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Putting coastal communities at the center of a sustainable blue economy: A review of risks, opportunities, and strategies

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New approaches to ocean governance for coastal communities are needed. With few exceptions, the *status quo* does not meet the diverse development aspirations of coastal communities or ensure healthy oceans for current and future generations. The blue economy is expected to grow to USD2.5–3 trillion by 2030, and there is particular interest in its potential to alleviate poverty in Least Developed Countries and Small Island Developing States, and to support a blue recovery from the COVID-19 pandemic. This paper presents a selective, thematic review of the blue economy literature to examine: (i) the opportunities and risks for coastal communities, (ii) the barriers and enablers that shape community engagement, and (iii) the strategies employed by communities and supporting organizations, which can be strengthened to deliver a 'sustainable' blue economy and improve social justice for coastal communities. Our review finds that under business-as-usual and blue growth, industrial fisheries, large-scale aquaculture, land reclamation, mining, and oil and gas raise red flags for communities and marine ecosystems. Whereas, if managed sustainably, small-scale fisheries, coastal aquaculture, seaweed farming and eco-tourism are the most likely to deliver benefits to communities. Yet, these are also the sectors most vulnerable to negative and cumulative impacts from other sectors. Based on our evaluation of enablers, barriers and strategies, the paper argues that putting coastal communities at the center of a clear vision for an inclusive Sustainable Blue Economy and co-developing a shared and accessible language for communities, practitioners and policy-makers is essential for a more equitable ocean economy, alongside mainstreaming social justice principles and integrated governance that can bridge different scales of action and opportunity.

KEYWORDS

blue economy, coastal communities, justice, sustainability, marine

1. Introduction

The UN Decade of Ocean Science for Sustainable Development (2021–2030) signifies a new level of policy and research attention on the ocean. It provides a critical opportunity to advance a more socially just and sustainable blue economy to improve the lives of millions of people living in coastal communities, globally, whose livelihoods, cultures and identities depend on healthy marine ecosystems (WWF, 2015a; FAO, 2022).

The blue economy is estimated to be worth USD1.5 billion and is expected to grow to USD 2.5–3 trillion by 2030 (WWF, 2015b; OECD, 2016). There is growing interest in the potential of the blue economy to alleviate poverty in Least Developed Countries (LDCs) and Small Island Developing States (SIDS), and to support a blue recovery from the COVID-19 pandemic (OECD, 2021). For example, the blue economy is declared as "the next frontier" in the African Union's Agenda 2063 (in UNECA, 2016; Okafor-Yarwood et al., 2020). In parallel, a recent analysis reveals exponential growth across diverse marine sectors (Jouffray et al., 2020): the seafood sector is the fastest growing food industry; coastal tourism is the fastest growing tourism sector; shipping accounts for 80% of global trade; 70% of new oil and gas discoveries are offshore; and more than 1.3 million km^2 of the seabed in Areas Beyond National Jurisdiction (ABNJ) is currently licensed for Deep-Sea Mining (DSM) exploration. This so-called "blue acceleration" is occurring under climate change and rapidly shifting geopolitics, which are concentrating activities where conditions are favorable and creating new opportunities and risks for coastal communities (Jouffray et al., 2020). In this paper, we review recent literature on the blue economy, sustainable blue economy and so-called blue justice. We focus on what this literature reveals about how coastal communities are impacted by and engaging in blue economy activities. Our aim is to examine the opportunities and risks posed by the emergent blue economy, and reveal tangible ways to operationalise a more socially just approach to deliver a Sustainable Blue Economy.

2. Approach

The paper is based on a selective, thematic review of published ($n = 23$) and grey literature ($n = 12$) on the blue economy, with emphasis on literature pertaining to coastal communities and the blue economy (Supplementary Table 1). We conducted a search of published articles on the Web of Science using the key search terms: "blue economy" OR "blue growth" OR "blue grabbing" OR "blue justice" OR "blue equality" OR "ocean economy" OR "ocean justice" OR "ocean grabbing" OR "ocean equality". From this database, we selected recent articles that provided an overview of the field with particular emphasis on the implications for coastal communities [from (Silver et al., 2015) analysis of blue economy discourse at Rio+20 to date]. We supplemented the review of published articles with a review of grey literature from a range of key organizations shaping the blue economy agenda, including: WWF, UNDP, UNEP, OECD, the Commonwealth and the High Level Panel for a Sustainable Ocean Economy. Our review is not intended to be systematic or comprehensive, rather it highlights key themes emerging in the literature around coastal communities and the blue economy.

Specifically, the review examines current narratives around the blue economy, the opportunities and risks of an emerging blue economy for communities, and the enablers, barriers and strategies shaping how communities can meaningfully engage in a Sustainable Blue Economy (SBE). Hence, when reviewing each document, we extracted information and examples on risks, opportunities, enablers, barriers and strategies. Based on this review, the paper ends with a discussion of the narratives that support community engagement in a SBE, through highlighting some of the internal contradictions in these agendas, and outlines tangible next steps to promote social (blue) justice for coastal communities in a sustainable blue economy. In this paper, social justice is understood as both a set of principles and as a social movement intended to achieve fairer process and outcomes for coastal communities in the ocean economy (*sensu* Schlosberg and Collins, 2014; see also Jentoft et al., 2022).

