

Environment and Communications Legislation
Answers to questions on notice
Agriculture, Fisheries and Forestry Portfolio

Inquiry: Inquiry into the Water Amendment (Restoring Our Rivers) Bill 2023

Question No: IQ23-000264

Hearing Date: 01 November 2023

Division/Agency: ABARES G1

Topic: Inquiry Hearing - QoN 1

Hansard Page:

Question Date: 01 November 2023

Question Type: Spoken

Senator Sarah Hanson-Young asked:

SENATOR HANSON-YOUNG

How expensive is 750 gigalitres of water?

DAVID GALEANO

Well, so, you could do some quick maths to estimate that using the current market price how much that would cost. I haven't got those numbers right in front of me that you could go to the market and figure out what those prices are and do that calculation.

SENATOR HANSON-YOUNG

How quickly does the market fluctuate?

DAVID GALEANO

We can probably provide you some information about past prices. The entitlement market tends to not be as volatile as the allocation markets of the allocation market goes up quite a lot in unseasonal conditions, but the entitlement market is much more stable. That is all in the Bureau of Meteorology website.

SENATOR HANSON-YOUNG

It would be good to get some of those, if we could have a bit of a summary of some of that, that would be helpful.

DAVID GALEANO

We can certainly send you the link.

Answer:

The latest Bureau of Meteorology water market report is for 2020-21 ([Australian Water Markets Report 2020–21 \(bom.gov.au\)](https://www.bom.gov.au/water/markets/reports/2020-21/)). This contains time series data on allocation and entitlement trade prices in the Murray Darling Basin.

More detailed information about water trade price data can be found at the Bureau of Meteorology dashboard [BOM Water Markets Dashboard – Water Information – Murray-Darling Basin](https://www.bom.gov.au/water/markets/dashboard/).

Environment and Communications Legislation
Answers to questions on notice
Agriculture, Fisheries and Forestry Portfolio

Inquiry: Inquiry into the Water Amendment (Restoring Our Rivers) Bill 2023

Question No: IQ23-000265

Hearing Date: 01 November 2023

Division/Agency: ABARES G1

Topic: Inquiry Hearing - QoN 2

Hansard Page:

Question Date: 01 November 2023

Question Type: Spoken

Senator Sarah Hanson-Young asked:

SENATOR HANSON-YOUNG

What are the sectors in the basin that are the most intensive when it comes to irrigation?

DAVID GALEANO

In terms of water application rates, do you mean? We can probably get the information, more detailed actual information from the Bureau of Statistics. They release information that describes water use per mega litres per hectare, that sort of stuff. Of the top of my head is the -- it is things like rice, cotton, they are the per hectare, the highest users. We can certainly give you the details but also the horticultural and almond sector, fruits and nuts, they are also fairly heavy users as well. We can certainly put you in the right direction.

SENATOR HANSON-YOUNG

I was going to ask you about almonds, where do they sit? They are big suckers of water, are they?

DAVID GALEANO

Per hectare there are. It is important to look at whether value is created as well but anyway, we can provide you details on notice if you like.

Answer:

The ABS provides data on area irrigated (ha), volume applied (ML) in the online publication [Water Use on Australian Farms \(4618\)](#). The most recent release is for 2020-21.

The three tables below show area irrigated (ha), volume applied (ML) and application rates (ML/ha) by commodity for the period 2016-17 to 2020-21. Almonds are not reported separately in the ABS data.

Table 1: Murray-Darling Basin - Area irrigated (ha)

Industry	2016-17	2017-18	2018-19	2019-20	2020-21
Cotton	308,116	320,175	167,926	44,034	181,284
Fruit trees, nut trees, plantation or berry fruits	79,199	87,562	96,127	101,077	116,313
Grapevines	73,317	74,048	68,612	71,913	80,020
Nurseries, cut flowers and cultivated turf	2,091	3,777	2,600	2,562	2,333
Cereals for grain or seed, excluding rice	191,350	292,545	235,199	122,918	274,376
Other crops n.e.c.	67,106	69,277	46,871	29,747	41,578
Pastures (including lucerne) and cereal crops used for grazing or fed off	364,675	395,062	280,818	202,527	284,524
Pastures (including lucerne), cereal and other crops cut for hay and silage	157,187	133,262	158,875	103,664	124,904
Rice	81,725	59,894	6,608	4,073	43,764
Sugar cane	668	0	0	0	0

