K4D | Knowledge, evidence and learning for development

Effectiveness of sustainable marine economy interventions

Laura Bolton
IDS
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Question

Assess the available evidence for the effectiveness and cost-effectiveness of interventions aimed at developing and growing sustainable marine economies.

Contents

1. Summary

Large development intervention programmes termed 'marine economy' or 'blue economy' are in their early stages and do not yet have results on effectiveness. Reports on the effectiveness of activities which could be considered under the blue economy umbrella were identified although more general reports of success than specific evidence.

The World Bank programme, Problue, is a multi-donor trust fund aiming to achieve sustainable economic development in healthy oceans. The latest annual review of the programme lists achievements in terms of number of activities, proposals accepted, and beneficiaries. Effectiveness outcomes were not yet available. Progress has been made in developing frameworks and tools to assist governments to develop roadmaps.

The Organisation for Economic Co-operation and Development (OECD) is undertaking a large number of activities in support of sustainable ocean economies which are also in early stages.

A review of African blue economy case studies looks at individual country examples (Okafor-Yarwood et al., 2020). Unsuccessful blue economy examples were identified in the area of port and shipping expansion in Cameroon, Côte d'Ivoire, and Kenya. Infrastructure development in these cases was found to damage the community and environment and lacked participatory planning. Specific details on cost effectiveness were not reported. Case studies labelled as successful included a women's shellfish farming association in the Gambia, locally managed marine areas in Madagascar, and community mangrove restoration in Kenya. Again, specific data on effectiveness measurement were not reported. Successful coordination with relevant stakeholders was a success factor.

Case studies on China (Wenhai et al., 2019) described individual blue economy initiative examples such as the Shandong Peninsula Blue Economic Zone. An empirical study evaluated the development of this economic zone from the perspective of improving economic efficiency, finding transportation conditions to be the most important (Liu et al., 2018). Other projects identified in China report successful coastal wetland and beach restoration.

India has plans in place for monitoring effectiveness with a Blue Coordination Committee which oversees efforts of different ministries. Their large programme is broken down into 'function clusters' overseen by different ministries. Further information on monitoring identified in the literature describes tracking systems that identify oil slicks and illegal fishing activity.

To assess programmes there are examples in the literature using the full-spectrum sustainability approach which looks at interventions in terms of all ecological, economic, social-cultural, and institutional or governance aspects.

The only cost-benefit analysis identified within the scope of this report was a forward looking analysis projecting global net cost benefits between 2020 and 2050. Categories of benefit included health, environmental, ecological, economic, and social. Categories of costs included costs to business, costs to government, research and development expenditure, enforcement and monitoring, and costs to households. Overall rates of return on investment are found to be high.

There were examples identified in the literature on the potential of the blue economy and articles with ideas and recommendations. These were not included in the main body of this report as not

directly related to assessing programme effectiveness but are listed in section 8 for further reference. Additional papers of potential interest are listed which have information on blue economy frameworks, development cooperation, and barriers to investment.

2. Background

'Marine economies', 'ocean economies', and 'blue economies' are considered relatively interchangeable in this report. This report tended to use the term blue economy as shorthand. Some definitions:

- OECD: "The **ocean economy** is defined by the OECD as the sum of the economic activities of ocean-based industries, together with the assets, goods and services provided by marine ecosystems."[1]
- The Commonwealth: The **blue economy** is an emerging concept which encourages better stewardship of our ocean or 'blue' resources.[2]
- The World Bank: The **blue economy** is sustainable use of ocean resources for economic growth, improved livelihoods and jobs, and ocean ecosystem health.[3]

Marine economy is concerned with the interaction between ocean-based industries and marine ecosystems (OECD, 2020). Ocean-based industries include market flows and stocks; and physical capital stock ocean-based industries (OECD, 2016). Marine ecosystems include non-market flows and services; and natural capital assets.

Blue economy activities and areas include renewable energy, fisheries, maritime transport, tourism, climate change, and waste management. The World Bank (2016) outlines ocean services to include: seafood, marine biotechnology, minerals, energy, freshwater (desalination), transport and trade, tourism and recreation, ocean monitoring and surveillance, carbon sequestration, coastal protection, and waste disposal.