3. Coastal communities and the blue economy

3.1. The fragmenting blue economy narrative

The blue economy agenda was first and foremost about improving ocean health and the sustainability of ocean uses: the term was first introduced in a book published for the Club of Rome, which framed the blue economy as innovation, technology and entrepreneurship for a greening of the ocean economy (Pauli, 2004). Literature on the subject has accelerated since 2010/2011, and the blue economy discourse has taken hold in international policy circles (e.g., The Economist, 2015).

Most definitions of the blue economy point to it having three pillars—environment, economy and society (Louey, 2022). As the concept of a blue economy has gained traction in academic and policy circles it has splintered and moved away from its central premise as a parallel to the green economy. Different strands of the discourse emphasize different pillars and specific problems, solutions and participants. Silver et al. (2015) identify four strands: oceans as natural capital; oceans as good business; oceans as integral to (Pacific) Small Island Developing States (SIDS), and; oceans as small-scale fisheries livelihoods (Table 1). More recently, social justice and equity framings are gaining high-level attention, as illustrated by reports released by

TABLE 1 Summary of diverging blue economy narratives (based on Silver et al., 2015).

Oceans as …	Emphasis of different blue economy narratives
Natural capital	This framing focuses on how nature is under-valued, particularly economically. Approaches focus on quantification, valuation and subsequent conservation and restoration of natural capital, with nature-based infrastructure and solutions, payments for ecosystem services, and blue carbon being prominent. This framing does not preclude coastal communities; benefits are expected to accrue through, for example, people-centred biodiversity conservation and focused investments in building the resilience of coastal 'blue carbon' habitats, plus local carbon markets.
Good business	This strand acknowledges that some activities are unsustainable but argues that new markets, incentives, regulation, and private sector investment can bring the ocean into the green economy with benefits 'trickling down' to citizens of ocean states. Terms associated with this perspective include blue growth and oceans as untapped, under-utilised and under-explored potential.
Integral to (Pacific) Small Island Developing States (SIDS):	In the run-up to Rio+20, Pacific SIDS delegates claimed that the Alliance of Global SIDS would adopt the blue economy terminology to frame their interests. While contested internally, this was taken forward primarily to ensure oceans and ocean states were brought into discussions about the green economy. For SIDS, adopting a blue economy framing aims to increase equitable distribution of benefits from their Exclusive Economic Zones (EEZ); improve fisheries governance within and beyond their EEZs; and build resilience to climate change. It aims to assert their identity as nations with ocean territories far in excess of their land territories, and to mobilise international NGO and donor support that aligns with their livelihood and development priorities. Healthy marine ecosystems are seen as integral to growth of SIDS' ocean economies.
Small-scale fisheries livelihoods	This framing of the blue economy has emerged as an important counter-narrative to oceans as good business and oceans as natural capital. It expands the oceans as integral to SIDS framing to all coastal people. Its focus is on communities, marginalised groups and poverty reduction, articulated through a concern for small-scale fisheries (Voyer and Leeuwen, 2019). At Rio+20 The International Collective in Support of Fishworkers (2012) issued a statement emphasising sustainable and equitable distribution of ocean resources, the cultural and collective value of small-scale fisheries and ocean-based food-security, and the need to protect fishers' rights with respect to privatisation, Illegal, Unreported and Unregulated (IUU) fishing, and enclosures, including no-take protected areas. More recently, the African Confederation of Professional Artisanal Fishing Organisations (CAOPA, 2022), representing artisanal fishing communities from Africa and the Pacific, called for a prohibition of deep-sea mining stating that: "our fishing zones, our EEZs, are too precious to be ever exposed to the risks posed by deep sea mining."

the High Level Panel for a Sustainable Ocean Economy (e.g., Toward Ocean Equity[1] and A Sustainable and Equitable Blue Recovery to the COVID-19 Crises[2]) Other efforts to re-frame the blue economy discourse include: community-based blue economies (UNDP, 2018; Bradford et al., 2020; Phelan et al., 2020); community-supported fisheries (Campbell et al., 2014); Blue Communities (Campbell et al., 2021); and Blue de-growth (Ertor and Hadjimichael, 2020).

Nevertheless, the social pillar of the blue economy is the least developed; the economic pillar has dominated in practice. Consequently, social and equity issues need to be considered alongside the environment in discussions about ocean futures (Bennett et al., 2021). One way to centralize social justice and advance the social pillar of a sustainable blue economy is to foreground the experiences of coastal communities who depend on healthy oceans and are highly impacted by transitions in ocean governance, as we aim to do in this review. Reflecting emphasis to date on the economic and environmental pillars of the blue economy, in the next sections we distinguish between the blue economy as business-as-usual or blue growth, and a Sustainable Blue Economy, defined by WWF as one which: "*restores, protects and maintains diverse, productive and resilient marine ecosystems; is based on clean technologies, renewable energy and circular material flows, and; provides social and economic benefits for current and future generations*" (WWF, 2018).

3.2. Opportunities and risks of the blue economy for coastal communities

3.2.1. Opportunities

The blue economy is said to offer *indirect opportunities* to coastal communities through: (i) national (blue) economic development "trickling down" to coastal citizens *via* creation of jobs and new financial opportunities; (ii) increased ocean rents and re-direction of subsidies and investment toward the environmental and social pillars of the blue economy; iii) improved infrastructure and technology enhancing access to information, energy and other services; iv) co-location of activities with co-benefits including climate change adaptation, provision of substrate or infrastructure, and enhanced cultural value; v) potential to enhance protection and restoration of ecosystem services, and vi) strengthened national sovereignty (Table 2).

