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Summary Report: Economic Contribution of the Australian Aluminium Industry

Australian Aluminium Council

20 September 2024

Table of Contents

This summary report outlines the Australian Aluminium Industry value added to the Australian economy and local community.

The report identifies key risks that may threaten future production and community outcomes. Observations are provided for ways Australian governments can support the Industry.

This summary report is supported by a full report into the Economic Contribution of the Australian Aluminium Industry.

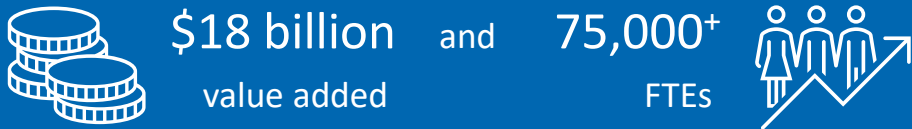
The Australian Aluminium Industry	3
Economic Contribution	4
Vertical Integration and Interdependencies	7
International Trade Challenges	9
Future Growth Prospects	10
Policy and Regulatory Barriers Affecting the Industry	11
Observations for Policy and Regulatory Improvements	12
Appendix A – Modelling Approach	15
Appendix B – State Contributions	16

The Australian Aluminium Industry

The Australian Aluminium Industry (the Industry) is comprised of four sectors that work together to provide value for the Australian economy and regions.

- Bauxite mining
- Alumina refining
- Aluminium smelting
- Aluminium extrusion

In 2023, it is estimated that the Industry contributed:



The economic contribution is generated within outer metropolitan manufacturing hubs, regional cities and remote regions.

Key Value Add Propositions



Economic Contribution Reaching all Australian Communities

In total, the Industry contributed \$18 billion of economic value and over 75,000 full-time equivalent (FTE) jobs in 2023 (including the direct, indirect and induced measures).

The Industry directly contributed \$5.7 billion in value added and employed 20,700 high skilled workers (FTE) with average earnings of \$134,000 (63% higher than the national manufacturing average).

The Industry operates across outer metropolitan hubs, regional cities and remote regions. These activities support further commercial and public welfare outcomes, bringing mutual benefits across the community and the Industry.



Sovereign Capability

Integrated mining, processing and manufacturing within the Industry provides additional value to the economy through local, reliable production and improved workforce skills.

Without the Industry, Australia would likely have greater exposure to global aluminium and transport disruptions and lose valuable skills.

The Industry also has opportunity to further develop Australia’s sovereign capability by undertaking additional advanced manufacturing. With government support, these opportunities can help support further economic and labour market growth in the future.



Vertically Integrated Supply Chain

The Industry is vertically integrated across four sectors from mined bauxite to extruded aluminium.

The vertically integrated value chain makes Australian aluminium and the Industry unique on a global scale.

Vertical integration across the four sectors improves efficiency and lowers external risks. The efficiency and lower risk is a competitive advantage that is crucial to operations and enhances the Industry’s economic contribution.

Without the efficiencies of vertical integration, the Industry operations may be at risk.

