBA to work with agricultural commodity groups to improve understanding of the changes to industries over the course of the Basin Plan, including the reported drivers of change. This is critical to ensure true impacts are understood, and the various impactors (both positive and negative) are accounted for in how data is interpreted and explained.

5. Improve counterfactual analysis to be able to account for impacts caused by the Basin Plan. It is not satisfactory for communities that the impacts of the Plan are found to be 'not measurable', as the expectation has been that Governments are tracking / monitoring these impacts, so that decisions can be informed.

Regulatory Impact Assessment

A Regulatory Impact Statement (RIS) was prepared to inform the Basin Plan.[23] This said that:

“There will be social and economic implications associated with the implementation of SDLs on consumptive water use, brought about through the effects on irrigated agricultural production, associated industries and suppliers, and Basin communities.”

“Overall, the impacts on the Basin economy will be modest. The Basin economy is still expected to grow under the Basin Plan, but at a slower rate than would be the case without the Basin Plan… While the overall impact of the Basin Plan is expected to be modest, some communities will likely be relatively more vulnerable to impacts from moving to SDLs.”

The original RIS indicated the annual economic impacts of the Basin Plan up to 2019, as per the below table.

Table 6: Economic impacts of water recovery, 2019, relative to baseline [a]

	2,400 GL/y	2,800 GL/y	3,200 GL/y
Irrigated agricultural production ($m/year)			
Impact (if all water recovered through water purchasing)			
Northern Basin [b]	-188 (-8.8%)	-188 (-8.8%)	-188 (-8.8%)
Southern Basin	-487 (-12.5%)	-576 (-14.8%)	-666 (-17.1%)
Impact (taking into account infrastructure investment)			
Northern Basin	-118 (-5.5%)	-118 (-5.5%)	-118 (-5.5%)
Southern Basin	-347 (-8.9%)	-424 (-10.9%)	-507 (-13.0%)
Agricultural production ($m/year)			
Impact (if all water recovered through water purchasing)			
Northern Basin	n/a [c]	-176 (-2.2%)	n/a
Southern Basin	n/a	-557 (-6.8%)	n/a
Impact (taking into account infrastructure investment)			
Northern Basin	-114 (-1.5%)	-114 (-1.5%)	-114 (-1.5%)
Southern Basin	-307 (-3.7%)	-379 (-4.6%)	-452 (-5.5%)
Gross regional product ($m/year)			
Impact (if all water recovered through water purchasing)			
Northern Basin	-177 (-0.7%)	-179 (-0.7%)	-182 (-0.7%)
Southern Basin	-463 (-1.3%)	-542 (-1.5%)	-616 (-1.7%)
Impact (taking into account infrastructure investment)			
Northern Basin	-112 (-0.4%)	-113 (-0.4%)	-117 (-0.4%)
Southern Basin	-331 (-0.9%)	-400 (-1.1%)	-468 (-1.3%)

(a) Figures are derived from ABARES (2011). For comparison purposes, baseline irrigated agriculture production is estimated to be $6.04 billion per annum, agricultural production $16.06 billion per annum, and basin economy is $63.8 billion per annum.

(b) For the northern basin, modelled reductions in water availability for the 2,400 GL/y and 3,200 GL/y scenarios were identical to the 2,800 GL/y scenario. Refer to ABARES (2011:88).

(c) Items in the table marked “n/a” cannot be derived from the model outputs.

[23] https://www.mdba.gov.au/sites/default/files/publications/Basin-Plan-RIS-Nov2012.pdf

In 2024, the Australian Government updated the RIS for the Basin Plan, after passing of Restoring our Rivers Amendments in late 2023.

The addendum focused largely on the additional 450 gigalitres of environmental water in isolation to the progress and impacts of the other elements of the Basin Plan. It therefore failed to provide a clear and transparent true picture of cumulative impacts of Basin Plan implementation. The updated analysis did include community vulnerability assessment, which highlighted regions that were at higher risk of further changes in water availability.

Critical Review of the Addendum to the Regulatory Impact Assessment

Given that the updated RIS did not consider cumulative, whole of Basin Plan implementation impacts, NIC undertook a quick analysis of the potential impacts from the governments two statements.

