Regional Development Australia
KIMBERLEY

Mining and Resource Industry

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Map of the Kimberley Region

Legend

- Sealed major road
- Sealed minor road
- Unsealed road
- 4WD track
- 4WD track only
- National highway
- National route
- Marine park boundary
- Reef
- Conservation park
- Marine park
- National park
- Airport
- Local Government Area boundary

Approximate driving distances (km)

	Perth GNH	Perth NWCH	Broome	Derby	Fitzroy Crossing	Halls Creek	Wyndham	Kununurra	Darwin
Perth GNH	-	-	2237	2391	2565	2843	3197	3202	4039
Perth NWCH	-	-	2374	2528	2701	2990	3345	3349	4176
Broome	2237	2374	-	221	395	683	1037	1042	1869
Derby	2391	2528	221	-	259	547	894	899	1733
Fitzroy Crossing	2565	2701	395	259	-	289	642	647	1474
Halls Creek	2843	2990	683	547	289	-	354	359	1186
Wyndham	3197	3345	1037	894	642	354	-	100	929
Kununurra	3202	3349	1042	899	647	359	100	-	829
Darwin	4039	4176	1869	1733	1474	1186	929	829	-

GNH = Great Northern Highway, NWCH = North West Coastal Highway

Mining and Resource Industry

Executive Summary

The mining and resource industry generates $506.63M[1] or 9.84% GRP. It employs 644 people or 4.2% of jobs in the region, 16.6% of those people are Indigenous[2]

The mining and resource sectors have been historically defined by low volume products of gold and diamonds along with small volumes of iron ore. However, it on the cusp of significant developments as new and proposed projects are diversifying the extractive mining sector to include mineral sands, nickel, copper, rare earths and crude oil. In general, the industry is seeing steady growth with an 18% increase in revenue recorded 2017-2018.

The region is well placed to capitalise on increased global demand for clean energy and rare earths. There is significant opportunity for development of potash, mineral sands and tight shale oil in the region.

Due to their compact nature, historically dominant products of gold and diamonds have not imposed any significant requirement on the region's road and port networks. However, increasing demand from diverse bulk minerals, rare earths and potential onshore oil and gas production will challenge existing road and shipping infrastructure.

Additionally, onerous and costly regulations, difficulties in capital raising and a poor logistic infrastructure create barriers to development.

RDAK recommends

- Australian Government streamline and reduces costs associated with various multi-agency approval processes to expedite private sector investment and industry development.
- Review how the Environmental Protection and Biodiversity Conservation Act (EPBC Act) is interpreted and administered by its public officers, seeking for a more appropriate balance to support regional development and the objectives of the Act.

[1] Kimberley Development Commission Economic Snapshot 2019
[2] See ref 2

The Snapshot

Generates $506.63 million dollars[3] 9.84%

Employ 644 people or 4.2% of jobs 16.6% are Indigenous[4]

Low volume products of gold and diamonds

New markets in Iron Ore, Oil & Gas

Emerging Markets Mineral Sands and Rare Earths

Industry is seeing steady growth with an 18% increase in revenue 2017-2018

Better infrastructure required for increasing product scale and diversity infrastructure

Industry Overview

The Kimberley region is considered massively underexplored in comparison to other known mineralised belts within Western Australia, yet it boasts the right geological terrain, metamorphic grade and tectonic setting to host multiple world-class deposits[5].

Strategically located on the southern margins of South-East Asia, the region is well place to access global markets as the international demand for clean energy and rare earth commodities soar.

The Kimberley's relatively small industry generated $432m for the region in 2018-2019. The sector is estimated to employ 644 people or 4.2% of jobs in the region. 16.6% of those jobs are undertaken by indigenous people.[6]

The resources sector in the Kimberley has a history of being heavily reliant of one or two commodities, particularly iron ore and diamonds. However, it is on the cusp of significant diversification as commercial quantities of rare earths and other minerals are identified and commercialised.

In general, the industry is seeing steady growth with an 18% increase in revenue recorded 2017-2018. This was mainly driven by the recommencement of iron ore production out of Koolan Island.