Recently, attention has focused on the prospect of a blue recovery from the COVID-19 pandemic. COVID-19 restrictions severely disrupted the movement of people and goods, with considerable adverse impacts on tourism, shipping, and international trade. SIDS and vulnerable groups, like women, were deeply affected (Northrop et al., 2020). During the pandemic, self-sufficiency at local and national levels became vital, highlighting the importance of sectors such as

1 https://oceanpanel.org/the-agenda/ocean-equity/

2 https://live-oceanpanel-wp.pantheonsite.io/sustainable-and-equitable-blue-recovery-COVID-19-crisis/

TABLE 2 Summary of the key opportunities for coastal communities offered by a sustainable blue economy, and the risks posed by business-as-usual.

	Opportunities	Risks
Indirect	- Jobs and new financial opportunities - Rents, investment, subsidies - Innovation, infrastructure, new technology - Co-location and co-benefits - Enhanced protection and restoration of ecosystem services - National sovereignty and security - Leverage COVID-19 recovery plans and funds	- Economy prioritised over sustainability and equity - Acceleration of unsustainable resource use - Sectoral trade-offs and increased ocean conflict - Elite capture and inequality - Marginalised communities
Direct	- Livelihoods and new markets - Food and nutritional security - Payments for ecosystem services - Capacity development and education - Improved governance, equity, rights	- Dispossession and displacement - High dependence on vulnerable livelihoods - Risks to food security - Rights violations - Inequitable distribution of costs and benefits

The information in this table was extracted from the published and grey literature reviewed (references in Supplementary Table 1).

small-scale fisheries, community-based aquaculture and other local enterprises. Moving forward, the literature identifies opportunities to leverage the COVID-19 recovery agenda to mobilize and re-direct financing and resources toward the environmental and social pillars of the blue economy. For example, the USA's Coronavirus Aid, Relief and Economic Security Act provides fisheries allocations for states, tribes and territories negatively impacted by COVID-19. The OECD (2021) identifies particular opportunities for SIDS to use support for a blue recovery through addressing debt, creating and seizing new investment opportunities, and building resilience and sustainability of critical sectors (greening ports, sustainable tourism, ocean health).

Our review suggests that a sustainable blue economy can present *direct opportunities* for coastal communities through improving markets, catalyzing new sustainable development sectors and directing investment into community development and livelihoods projects. Direct opportunities include: (i) alternative, enhanced and sustained livelihoods; (ii) enhanced food and nutritional security; (iii) Payments for Ecosystem Services; (iv) capacity development, and; (v) improved governance, equity and rights (Table 2). An example from Costa Rica involves a partnership between CoopeSoliDar[3] and local women to improve the value chain; shortening it for high quality, local products and labeling it as fair trade. The literature also notes the potential to improve the availability and access to nutritious aquatic foods locally and globally through better-managed capture fisheries and sustainable mariculture and aquaculture under a SBE. Sustainable mariculture production of a diversity of seafood, including shellfish and seaweed, in particular, is highlighted as being a source of sustainable and healthy food that can be accessed by poor communities (Farmery et al., 2021).

Other direct benefits can be derived from Payments for Ecosystem Services (PES) to communities, with the literature noting the particular potential for payments for bundles of ecosystem services contributing to key outcomes such as water quality (Vanderklift et al., 2019). To give a detailed example, Okafor-Yarwood et al. (2020), outline the case of the Mikoko Pamoja project in Gazi Bay, Kenya, the first mangrove PES project in the world. Approximately 117 hectares of natural and planted mangrove forests are under a co-management regime between communities, government agencies and NGOs, with carbon credits verified through Plan Vivo and sold on the international voluntary carbon market. By raising income from stacked services including carbon credits and other income-generating activities such as beekeeping and ecotourism, the project safeguards the mangroves and the multiple services they provide to the local community. Between 2014 and 2020, the community participants received USD 96,915 in PES payments.

The literature points to opportunities for capacity development and community empowerment relating to improved ocean and financial literacy, technological capacity, and entrepreneurship. It also identifies improvements in governance, equity and rights as direct opportunities for communities as well as key enablers of an inclusive SBE. For example, coaching for gender equity in the blue economy can lead to improvements in self-confidence, negotiating-skills and assertiveness for women more broadly (Österblom et al., 2020). Equity in particular is presented as important as a means (enabler) and as an end (opportunity). It can represent a virtuous cycle: improved experiences of equitable treatment and outcomes in some areas can lead to expectations about a minimum standard of socially just practice in other areas and across scales (Österblom et al., 2020).

Despite the huge potential for social and economic prosperity in a healthy and resilient ocean economy, there are three important considerations to note. First, there are competing requirements for space across marine sectors and they cannot all develop to their full potential simultaneously (Crona et al., 2021). Second, the capacity of these sectors to contribute to the blue economy varies across regions in

3 https://coopesolidar.org

response to natural resource availability and, more importantly, enabling conditions (Cisneros-Montemayor et al., 2021). Third, as highlighted in the following sections, many of the indirect and direct opportunities rely on a *sustainable* blue economy where sustainable use, protection and recovery of marine ecosystems is central, and where costs, benefits, and livelihood and food security opportunities are shared. Notably, the specific opportunities for coastal communities to engage in these sectors directly can be relatively limited.

