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

Lucy Robinson
CSIRO Ocean & Atmosphere, Australia

1.1   Australian population growth

Australian population projections are available from a number of sources, but the original source of all projection data is the Australian Bureau of Statistics (ABS 2018). The latest ABS population projections (released in November 2018) were provided annually from 2017 to 2066 (Figure 1). The residential population projections are based on three series (A, B and C) that include assumptions about future fertility, mortality and migration (both overseas and internal). The three series of projections were selected from a possible 72 combinations of various assumptions and were formulated based on historical demographic trends. Series A assumes higher parameter values with a total fertility rate of 1.95 babies per woman, the life expectancy (at birth) for males and females is 87.7 and 89.2 respectively and net overseas migration is assumed to be 275 000 persons per year. Series B assumes current trends with a total fertility rate of 1.80, the life expectancy for males and females is 83.0 and 86 respectively and net overseas migration is assumed to be 225 000 persons per year. Series C assumes lower parameter values with a total fertility rate of 1.65 babies per woman, the life expectancy for males and females is 83 and 86 respectively and net overseas migration is assumed to be 175 000 persons per year. In all projections total fertility rates and net overseas migration are assumed from 2027 onwards and the life expectancy at birth is assumed from 2066. Projections for series A, B and C show average annual growth of 1.4%, 1.1% and 0.9% respectively (Figure 1).
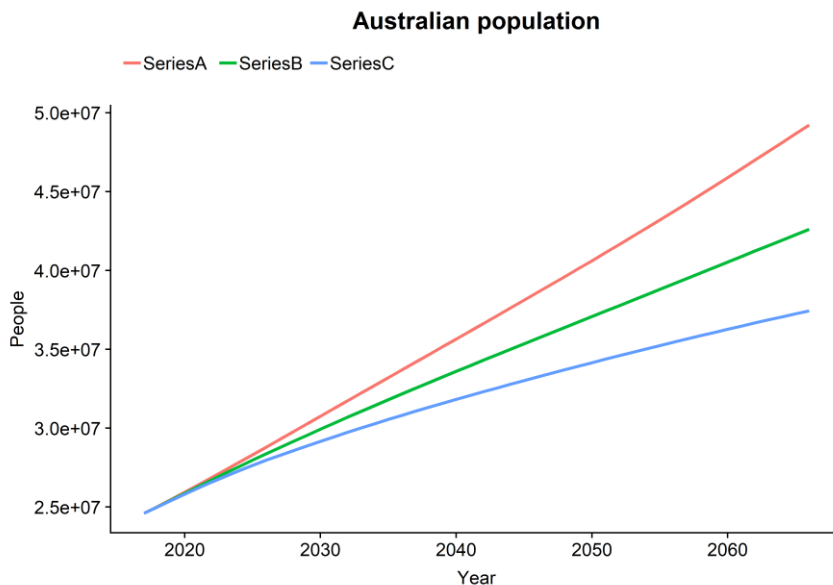

Figure 1 Historical and projected Australian population from 1996 to 2066

In the projections of all three series between 2017-2027, 60% of growth results from overseas migration while only 40% is from natural increase (i.e. births minus deaths). This is based on trends observed from ABS Census data in the decade prior to 2017. From 2027-2042 the

proportion of growth attributed to natural increase in series A is projected to increase to 44%, but declines in series B and C to 36% and 27% respectively in 2042.

There is no acknowledgement of interactions or influence from other sectors in the ABS document that provides the most recent projections. There is however acknowledgement in a Commonwealth Department of Treasury report that long term population growth is beneficial for the Australian economy, but puts pressure on other sectors, including infrastructure, services and the environment (Treasury 2010).