Outlook continues to improve with developments in:

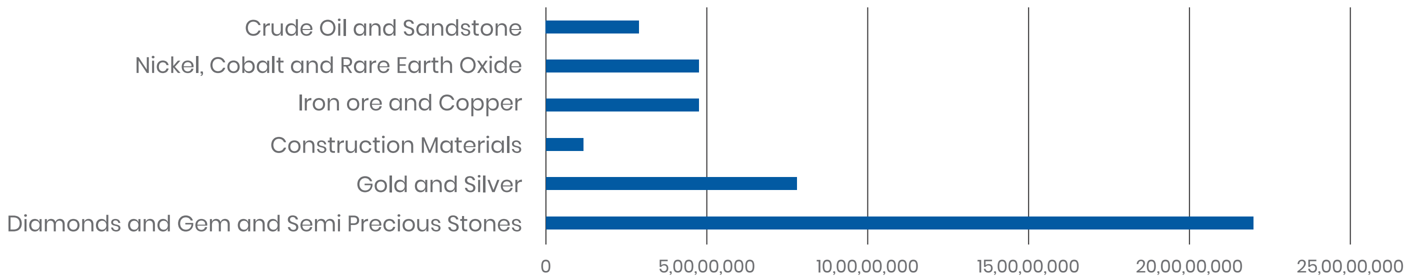
- Koolan Island Iron Ore production $250 million to GVP
- Savannah Project's Nickel and Copper mine production $200 million to GVP
- Northern Minerals Dysprosium production $20 million to GVP
- Buru Energy Ungani Oil fields production 1400 BOPD

With exception of offshore oil and gas production in the Browse Basin, most of the extractive mining in the region has been in located in central and east Kimberley.

However, emerging projects will see increased developments in the West Kimberley.

[3] Kimberley Development Commission Economic Snapshot 2019
[4] See ref 2
[5] Hexagon Resources
[6] See ref 2

Production Value by Commodies 2018-19



Logistics

West Kimberley is accessed from the south by the sealed Great Northern Highway. Access to the East Kimberley is via the national Victoria Highway from the east and Great Northern Highway from the west. These roads can occasionally become comprised and cut off by fire, flood and cyclonic events.

Shipping access into the Kimberley is via the main ports of Broome, Derby, and Wyndham and the lesser Yampi Sound Ports of Cockatoo and Koolan Islands.

Main commercial airports operate in Broome and Kununurra along with lesser airports in all major townships. There is a substantial community-owned airbase on the Dampier Peninsula currently servicing offshore Oil and Gas industry. There is potential to utilise the joint use RAAF Curtin Airbase near Derby, which has capacity for an extensive range of cargo carriers.

Due to their compact nature, historically dominant products of gold and diamonds have not imposed any significant requirement on the region's road and port networks. Likewise, the bulk of iron ore has been exported direct from offshore facilities direct from the mine site at Koolan Island.

However, increasing demand from diverse bulk minerals, rare earths and potential onshore oil and gas production will challenge existing road and shipping infrastructure. Projected growth in annual tonnage exported from mainland ports and roads likely to increase from less than 200,000 tonnes (in 2017/18) to over 4 million tonnes in 2030[7]. Currently, existing key infrastructure is already under duress. For example, the Port of Broome presently has no bulk storage tanks capable of storing oil from Buru Energy's Ungari Oil fields, therefore oil has had to be transported a longer distance for export via Wyndham Port.

Industry sectors

Diamonds

The Kimberley is famous for world class diamonds and makes up the entire Western Australian diamond output. Diamonds, gems and precious stones account for more than half of the total mineral production in the Kimberley, with total gross sales valued at $219.2M or 8% of all wealth produced in the region[8].

Rio Tinto's Argyle Diamond mine, south of Kununurra has produced more than 4.1M carats since opening in 1983. It is the lead contributor for the sector contributing 6% of the total gross product of the region, employing 412 workers[9]. The mine has produced around 18% of the world's diamonds during its operation and it is scheduled for closure and rehabilitation during 2020. This will have a major negative impact on the region's economic output and the local community in the east Kimberley.

The Ellendale Mine east of Derby produced approx. 50% of the world's yellow diamonds - almost 1.3 million carats of gem and industrial-quality diamonds from 2002 until its closure to 2015. Recent exploratory drilling around this area has identified new prospects and is considered a significant discovery. Gibb River Diamonds have mining and exploration leases at Ellendale and Blina Diamond Projects. Successful engagement with local Traditional Owner group is ongoing.

