

# Review of proposed expansion of the cotton industry in the Northern Territory

## Appendix A: Method

Subsidies to the cotton industry in the Northern Territory were calculated by:

1. identifying government subsidies,
2. annualising the subsidy, and
3. calculating the portion of the subsidy attributed to the Northern Territory cotton industry.

Annualised subsidies were calculated using a discount rate of seven percent over 30 years as recommended in the Australian Government's *Guide to technical appraisal: Technical guide of the Assessment Framework*.<sup>1</sup>

The portion of the subsidy attributed to the Northern Territory cotton industry was based on either revenue, area or bales. This is summarised in Table 1.

Table 1: Apportionment to the Northern Territory cotton industry

Beneficiary of subsidy	Basis for attribution	Value	Cotton in the Northern Territory	Contribution of Northern Territory Cotton
Australian agriculture <sup>2</sup>	Revenue	71,000,000,000	203,250,000	<b>0.29%</b>
Northern Territory agriculture <sup>3</sup>	Revenue	767,000,000	203,250,000	<b>26.50%</b>
Australian cotton <sup>4</sup>	Hectares	594,000	54,000	<b>9.09%</b>
Northern Australian cotton <sup>5,6</sup>	Bales	797,525	289,600	<b>36.31%</b>
Northern Territory Cotton				<b>100%</b>

<sup>1</sup> Infrastructure Australia. (2021). *Guide to technical appraisal: Technical guide of the Assessment Framework*. <https://www.infrastructureaustralia.gov.au/sites/default/files/2021-07/Assessment%20Framework%202021%20Guide%20to%20economic%20appraisal.pdf>

<sup>2</sup> Australian Bureau of Statistics. (2022). *Value of Aussie Agriculture hits \$71 billion in 2020-21*. <https://www.abs.gov.au/articles/value-aussie-agriculture-hits-71-billion-2020-21>

<sup>3</sup> Northern Territory Government. (2024). *2024-25 Budget Working for the Territory: Industry Outlook*. . [https://budget.nt.gov.au/\\_data/assets/pdf\\_file/0006/1376961/2024-25-industry-outlook-book.pdf](https://budget.nt.gov.au/_data/assets/pdf_file/0006/1376961/2024-25-industry-outlook-book.pdf)

<sup>4</sup> Australian Bureau of Statistics. (2023). *Agricultural Commodities, Australia*. <https://www.abs.gov.au/statistics/industry/agriculture/agricultural-commodities-australia/latest-release#cereal-and-other-broadacre-crops>

<sup>5</sup> MITEZ Economic Development. (2021). *North Queensland Cotton Gin assessment and feasibility study*. <https://mitez.com.au/wp-content/uploads/2022/02/North-Queensland-Cotton-Gin-Assessment-and-Feasibility-Study-Report.pdf>

<sup>6</sup> Alsop. (2023). *Ord gin build starts, NT's nears commissioning*. <https://www.graincentral.com/cropping/cotton/katherine-gin-nears-commissioning-build-starts-at-kununurra/>

The total subsidy for each component of the supply chain is shown in Table 2

Table 2: Annualised subsidy for cotton in the Northern Territory

Supply Chain	Annualised subsidy for cotton in the Northern Territory (\$ million)	Section
Land	24.5	1
Water	13.4	2
Research and Development	2.6	3
Processing	1.5	4
<b>Total</b>	<b>42.0</b>	

Improvements to roads and communications and access to export markets are identified as requirements to develop Northern Australia.<sup>7</sup> Government commitments in these areas include the \$4.9 billion Roads of Strategic Importance program, and \$1.5 billion towards infrastructure at the Darwin Port.<sup>8,9</sup> These have not been included as subsidies to Northern Territory cotton in this analysis.

<sup>7</sup> Australian Government. (2015). *Our North, Our Future: White Paper on Developing Northern Australia Overview*. <https://www.infrastructure.gov.au/sites/default/files/documents/nawp-whitepapersummary.pdf>

<sup>8</sup> Department of Infrastructure, Transport, Regional Development, Communications and the Arts. (n.d. est 2024). *Roads*. <https://www.infrastructure.gov.au/infrastructure-transport-vehicles/freight/roads>

<sup>9</sup> Northern Territory Government. (2024). *Middle Arm Sustainable Development Precinct*. <https://invest.nt.gov.au/why-the-territory/infrastructure-and-strategic-land/middle-arm-sustainable-development-precinct>