It was beyond the scope of this report to explore all of these activities separately. The report is based on search results for the terms "marine economy", "ocean economy", and "blue economy".

Some interventions identified in this report were large and labelled with this term and others are small and authors have ascribed them with one of the terms marine economy, ocean economy and blue economy. Different sources for this report put different emphasis on the human side, the economic side, or the environmental side.

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[1] https://www.oecd.org/ocean/topics/ocean-economy/ accessed 15.7.21

[2] https://thecommonwealth.org/blue-economy accessed 15.7.21

[3] https://www.worldbank.org/en/news/infographic/2017/06/06/blue-economy accessed 15.7.21

3. World Bank Problue

The World Bank Problue[4] programme is a multi-donor trust fund aiming "to achieve integrated and sustainable economic development in healthy oceans" (World Bank, 2020, p5). It is organised into four areas: 1) improved fisheries governance; 2) marine litter and pollution management; 3) blueing oceanic sectors; 4) integrated seascape management. PROBLUE does not consider these in isolation.

The annual review (World Bank, 2020) lists broad achievements rather than details on effectiveness or cost-effectiveness. In 2020 PROBLUE accepted proposals for 49 activities reaching 10 million direct beneficiaries in over 50 countries. 96 percent of proposals accepted included gender-sensitive elements.

PROBLUE global work "focuses on developing innovative tools, guidelines, and methodologies to enhance operations and provide support to governments in their decision-making process" (World Bank, 2020, p16). This has included development of the Blue Economy Development Framework (BEDF)[5], analytical tools and technical assistance to help countries define a roadmap to a sustainable marine economy.

Progress made in PROBLUE global work includes:

- Analysing how government social protection systems can address the unique characteristics of the fisheries sector.
- Developing social impact guidelines for offshore wind development.
- Developing tools to support countries in reducing plastic pollution.
- Analysing institutional gaps in solid waste management.
- Development of a Blue Public Expenditure Guidance Note.

PROBLUE has monitoring in place for all of its programmes. Results were not identified within the scope of this review. PROBLUE began on 26 October 2018 so results are yet to emerge.

4. OECD

The OECD is carrying out a significant amount of work in support of sustainable ocean economies including (OECD, 2020):

- Understanding economic contributions of the ocean and future potential for ocean-based industry.
- Developing and tracking policy and financing approaches for marine conservation and sustainable use.
- Supporting governments to curtail plastics pollution.

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[4] https://www.worldbank.org/en/programs/problue accessed 23.7.21

[5] https://thedocs.worldbank.org/en/doc/915191553141931804-0120022019/render/BH023BlueEconomydigital.pdf accessed 23.7.21

- Providing guidance for adaptation to sea level rise.
- Helping developing countries harness the benefits of sustainable ocean activities.
- Identifying and evaluating fishing support measures.
- Tracking policies and practices to deter prevent illegal fishing.
- Proposing solutions to decarbonise shipping and decrease pollution.
- Assessing technical potential for offshore wind.
- Mapping the role of public marine data.
- Tracking ocean-related development finance.

Evidence on effectiveness in these activity areas was not identified within the scope of this report.

5. Africa

A paper looking at the Blue Economy across Africa looks at assessing performance of blue initiatives against societal, economic and environmental metrics (Okafor-Yarwood et al., 2020). A number of successful and unsuccessful blue economy examples are described. The unsuccessful examples are largely port expansion projects. Infrastructure developed in Cameroon's maritime and shipping sector to improve the livelihoods of coastal communities, for example, brought about economic development but damaged coastal communities and the environment. Communities lost their homes for the port to be built and were poorly compensated. Forests were cleared leading to biodiversity loss, and traditional fishing grounds were lost. Opportunity for local development is provided by the port but at the expense of the environment and cultural livelihoods.

A similar situation is found with port infrastructure expansion in Côte d'Ivoire (Okafor-Yarwood et al., 2020). The project in Abidjan aimed at accommodating more container ships to become a major maritime transport hub. Enlargement of the canal has led to diversion of sea currents thought to be causing coastal erosion and displacing local residents who received little or no support from the government.