Although unlikely to replicate the scale of Rio Tinto's Argyle Diamond Mine, it presents medium to long term opportunity for local employment and contribution to the regional economy.

[7] ATEA Consulting Kimberley Snapshot 2020
[8] Kimberley Development Commission
[9] Rio Tinto Argyle Diamond Mine

Iron Ore

Iron ore bodies in on Koolan and Cockatoo Islands, Buccaneer Archipelago boasts Australia's highest-grade hematite Ore reserves which average 65.5% Fe[10]. Mt Gibson Iron have recommenced ore production from Koolan Island, employing 315 people and exporting an excess of 25Mt since April 2019. Cockatoo Island operations are currently in care and maintenance mode.

The east Kimberley based KMG Ridges Iron Ore Mine has been in care and maintenance since 2015. This mine has considerable resources of lower grade ore and could reactivate if iron ore prices become viable.

Gold

The region has a history of gold mining dating back to the short-lived Halls Creek gold rush in 1885. Today, there are several small working mines and proposed tenements under exploration and development.

Pantoro's Nicholson's Find Project, south west of Halls Creek has a current production rate of 50,000–55,000 ounces a year which is forecast to increase to 80,000 ounces.[11] Hexagon have also announced a prospect at Halls Creek Project which is in early stage gold and base metal exploration and development.

Mineral Sands

The Sheffield Resources Thunderbird Project is a proposed large-scale, long-life mineral sands mining and processing project located in West Kimberley. The mine is projected to create 400 jobs during construction and 280 direct jobs over the 42-year life of the mine.

Sheffield has secured binding agreements for a significant proportion of the Zircon and Ilmenite production, however latest announcements from Sheffield Resources advise they await acceptable equity funding solution before a commencement date is secured.

Heavy Rare Earths

Australia's first heavy rare earth mine 'Brown's Range' dysprosium mine is located south east of Halls Creek. This mine is expected to scale up from pilot to full operations by 2020-21. The Browns Range access road has been included as one of the priorities in the Infrastructure Priority List recently published by Infrastructure Australia. A globally significant deposit, the Northern Minerals Browns Range project aims to be the next significant dysprosium producer outside of China.

Graphite

Graphite production in the region is under proposed exploration and development. The Hexagon owned McIntosh Project, is a large-scale, high-quality flake graphite deposit located north east of Halls Creek which is currently undergoing pre-feasibility studies.

Potash

Agrimin's proposed potash mine is located on the remote Lake Makcay, near the NT border in central Kimberley. It has reportedly the largest deposits of sulphate of potash in the world. Potentially Australia's first potash mine, it is estimated to be able to produce 426,000 tonnes per year as dry granular product over a minimum 20-year mine life span.

Oil and Gas

Major resource companies have invested heavily in Western Australia to increase production of liquefied natural gas from the Browse Basin[12]. However, due to environmental and community concerns all gas processing is conducted in the Northern Territory or on floating LNG vessels. The economic contribution from this sector is therefore not directly attributed to the Kimberley GVP. However, servicing of offshore rigs infrastructure and labour force transfer requirements contribute significantly to the local economy.

There is a considerable opportunity for onshore tight shale development within the region. Several companies have identified sizable resources of recoverable oil and gas. Reports indicate these projects could realise a minimum of several billion to GVP and 2,000 long term direct jobs. However, environmental and community concerns around hydraulic extraction (fracking) have impacted the social licence for production and exploration ventures.

[10] Mt Gibson Iron
[11] Pantoro
[12] WA Government Department of Jobs, Tourism, Science and Innovation

STRENGTHS	OPPORTUNITY	BARRIERS	RISKS
• Strategic location to global markets • Natural resource rich ground • Large areas of suitable land • Underexplored formations	• Increased global demand • Improve Indigenous engagement & employment • Diversification of products • Building scale	• Complex regulation • High input costs • Lack of skilled or experienced labour • Clarity and regulation of Country of Origin labelling • Ability to attract capital investment	• Changing commodity prices • Complex regulatory processes • Environmental and social aversion to mining practises

Industry Opportunity

Global Demand and Access to Markets

The region is strategically located to SE Asia to capitalise on the increasing global demand for clean energy and rare earth commodities. The region boasts significant world class reserves of several key elements that provide potential for sustainable economic and social development for the Kimberley.