Vegetables	28,177	24,453	22,255	18,481	21,188
Total	1,353,611	1,460,054	1,085,891	700,997	1,170,284

[Source: ABS 4618 - Water Use on Australian Farms](#)

Table 2: Murray-Darling Basin - Volume of water applied (ML)

Industry	2016-17	2017-18	2018-19	2019-20	2020-21
Cotton	2,420,296	2,505,050	1,220,014	287,750	1,222,851
Fruit trees, nut trees, plantation or berry fruits	598,365	678,277	769,066	757,093	799,836
Grapevines	373,530	409,798	391,235	375,476	417,586
Nurseries, cut flowers and cultivated turf	8,140	14,219	12,576	10,556	12,102
Cereals for grain or seed, excluding rice	401,028	527,480	541,716	278,513	585,211
Other crops n.e.c.	91,255	134,268	79,370	45,232	85,689
Pastures (including lucerne) and cereal crops used for grazing or fed off	993,285	1,247,724	803,068	527,171	743,180
Pastures (including lucerne), cereal and other crops cut for hay and silage	429,431	432,819	422,133	278,103	359,453
Rice	935,487	725,063	67,603	53,173	530,063
Sugar cane	6,675	0	0	0	0
Vegetables	119,521	122,981	115,203	90,676	87,817
Total	6,377,014	6,797,678	4,421,983	2,703,741	4,843,788

[Source: ABS 4618 - Water Use on Australian Farms](#)

Table 3: Murray-Darling Basin - Application rate (ML/ha)

Industry	2016-17	2017-18	2018-19	2019-20	2020-21
Cotton	7.9	7.8	7.3	6.5	6.7
Fruit trees, nut trees, plantation or berry fruits	7.6	7.7	8.0	7.5	6.9
Grapevines	5.1	5.5	5.7	5.2	5.2
Nurseries, cut flowers and cultivated turf	3.9	3.8	4.8	4.1	5.2
Cereals for grain or seed, excluding rice	2.1	1.8	2.3	2.3	2.1
Other crops n.e.c.	1.4	1.9	1.7	1.5	2.1
Pastures (including lucerne) and cereal crops used for grazing or fed off	2.7	3.2	2.9	2.6	2.6
Pastures (including lucerne), cereal and other crops cut for hay and silage	2.7	3.2	2.7	2.7	2.9
Rice	11.4	12.1	10.2	13.1	12.1
Sugar cane	10.0	0.0	0.0	0.0	0.0
Vegetables	4.2	5.0	5.2	4.9	4.1

[Source: ABS 4618 - Water Use on Australian Farms](#)

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Answers to questions on notice
Agriculture, Fisheries and Forestry Portfolio

Inquiry: Inquiry into the Water Amendment (Restoring Our Rivers) Bill 2023
Question No: IQ23-000266
Hearing Date: 01 November 2023
Division/Agency: ABARES G1
Topic: Inquiry Hearing - QoN 3
Hansard Page:
Question Date: 01 November 2023
Question Type: Spoken

Senator Sarah Hanson-Young asked:

SENATOR HANSON-YOUNG

In terms of the highest value use, what is the sector that is the most efficient, biggest bang for your buck?

DAVID GALEANO

I would have to probably check for you the details.

JARED GREENVILLE

Maybe the way to look at that the reverse some of the previous work that we have looked at when water prices have gone up and you can which sectors are just more than others so which ones use less and we see a fall in their level of production and we know that when prices go up, water is used less in rice and irrigated pastures and the relative fall in water use among some of the other sectors such as horticulture is much lower so that gives you an education that make indication as to water will go on the relative impacts across both regions because industries are generally geographically located but also in terms of the overall impact on agricultural value of production and so forth and those things.

Answer:

We have interpreted this question to be asking what is the gross value of irrigated agricultural production generated per ML of water used, which has been calculated below in Table 1 using available ABS data.

Care is required interpreting this data. The value of water use is sometimes measured by the gross value of irrigated production generated per ML of water used. However, this is a potentially unreliable measure of the value of water for several reasons. For example, it does not account for other inputs such as land, materials, labour and so on. As a result, it should not be used to decide how water is allocated (or recovered) between different agricultural industries.

