

SHORT SUMMARY

5.20.001 Economic Assessment of Blue Economy

INTRODUCTION

Across the world, blue economy growth is expected to be led by the offshore wind sector. The port sector is expected to have the second largest growth rate. Fish processing is expected to have the third highest growth rate in both GVA and employment. The value of Australian blue economy has been declining recently largely due to lower commodity prices (Fig 3). Estimated values could change significantly depending on the estimation method, and several evaluation and analysis methods have been found from the literature review such as satellite account, input-output analysis, cluster analysis, data envelopment analysis, and social cost-benefit analysis, stated preference.

Australia has the third largest marine jurisdiction with the exclusive economic zone of 10.2 million sq. km, much larger than its land area of 7.69 million sq. km. For the 2015-2016 period, the Australian blue economy had GVA of \$71.4 billion comprising of \$39.8 billion of direct value adding and \$31.6 billion of indirect value adding and employed 197 thousand full time equivalent workers. The economy is currently dominated by the offshore oil and gas industry contributing about 50%, and the tourism and shipping service sectors contributing about 40% to the blue economy output. By 2025, its GVA is expected to reach \$100 billion driven by the renewable energy, offshore oil and gas, and aquaculture sectors (AIMS, 2018).

Figure 1 (Shown on right). Blue economy research output by countries and authors internationally.

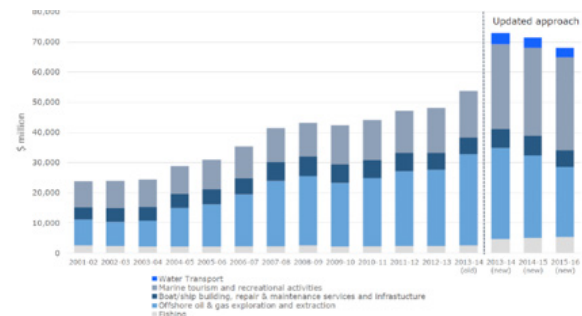


Figure 1: Measurable output from selected blue activities (AIMS, 2018)

China, U.S., U.K. and Australia are the four countries with largest volume of research on blue economy (Fig 2). The number of studies has been growing steadily since 1959 and accelerating in recent years with nearly 60% of studies published in the last three years (2018-2020), and 90% in the last 10 years (2010-2020) (Fig 3).

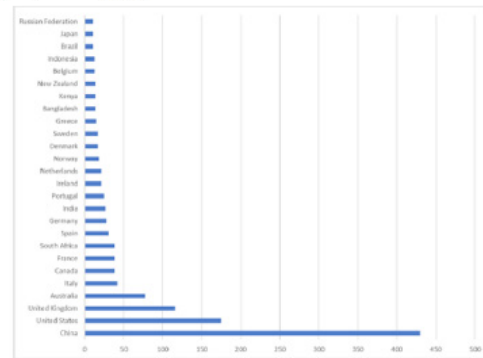


Fig 2: Blue economy research output by countries (authors)

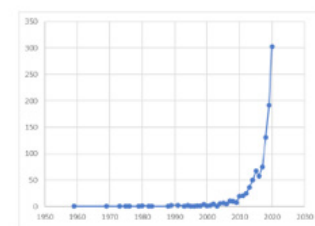


Fig 3: Blue economy research by year (authors)

Much of research using the non-market value approach to date has focused on 'Cultural services' with a largest quantum of research on tourism and recreation (Fig 4). The second most represented grouping in the literature was 'Multiple ecosystem services'. Studies on 'Regulating and Maintenance Ecosystem services' was the third most represented category with a focus on the capacity of particular habitat types to offer coastal protection.

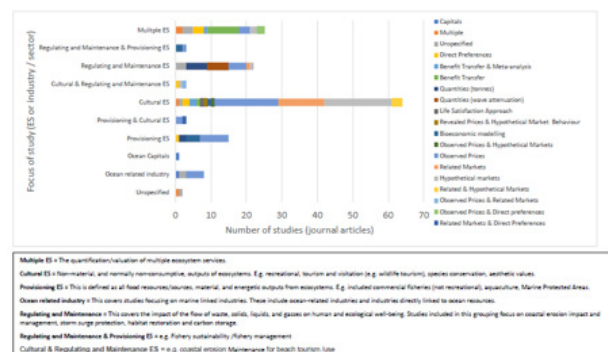


Fig 4: Focus of Quantitative Papers identified through the systematic review

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KEY POINTS

This scoping study aimed to conduct a systematic review on blue economy evaluation and analysis, and in doing so, answered the following research questions:

1. What are the integration frameworks for blue economy?
2. How is the economic impact of blue economy evaluated?
3. How can the total economic value of sustainable marine and coastal development be evaluated?
4. What are the implications and recommendations for sustainable offshore developments?

A team of 8 researchers from 2 organisations contributed to this project.