# 1 Method to calculate subsidies for Land

Cotton is grown in the Northern Territory on pastoral leases. Nominal rent is paid to the government on these leases.<sup>10, 11, 12</sup> The Government's income from lease rentals only just covers the cost of administering the leases.<sup>13</sup>

For the purpose of this analysis, the land subsidy is calculated by the area of land assumed for cotton (54,000 hectares) multiplied by the average price of farmland over the last five years (\$5,626/hectare) reported by ABARES (\$4,303 in 2019; \$4,521 in 2020; \$5,607 in 2021; \$6,916 in 2022; \$6,782 in 2023).<sup>14</sup>

The annual subsidy for land is shown in Table 3.

Table 3: Land subsidy for Northern Territory cotton

Subsidy	Value	Annual Total Subsidy	Portion attributed to Northern Territory Cotton	Annual subsidy attributed to Northern Territory cotton
Land value	303,793,200	24,481,601	100%	24,481,601

<sup>10</sup> Productivity Commission. (2002). *Pastoral Leases and Non-Pastoral Land Use: Commission Research Paper*. <https://www.pc.gov.au/research/completed/pastoral-leases/pastoralleases.pdf>

<sup>11</sup> Northern Territory Government. (2024). *2024-25 Budget Working for the Territory: Budget Paper No. 2 – Budget Strategy and Outlook*. [https://budget.nt.gov.au/\\_data/assets/pdf\\_file/0011/1376354/2024-25-bp2-book.pdf](https://budget.nt.gov.au/_data/assets/pdf_file/0011/1376354/2024-25-bp2-book.pdf)

<sup>12</sup> Russell-Smith, Sangha and Kamaljit. (2018). *Emerging opportunities for developing a diversified land sector economy in Australia's northern savannas*. [https://ris.cdu.edu.au/ws/portalfiles/portal/23382857/Rangelands\\_Final\\_Revision.pdf](https://ris.cdu.edu.au/ws/portalfiles/portal/23382857/Rangelands_Final_Revision.pdf)

<sup>13</sup> Productivity Commission. (2002). *Pastoral Leases and Non-Pastoral Land Use: Commission Research Paper*. <https://www.pc.gov.au/research/completed/pastoral-leases/pastoralleases.pdf>

<sup>14</sup> Department of Agriculture, Fisheries and Forestry ABARES. (2024). *ABARES Farmland Price Indicator (Beef Regions, Northern Australia)*. <https://www.agriculture.gov.au/abares/data/farmland-price-indicator>

## 2 Method to calculate subsidies for Water

Water entitlements are issued free in the Northern Territory, which is a subsidy to irrigators. While water trade is possible, there are no reported trades of water in the Northern Territory.

A value for water entitlements was calculated for these entitlements based on water application of 8.1 megalitres per hectare for the forecast irrigated hectares (14,000) by the purchase price of overland water licences in Queensland by the Australian Government (\$2,745 per megalitre).<sup>15, 16, 17</sup> That amount has been halved to address criticisms that the Government paid too much for the water.<sup>18</sup>

Note that the estimate for water entitlements is conservative because:

- the area used to irrigate cotton is likely to be an under-estimate because dryland cotton is not financially viable. To achieve the forecast revenue of \$203 million, the area under irrigation would need to double. This would then double the estimated value of water.
- recent prices paid by the Australian Government for unregulated, unsupplemented and supplementary water in the Murray-Darling Basin are much higher than \$1,372, with the exception of one valley. These are shown in Table 4. Unregulated, unsupplemented and supplementary water are in systems without a public headwater storage and are the most similar water products to water in the Northern Territory.

Table 4: Average price of unregulated, unsupplemented and supplementary water in the Murray-Darling Basin

Valley	Water product	Average price per megalitre \$
Barwon-Darling	Unregulated (Class A)	3,314
Condamine-Balonne	Unsupplemented – Lower Balonne	8,000
Namoi	Supplementary (Class B)	4,413
Namoi	Unregulated	3,434
New South Wales Border Rivers	Unregulated	774

The annual subsidy for land is shown in Table 5.