This approach, aimed at providing a clearer picture using the governments models and is presented in the below table. This analysis is limited for many reasons (as above), but as it is the data the Government used to inform their decision, it is part of the data available to understand the impact.

For total reduction in GVIAP, the cumulative impact could range between between $602 million - $914 million less GVIAP, per year which is nearly $1 billion from our Basin economy. These figures include the likely impact of further recovery for a shortfall in SDLAM projects.

The combined total Basin Plan Average allocation price increase ($/ML) - baseline plus new scenario could be between $72- $143/megalitres (below Table 2), this includes the current average increases of $72/ megalitres with the estimated increase expected from additional recovery for the 450 GL of additional environmental water. It is important to note that actual variation is different and that there is no assessment of the price impact of any future water recovery for shortfalls in SDLAM, which would increase the likely impact again.

Table 4: Compilation of impact assessments by comparison for cumulative impact assessment

Variable	Baseline scenario current water use (No further recovery)	125 GL buybacks (difference from Model Baseline)	225 GL buybacks (difference from Model Baseline)	325 GL buybacks(difference from Model Baseline)
Average water allocation price increase ($/ML)	72*	24**	45**	71**
TOTAL Basin Plan Average allocation price increase ($/ML) - baseline plus new scenario	NA	96	117	143
Average water use (GL/yr)**	3,748	3,675	3,616	3,571

Reduction in GVIAP ($M/yr)	542-764***	60**	111**	150**
TOTAL Basin Plan Reduction in GVIAP ($M/yr) – baseline plus new scenario	NA	602-824	653-875	692-914

*** ABARES 2020 insights paper[1]**

****ABARES 2024 impacts from further water recovery - Table 1**

***** 2012 Regulatory Impact Statement on the Murray Darling Basin Plan by the MDBA[1]. Lower scenario includes estimate of infrastructure investment higher scenario is direct purchase only for 2750GL scenario.**

A comparison of the trendline for purchases under the original 2100GL target versus the likely impact for the additional 450GL scenarios (below Figure), indicated that there is a significant increase in impact for further water purchases, much larger than experienced under the initial rounds of the Basin Plan. This is due to the thinning in the markets and the reduction in availability and increased demand pressures. This clear piece of evidence from the analysis, highlights that increases in water price are nearly double the rate for the for later purchases (post the initial 2,100GL), despite being smaller volumes of water purchased.

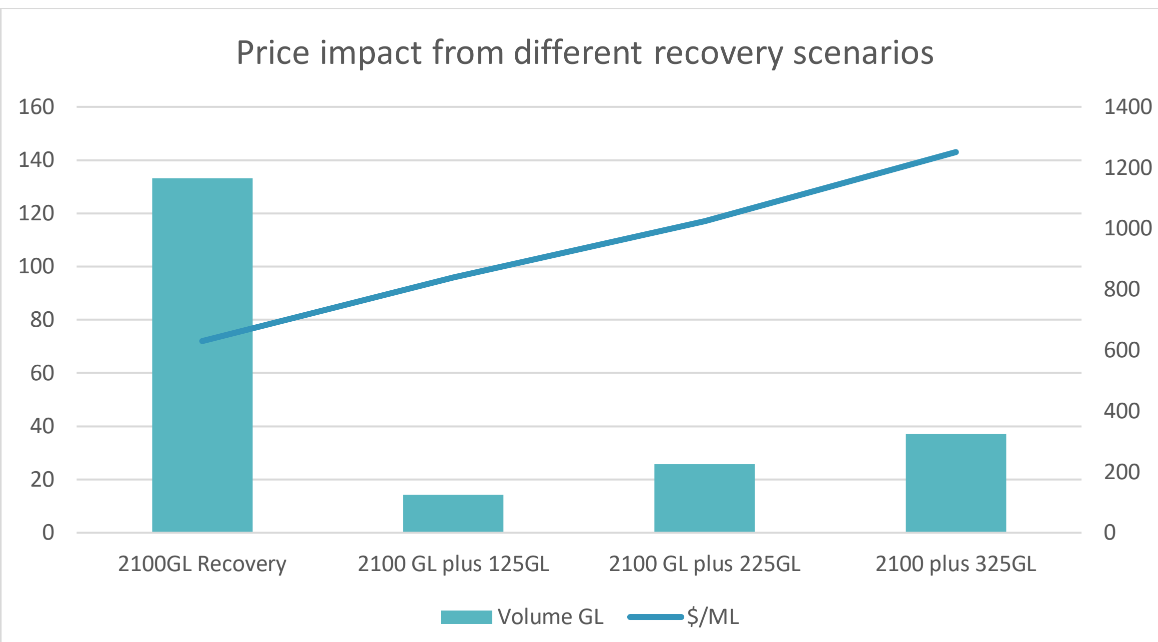


Figure 2: Price impact relative to the volume of water being recovered for the Murray Darling Basin Plan

For these reasons, we are concerned that impact assessment to date has underestimated the true extent of impacts of the Plan.