3.2.2. Risks

There are concerns that the dominant blue economy agenda prioritizes economic growth over sustainability and equity, with oceans viewed "as a source of wealth and prosperity … whose economic potential needs unlocking" (Childs and Hicks, 2019, p. 324). The blue economy agenda has been described as akin to a *blue frontier* or a *blue rush*. Importantly, despite continued prominence in some blue economy narratives, evidence suggests that the 'trickle-down' of benefits from ocean-based economic growth to communities is unlikely (Wieland et al., 2016; Akinci, 2018), and prioritization of economic over environmental and social objectives can accelerate unsustainable use of marine resources, increase sectoral and user conflict, lead to elite capture and exacerbate inequities. Such business-as-usual and blue growth trajectories pose *indirect and direct risks* to coastal communities (Table 2).

A review of sectoral interactions in the blue economy noted that 13 out of 14 ocean sectors have interactions resulting in negative ecosystem impacts (Crona et al., 2021). The diverse suite of impacts identified can adversely affect coastal communities through loss of valued ecosystem services, with fisheries found to be particularly sensitive to negative impacts from other sectors mediated by marine ecosystems. Importantly, the authors note the potential for cumulative impacts driven by particular sectors: drilling, mining, aggregates, shipping, fishing, and aquaculture. Others also note that distant activities, such as DSM or fishing in ABNJ still impact vital coastal ecosystems through ecological connectivity and ocean circulation and advocate for a total prohibition of activities in ABNJ (Popova et al., 2019; UNEP FI, 2022). This includes calls directly from small-scale fishers' representatives in Africa and the Pacific to prohibit activities, noting a "blue fear" of DSM and "other destructive polluting activities promoted as part of the blue economy" (CAOPA, 2022).

Sectoral interactions can also result in direct conflict within and between marine sectors. Crona et al. (2021), identify military operations, shipping, and drilling as three sectors most commonly associated with conflicts. Aside from issues relating to climate change and pollution, oil and gas operations, in particular, are detrimental to capture fisheries, aquaculture, tourism and shipping (Jouffray et al., 2020); and fisheries and tourism are the sectors most vulnerable to conflicts with other marine uses (Crona et al., 2021). Moreover, the ability of communities to voice their concerns in an increasingly contested space will be challenging, with a risk that conflict is resolved in favor of more powerful economic interests (Voyer and Leeuwen, 2019).

Indeed, in a "business-as-usual" blue economy many coastal communities, small-scale sectors, and minority groups are marginalized from the high-level decision-making processes that are defining the blue economy, and from its implementation and governance (Cohen et al., 2019). The exclusion of coastal communities is particularly associated with offshore sectors, such as DSM and industrial fishing, suggesting a lack of connection between more remote initiatives and coastal communities.

A blue economy that fails to address or exacerbates unsustainable use, sector conflicts and marginalization of communities presents a number of significant *direct risks* to coastal communities' lives, livelihoods, food security and rights. As competition for ocean space increases, less politically powerful local communities and traditional resource users could be displaced or dispossessed of the ocean resources they depend upon (Bennett et al., 2019; Phelan et al., 2020). In particular, prioritization of larger-scale economic activities and growth sectors can mean activities such as small-scale fisheries are "subtly and overtly squeezed for geographic, political and economic space" (Cohen et al., 2019, p. 171), with important implications for access to resources, community livelihoods and food security. Reflecting development-induced displacement on land, Okafor-Yarwood et al. (2020), report the adverse impacts of port development on the livelihoods of fishers and farmers along the African coast. They give the example of Kribi Port in Cameroon where efforts to relocate communities were ineffective in addressing the wellbeing and livelihoods of displaced communities. Note too that top-down marine spatial planning processes and, specifically, the expansion of poorly sited and planned (no-take and highly regulated) Marine Protected Areas have been found to displace and dispossess Indigenous groups and other local communities from the marine ecosystems on which they depend economically, socially and culturally (Farmery et al., 2021).

In sum, community livelihoods that depend on marine ecosystems can be adversely impacted by environmental degradation, dispossession, displacement, direct conflict with other sectors, all of which are exacerbated by marginalisation from top-down planning and blue economy decision-making. In addition, the literature notes that as part of a developing blue economy, increased reliance on livelihoods (e.g., fisheries and tourism) that are already highly precarious and vulnerable to external perturbation (e.g., climate change and terrorism) may escalate adverse impacts on coastal communities. The blue economies of low-lying coastal areas, SIDS and LDCs