Table 1: Murray-Darling Basin - Gross Value of Irrigated Agricultural Production (nominal \$) / ML

Commodity	2016-17	2017-18	2018-19	2019-20	2020-21
Cotton	591	827	802	673	1,016
Fruit and nuts	2,791	2,769	2,857	2,968	3,307
Grapes	2,658	2,389	2,590	3,156	3,089
Nurseries, cut flowers and cultivated turf	24,639	np	21,838	np	20,877
Cereals for grain and seed	592	616	np	np	685
Other crops	837	486	372	425	763
Hay	np	np	np	549	488
Rice	269	335	452	634	324
Sugar cane	599	-	-	-	-
Vegetables	7,681	6,866	np	7,647	8,126

Note 1: Industry categories reported in ABS 4618 (volume applied) and ABS 4610 (GVIAP) do not always align. The above table only shows GVIAP (nominal \$) / ML for industry categories that do align. For example, dairy is reported as a stand alone category in ABS 4610 but not in ABS 4618.

Note 2: **np** not available for publication but included in totals where applicable

[Source: ABS – 4610 Water Account, Australia](#)

[Source: ABS 4618 - Water Use on Australian Farms](#)

Environment and Communications Legislation
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Agriculture, Fisheries and Forestry Portfolio

Inquiry: Inquiry into the Water Amendment (Restoring Our Rivers) Bill 2023

Question No: IQ23-000267

Hearing Date: 01 November 2023

Division/Agency: ABARES G1

Topic: Inquiry Hearing - QoN 4

Hansard Page:

Question Date: 01 November 2023

Question Type: Spoken

Senator Sarah Hanson-Young asked:

SENATOR HANSON-YOUNG

Do you have any statistics or numbers you can share with us on how many of the water entitlements that are held for agricultural or horticultural use, food and fibre, I'm thinking, are owned by Australian companies versus foreign companies?

DAVID GALEANO

I think there is a register but I think it is a question best directed at other folk in the Commonwealth. DCCEEW or others.

SENATOR HANSON-YOUNG

You don't have access to that kind of stuff?

DAVID GALEANO

We could probably dig it up but I don't know that information off the top of my head.

SENATOR HANSON-YOUNG

Yes, I know. But we're trying to get evidence in front of us right now, so I'd like us to be able to find it right now.

Answer:

Detailed information on foreign ownership of water entitlements can be found using the below link from the Australian Taxation Office (ATO).

[Register of foreign ownership of water entitlements: Report of registrations as at 30 June 2022](#)

Environment and Communications Legislation
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Agriculture, Fisheries and Forestry Portfolio

Inquiry: Inquiry into the Water Amendment (Restoring Our Rivers) Bill 2023

Question No: IQ23-000268

Hearing Date: 01 November 2023

Division/Agency: ABARES G1

Topic: Inquiry Hearing - QoN 5

Hansard Page:

Question Date: 01 November 2023

Question Type: Spoken

Senator Karen Grogan asked:

CHAIR

When you say there is a trend down in the number of farms, I'm interested in the sort of land use aspect. If there is a trend down in the number of farms, are they being bought up and they are actually just bigger farms or is it a transfer of the utilisation of the land?

JARED GREENVILLE

There are a number of different factors in different industries but I think you can categorise generally that farms are getting larger and the economic scale for farms is getting larger over time. There has been some shift in agricultural land use so agriculture operates at about 55 per cent of our landscape. That has fallen over the past 30 odd years, largely because of number of areas have moved into the conference Ashman conservation estate so there has been some shift inland out of agriculture but those dynamics about the number of farms are really being driven by the market dynamics, productivity growth in particular and deregulation of a number of industries and just the scale to get some of the efficiencies and that is largely related to, you know, the intensification of machinery and those other aspects that we see.

CHAIR

You said that we were currently at 55 per cent and what was that previously?

JARED GREENVILLE

It was in the order of about 60 per cent... Two seconds. I did bring that number with me. So, may be able have to take that directly on notice because I didn't bring that number exactly with me. It has fallen relatively by about 30 per cent but I think it is from 60 per cent to 55 per cent or something like that but let me take that on notice.