Conclusion

Understanding the social and economic impacts of the Basin Plan on both communities and the agriculture sector is a critical part of reviewing the Basin Plan, and must be incorporated into the 2026 Basin Plan Review.

At present, there is a lack of data on these impacts, and a range of methodological challenges, which risks these impacts not being fully understood. However, this is no reason for such assessments to not occur. It is the expectation of communities and industries that the Australian Government properly assesses and reports these impacts. Understanding these impacts is fundamental to decision-making for any future water reform.

While communities and industries can provide data to this process, it is ultimately the responsibility of the Australian Government to properly monitor and report on the impacts of reform. This includes ensuring consistent and centralised record keeping and reporting.

Finally, it must be emphasised that bringing communities along the journey is critical to ensuring full impacts are identified and explained, as well as ensuring people feel heard. These processes started strongly with historic work by the MDBA on community profiles, but has been discontinued. Replicating this work provides a valuable avenue to better understand impacts, and ensuring communities feel heard.

Appendix 1: Water Use on Australian Farms (MDB only)

	NSW				Vic				QLD				SA				MDB Total			
Year	Agricultural Businesses (Irrigating)	Area irrigated (ha)	Volume Applied (ML)	Application Rate (ML/ha)	Agricultural Businesses (Irrigating)	Area irrigated (ha)	Volume Applied (ML)	Application Rate (ML/ha)	Agricultural Businesses (Irrigating)	Area irrigated (ha)	Volume Applied (ML)	Application Rate (ML/ha)	Agricultural Businesses (Irrigating)	Area irrigated (ha)	Volume Applied (ML)	Application Rate (ML/ha)	Agricultural Businesses (Irrigating)	Total area watered (ha)	Volume Applied (ML)	Application Rate (ML/ha)
2006-07	5941	598000	2 384 595	4	7 281	346000	1 381 116	4	1 384	85000	301 937	3.6	2 456	73000	390 631	5.4	17 062	1,101,000	4 458 279	4.1
2007-08	4,808	449,690	1,483,874	3.3	6,846	298,578	937,927	3.1	1,506	136,656	405,615	3	2,320	72,828	314,243	4.3	15,479	957,752	3,141,659	3.3
2008-09	5,371	446000	1,734,698	3.9	6,392	253,000	797,172	3.2	1,317	171,000	665,290	3.9	1,996	58,700	295,247	5	15,077	929,000	3,492,407	3.8
2009-10	5,456	491,177	1,820,496	3.7	6,312	320,428	1,042,018	3.3	1,541	108,760	414,441	3.8	1,811	55,296	287,527	5.2	15,120	975,660	3,564,481	3.7
2010-11	6,014	598000	2,584,061	4.3	6,009	355000	837,256	2.4	1,373	173000	788,842	4.6	1,937	63000	297,001	4.7	15,347	1189000	4,507,454	3.8
2011-12	5,324	742,822.70	3,451,312.30	4.6	5,818	436,333.40	1,401,037.10	3.2	1,263	172,540.30	713,184.70	4.1	1,946	59,855.10	309,790.90	5.2	14,359	1,411,611.20	5,875,448.80	4.2
2012-13																	12,953.70	1591000.00	8,273,450.50	5.2
2013-14																	14,496	1559000.00	7,736,385	5
2015-16																	9,216	1,238,107	4,938,382	4
2016-17																	9,197	1,353,611	6,377,014	4.7
2017-18																	9496.00	1460053.00	6797678.02	4.7
2018-19																	8852.00	1085891.00	4421982.59	4.1
2019-20																	7,308	700,997	2703741.30	3.9
2020-21																	8,389	1,170,284	4,843,788	