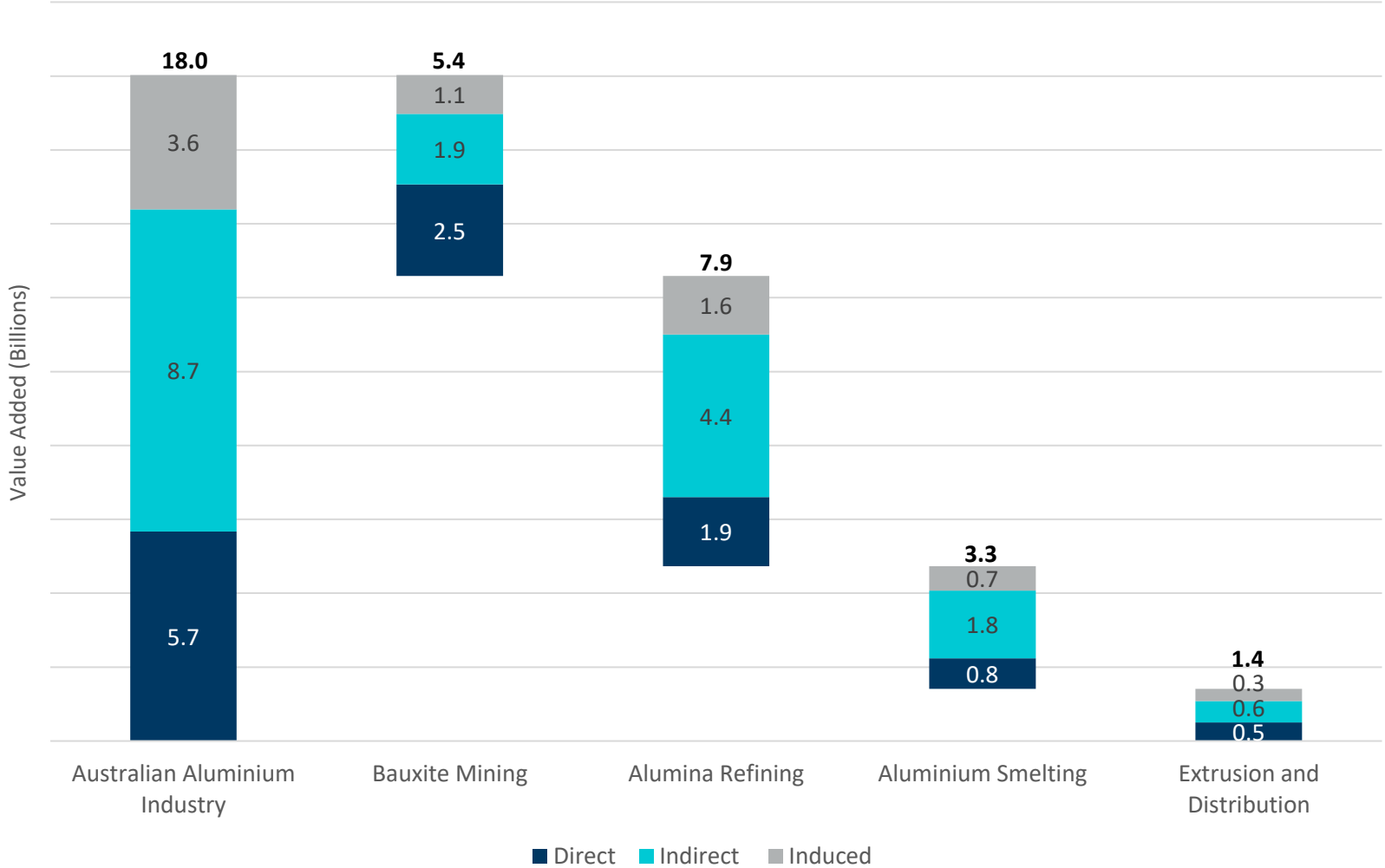
Economic Contribution (Value Added)

The Industry contributed an estimated \$18 billion in total economic value to the Australian economy in the 2023 calendar year.

The economic value is presented in value added terms:

- Direct value added from gross operating surplus, wages paid, and taxes on production is \$5.7 billion.
- Indirect value added from Industry operating expenditure that generates commercial activity in other sectors is \$8.7 billion.
- Induced value added from Industry operating expenditure that generates household activity is \$3.6 billion.

The economic contribution from the bauxite sector is comparable to the gold and nickel mining industries in Australia. However, the Industry’s downstream processing and manufacturing sectors mean the Industry provides a greater overall contribution to Australia.



* Due to rounding the sum of sector contributions may not appear equal to the total of each sector or the Industry.