The Lamu Port Project in Kenya, underway to improve competitiveness in the transhipment business, has upset local residents who have not been involved in the planning and implementation process (Okafor-Yarwood et al., 2020). Fishing grounds have declined and the diversity of fish species altered.

The Okafor-Yarwood et al., (2020) paper goes on to cite successful blue economy examples, largely community enterprise projects. In Karmollah, the Gambia, the TRY Oyster Women's Association (TRY) have exclusive use rights to a fishery under a Cockle and Oyster Fishery Co-Management Plan. It has reduced pressure on the mangrove environment and increased cooperation and reduced tension among local groups (Lau & Scales, 2016). Some of the success is attributed to trust building among stakeholders and national consultation among women harvesters (UNEP, 2015). The programme benefited from integrated programmes with tangible short-term success progressing to achieving long-term goals. Adaptive management was based on indigenous knowledge and scientific research.

Locally managed marine areas established in southwest Madagascar used traditional laws and indigenous knowledge to govern closures to improve octopus stocks (Cripps & Gardner, 2016). Technical and material support was provided by conservation NGOs and the Madagascan Marine Research Institute to enable local management. Early involvement of seafood export companies was seen as important for success (Okafor-Yarwood et al., 2020).

The Mikoko Pamoja project in Kenya involves community restoration of mangrove forests (Okafor-Yarwood et al., 2020). Technical and carbon quantification support is provided by the Kenya Marine and Fisheries Research Institute. Carbon credits produced by the project are sold on the international voluntary carbon market through the Association for Coastal Ecosystem Services (ACES) charity. Benefits from the project support community needs. Seaweed farming in Kenya is another case study described.

A case study of the Seychelles in UNEP[6] (2015) describes the coordinated approach to fisheries and marine planning. The Minister of Finance, Trade, and Blue Economy developed innovative economic mechanisms including a debt swap. Debt is being reduced in return for government commitment to enhance marine conservation including a Marine Spatial Planning Initiative.[7] The process was facilitated through regular participatory meetings and a draft zoning design proposed in April 2015. By March 2020 the 30 percent of marine waters were protected which was the target (The Commonwealth Blue Charter, 2020). The marine protected areas included zone 1 – high biodiversity protection areas (15 percent); zone 2 – medium biodiversity protection and sustainable use area (17 percent); and zone 3 – multiple use. Development of marine spatial planning is noted to take up to 10 years. Information on the effectiveness of the initiative was not identified within the scope of this review.

Review of the Seychelles blue economy roadmap notes achievements to include the country declaration of 30 percent of territorial waters as Marine Protected Area in March 2020 (Senaratne, 2020). The country's blue economy strategy is thought to have significantly reduced debt levels by raising a US$15-million sovereign blue bond.

6. China

China has been working on scientific innovations for the marine industry with six national marine economic innovation and development demonstration areas and seven national industrial demonstration bases for rejuvenating marine industry with science and technology (Wenhai et al., 2019).

Shandong Peninsula Blue Economic Zone (SPBEZ) is reported in the Journal *Frontiers in Marine Science* (Wenhai et al., 2019) to have established a system of modern marine industry whilst improving the quality of the ecological environment of the ocean and the land. It includes an industrial cluster, an education centre on marine science, and a pilot zone for marine economic

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[6] United Nations Environment Programme

[7] https://seymsp.com/the-initiative/ accessed 27.7.21

reform. One empirical[8] study evaluates the development of SPBEZ from the perspective of improving economic potential (Liu et al., 2018). It finds the most important factor for improving economic efficiency to be transportation conditions suggesting a need to strengthen construction of the transportation system. Development of industrial structure was the second recommendation. And third most important was business climate. This is achieved through the formulation of policies to attract investment such as tax policies and improving the openness of zones.

A number of projects in China have successfully recovered coastal wetlands and restored beaches (Wenhai, 2019). These include the ecological project to restore wetlands by developing mangrove forests in the south and Chinese tamarisk forests in the north, and the ecological island-reef restoration project. The central government subsidised cities implementing these activities, which are known as the 'Blue Bay Treatment Project'.