1.2 Sector-specific conceptual model
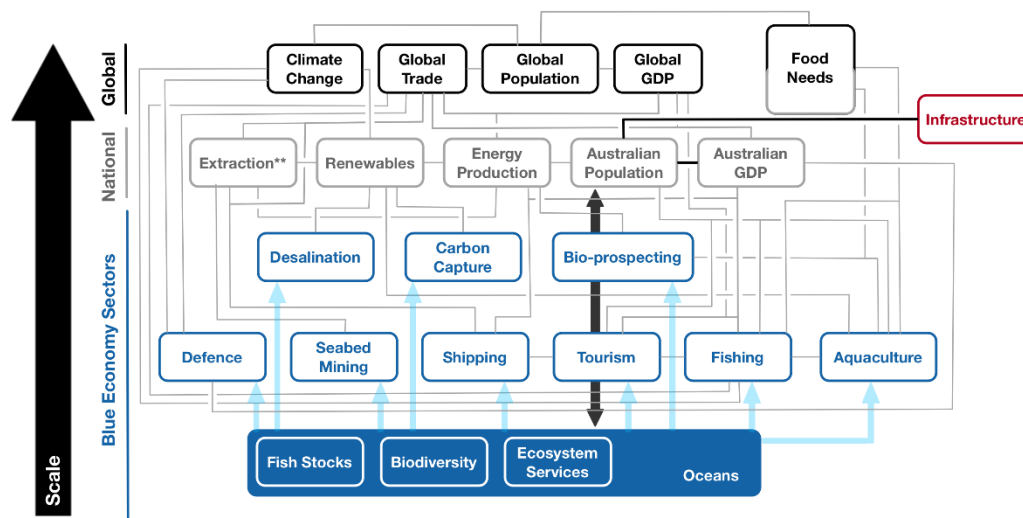
** Extraction - land and sea

Figure 2. 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

ABS. 2018. Population Projections, Australia, 2017 to 2066. Australian Bureau of Statistics

AEMO. 2018a. 2018 Gas Statement of Opportunity, For eastern and south-eastern Australia, June 2018. Australian Energy Market Operator Limited

AEMO. 2018b. West Australian Gas Statement of Opportunity, December 2018. Australian Energy Market Operator Limited

AEMO. 2019a. 2019 Planning and Forecasting Consultation Paper. Australian Energy Market Operator Limited

AEMO. 2019b. Gas Statement of Opportunities, For eastern and south-eastern Australia. Australian Energy Market Operator Limited

Boughen N, Mason C, Paxton G, Parsons R, Johns S, Parr J, Moffat K. 2010. Seafloor exploration and mining in Australia: Stakeholder reactions, expectations and desired level of engagement. CSIRO Wealth from Oceans Flagship

BREE. 2014. Australian Energy Projections to 2049-50. November 2014. Bureau of Resources and Energy Economics. Bureau of Resources and Energy Economics. Archived in The Office of the Chief Economist, Australian Government Department of Industry, Innovation and Science

Van Dover CL, Ardron JA, Escobar E, Gianni M, Gjerde KM, Jaeckel A, Jones DOB, Levin LA, Niner HJ, Pendleton L, Smith CR, Thiele T, Turner PJ, Watling L, Weaver PPE. 2017. Biodiversity loss from deep-sea mining. Nat Geosci 10:464–5. http://www.nature.com/doifinder/10.1038/ngeo2983. Last accessed 15/02/2019

Evans K, Bax N, Smith D. 2017. Australia state of the environment 2016: marine environment, independent report to the Australian Government Minister for the Environment and Energy. Canberra: Australian Government Department of the Environment and Energy

Geoscience Australia. 2019. Offshore mineral resources. http://www.ga.gov.au/scientific-topics/minerals/mineral-resources-and-advice/australian-resource-reviews/offshore-mineral-resources

Geoscience Australia, Young G. 2006. Australian offshore mineral locations. Geoscience Australia

Mason C, Paxton G, Parr J, Boughen N. 2010. Charting the territory: Exploring stakeholder reactions to the prospect of seafloor exploration and mining in Australia. Mar Policy 34:1374–80. https://www.sciencedirect.com/science/article/pii/S0308597X10001181. Last accessed 15/02/2019

Mason CM, Paxton G, Parsons R, Parr JM, Moffat K. 2014. "For the benefit of Australians": Exploring national expectations of the mining industry. Resour Policy 41:1–8. https://www.sciencedirect.com/science/article/abs/pii/S0301420714000099. Last accessed 15/02/2019

Miller KA, Thompson KF, Johnston P, Santillo D. 2018. An Overview of Seabed Mining Including the Current State of Development, Environmental Impacts, and Knowledge Gaps. Front Mar Sci 4:418. http://journal.frontiersin.org/article/10.3389/fmars.2017.00418/full. Last accessed 15/02/2019

Treasury. 2010. Australia to 2050: future challenges , Intergenerational Report (IGR). Canberra, Australia: Treasury, The Australian Government

Treasury. 2015. 2015 Intergenerational Report, Australia in 2055. Canberra, Australia: Treasury, The Australian Government

Vanreusel A, Hilario A, Ribeiro PA, Menot L, Arbizu PM. 2016. Threatened by mining, polymetallic nodules are required to preserve abyssal epifauna. Sci Rep 6:26808. http://www.nature.com/articles/srep26808. Last accessed 15/02/2019