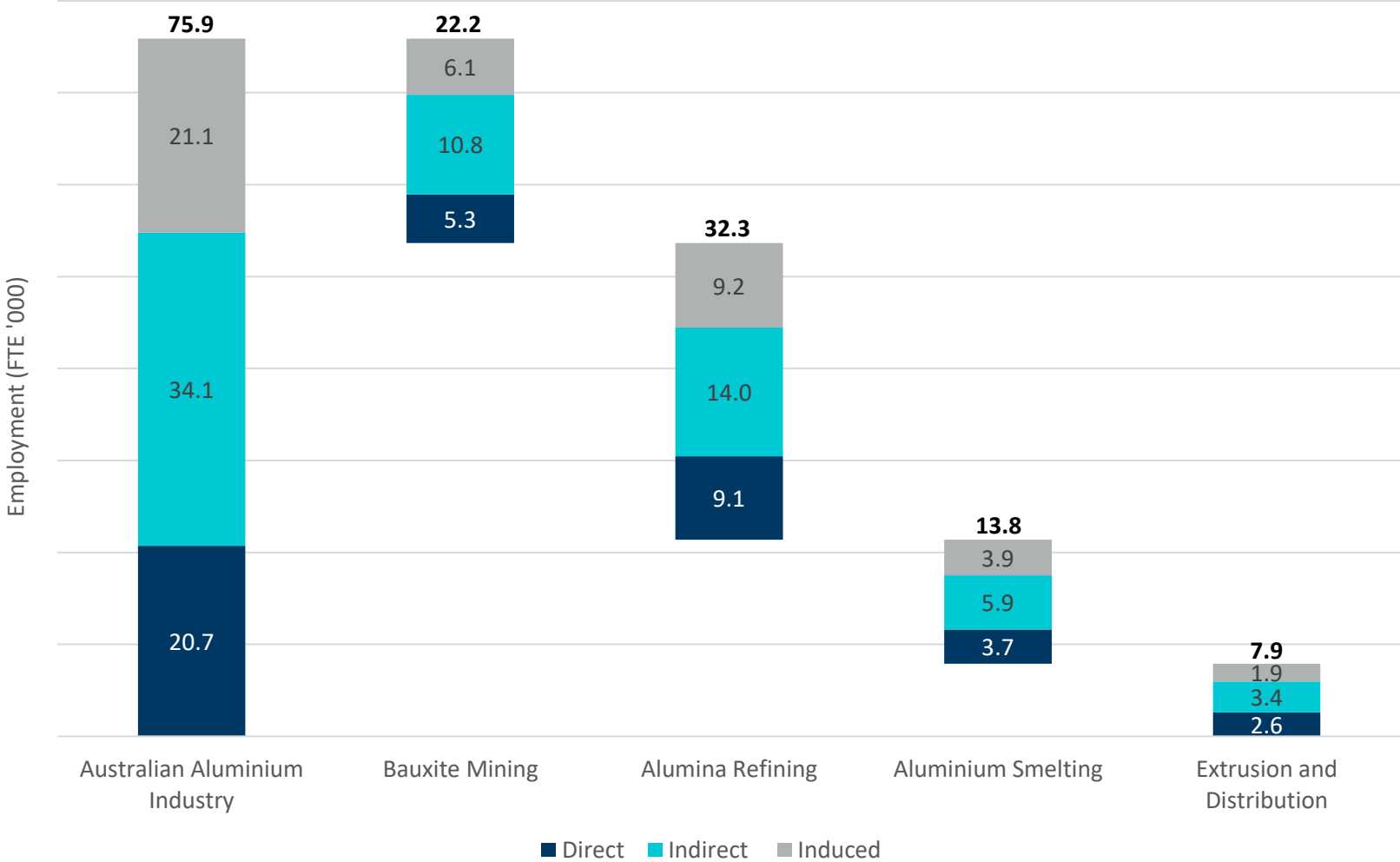
Economic Contribution (Employment)

In the 2023 calendar year, it is estimated that the Industry supported over 75,000 FTE-jobs, including direct, indirect, and induced positions.

- The Industry directly employs 21,000 highly skilled workers (FTE).
- Indirect employment supported through Industry expenditure and commercial activity is 34,000 workers (FTE).
- Induced employment supported through Industry expenditure and household activity is 21,000 workers (FTE).

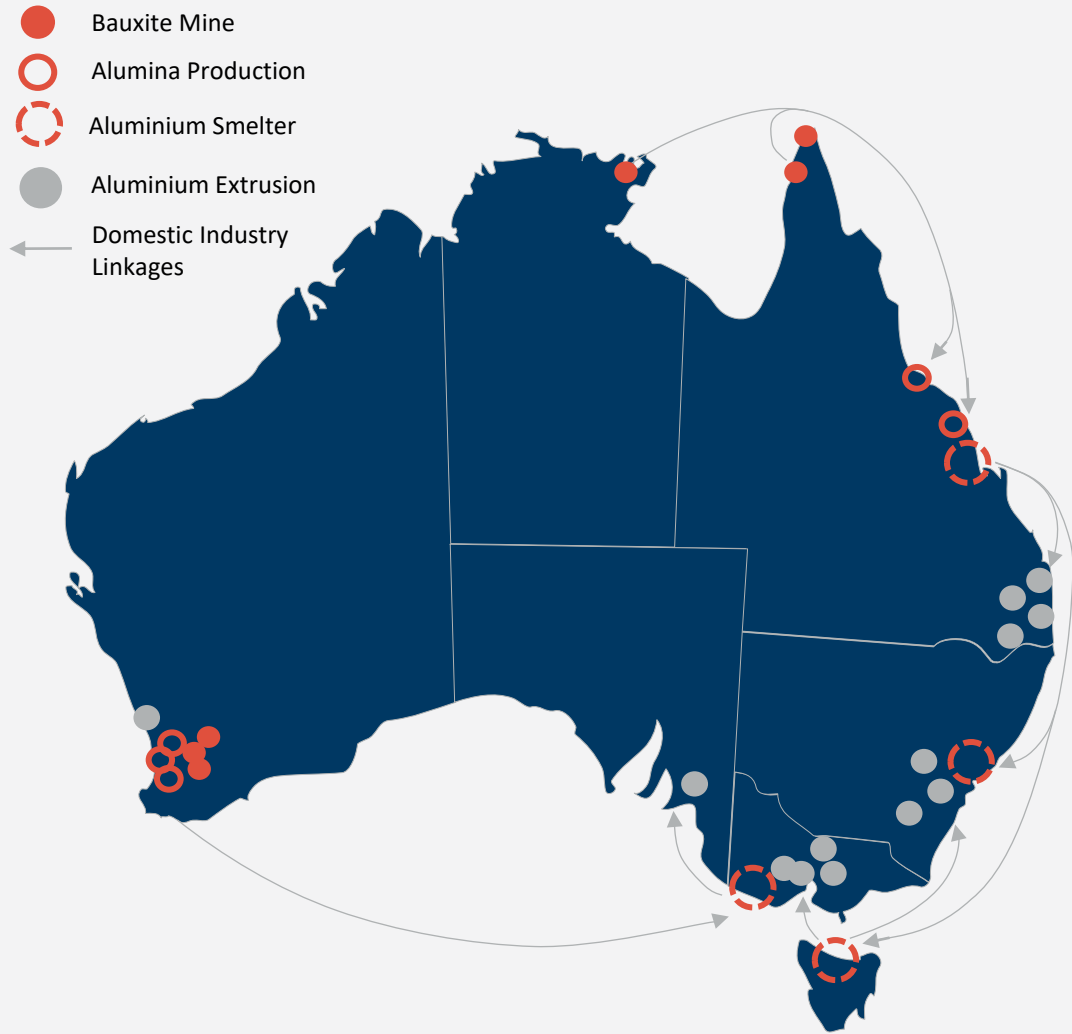
The Industry provides highly skilled employment and training opportunities, reflected in the Industry average earnings of \$134,000 for direct employees.

