A contribution to

An analysis of medium to long-term impacts on the Australian Oceans

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1.1 Extractive land: Minerals and coal

Australia is the world's fifth largest producer of black coal (430Mt in 2017), behind China, India, the USA and Indonesia (MCA 2018) putting Australia in a very strong position in the metallurgical coal market (coal utilized in the steel production). In the case of demand of thermal coal (coal used in power generation), Australia is also among the main suppliers globally (along Russia and the United States), but investors from western nations appear likely to continue push to phase down their thermal coal use in favour of renewables methods(IBISWorld 2018). Australia exports of coal has reached a peak in 2017-18 ($22.9 billion dollars), but it is expected to decline by 2023-24 ($17.1 billion(MCA 2018)). Long-term forecast of this industry also predicts a likely decline by 2050 in the production of Australian coal (Figure 1). The coal generation Australian fleet is expected to leave the National Electricity Market by 2050 (RENEWA 2019) as shown in Figure 1.

Western Australia is the largest iron ore exporter in the world with 38% of global production and 53% of global seaborne in 2017. The world iron ore production has been growing since 1950's and it is expected to increase exponentially by 2028(Yellishetty 2018). This trend is also predicted for Australia, where production of iron ore has growth exponentially from 2010 to 2018 it is expected to continue strong and stable until 2025 (Figure 2;(IBISWorld 2019). However, despite higher outputs in the production, it is expected weaker iron ore prices by 2025 that would lower the industry revenue in the long-term(IBISWorld 2018). In addition, more rigorous implementation of environmental policies in both China infrastructure construction and Chinese steel industry have reduced the demand of Australian iron ore. This sector is influenced strongly by the world price of iron ore and steel, US dollars exchange, demand from iron smelting and steel manufacturing.

Drivers

- World price of iron ore and steel
- Demand from iron smelting and steel manufacturing
- US dollar exchange

Restrains

- More rigorous implementation of environmental policies
- Government regulations and compliances of infrastructure construction