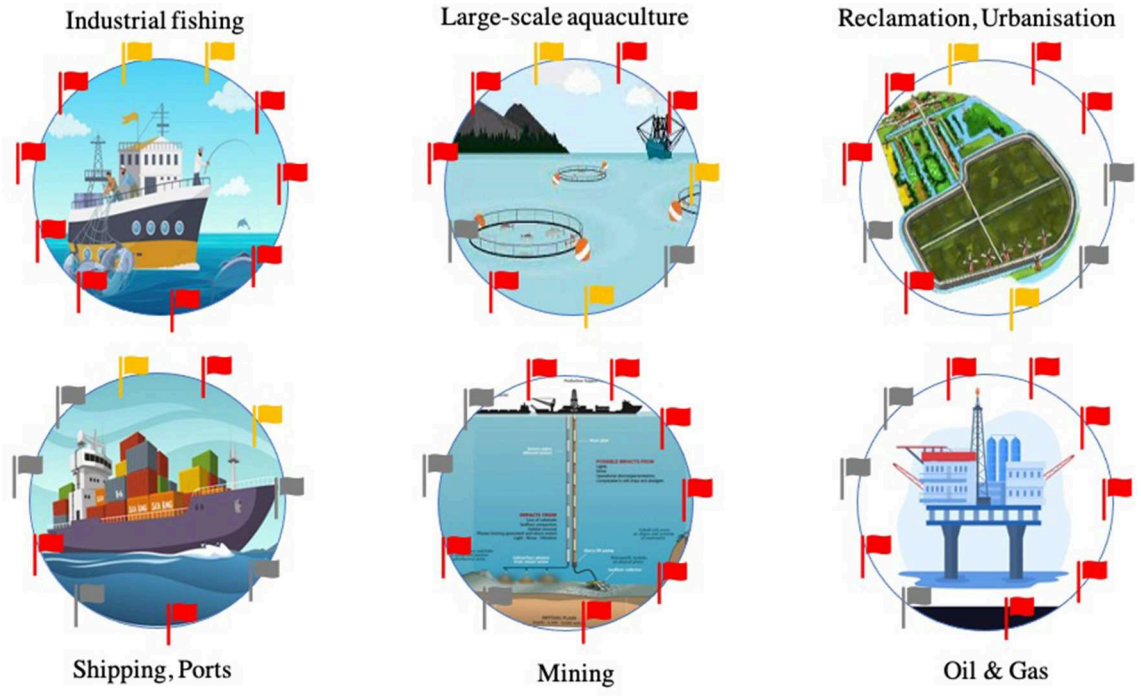

FIGURE 1
Illustration of red flags for coastal communities based on the consolidation of evidence from literature indicating risks to communities from key blue economy sectors. Red indicates high risk. Amber indicates moderate or mixed risks. Grey indicates uncertainty or no clear references in the study materials reviewed. Key (clockwise from 1): Rapidly expanding; Poor environment record; Unequal; Exclusive; Conflict; Displaces communities; Rights violations; Adversely impacts livelihoods; adversely impacts food security; Lack of benefit overall.

are disproportionately affected by direct impacts of the blue economy on coastal livelihoods (Österblom et al., 2020).

Food and nutritional security are similarly impacted by risks generated by an unregulated blue economy and external perturbations. In particular, the commodification of aquatic food production has the potential to dramatically alter local food systems. Small-scale fisheries provide a key source of micro-nutrients and protein for over a billion low-income consumers globally (Cohen et al., 2019). In a "business-as-usual" blue economy, this sector faces challenges from trade-offs among local, domestic and export markets; demand for high value seafood; and volatilities in global food markets and distribution channels. For instance, mariculture and coastal aquaculture are widely promoted to make up for declining wild-capture fisheries, yet production remains relatively low compared to wild-capture fisheries, and assumptions around substitutability fail to value the highly-dispersed subsistence uses and cultural importance of small-scale fisheries (Govan, 2017).

Finally, a blue economy that prioritises economic growth over social objectives risks perpetrating human rights violations and social injustice directly against members of coastal communities. Growth in the blue economy poses risks to health, safety and wellbeing, with evidence of human trafficking, bonded labour, and health impacts in industries including industrial fisheries and shipping (ship-breaking) (UNEP, 2021).

More broadly, existing inequalities in access to ocean resources can lead to unequal ability among ocean sectors, nations, communities and peoples to claim rights, take up opportunities, and influence the blue economy agenda thereby further exacerbating inequality (Crona et al., 2021). The literature suggests economic growth does not "trickle down" and that in the absence of explicit efforts to improve societal welfare, it can result in the poorest people being made worse off, as seen in the seafood trade (Farmery et al., 2021). Literature also contests assumptions that income from large-scale enterprises and government revenue is redistributed to those in need, raising important questions about the social benefits of offshore sectors such as DSM (Béné et al., 2016).

The sectors that come up consistently in the literature as concerns for coastal communities are mining, oil and gas, coastal development (urbanisation, port development, land reclamation), and industrial fishing (Figure 1). These industries are expanding rapidly, for example: larger-scale aquaculture production is driving exponential growth in the seafood industry; 12 of 15 mega-cities are coastal; oil and gas is the largest ocean-based industry by value with further growth expected offshore; and sand and gravel mining and deep-sea mining exploration are accelerating to keep up with the construction and high-tech industries (Jouffray et al.,

2020). These sectors have poor environmental records, and are shown to adversely impact communities in a number of significant ways, yet, they deliver very few to no benefits for communities. They are highlighted here as red flags that will require specific attention in developing a socially just SBE.

3.3. Barriers and enablers shaping engagement of communities in the blue economy

As well as understanding the opportunities and risks posed by the emerging blue economy for coastal communities, our review aimed to understand the conditions, broadly speaking, which influence the ability of coastal communities to influence the blue economy agenda, buffer its risks and take up its opportunities. In this section, we outline the barriers to and enablers of community engagement in a (sustainable) blue economy identified in the literature; organised into three themes related to power, capacities and governance. In Section 2.4 we then review the strategies used by coastal communities and supporting agencies to improve coastal community uptake and experiences of the blue economy.