This Industry average wage is \$50,000 or 60% higher than the national manufacturing average.



* Due to rounding the sum of sector contributions may not appear equal to the total of each sector or the Industry.

Economic Contribution



*The Kwinana alumina refinery is included in the economic contribution data, which is based on the 2023 calendar year. The refinery ceased alumina production in 1H 2024 as a part of a phased curtailment and is therefore not included on this map.



Regional Contributions

The Industry is a key contributor to economic activity in the remote and regional communities where the Industry operates. For example, the Industry operates two bauxite mines in remote northern Cape York (QLD). The total economic contribution within the Cape York area is an estimated \$375 million and 3,632 workers (FTE).

The Industry contributes to all states and territories. In Western Australia and Queensland, the Industry contributes an estimated \$5.8 billion and \$4.2 billion in economic value and 18,500 and 16,000 workers (respectively) (direct, indirect and induced). State contributions are provided in Appendix B.



Workforce Implications

The Industry significantly contributes to the workforce through the contribution to employment and wages. The Industry also provides extensive training programs that uplift workforce skills.

Training offered by the Industry is reflective of its diverse activities. This includes training related to the operation of mining equipment, advanced manufacturing techniques, the management of supply chains and the management of business finances. The high value skills by working within the Industry are adaptable and can benefit other Australian sectors.



Indigenous Communities

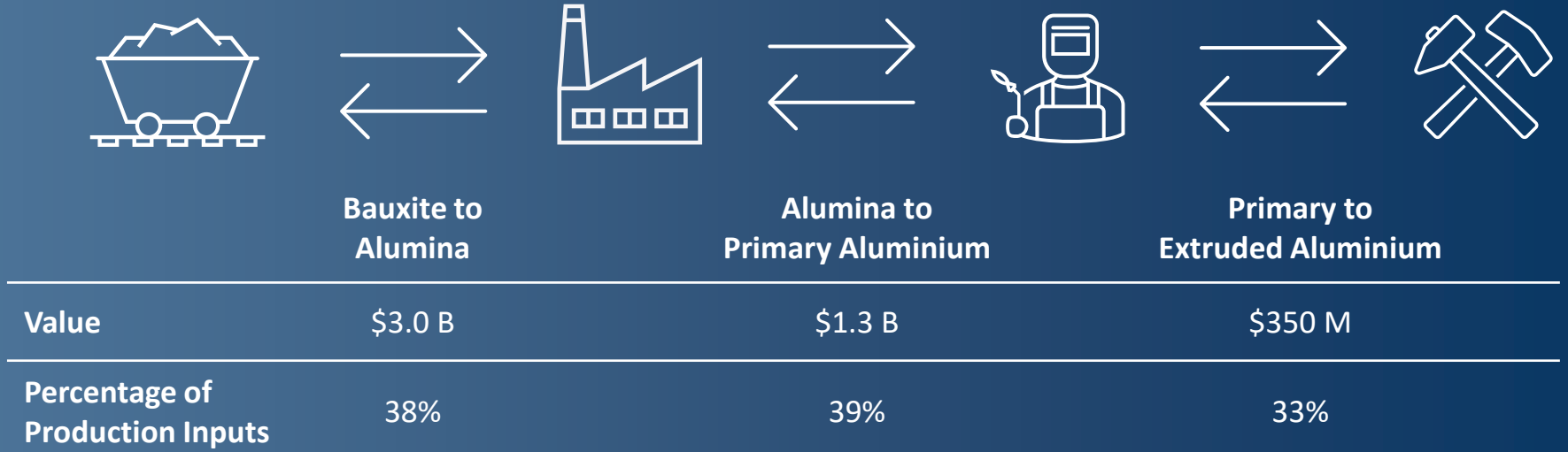
The Industry strongly supports indigenous communities. At remote bauxite mines, the local indigenous workforce contributes to 17-30% of the employment. In addition, Industry expenditure contributes to local indigenous businesses and community programs.