Answer:

Agriculture accounted for 55% of land use in Australia in 2020 (Catchment scale land use of Australia – update December 2020, ABARES). Consistent time series is not available back to 1990, but using other data sources indicates that the area has fallen by about 10 percentage points since 1990.

Environment and Communications Legislation
Answers to questions on notice
Agriculture, Fisheries and Forestry Portfolio

Inquiry: Inquiry into the Water Amendment (Restoring Our Rivers) Bill 2023

Question No: IQ23-000269

Hearing Date: 01 November 2023

Division/Agency: ABARES G1

Topic: Inquiry Hearing - QoN 6

Hansard Page:

Question Date: 01 November 2023

Question Type: Spoken

Senator Sarah Hanson-Young asked:

SENATOR HANSON-YOUNG

I'm wondering how many jobs are employed in the cotton industry.

JARED GREENVILLE

Primary sources are we would go to the census data, quite likely. We noticed the census data doesn't become more jobs, particularly for seasonal workers and the like. But we could look at that and provide that on notice.

SENATOR HANSON-YOUNG

If you could, that would be helpful. The census data I have from 2016 was that 1,007 were employed in the cotton industry. The reason I ask is that it has been claimed in evidence to this committee that there are 10,000 direct jobs in the cotton industry in Australia. That seems like bollocks to me.

JARED GREENVILLE

We haven't done the work to verify or—

SENATOR HANSON-YOUNG

If you go away and look at what is available that would be helpful.

CHAIR

This is the point where I point out to you, gentlemen, that the return of questions on notice is 3 November.

SENATOR HANSON-YOUNG

I don't want you have to create new documentation, but you're going to know where to look and how to get it quickly, and that's what would be helpful. I'm interested in the cotton industry, the almond industry, the rice industry, and then overall—we're being told that buybacks are going to destroy towns and kill jobs. That's clearly not true across the board. But if there is less water available for some of these industries then, yes, maybe there is going to need to be an adjustment. But it's not helpful for us if we're being presented with jobs figures that are overblown and false. We have to try and work out where the baseline is. So if you could help us out with that then that would be great.

Answer:

The 2021 Census of Population and Housing indicates the following for cotton:

- 1121 people were employed in cotton growing in Australia. A further 466 people were employed in cotton ginning. The figures for the Murray-Darling basin (MDB) are 897 and 353, respectively.

The census is self-reported data.

The Census is likely to underestimate the contribution of temporary and seasonal agricultural workers to Australia's agricultural workforce. There are also difficulties in quantifying employment in the off-farm agricultural supply chain.

An attached spreadsheet contains 2021 Census Industry of Employment counts for Agriculture in Australia and the MDB. Industry of Employment counts for Agriculture, Forestry and Fishing Support Services and Food Product Manufacturing for both Australia and the MDB have also been provided.



Australian Bureau of Statistics

2021 Census - counting persons, place of usual residence

4-digit level INDP Industry of Employment by Australian Drainage Divisions (UR)

Counting: Person Records

Filters:

Default Summation Person Records

Australian Drainage Divisions (UR)		Murray-Darling Basin	Australia
4-digit level INDP Industry of Employment			
0100	Agriculture, nfd	9479	27368
0110	Nursery and Floriculture Production, nfd	23	145
0111	Nursery Production (Under Cover)	3	206
0112	Nursery Production (Outdoors)	965	9532
0113	Turf Growing	184	1089
0114	Floriculture Production (Under Cover)	0	4
0115	Floriculture Production (Outdoors)	224	2406
0120	Mushroom and Vegetable Growing, nfd	13	162
0121	Mushroom Growing	444	2580
0122	Vegetable Growing (Under Cover)	176	1327
0123	Vegetable Growing (Outdoors)	2138	16273
0130	Fruit and Tree Nut Growing, nfd	1446	4210
0131	Grape Growing	2974	6009
0132	Kiwifruit Growing	56	70
0133	Berry Fruit Growing	400	4925
0134	Apple and Pear Growing	551	1452
0135	Stone Fruit Growing	391	805
0136	Citrus Fruit Growing	1287	2527
0137	Olive Growing	200	489
0139	Other Fruit and Tree Nut Growing	1145	7197
0140	Sheep, Beef Cattle and Grain Farming, nfd	369	742
0141	Sheep Farming (Specialised)	8721	18278
0142	Beef Cattle Farming (Specialised)	12733	44450
0143	Beef Cattle Feedlots (Specialised)	708	1091
0144	Sheep-Beef Cattle Farming	3537	7521
0145	Grain-Sheep or Grain-Beef Cattle Farming	9457	18276
0146	Rice Growing	0	5
0149	Other Grain Growing	9717	18945
0150	Other Crop Growing, nfd	4	10
0151	Sugar Cane Growing	11	4210
0152	Cotton Growing	897	1121
0159	Other Crop Growing nec	521	1856
0160	Dairy Cattle Farming	4292	17445
0170	Poultry Farming, nfd	551	1735
0171	Poultry Farming (Meat)	405	2115
0172	Poultry Farming (Eggs)	1395	3903
0180	Deer Farming	5	27
0190	Other Livestock Farming, nfd	10	15
0191	Horse Farming	846	3718
0192	Pig Farming	1118	2084
0193	Beekeeping	568	1635
0199	Other Livestock Farming nec	363	1136
Total		78352	239093