<sup>15</sup> CottonInfo. (2023). 2023-24 Australian cotton industry gross margin: Notes and assumptions. <https://cottoninfo.com.au/sites/default/files/inline-files/Gross%20margins%20notes%202023.pdf>

<sup>16</sup> Price Waterhouse Coopers for NT Farmers Association. (2019). Business Case for the Construction of a Cotton Gin in the Northern Territory. <https://ntfarmers.org.au/wp-content/uploads/2021/08/60321b63d7bd4778a95579680cac25f2.pdf>

<sup>17</sup> Slattery & Campbell. (2018). That's not how you haggle. <https://australiainstitute.org.au/report/thats-not-how-you-haggle/>

<sup>18</sup> Miller. (2020). So what will the licensing of floodplain harvesting mean? <https://www.theland.com.au/story/6977219/floodplain-harvesting-licensing-essential/>

Table 5: Water subsidy for Northern Territory cotton

Subsidy	Value	Annual Total Subsidy	Portion of Northern Territory cotton	Annual subsidy attributed to Northern Territory cotton
Water entitlements	155,641,500	12,542,589	100%	12,542,589
Northern Australia Water Resource Assessment <sup>19</sup>	15,000,000	1,208,796	36%	438,942
Ord River Expansion to the Northern Territory preliminary business case <sup>20</sup>	500,000	40,293	100%	40,293
Ord River Expansion to the Northern Territory Detailed Business Case <sup>21</sup>	2,300,000	185,349	100%	185,349
LiDAR survey and digital elevation model development for key Northern Territory rivers <sup>22</sup>	1,800,000	145,339	100%	145,339
Recalibration of models in high demand water systems, NT <sup>23</sup>	900,000	72,528	100%	72,528
<b>Total</b>				<b>13,424,756</b>

<sup>19</sup> CSIRO. (2021). NAWRA Overview and findings. <https://www.csiro.au/en/research/natural-environment/water/Water-resource-assessment/NAWRA/Overview>

<sup>20</sup> National Water Grid. (2024). Ord River Expansion to the Northern Territory preliminary business case. <https://www.nationalwatergrid.gov.au/projects/ord-river-expansion-nt>

<sup>21</sup> National Water Grid. (2024). Ord River Expansion to the Northern Territory Detailed Business Case. <https://www.nationalwatergrid.gov.au/projects/ord-river-expansion-nt-detailed-business-case>

<sup>22</sup> National Water Grid. (2024). Lidar survey and digital elevation model development for key Northern Territory Rivers. <https://www.nationalwatergrid.gov.au/projects/lidar-survey-digital-elevation-model-development-key-nt-rivers>

<sup>23</sup> National Water Grid. (2024). Recalibration of models in high demand water systems, Northern Territory. <https://www.nationalwatergrid.gov.au/projects/recalibration-models-high-demand-water-systems-nt>

### 3 Method to calculate subsidies for Research and Development

Research and development subsidies returning less than \$2,000 per annum and grants from the Future Drought Fund (Northern Hub) were excluded.

The annual subsidy for Research and Development is shown in Table 6.

Table 6: Research and Development subsidy for Northern Territory cotton

Subsidy	Total Value	Annual Total Subsidy	Portion attributed to Northern Territory cotton	Annual subsidy attributed to Northern Territory cotton
Cotton Breeding Partnership <sup>24</sup>	75,000,000	6,043,980	9%	549,453
Cotton Research Development Corporation <sup>25</sup>	204,000,000	16,439,626	9%	1,494,511
Cooperative Research Centre for Developing Northern Australia:				
Water Security for Northern Australia: Co-Design Phase <sup>26</sup>	900,000	72,528	36%	26,337
Water Security for Northern Australia Program: Implementation Phase <sup>27</sup>	7,345,176	591,921	36%	214,940
Scaling Next Generation Water Markets In Northern Australia <sup>28</sup>	250,000	20147	36%	7,316
De-Risking Phase 11 - NT Through Sustainable Development Precincts <sup>29</sup>	1,071,211	86,325	26.50%	22,876
An Evaluation Of Northern Territory Agriculture Supply Chains And Export Opportunities <sup>30</sup>	542,000	43,678	26.50%	11,574
Leading CRCNA's De-Risking And Supply Chain Investment And Impact <sup>31</sup>	1,028,216	82,860	26.50%	21,957

<sup>24</sup> CSIRO. (2021). Cotton partnership reaches \$150 million investment milestone.

[https://www.csiro.au/en/news/All/News/2021/May/Cotton-partnership-reaches-\\$150-million-investment-milestone](https://www.csiro.au/en/news/All/News/2021/May/Cotton-partnership-reaches-$150-million-investment-milestone)

<sup>25</sup> CRDC. (2024). Research and Development. <https://www.crdc.com.au/research-development>

<sup>26</sup> CRC Northern Australia. (2024). Water Security for Northern Australia Program: Co-Design Phase.