Mutual benefits for indigenous communities and the Industry are created through employment within bauxite operations alongside Industry contributions to the local areas.

Vertical Integration and Interdependencies

Each sector of the Industry has upstream and downstream linkages that provide a reliable source of inputs or customers.

Vertical integration creates efficiencies and a competitive advantage. Without vertical integration, the current production levels of each sector would likely be at risk.



Upstream Linkages

Upstream linkages provide the critical inputs required for operations. The upstream sectors of bauxite mines and alumina refineries provide resources to aluminium smelters and extruders.

If a bauxite mine closed in south-west WA:

- It is highly unlikely bauxite from south-west WA could be effectively refined elsewhere globally due to its unique chemical properties.
- Downstream sectors would experience higher difficulty sourcing inputs for aluminium smelters, causing increased exposure to global Aluminium Industry and supply chain disruptions. This would likely increase the cost of production and discourage global companies from producing in Australia.

Downstream Linkages

The downstream linkages provide local demand for produced goods. Aluminium smelters and extruders demand consistent local supply from bauxite mines and alumina smelters. This creates a reliable base for revenue, lowering risks and attracting investment to Australia.

If an aluminium smelter closed on the eastern coast:

- The alumina sector may have to increase exports overseas and the extrusion sector would likely source more primary aluminium from overseas.
- All sectors would be exposed to disruptions in the global Aluminium Industry. This would likely increase the cost of production and discourage global companies from producing in Australia.

Interdependency Scenario

An illustrative scenario applied a reduction in south-west bauxite mining capacity by one-third. The effect on economic contribution was estimated as:

- A reduction in the bauxite mining sector by \$420 million in value added (direct, indirect and induced) and 620 workers (FTE) (direct).
- A reduction across the Industry by \$2,700 million in value added (direct, indirect and induced) and 10,600 workers (FTE) – or an approximate 15% reduction in the 2023 \$18 billion Industry contribution.

A reduction in bauxite mining capacity in south-west WA could have significant implications for the Industry. This would likely result in a proportionate decrease in alumina refining in the region, as these refineries are specialised to handle the high silica content of south-west WA bauxite. Additionally, south-west WA alumina refineries are among the lowest emitters globally. Therefore, their reduced output could lead to increased global emissions, as higher-emission refineries increase production.

The impact on Australian aluminium smelters due to the loss of south-west WA bauxite capacity is also a potential concern, although this has not yet been quantified.

Table: Interdependency Scenario (One-Third Reduction in South-West WA Bauxite Mining) – Industry Economic Contribution

	Base Case	Scenario	Reduction – Bauxite Sector	Reduction – Industry	Reduction – Industry
Revenue (\$ million)	21,700	18,700	800	3,000	16%
Value added (\$ million)	18,000	15,300	420	2,700	15%
Employment (FTE)	75,900	65,300	620	10,600	14%