7. Monitoring and Assessment

"There is no finite endpoint to the development and implementation of a Blue Economy strategy. Progress requires constant monitoring and evaluation, and iterative approaches to plans and activities. Many nations are in the early stages of establishing their Blue Economies" (Bramley et al, 2021, p72).

India is planning monitoring through its Blue Economy Coordination Committee which oversees efforts of different ministries activities supported by states, union territories and other agencies. It focuses on six targeted 'function clusters': "National Accounting Framework (overseen by the Ministry of Statistics and Programme Implementation); Marine Fisheries (under the Department of Fisheries); Logistics, Infrastructure and Shipping (under the Ministry of Ports, Shipping and Waterways); Coastal and Deep Sea Mining, New and Renewable Offshore Energy and R&D (under the Ministry of Earth Science); National Coastal Marine Spatial Planning Framework (under the Ministry of Environment, Forest and Climate Change and Security); and International Engagement (under the National Security Council Secretariat)" (Bramley et al, 2021, p72).

The Earth and Sea Observation System (EASOS)[9] is drawing together satellite-based remote sensing data to identify potential oil slicks around Malaysia's Exclusive Economic Zone (Bramley et al, 2021). The system has given early warning to avert potential major environmental disaster.

Effective monitoring, control and surveillance systems for fisheries is important (World Bank, 2017). The Republic of Pilau implemented a successful monitoring, control and surveillance plan and had a positive impact on countering illegal, unreported and unregulated fishing (Bramley et al, 2021). Pilau also improved pollution detection. The Indonesia Maritime Information Centre, a multi-agency data-sharing centre, has supported the identification of illegal fishing vessels. Transparency of information is extended to the public with reporting on incidents and

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[8] The study was exploring a hybrid multiple criteria decision making (MCDM) model that combines the 'decision making trial and evaluation laboratory' (DEMATEL) technique and the DEMATEL based analytic network process (DANP) technique

[9] a project led by the UK's Satellite Applications Catapult

interventions covering maritime security, maritime safety, contraband smuggling, and natural disaster.

In the collection of African case studies, Okafor-Yarwood et al. (2020) used the 'full spectrum sustainability approach'[10] to assess balance or imbalance among ecological, social, and economic aspects. The approach uses sustainable objectives for each full-spectrum sustainability category which may be useful for looking at programme effectiveness (Jones & Stephenson, 2019). For the ecological category objectives include productivity and trophic structure; biodiversity; and habitat and ecosystem integrity. Indicators for the objectives include recruitment dynamics, indigenous knowledge, pollution, and habitat restoration. Economic objectives include viability, sustainable livelihoods, and distribution of benefits. Indicators for these objectives include human demographics, livelihood index, and inclusion of marginalised groups. Social and cultural sustainability objectives include health and ethical practices with indicators including quality of life and respect for indigenous practices. The fourth full-spectrum sustainability category is governance and institutional with objectives such as legal support and governance structure. Indicators include people-centred policies, multi-sectoral involvement and collaboration.

An analysis commissioned by the High Level Panel for a Sustainable Ocean Economy attempts to estimate projected global net cost-benefits from 2020 to 2050, focusing on four ocean-based policy interventions (Konar & Ding, 2020). These are 1) conserving and restoring mangrove habitats, 2) scaling up offshore wind production, 3) decarbonising the international shipping sector, and 4) increasing the production of sustainably sourced ocean-based proteins. The categories of benefit include health, environmental, ecological, economic, and social. Categories of costs include costs to business, costs to government, research and development expenditure, enforcement and monitoring, and costs to households. Overall rates of return on investment are found to be high. For example (in US dollars) $1 invested in mangrove conservation and regeneration generates a $3 benefit; $1 invested in scaling up global offshore wind generates between $2-$17 benefit; $1 invested in decarbonising international shipping generates $2-$5; and $1 investment to increase sustainably sourced ocean-based protein generates $10 benefit.