<https://crcna.com.au/projects/co-design-phase-water-security-northern-australia-program/>

<sup>27</sup> CRC Northern Australia. (2024). Water Security for Northern Australia Program: Implementation Phase.

<https://crcna.com.au/projects/water-security-northern-australia-implementation-phase/>

<sup>28</sup> CRC Northern Australia. (2024). Water Security for Northern Australia Program: Implementation Phase.

<https://crcna.com.au/projects/water-security-northern-australia-implementation-phase/>

<sup>29</sup> CRC Northern Australia. (2024). De Risking !! – NT Through Sustainable Development Precincts.

<https://crcna.com.au/projects/de-risking-phase-ii-nt-through-sustainable-development-precincts/>

<sup>30</sup> CRC Northern Australia. (2024). An evaluation of Northern Territory Agriculture Supply Chains and Export Opportunities.

<https://crcna.com.au/projects/evaluation-northern-territory-agriculture-supply-chains-and-export-opportunities/>

<sup>31</sup> CRC Northern Australia. (2024). Leading CRCNA's De-Risking and Supply Chain Investment and impact.

<https://crcna.com.au/projects/leading-crcnas-de-risking-and-supply-chain-investment-and-impact/>

Subsidy	Total Value	Annual Total Subsidy	Portion attributed to Northern Territory cotton	Annual subsidy attributed to Northern Territory cotton
Prioritising, De-Risking And Brokering Agricultural Development In The Northern Territory <sup>32</sup>	100,000	8,059	26.50%	2,135
Northern Australia Agriculture Investor Identification And Analysis <sup>33</sup>	215,000	17,326	36%	6,292
<b>Total</b>				<b>2,617,865</b>

## 4 Method to calculate subsidies for Processing

Table 7: Processing subsidy in the Northern Territory

Subsidy	Value	Annual Total Subsidy	Portion attributed to Northern Territory Cotton	Annual subsidy attributed to Northern Territory cotton
Northern Territory Connections package <sup>34</sup>	7,400,000	596,339	26%	158,026
Business case for Katherine Gin <sup>35</sup>	58,398	4,706	100%	4,706
Logistics and Business Hub at Katherine <sup>36</sup>	63,200,000	5,093,061	26%	1,349,628
<b>Total</b>				<b>1,512,360</b>

<sup>32</sup> CRC Northern Australia. (2024). *Prioritising, De-risking and brokering agricultural development in the Northern Territory*. <https://crcna.com.au/projects/prioritising-de-risking-and-brokering-agricultural-development-northern-territory/>

<sup>33</sup> CRC Northern Australia. (2024). *Northern Australia agriculture investor identification and analysis*. <https://crcna.com.au/projects/northern-australia-agriculture-investor-identification-and-analysis/>

<sup>34</sup> National Water Grid. (n.d. est 2024). *Northern Territory Connections package*. <https://www.nationalwatergrid.gov.au/projects/nt-connections-package>

<sup>35</sup> Investment Territory. (2023). *NT Farmers cotton gin study*. <https://invest.nt.gov.au/news-and-insights/nt-farmers-cottin-gin-study>

<sup>36</sup> Joyce. (2022). *New logistics hub to drive NT's economic development*. <https://nationals.org.au/new-logistics-hubs-to-drive-nts-economic-development/>

## 5 Operating costs for irrigated and dryland cotton

Table 8: Operating costs for irrigated and dryland cotton

Operating Costs	Irrigated Cotton <sup>37</sup> \$/Ha	Percentage assumed of costs to apply to dryland cotton in the Northern Territory	Dryland Cotton \$/Ha
Depreciation	260	50%	130
Fuel and Oil	258	100%	258
Hire	47	50%	24
Motor Vehicles	25	100%	25
Repairs and Maintenance	315	50%	158
Employees	351	100%	351
Administration	98	100%	98
Electricity	85	50%	43
<b>Total operating costs</b>	<b>1,439</b>		<b>1,086</b>

<sup>37</sup> CRDC and Boyce. (2021). *Australian Cotton Comparative Analysis: 2021 Crop*. <https://boyceca.com/wp-content/uploads/2023/12/Boyce-Cotton-Comparative-Report-2021-1.pdf>