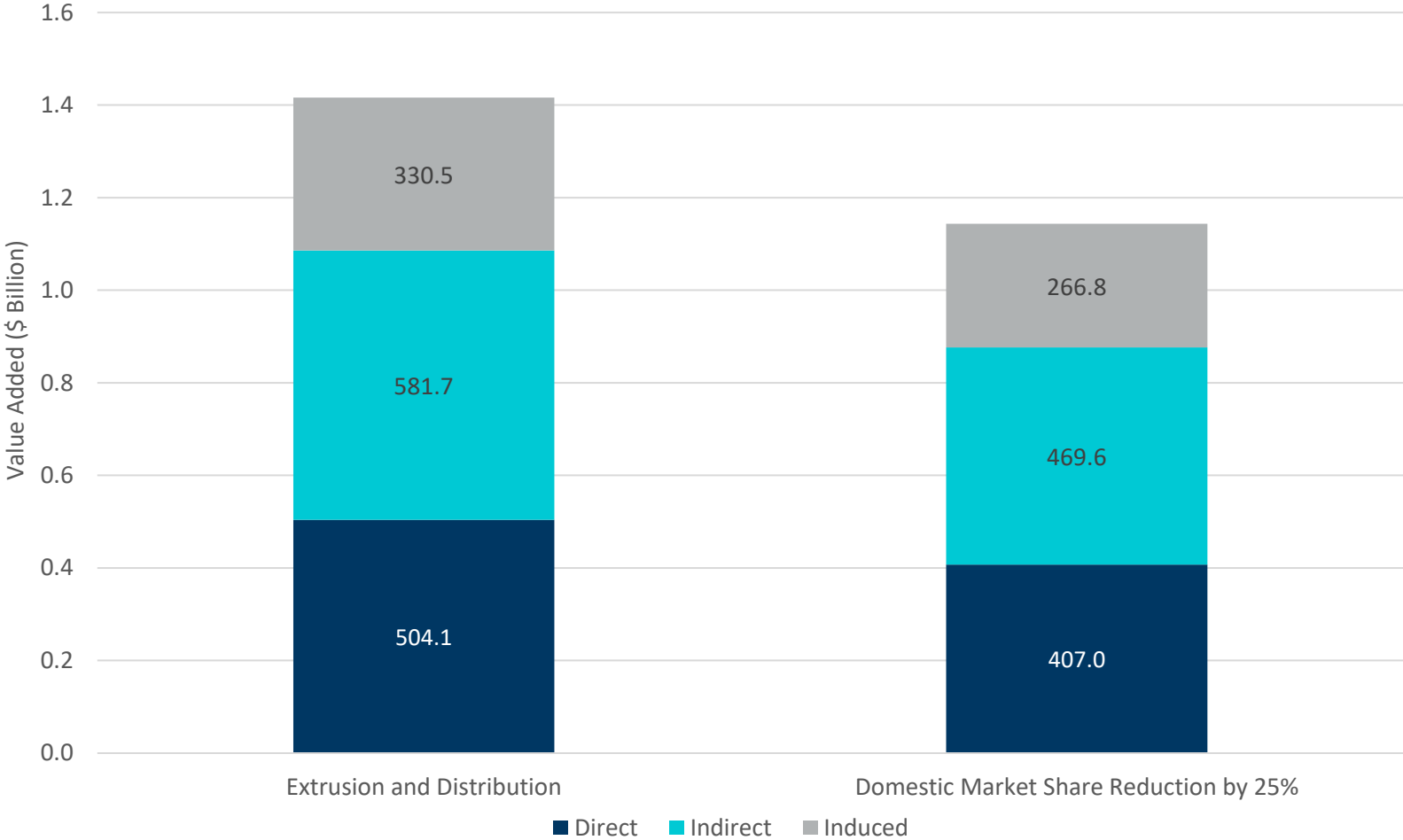
International Trade Challenges

The Industry remains internationally competitive. The aluminium extrusion sector noted challenges from international competitors that can supply products into Australia at prices below the cost of production due to subsidies.

The aluminium extrusion sector has successfully applied to the Australian Anti-Dumping Commission for the implementation of trade remedies. Anti-dumping measures for aluminium extrusion products in Australia are currently placed upon China, Malaysia and Vietnam imports. Other international markets also apply anti-dumping measures for extruded aluminium imports (including the US, UK and Canada).

The Industry may require further support for free and fair trade within extruded, semi-fabricated and fabricated aluminium products. Without action, aluminium extruders and fabricators in Australia may lose market share and reduce production volumes. This could impact related sectors and reduce the economic benefits to Australian communities.

If the Australian extrusion and distribution sector's domestic market share were to decrease by 25%, it could result in a reduction of 34,000 tonnes in production, assuming alternative export markets cannot be secured. This could lead to a \$272 million loss in economic value and the potential loss of over 1,500 FTE jobs, including direct, indirect, and induced positions.



*The vulnerabilities of the upstream sectors are analysed in a separate report commissioned by the AAC.

Future Growth Prospects

The Industry has the opportunity to maintain and grow its economic contribution. Where opportunities materialise, there is potential for significant medium and long-term growth for the Industry and welfare outcomes for Australian communities.



Global Opportunities for the Industry

The Industry exports significant volumes to international markets. In the short to medium term, global primary aluminium demand is expected to grow 3.8% per annum to 2029 (Department of Industry, Science and Resources).

This growth is driven by sustained demand levels and increasing need for products that support the green economy. New demand for aluminium products generated by the green economy includes framing for solar panels, energy storage systems, transmission lines, and expanded use for eclectic vehicles within the automotive industry.

The Industry can achieve production growth that matches the rate of global demand increase. However, to maintain current production levels and achieve growth, it is likely that the Industry will need to overcome regulatory and policy barriers with government support. For example, currently, potential bauxite mines can wait a decade or longer for approvals to begin operations.