8. Further resources

Potential

World Bank (2017). The potential of the blue economy. Increasing long-term benefits of the sustainable use of marine resources for small island developing states and coastal least developed countries. World Bank and United Nations.
https://sustainabledevelopment.un.org/content/documents/2446blueeconomy.pdf

Key messages for future action for least developed island states and coastal countries.

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[10] Full spectrum sustainability must include the four pillars: ecological, economic, social-cultural, and institutional or governance

Patil et al. (2016*). Toward a Blue Economy: A Promise for Sustainable Growth in the Caribbean***. World Bank.** https://documents1.worldbank.org/curated/en/965641473449861013/pdf/AUS16344-REVISED-v1-BlueEconomy-FullReport-Oct3.pdf

A guide for planning a successful transition to socially equitable blue growth. Quantifies the current value of the ocean economy and makes future projections.

Fang et al. (2021). Evaluation of the sustainable development of an island "Blue Economy": A case study of Hainan, China. *Sustainable Cities and Society*, *66*, 102662. https://www.sciencedirect.com/science/article/abs/pii/S2210670720308787

Investigates China's Hainan Island based on the driver–pressure–state–impact–response (DPSIR) framework conducts a coupling coordination analysis to study the sustainable development capacity of the island's blue economy.

Sarker et al. (2018). From Science to Action: Exploring the Potentials of Blue Economy for Enhancing Economic Sustainability in Bangladesh. *Ocean and Coastal Management*. **(157) 180-192.** https://www.sciencedirect.com/science/article/abs/pii/S0964569117307809

Identifying the Blue Economy potentials of Bangladesh with economic evaluation. Identifies challenges for Blue Growth and develops a management framework.

Planning

UNEP (2019). *United Nations Environment Programme's Marine and Coastal Strategy.* *https://wedocs.unep.org/bitstream/handle/20.500.11822/27177/7d.%20Draft%20UN%20Environ ment%20Programme%20Marine%20and%20Coastal%20Strategy.pdf?sequence=29&isAllowed =y*

Includes: challenges and drivers of change; vision and mission; basis for action; strategy guiding principles; implementation framework; theory of change; and strategic delivery core outputs.

OECD (2021). *Sustainable Ocean Economy Country Diagnostics of Indonesia.* https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DCD(2021)5&docLang uage=En

A sustainable ocean economy diagnostic of Indonesia produced to support understanding of Indonesia's ocean economy. It describes economic trends; governance and policy instruments; and financing.

Christ et al. (2020). A baseline for the blue economy: catch and effort history in the republic of Seychelles' domestic fisheries. *Frontiers in Marine Science*, *7*, 269. https://www.frontiersin.org/articles/10.3389/fmars.2020.00269/full?&field=&journalName=Frontiers_in _Marine_Science&id=516238

Baseline data on domestic fisheries and fishing effort within the Seychelles Exclusive Economic Zone from 1950 to 2017, and resulting Catch Per Unit Effort data (CPUE).

Financing

Sumaila et al. (2021). Financing a sustainable ocean economy. *Nature communications*, *12*(1), 1-11.
https://www.nature.com/articles/s41467-021-23168-y

Identifying key barriers to financing the ocean economy and suggestions for how to overcome them.

Inamdar et al., (2016). Developing impact investment opportunities for return -seeking capital in sustainable marine capture fisheries. World Bank.
https://openknowledge.worldbank.org/bitstream/handle/10986/31462/135573.pdf?sequence=4&isAllowed=y

An overview of key concerns that impact investors and potential approaches for public-private partnerships.

The Caribbean Development Bank (2018). Financing the blue economy. A Caribbean development opportunity.
https://www.caribank.org/sites/default/files/publication-resources/Financing%20the%20Blue%20Economy-%20A%20Caribbean%20development%20opportunity.pdf

This paper assesses the blue economy potential for the Caribbean, and focuses on innovative financing options that will enable policy makers to advance blue economy strategies at a national and regional level.

Blanco-Iturbe et al. (2020). Accelerating Blue Bonds Issuances in Latin America and the Caribbean. IDB Invest and UN Global Compact.
https://idbinvest.org/en/download/13319

Provides insight and guidance for issuing blue bonds to fund sustainable ocean and water-related business opportunities in Latin America and the Caribbean.