Industry Diversity

Potential expansions to heavy rare earths, potash and gold will diversify historically limited commodities and provide opportunity for local jobs and economic advancements across a broader range of fields.

On shore production of tight shale oil and gas represents a major opportunity if the projects can create a social licence and overcome technical challenges.

Indigenous Engagement

With 91% of Kimberley land falling under Native Title, and Indigenous people making up 50% of the Kimberley population it is essential that partnership and agreements with Indigenous groups are developed. Good relationships will assist business reach Indigenous Employment Targets aimed at Closing the Gap and create positive social and economic outcomes for the region.

Infrastructure

Major road improvements on the Tanami and Duncan Roads will impact positively on mining prospects in the region, opening access to mineral rich land and supply chains to market. Increasing the scale and diversity of products will lead to higher demands on bulk port facilities, creating jobs and revenue for the sector.

Collaborative Engagement

Due the small scale of most operations and the diversity of commodities it is imperative that sectors work collaboratively and innovatively with each other and with government to invest in common use infrastructure required by industry.

Industry Barriers

Regulations

The Mining Act 1978 and regulations covers mining activity on the Western Australian mainland with Commonwealth legislation covering exploration and exploitation beyond the first three nautical miles from the shoreline[13]. Developers are also governed by the Environmental Protection and Biodiversity Act, including stringent provisions around flora and fauna studies and protecting water management amongst others, along with Native Title considerations. Negotiating regulations and permits is a complex, lengthy and costly burden undertaken by all potential proponents. Any streamlining of regulations to create efficiencies should be considered.

Funding

Mining sector prospectors and operators are often small companies with limited financial resources or cash flows. Raising equity and securing funding is a primary barrier to the progression of many feasible projects.

Industry Risks

- Changes in the global commodity pricing presents a risk to the profitability and viability of mining projects.
- Environmental challenges of flood, fire and cyclonic events present a risk to mining assets as they do elsewhere in the world.
- Public acceptance of mining activity is a risk for many projects. Opposition to fracking for example or the on-shore processing of gas north Broome has demonstrated how public support or the lack of can, influence whether the mining and energy sector can development in ways to deliver on its potential to drive regional growth.

Report Recommendations

Recommendation One

Australian Government streamline and reduces costs associated with various multi-agency approval processes to expedite private sector investment and industry development.

Recommendation Two

Australian Government review how the Environmental Protection and Biodiversity Conservation Act (EPBC Act) is interpreted and administered by its public officers, seeking for a more appropriate balance to support regional development and the objectives of the Act.

[13] ATEA Consulting Kimberley Snapshots

This bibliography includes references for the full Business in the Kimberley Report.