Future Advanced Manufacturing Prospects

Despite the significant sovereign capabilities already provided by the Industry, there are further opportunities for advanced manufacturing within it. Additional manufacturing prospects may arise from innovations in product development (such as high-purity alumina) and the production of core manufacturing inputs (like aluminium fluoride and green caustic soda).

Enhancing advanced manufacturing capabilities within the Industry will likely add further value to the economy and improve workforce skills. Industry Members stated that without policy support, there is a risk that these Industry prospects will not be fully realised, and the economic opportunity is lost for Australian.



Green Aluminium

Industry members are aiming to achieve net-zero emissions by 2050, with interim targets and decarbonisation initiatives in place. They have already begun taking steps to reduce their carbon footprint across all sectors.

For example, bauxite mines have directly invested in renewable electricity generation, alumina refineries have begun adapting processes to lower emissions, and aluminium smelters are working with the government and renewable energy providers to secure new power contracts. Producing green aluminium could help attract international demand and investment to the Industry.

Policy and Regulatory Barriers Affecting the Aluminium Industry

The Industry Members stated that numerous policy and regulatory barriers must be overcome to generate future investment, maintain and expand operations. These barriers were outlined by Industry Members as a significant factor for international investors when choosing the most favourable market for aluminium production.



Regulatory Approvals

Australian policies and regulations ensure community safety and fair value from Industry operations. However, members indicated that the rigorous approval process compared to foreign industries can create barriers to investment, including:

- Long and uncertain regulatory frameworks that increase upfront investment costs.
- Inconsistent regulatory approaches by different government departments and jurisdictions.

This is especially challenging for the bauxite sector, where projects can face approval delays of over a decade.



Import Competition

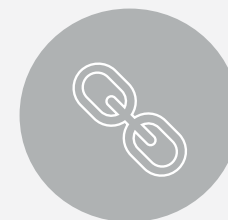
Downstream sectors of Industry are exposed to foreign competitors that, at times, sell below production cost. If unfair trade practices occur, the Industry could lose its customers and revenue, preventing future investment and value for Australians.



Decarbonisation and Energy Transition

The Industry may be at risk of losing international competitiveness due to higher energy capital costs compared to foreign competitors, which could further reinforce Australia's reputation as a higher-cost producer.

The transition to decarbonisation and renewable energy requires significant capital investment in energy generation and transmission to move away from fossil fuels, potentially leading to higher costs for the Industry (and others) in the short to medium term.



Supply of Industry Materials

The supply of key materials used for Industry production can be vulnerable to external and internal risks.

- Firstly, vertically integrated supply chain establishes interdependencies. This increases efficiencies but means a disruption to production in one sector can negatively impact all the Industry sectors that rely on that production.
- Secondly, inputs sourced from international markets can be unreliable over the long-term. Industry Members have indicated that foreign sourced inputs can be vulnerable to international shocks and supply chain issues.

Observations for Policy and Regulatory Improvements – 1

To ensure the Australian Aluminium sector's economic contribution is maintained and grows into the future, Australian governments must ensure a supportive environment for investment.

The following policy and regulatory observations from Industry Members outline ways policy and regulation can be improved.

Implementing policy adjustments to support these observations should help the Industry sustain and grow:

- sovereign capabilities that provide reliable goods and highly-skilled jobs,
- a vertically integrated industry that delivers a comparative advantage, and
- significant economic contribution to the Australian economy and regional areas.



Timely, Clear and Consistent Regulatory Processes

Members response to Policy and Regulatory Barrier 1 (Regulatory Approvals)

To encourage new investment, the Australian regulatory approval process for the Australian Aluminium Industry must be timely, clear and consistent. An adapted regulatory process needs to include:

- A single point of contact within government.
- Holistic Consideration of impacts and benefits in the regulatory evaluation of projects.
- Consideration of shortened and more transparent approval lead-times.
- Improved Consistency within and between levels of government
- Early engagement with Industry on regulatory design or enhanced regulatory cost-recovery.



Critical Minerals List

Members response to Policy and Regulatory Barrier 1 (Regulatory Approvals)

Members response to Policy and Regulatory Barrier 4 (Supply of Industry Materials)

Bauxite, alumina, and aluminium should be added to the Australian Critical Minerals List, as they are crucial resources for Australia and part of a vulnerable supply chain. Including these materials on the list would streamline regulatory processes and facilitate funding for decarbonisation initiatives.

Additionally, this recognition would enhance the Industry's ability to attract international investment in a competitive market.

Observations for Policy and Regulatory Improvements – 2

To ensure the Australian Aluminium sector's economic contribution is maintained and grows into the future, Australian governments must ensure a supportive environment for investment.

The following policy and regulatory observations from Industry Members outline ways policy and regulation can be improved.

Implementing policy adjustments to support these observations should help the Industry sustain and grow:

- sovereign capabilities that provide reliable goods and highly-skilled jobs,
- a vertically integrated industry that delivers a comparative advantage, and
- significant economic contribution to the Australian economy and regional areas.