Interaction with other sectors

- Global trade, global GDP, shipping, extractive ocean, future population

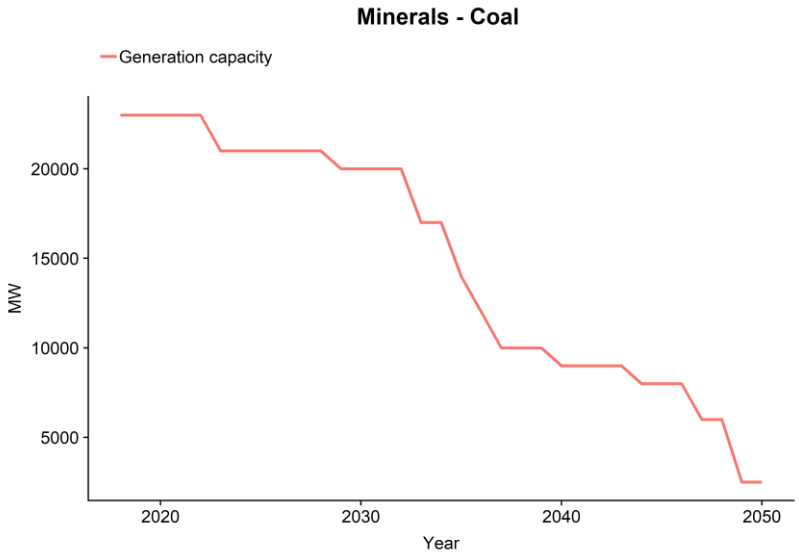


Figure 1. Predicted long-term coal generation capacity in Australia at 2050

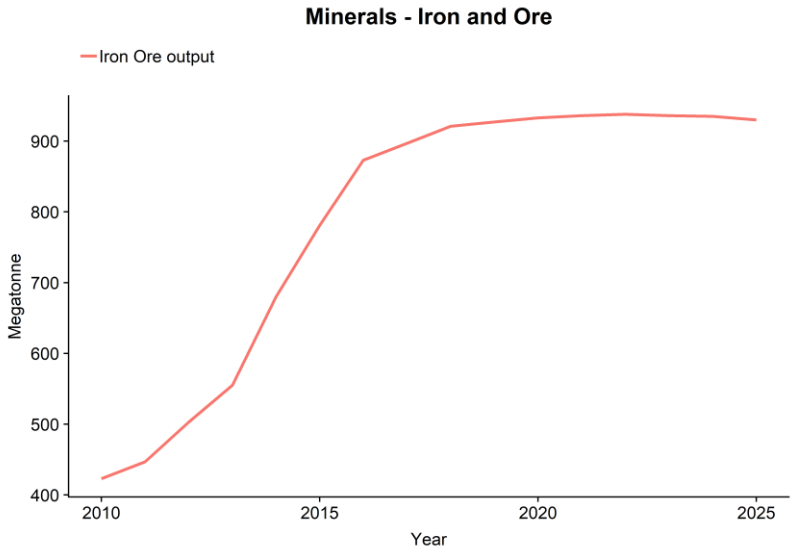
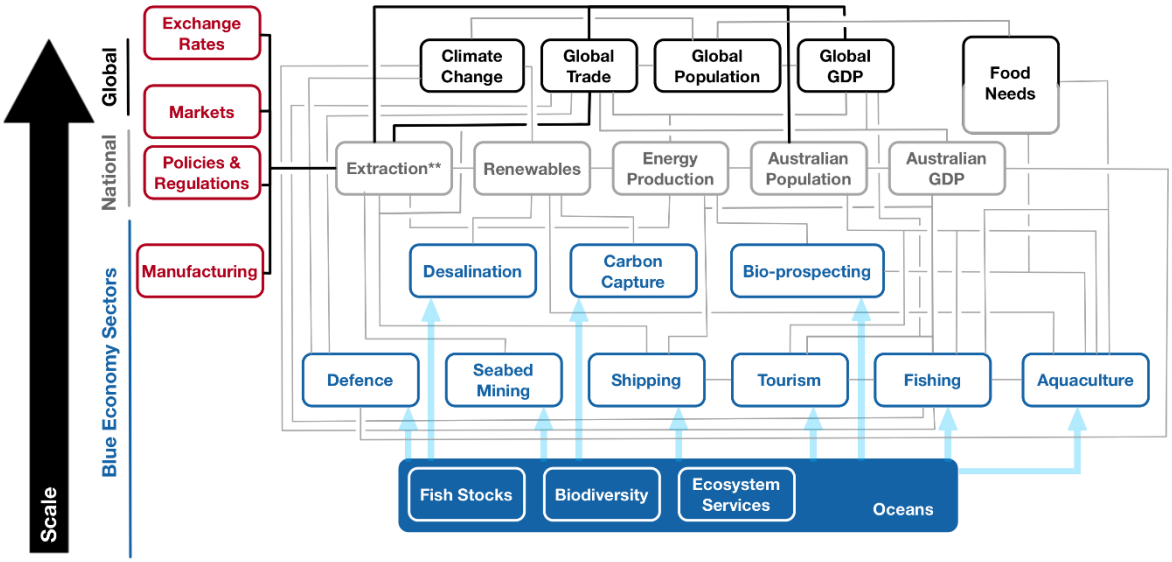


Figure 2. Projected iron and ore output (Megatonne) in Australia by 2025.

1.2 Sector-specific conceptual model



** Extraction - land and sea

Figure 3. The initial conceptual model in Figure 1 in the main document, complemented with information about sector-specific drivers obtained from the analysis of sector projections. See main text for more information.

1.3 References

IBISWorld (2018). Iron smelting and Steel manufcturing in Australia, IBISWorld. Department of Industry.

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Yellishetty, M., Ranjith, P.G., Tharumarajah, A. (2018). "Iron ore and steel production trends and material flows in the world: is this sustainable?" Resources, Conservation and Recycling 1084-1094.