1. ABARES Value of agricultural production and land use, Kimberley region
2. ABC News Australian Government's ban on live exports to Indonesia 'irrational', cattle farmers tell court. 2017
3. ABS 2016 Highest Year of School Completed by Indigenous Status by Sex
4. ABS Census 2001-2016
5. ATEA Consulting Kimberley Snapshots 2020 Volumes 1-10
6. Austrade/ Tourism Research Australia 2018
7. Australian Bureau of Statistics – Quick Stats Kimberley Region
8. Australian Bureau of Statistics 2016, 'Kimberley' (SA3), Community Profile'
9. Australian Bureau of Statistics Census Quick Stats 2001 & 2016
10. Australian Bureau of Statistics, Socio – Economics Indexes for Areas Kimberley 2018
11. Bain & Company Understanding Southeast Asia's Emerging Middle-Class Report 2019
12. Budget Direct – Average Holiday Costs Statistics 2019
13. Cambridge Gulf Limited
14. Centre for Indigenous Economic Policy Research, ANU (2014): 'Indigenous employment and businesses: Whose business is it?
15. Comparison of impacts of economic and social factors on countries' logistics performances: a study with 26 OECD countries, Research in Logistics and Production Guner, S. and Coskun, E.
16. CRCNA – Aquaculture Industry Situational Analysis (AISA) – Key Findings & Recommendations Summary
17. CRCNA Preparing the way for growth in aquaculture in Northern Australia: Industry priorities and vision 2028
18. CSIRO Northern Australia Water Resource Assessment Fact Sheet
19. Department Foreign Affairs and Trade - Indigenous Tourism Surge 2019
20. Department of Primary Industries and Regional Development - Status of The Western Australian Pastoral Rangelands 2018
21. Department of Primary Industries and Regional Development AGRIC Report 2019
22. Department of Primary Industries and Regional Development Regional Price Index Report 2019
23. Department of Prime Minister and Cabinet 'The Indigenous Business Sector Strategy: Supercharging Indigenous Business Start-Up and Growth 2018-2028'
24. Department of Prime Minster and Cabinet - Closing the Gap Refresh 2019
25. Department of Prime Minster and Cabinet - Closing the Gap Report 2018
26. Department Primary Industries and Regional Development - Boosting aquaculture in WA
27. Department Primary Industries and Regional Development – Status Report of the Fisheries and Aquatic Resources North Coast Bioregion 2016-17
28. DFAT Indigenous Tourism Surge 2019
29. Hexagon Resources
30. Housing Western Australian – Aboriginal Employment Plan Kimberley Pilbara
31. How to employ indigenous workers?' Charles Sturt University and University of Technology Sydney 'Determining the factors influencing the success of private and community-owned indigenous businesses across remote, regional and urban Australia'
32. Inquiry into Opportunities for Expanding Aquaculture in Northern Australia
33. Interview Ian McKenna, Owner, East Kimberley Construction
34. Interview Jon Condon Beef Central Magazine 2018
35. Interview Mr Alfred Nagaiya, Shire Wyndham East Kimberley Economic Development Advisor
36. Interview Mr Jack Burton CEO Kimberley Meat Works
37. Interview Ms Susan Murphy, CEO, Winun Ngari Indigenous Corporation
38. Kimberley Development Commission – Aquaculture 2019
39. Kimberley Development Commission Economic Snapshot 2019
40. Kimberley Development Commission Regional Overview
41. Kimberley Development Commission Website & Kimberley Regional Overview 2019
42. Kimberley Ports Website
43. Kimberley workforce development plan 2014–2017 - Kimberley Workforce Development Alliance
44. Mercardo - Value analysis of the Australian live cattle trade - key highlights November 2018
45. Mt Gibson Iron
46. National Indigenous Australians Agency - Indigenous Rangers - Working on Country
47. Northern Beef Development Project - Mosaic agriculture
48. Ongoing growth in the number of Indigenous Australians in business - Shirodkar, S & Hunter, B & Foley, D
49. Parliament of Australia Indigenous Employment - the positives.
50. Parliament of Australia, House Standing Committee on Aboriginal and Torres Strait Islander Affairs Indigenous Employment
51. Perth Convention Bureau High Yield Delegate Research 2018
52. Pro and Associates - Regulatory costs in the red meat and livestock industries final report 2016
53. PWC Pre-Feasibility Study – West Kimberley Supply Chain and Logistics Hubs
54. Rangelands NRM WA Website
55. REMPLAN - Kimberley Economic Profile 2019
56. Research Gate - Regional Branding: Building Brand Value
57. Rio Tinto Argyle - Diamond Mine
58. State Aviation Strategy 2015, Current perceptions future directions study - TNS 2016
59. State Fisheries Report 2018
60. State Government of Western Australia – Who Buys What and How 2019
61. State Housing Western Australia - Aboriginal Employment Plan Kimberley and Pilbara
62. State Water Strategy – Irrigated Agriculture in Western Australia
63. Status Report of the Fisheries and Aquatic Resources 2016-17 North Coast Bio Region
64. Supply Nation – Building Indigenous Growth Report
65. Supply Nation - The Sleeping Giant A Social Return on Investment Report on Supply Nation Certified Suppliers
66. The Australian Government Competition Policy Review Final Report 2015 - Harper Review
67. Tourism Investment and Regulation Review Final Report – Austrade 2012
68. Tourism Research Australia 2018
69. Tourism WA Destinations Perceptions 2018
70. Tourism WA Visitor Fact Sheet 2018
71. WA Cattle Summary 2019 - Pilbara Kimberley Cattleman's Association
72. Webjet web search January 2020
73. Winters, T. Media Release: Indigenous Australia to Play Greater Role.
74. Worldometer Website February 2020

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