Dataset: Census of Population and Housing, 2021, TableBuilder

Cells in this table have been randomly adjusted to avoid the release of confidential data. No reliance should be placed on small cells.

INFO



Australian Bureau of Statistics

2021 Census - counting persons, place of usual residence

4-digit level INDP Industry of Employment by Australian Drainage Divisions (UR)

Counting: Person Records

Filters:

Default Summation Person Records

Australian Drainage Divisions (UR)		Murray-Darling Basin	Australia
4-digit level INDP Industry of Employment			
0500	Agriculture, Forestry and Fishing Support Services, nfd	15	61
0510	Forestry Support Services	362	3383
0520	Agriculture and Fishing Support Services, nfd	260	704
0521	Cotton Ginning	353	466
0522	Shearing Services	1196	2597
0529	Other Agriculture and Fishing Support Services	4468	15340
Total		6662	22549

Dataset: Census of Population and Housing, 2021, TableBuilder

INFO Cells in this table have been randomly adjusted to avoid the release of confidential data. No reliance should be placed on small cells.

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Australian Bureau of Statistics

2021 Census - counting persons, place of usual residence 4-digit level INDP Industry of Employment by Australian Drainage Divisions (UR) Counting: Person Records

Filters:

Default Summation Person Records

Australian Drainage Divisions (UR)		Murray-Darling Basin	Australia
4-digit level INDP Industry of Employment			
1100	Food Product Manufacturing, nfd	887	12515
1110	Meat and Meat Product Manufacturing, nfd	40	292
1111	Meat Processing	8638	33892
1112	Poultry Processing	2933	14707
1113	Cured Meat and Smallgoods Manufacturing		
		870	5172
1120	Seafood Processing	32	1586
1130	Dairy Product Manufacturing, nfd	81	408
1131	Milk and Cream Processing	569	3749
1132	Ice Cream Manufacturing	82	1722
1133	Cheese and Other Dairy Product Manufacturing		
		1788	11777
1140	Fruit and Vegetable Processing	1870	8854
1150	Oil and Fat Manufacturing	136	1080
1160	Grain Mill and Cereal Product Manufacturing, nfd	33	96
1161	Grain Mill Product Manufacturing	782	2847
1162	Cereal, Pasta and Baking Mix Manufacturing		
		294	4298
1170	Bakery Product Manufacturing, nfd	27	311
1171	Bread Manufacturing (Factory based)	2762	25653
1172	Cake and Pastry Manufacturing (Factory based)	371	6887
1173	Biscuit Manufacturing (Factory based)	160	2979
1174	Bakery Product Manufacturing (Non-factory based)	1879	15515
1180	Sugar and Confectionery Manufacturing, nfd	0	13
1181	Sugar Manufacturing	7	4401
1182	Confectionery Manufacturing	837	8365
1190	Other Food Product Manufacturing, nfd	3	29
1191	Potato, Corn and Other Crisp Manufacturing	58	1616
1192	Prepared Animal and Bird Feed Manufacturing	1701	4701
1199	Other Food Product Manufacturing nec	631	10467
Total		27476	183940

Dataset: Census of Population and Housing, 2021, TableBuilder

INFO Cells in this table have been randomly adjusted to avoid the release of confidential data. No reliance should be placed on small cells.