The Nature Conservancy (2021). Blue Bonds: An Audacious Plan to Save the World's Ocean.
https://www.nature.org/en-us/what-we-do/our-insights/perspectives/an-audacious-plan-to-save-the-worlds-oceans/

Looking at the potential of blue bonds for unlocking funding for conservation.

Lee et al. (2020). The Blue Economy and the United Nations' sustainable development goals: Challenges and opportunities. *Environment international*, *137*, 105528.
https://www.sciencedirect.com/science/article/pii/S0160412019338255

Examines the scientific evidence of the association between the blue economy and the UN Sustainable Development Goals. It identifies the relevance and alignment of stakeholders for this association.

Development Cooperation

OECD (2021). Development co-operation for a sustainable ocean economy 2021.
https://www.oecd.org/ocean/topics/developing-countries-and-the-ocean-economy/development-co-operation-sustainable-ocean-economy-2019.pdf

A snapshot overview of development co-operation with recommendations for providers of overseas development assistance.

Governance and recommendations

Rudolph et al. (2020). A transition to sustainable ocean governance. *Nature communications*, *11*(1), 1-14.
https://www.nature.com/articles/s41467-020-17410-2

This article demonstrates how current economic and social systems can adapt and shift towards ocean management with niche innovations within and across economic sectors and stakeholder communities.

Cisneros-Montemayor et al. (2021). Enabling conditions for an equitable and sustainable blue economy. *Nature*, *591*(7850), 396-401.
https://www.nature.com/articles/s41586-021-03327-3

Authors suggest policymakers engage in researchers and stakeholders to promote evidence-based collaborating planning to choose sectors carefully to avoid multiple overlapping industries within the marine economy. Local benefits must be prioritised and the system must deliver on social, environmental and economic goals.

Atkisson et al. (2018). Getting it right in a new ocean: Bringing Sustainable Blue Economy Principles to the Arctic. WWF Arctic Programme.
https://arcticwwf.org/site/assets/files/2050/report_arctic_blue_economy_web.pdf

Consideration of the blue economy in the arctic.

UNEP (2021). Governing Coastal Resources - Implications for a Sustainable Blue Economy.
https://www.unep.org/resources/publication/governing-coastal-resources-implications-sustainable-blue-economy

This study uses a Drivers, Pressures, State, Impact, Response (DPSIR) framework to assess how global scale drivers are pushing the development of land-based activities (pressures), which in turn affect the quality and availability (state) of coastal resources. It provides an evaluation of the governance arrangements in the extractive and aquaculture sectors. And presents an analysis of possible governance responses that may be able to reduce the effects of land-based activities on coastal resources and thereby support the transition to a sustainable blue economy.

Northrop et al. (2020). A Sustainable and Equitable Blue Recovery to the COVID-19 Crisis. Washington, DC: World Resources Institute.
https://oceanpanel.org/sites/default/files/2020-09/20_HLP_Report_COVID_Blue_Recovery.pdf

A series of 16 Blue Papers and various Special Reports that offer a synthesis of knowledge, new thinking and perspectives, and opportunities for action.

Stuchtey et al. (2020). Ocean Solutions That Benefit People, Nature and the Economy. High Level Panel for a Sustainable Ocean Economy. https://www.oceanpanel.org/ocean-action/files/executive-summary-ocean-solutions-report-eng.pdf

This report uses recent scientific research, analyses and debates from around the world to showcase a balanced model for ocean management that simultaneously achieves effective ocean protection, sustainable production and equitable prosperity.

Winther et al. (2020). Integrated ocean management for a sustainable ocean economy. *Nature ecology & evolution*, *4*(11), 1451-1458. https://www.nature.com/articles/s41559-020-1259-6

Researchers make a case for integrated ocean management (IOM) to be the key overarching approach for achieving a sustainable ocean economy by building upon and connecting existing sectoral governance efforts.