3.3.1. Reducing power imbalances and structural inequalities

Power differentials between global north and south, governments and communities, and large-scale and small-scale producers are recognised as a key barrier to a more equitable (and sustainable) blue economy (Govan, 2017; Österblom et al., 2020; Bennett et al., 2021; Cisneros-Montemayor et al., 2021). The blue economy is currently characterised by the persistence of structural inequalities in political negotiations, international trade-agreements, global markets and value chains, resources and capacities (Table 3). For example, in Africa, 25% of all the marine catches in the continent are made by non-African states, resulting in the loss of USD 3.3 billion in potential earnings (Okafor-Yarwood et al., 2020). Such power imbalances and inequalities are exacerbated by top-down and exclusive blue economy decision-making (Okafor-Yarwood et al., 2020), alongside a lack of recognition for indigenous, customary and community knowledge, cultures and rights (Österblom et al., 2020). To enable a shift to a more equitable and sustainable blue economy requires improved international co-operation, clearly defined territorial rights for nations and communities, formalised mechanisms to ensure inclusive decision-making at all scales (including large-scale and/or off-shore activities), and more attention to a broad suite of human rights. In particular, areas traditionally and collectively governed by Indigenous peoples and local communities should be appropriately recognized and secured.

3.3.2. Addressing a lack of capacity, knowledge and resources

A lack of capacity is often cited as a barrier to community involvement in the blue economy. Specifically, this relates to a lack of knowledge, financial capital, education and skills, time and interest (UNDP, 2018; UNEP, 2021). Underpinning (scientific and technical) knowledge deficiencies are: scientific and knowledge inequalities; lack of appreciation for Indigenous and local knowledge; insufficient knowledge-sharing and promotion of best-practice; as well as widespread data and information gaps around the environmental, social and cultural impacts of blue economy activities (Österblom et al., 2020). In response, valuing Indigenous knowledge, decolonising and democratising ocean research, and accounting for social impacts and social limits to growth are key enablers for a more equitable and sustainable blue economy.

Financially, the investments required to catalyse development of a sustainable blue economy, particularly at the community level, are substantial. The USD 13 billion of philanthropy and Overseas Development Assistance spent over the last decade is regarded as insufficient (Sumaila et al., 2021). Ocean investments are often seen as high risk and there is a perceived lack of high-quality investment opportunities (Sumaila et al., 2021), exacerbated by widespread under-valuation of marine and community resources (Chen et al., 2020). Moreover, financial institutions are concentrated in the Global North and dominated by large corporations and multinationals (UNEP, 2021). As such, finance can be challenging to access for the countries and communities that need it most (UNDP, 2018; Okafor-Yarwood et al., 2020). Improving access to sustainable finance, as well as capacity building around business planning and enterprise development are key enablers for coastal community engagement in the blue economy. To this end, key frameworks, such as the Sustainable Blue Economy Finance Principles[4] have been developed to help re-direct harmful subsidies and market mechanisms; capture and re-distribute revenues for ocean uses; improve community access to finance and credit, and; foster new and innovative investments in green and social enterprises (WWF, 2018). Beyond knowledge and financial resources, a broad suite of capacity and resource issues can limit communities' ability to and interest in engaging with the blue economy, from poverty and lack of social security; to lack of education, literacy and skills; to remoteness and organisational challenges. These present immediate barriers to accessing finance, understanding policy or scientific language (including the language of the blue economy), and navigating bureaucratic processes. To

4 https://www.unepfi.org/blue-finance/the-principles/

TABLE 3 List of factors identified in a strategic review of the literature as blocking and enabling the emergence of a more equitable sustainable blue economy.

Barriers	Enablers
Elite capture of the blue economy - Existing power imbalances - Top-down and fragmented decision-making **Existing inequalities and lack of rights** - Structural inequalities - Lack of recognition - Lack of rights	**Equitable partnerships** - Improved international co-operation - More inclusive decision-making involving diverse stakeholders across scales, including accountable public consultation and formal requirements to include communities. - Improved understanding of the value communities contribute economically, socially and culturally. - Enhanced advocacy of community rights - Right to free, prior and informed consent of Indigenous peoples and local communities is recognized and respected. - More collaborative processes with communities, including shared visions for a SBE **Secure tenure and human rights** - Legally defined national jurisdictions - Improved mechanisms to fairly allocate rights over ABNJ - Communities' customary and territorial rights secured - Recognition of human rights to food, equality and non-discrimination, Indigenous rights and labour rights - Use of (human) rights-based approaches
Uncertainty and knowledge gaps - Knowledge gaps in ecological, technical, financial, management and socio-cultural information - Scientific and knowledge inequalities - Lack of appreciation for local and Indigenous knowledge - Insufficient knowledge sharing **Market and finance barriers** - Inadequate financial investment - Ocean investments (in sustainability and community development) seen as high risk - Under-valuation of marine and community resources - Concentration of financial institutions and resources - Available finance difficult to access - Questionable financial and market practices common **Community capacity and heterogeneity** - Limited education, skills, time, capital, technology and infrastructure - Challenges with community organisation, governance and heterogeneity - Lack of interest and engagement in the blue economy agenda - Remoteness - Small economies - Poverty and lack of social security	**Knowledge-sharing and evidence-based decision-making** - Generation of evidence on social and cultural impacts; tangible and intangible values; social and ecological limits to growth - Better inclusion of a multiplicity of knowledge systems (including Indigenous/local) and knowledge exchange across diverse stakeholders - Strengthened adaptive learning about risks and opportunities - Democratisation of ocean research **Improve access to markets and innovative, sustainable finance** - Re-direction of harmful market subsidies and mechanisms in place to promote sustainable and equitable uses - Mechanisms implemented to capture revenues from ocean use through taxes, levies, and fees - Improved access to financing, savings, micro-credit and insurance - Private sector, donor and government investment guided towards blue-green and social enterprises - Consumer preferences for sustainable and fair-trade goods and services leveraged **Capacity to address risks and take up opportunity** - Emphasis on satisfying people's basic needs - Community capacities accounted for in programme design - Improved access to innovative environmentally appropriate technologies and infrastructure - Strengthened capacity to lobby and network strategically
Lack of and ineffective governance - Loopholes in international obligations - Lack of clear jurisdictions, accountability, criteria, targets, and indicators - Politics and power dynamics, including geopolitical manoeuvring, lobbying by industry, colonial legacies and corruption - Lack of formalised benefit-sharing obligations - Substantial costs of developing and enforcing regulation - Lack of political will to drive necessary policy and regulatory change for a SBE - Policy prioritisation of large-scale economic industry - Low institutional capacity and resources - Lack of integrated planning	**Improved governance** - Improved implementation of existing regulation - New regulation and institutions developed to deal with emerging sectors - Inclusion of clauses to mitigate social (as well as environmental) impacts of activities, and associated impact assessments. - Good governance principles fully applied - Decentralised governance approaches implemented - Rights to participation and fair outcomes formally recognised