THE CHALLENGE

Blue economy output evaluation and analysis are critical to decision making and policy formulation. Yet, various definition and studies methods used in existing studies worldwide resulted in inconsistent and incompatible data.

THE OPPORTUNITY

Australia has the third largest marine jurisdiction with the exclusive economic zone of 10.2 million sq. km, much larger than its land area of 7.69 million sq. km. In terms of volume, more than 99% of Australia's international trade is carried by sea.

Australia has the fourth largest output of blue economy research in the world despite its small population and economy. Australian blue economy is expected to have much larger share of GDP in the future, contribute to global sustainable development goal and meet increasing food demand.

OUR RESEARCH

Systematic Review on Blue Economy Evaluation and Analysis

- △ A wide range of research methods and their application from local, micro to international, macro level have been identified.
- △ Both market and non-market value approaches were considered.

Integration Frameworks of Blue Economy

- △ Integration frameworks are used to present the organisation of blue economy. They show blue sectors, their links and interactions.
- △ An integration framework can be presented in various forms, i.e. as a conceptual framework, colour-coded table, graphical complex network, or input-output table.

Blue Economy Evaluation and Analysis Methods

The review covers study methods to:

- △ Evaluate the economic value of blue economy, especially gross value added (GVA) and total economic value (TEV).

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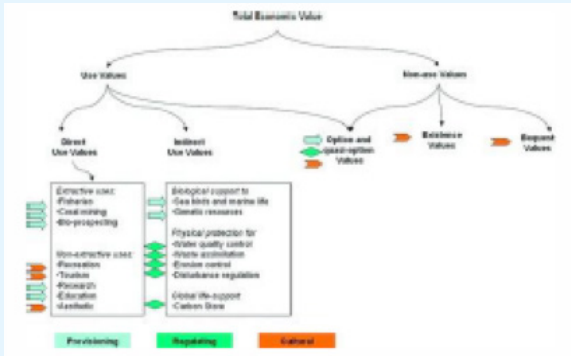


Figure 2. TEV framework (Stoeckl et al., 2011)

	PRODUCERS AS CONSUMERS									FINAL DEMAND				
	Agriculture	Manufacturing	Construction	Services	Government	Household	Business	Government	Household	Business	Government	Household	Business	Government
Final Demand														
Intermediate Demand														
Total Demand														
Value Added														
Imports														
Exports														
GDP														

Figure 3. Input-output table (Miller and Blair, 2009)

△ Analyse the impact and efficiency of blue economy.

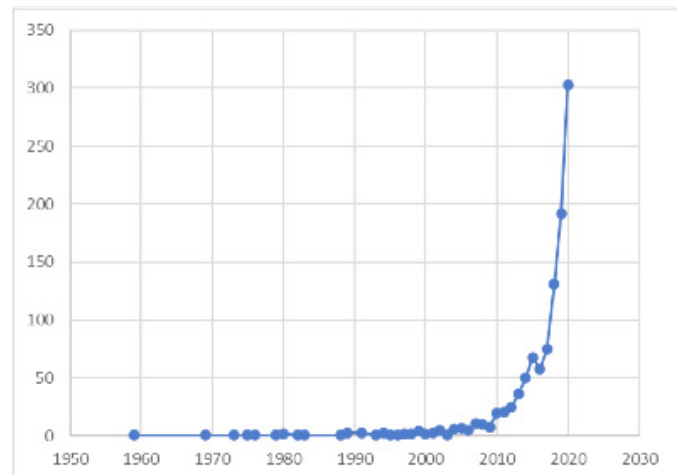


Figure 4. Blue economy research output by year.

The share of blue economy varies substantially across countries from 3-4% of GDP in some developed countries to 10-15% in some developing countries.

For the 2015-2016 period, the Australian blue economy had GVA of \$71.4 billion, contributing 4.3% of GDP and employing 197 thousand full time equivalent workers.

Total economic value (TEV) framework can be used to capture market and non-market value of blue economy (Figure 2). Input-output table can be used for economic mapping and impact analysis (Figure 3).

Other methods, such as data envelopment analysis (DEA), Malmquist efficiency index, growth accounting, social cost-benefit analysis (SCBA), cluster and network analysis are also useful in benchmarking and analysing the efficiency, impacts and interactions between blue economies and sectors.

OUTCOMES

Blue economy research has started in about 1959, and the number has been increasing rapidly in recently years with 90% of studies in the last 10 years (2010-2020) and 60% in the last two years (2018-2020).

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NEXT STEPS

Evaluating and analysis of the economic value, efficiency, links and interaction between Australian blue sectors.

Developing the application of economic reporting including non-market valuation, for Australia's blue economy.

Engaging with BECRC research teams in relevant RP5 and cross-program activities.

A systematic review of blue economy evaluation and analysis (forthcoming).

PROJECT TEAM

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PROJECT REPORTS/PUBLICATIONS

Nguyen, HO et al. (2020). 5.20.001 Economic Assessment of Blue Economy - Final Project Report. Blue Economy Cooperative Research Centre.