9. References

Bramley, B., Rogers, A.D., Hamflett, A., Turner, J., Howell, D., Giannoumis, J., Matthew, E., Lambert, N. (2021). *The Blue Economy in Practice: Raising Lives and Livelihoods*. NLA International, Oxford, UK. http://nlai.blue/wp-content/uploads/2021/06/NLAI_Blue_Economy_In_Practice.pdf

Cripps, G., & Gardner, C. J. (2016). Human migration and marine protected areas: Insights from Vezo fishers in Madagascar. *Geoforum*, 74, 49-62. https://www.sciencedirect.com/science/article/abs/pii/S0016718516300525

Jones, O. P., & Stephenson, R. L. (2019). Practical use of full-spectrum sustainability in the Bay of Fundy. *Ecology and Society*, 24(3). https://www.jstor.org/stable/pdf/26797001.pdf?refreqid=excelsior%3A109b9f9505df471ac38d188e707b7da3

Konar, M., & Ding, H. (2020). *A sustainable ocean economy for 2050. Approximating its benefits and costs*. Washington, DC: World Resources Institute. https://oceanpanel.org/sites/default/files/2020-07/Ocean%20Panel_Economic%20Analysis_FINAL.pdf

Lau, J. D., & Scales, I. R. (2016). Identity, subjectivity and natural resource use: How ethnicity, gender and class intersect to influence mangrove oyster harvesting in The Gambia. *Geoforum*, 69, 136-146. https://www.sciencedirect.com/science/article/abs/pii/S0016718515300567

Liu, W., Shi, H. B., Zhang, Z., Tsai, S. B., Zhai, Y., Chen, Q., & Wang, J. (2018). The development evaluation of economic zones in China. *International journal of environmental research and public health*, 15(1), 56. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5800155/

OECD (2021). *Sustainable Ocean Economy Country Diagnostics of Indonesia*. https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DCD(2021)5&docLanguage=En

OECD (2020). *OECD work in support of a sustainable ocean.* https://www.oecd.org/ocean/OECD-work-in-support-of-a-sustainable-ocean.pdf

OECD (2016), *The Ocean Economy to 2030*, OECD Publishing, Paris. https://doi.org/10.1787/9789264251724-en

Okafor-Yarwood, I., Kadagi, N. I., Miranda, N. A., Uku, J., Elegbede, I. O., & Adewumi, I. J. (2020). The blue economy–cultural livelihood–ecosystem conservation triangle: The African experience. *Frontiers in Marine Science*, 7, 586. https://www.frontiersin.org/articles/10.3389/fmars.2020.00586/full

Senaratne, M. (2020). The Blue Economy: Charting a New Development Path in the Seychelles. *Observer Research Foundation.* https://www.orfonline.org/wp-content/uploads/2020/08/ORF_OccasionalPaper_265_BlueEconomy-Seychells.pdf

UNEP (2015). Blue Economy: Sharing Success Stories to Inspire Change. Nairobi: United *Nations Environmental Programme Regional Seas Report and Studies*, 195. https://www.unep.org/resources/publication/blue-economy-sharing-success-stories-inspire-change

Wenhai, L., Cusack, C., Baker, M., Tao, W., Mingbao, C., Paige, K., ... & Yufeng, Y. (2019). Successful blue economy examples with an emphasis on international perspectives. *Frontiers in Marine Science*, 6, 261. https://www.frontiersin.org/articles/10.3389/fmars.2019.00261/full

World Bank (2020). *Healthy Oceans. Healthy Economies. Healthy Communities*. 2020 Annual Report. PROBLUE. https://documents1.worldbank.org/curated/en/564401603456030829/pdf/PROBLUE-2020-Annual-Report.pdf

World Bank (2017). *The potential of the blue economy: increasing long-term benefits of the sustainable use of marine resources for small island developing states and coastal least developed countries.* World Bank. https://sustainabledevelopment.un.org/content/documents/15434Blue_EconomyJun1.pdf

World Bank (2016). *Blue economy development framework, growing the blue economy to combat poverty and accelerate prosperity.* https://thedocs.worldbank.org/en/doc/446441473349079068-0010022016/original/AMCOECCBlueEconomyDevelopmentFramework.pdf

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