The information in this table was extracted from the published and grey literature reviewed (references in Supplementary Table 1).

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TABLE 4 Key strategies identified in a strategic review of the literature to ensure communities can address risks and take up opportunities in the blue economy.

Strategy	Options
Showcasing customary practices	- Continue (and adapt) customary practices and management - Utilise and (re-)assert coastal territories and tenure - Use the narratives of conservation and climate change to reinforce and authenticate customary practices
Documenting and evidencing	- Document and map existing patterns of resource use to allow communities to evidence and claim associated rights - Valuation of small-scale marine resource uses for economies - Monitor and enforce compliance to existing management regulations - Record social and environmental impacts and risks of unsustainable blue economy interventions - Develop and apply best-practice models - Use and value local knowledge, and democratise science and data gathering
Co-production and collaboration	- Foster community ownership, engagement and participation - Develop partnerships with NGOs, CBOs, governments and private sector - Create bridging organisations and multi-stakeholder forums - Cross-sectoral blue economy planning - Build social capital and trust
Providing resources	- Provide infrastructure and technologies, including Information and Communication Technologies (ICT) - Set up financial mechanisms accessible to communities, engage the private and finance sectors to attract donors, and support communities to comply with funding requirements - Create good conditions for investment and support with incubation and acceleration of innovations and enterprises. - Translate concepts, framework and approaches so they are accessible for communities
Capacity building	- Provide education and skills training (financial literacy, technical know-how, business skills, research and monitoring, resource management, value chain efficiencies, organisational skills, risk awareness) - Empower communities and small-scale producers to understand and claim rights; access and participate in decision-making - Support marginalised groups (e.g., women and youth) in leadership, governance and business
Improving governance	- Alter financial and other incentives (e.g., certification schemes) - Planning and designation of marine areas for community development - Nurture and improve community leadership - Develop new policy and institutions for community participation

The information in this table was extracted from the published and grey literature reviewed (references in Supplementary Table 1).

enable effective community engagement in the blue economy, approaches need to accommodate and address capacity issues within communities.

3.3.3. Improving governance of the blue economy

Non-existent, fragmented and poor governance are major barriers to a sustainable and equitable blue economy. Table 3 identifies constraints at the international/regional level (e.g., loopholes in international obligations and geopolitical manoeuvring) and at the national/sub-national level (e.g., poor planning, impact assessment and accountability), driven by factors such as low institutional and financial capacity, lack of political will, corruption and pressure from vested interests (Govan, 2017; UNDP, 2018; Okafor-Yarwood et al., 2020; Österblom et al., 2020). Yet, effective governance is arguably the most significant enabler of an equitable and sustainable blue economy, including improved implementation of existing regulation and development of new policy and institutions to govern emerging and expanding sectors (Sumaila et al., 2021). Clear governance frameworks, good governance principles, and inclusive and decentralised forms of governance are identified in the literature as critical to the delivery of an inclusive SBE. Our review also noted the need for civil society and private sector participation (including communities) to play a role in blue economy governance (e.g., voluntary agreements and codes of conduct, corporate social responsibility, social license to operate, certification) (Voyer and Leeuwen, 2019; UNEP, 2021).

3.4. Strategies used by and to support communities navigate the blue economy

The risks and barriers associated with unsustainable blue growth being faced by coastal communities are numerous and the effort needed to deal with risks, in turn, limits the time and capacity communities have to create and take advantage of new opportunities from an emerging sustainable blue economy. There is high dependence on civil society groups, the third sector and/or governments to develop solutions in partnership with communities. Aligning with enabling factors, the literature review identified a diverse range of strategies that offer multiple avenues for pro-active support of communities and that can be employed as portfolios of activity (Table 4).