Decarbonisation and Energy Transition Support

Members response to Policy and Regulatory Barrier 2 (Decarbonisation and Energy Transition)

Transitioning to renewable energy within the Industry requires significant capital investment. There is a risk of losing price competitiveness in the short term or losing customers in the long term. To address this, the government must provide:

- Policy support for Industry that targets specific energy transition projects.
- Further electricity planning across the electricity network.



Fair Trade Policies

Members response to Policy and Regulatory Barrier 3 (Import Competition)

Unfair import competition in the downstream sectors of the Industry is understood by Industry Members to be threatening future production and community outcomes. The importation of extruded and fabricated aluminium manufactured with production subsidies is discussed in Chapter 5.

Industry Members stated that the Australian government should take further action to ensure Australian manufacturers are not exposed to cost subsidised imported aluminium. This should include further strengthening the trade remedies process to better support free and fair trade.

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Appendices

Appendix A – Modelling Approach

The analysis in this report is measured using the *FTI Consulting Regional Input-Output Framework (FRIO)*. Both economic contribution studies and the FRIO framework estimate an industry's impact on the broader economy at a specific point in time. The economic contribution is divided into:

- **Direct contribution:** This refers to the benefits derived from Industry operations, based on the value added through the sales of production from individual projects. It is estimated using economic metrics such as wages, taxes on production, and gross operating income (EBITDA). For the Australian Aluminium Industry, data was sourced from the AAC, industry participants, and government sources.
- **Indirect contribution:** This represents the economic benefits resulting from Industry expenditure, specifically payments for the supply of goods and services. It is estimated using the latest ABS national input-output tables. The FRIO framework also provides a regional disaggregation (including Australian states and sub-state regions) of both indirect and direct contributions.
- **Induced contribution:** This measures the economic impact of Industry activities on the household sector, focusing on expenditure that reaches households and is subsequently spent, stimulating business activity. It is calculated using similar methods as those for indirect contribution.

The FIRO framework provides estimates of the direct, indirect and induced contribution of the Australian Aluminium Industry. This represents the volume of turnover, value added, and the employment contribution by region, state and the national economy. The outputs include the level of intra-sector-trade between each of the sectors within the Australian Aluminium Industry. Expenditures from intra-sector trade are excluded from total intermediate costs to prevent double counting.

For more details on the approach to estimating these economic contributions, please refer to the appendix of the full report.

Appendix B – State Contributions (Value Added)

Total State Contribution (Direct, Indirect and Induced) by Sector (\$ million)

	WA	QLD	NSW	VIC	NT	TAS	SA	Cross border	Total
Bauxite Mining	2,036	1,532	0	0	420	0	0	1,452	5,439
Alumina Refining	3,631	1,732	0	0	0	0	0	2,488	7,851
Aluminium Smelting	0	755	892	415	0	249	0	1,008	3,320
Extrusion and Distribution	82	289	175	280	13	29	78	469	1,414
Australian Aluminium Industry	5,749	4,308	1,067	696	433	278	78	5,495	18,025

State Contribution by Direct, Indirect and Induced (\$ million)

	WA	QLD	NSW	VIC	NT	TAS	SA	Cross border	Total
Direct	2,606	1,932	400	288	288	115	44	0	5,673
Indirect	2,487	1,811	501	297	122	137	25	3,342	8,722
Induced	656	565	167	111	23	25	9	2,075	3,630
Total	5,749	4,308	1,067	696	433	278	78	5,418	18,025

Appendix B – State Contributions (Employment)

Total State Employment (Direct, Indirect and Induced) by Sector (FTE)

	WA	QLD	NSW	VIC	NT	TAS	SA	Cross border	Total
Bauxite Mining	6,376	6,392	0	0	1,327	0	0	8,136	22,232
Alumina Refining	11,740	6,214	0	0	0	0	0	14,315	32,268
Aluminium Smelting	0	2,464	2,796	1,383	0	951	0	5,886	13,479
Extrusion and Distribution	402	1,386	819	1,310	68	145	390	3,366	7,887
Australian Aluminium Industry	18,518	16,457	3,615	2,694	1,395	1,096	390	32,093	75,866

State Contribution by Direct, Indirect and Induced (FTE)

	WA	QLD	NSW	VIC	NT	TAS	SA	Cross border	Total
Direct	7,966	8,174	1,700	1,417	545	689	234	0	20,725
Indirect	7,441	5,787	1,344	1,010	706	312	156	17,309	34,064
Induced	3,111	2,496	570	267	144	95	0	14,394	21,077
Total	18,518	16,457	3,615	2,694	1,395	1,096	390	31,703	75,866



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