Several facets of community and customary practice are significant for the development of the blue economy. These include: recognising that the oceans are not "uninhabited" empty spaces but replete with local and customary practices, knowledges and values; acknowledging that these practices, knowledges and values are under-documented and -recognised in scientific and policy discourses in terms of their importance to communities, to economies and to sustainable resource management; and being aware that formal recognition in the form of rights is, therefore, often missing (Bennett et al., 2019, 2021; Cohen et al., 2019; Österblom et al., 2020).

Many of the strategies that communities employ aim to showcase, document, defend and reinforce these customary practices and rights, which in turn can provide the authority to regulate their own and others' blue economy activities within coastal areas. Governments and supporting agencies can play a vital role in documenting, evidencing, monitoring and enforcing blue economy activities and their social and environmental impacts (UNDP, 2018). For example, the Illuminating Hidden Harvests[5] and Too Big to Ignore[6] initiatives set out to document the value of small-scale fisheries. The literature notes the importance of valuing local knowledge systems, fostering access to available scientific and monitoring data, and democratising scientific processes to enable communities to generate new knowledge and information (e.g., through citizen science).

A co-production approach is often highlighted as a key strategy. Three scales of collaboration are important: (i) community participation in and ownership of blue economy initiatives from conception to monitoring (Chen et al., 2020); (ii) collaboration between communities and government, private sector, and civil society (UNDP, 2018); and (iii) co-operation at a regional and international level, among nations, multi-lateral agencies and the private sector (Govan, 2017). Collaboration with diverse stakeholders across scales is seen as integral to scaling up the potential benefits of a SBE for communities (Chen et al., 2020).

High levels of social capital, participation, and trust – and strategies that promote these – underpin effective partnerships. NGOs can play a vital role as trusted partners mediating relations between communities and other actors (e.g., governments and the private sector). A good example of where high social capital in communities and strong partnerships with NGOs has been effective in influencing blue economy outcomes is in the Arctic. Here, Indigenous Peoples and Local Communities (IPLCs) of the Arctic Council[7] and NGO allies have, among many other examples: (i) developed a vision for the Arctic's Blue Bioeconomy; (ii) scaled up efforts to document and digitise Arctic cultural heritage "including food heritage as a foundation for diversification of local economies and new approaches to adapt to Arctic change", and; lobbied against oil exploration and extraction and successfully won a moratorium in court (PAME, 2021). In the absence of trusting partnerships, local communities can resort to non-compliance, resistance and protest. These strategies did not feature in the blue economy literature (even where there was dissatisfaction with blue economy interventions such as the Kribi port development example detailed earlier), but are a well-known strategy in wider natural resource management literature (Boonstra et al., 2017).

The role of governments and supporting agencies is particularly important in providing resources, building capacity and enhancing governance of the blue economy. Improved access to financial, technical, human and other resources can encourage adoption of new innovations, enable development of new livelihoods and market opportunities, incentivise changing practices, and improve transparency and accountability in supply chains and governance (UNDP, 2018). Strategies to build capacity typically focus on the community level–for instance, in financial literacy, business skills and leadership–but can also target supporting agencies, the private sector and government agencies.

Finally, communities and supporting agencies play a critical role in influencing, developing and implementing blue economy governance across scales. Strategies include shaping incentive systems, planning and designating marine uses, lobbying and advocacy, and developing new policy and regulation directly. Factors seen as integral to scalability were: co-production approaches, peer-to-peer exchanges, collaboration with the private sector, financing, and innovative technologies (e.g., ICT can enable scaling up of citizen science data collection from manual inputs to a large database, which in turn has the potential to be rolled out across other areas).

4. Discussion and ways forward

Coastal communities are increasingly impacted by a blue acceleration whether or not it is explicitly driven by the blue economy agenda. Blue economy transitions are not currently shaped by communities' visions for development, nor are they necessarily explicitly aligned to Agenda 2030. Further, the capacity of communities to engage effectively with such rapid economic and governance transitions is limited. As a result, many of these change processes are experienced as external risks and barriers by communities.

Certainly, the review finds that there is a significant lag in blue economy governance and regulation to protect communities and the marine ecosystems they depend on. Ambitious individual growth trajectories across blue economy sectors threaten to collectively exceed the carrying capacity of the ocean and significantly escalate ocean conflicts. Fisheries

5 https://www.cgiar.org/news-events/event/illuminating-hidden-harvests-ihh-a-snapshot-of-key-findings-webinar/

6 http://toobigtoignore.net

7 https://www.arctic-council.org/projects/

and tourism — sectors on which communities often rely — are particularly vulnerable to adverse impacts from other blue economy sectors. Regulation of expanding, emerging and high-risk sectors such as shipping, oil and gas, deep-sea mining, large-scale aquaculture, and industrial fishing is currently inadequate to ensure sustainable outcomes and equitable sharing of benefits. There is also a lack of tailored governance frameworks to support benefit sharing and community engagement in a SBE. Ocean policies are described as "equity-blind", with blue economy narratives, in particular, criticised for homogenising, de-peopling, and de-politicising the oceans (Österblom et al., 2020; Bennett et al., 2021). In their comparative analysis of regional blue economies, Cisneros-Montemayor et al. (2021), found equity, human rights and infrastructure to be the enabling conditions most lacking across regions.

As this review shows, communities have not been able to negotiate the processes and outcomes of the blue economy on an equal footing. Blue economy decision-making processes have failed to recognize and facilitate the effective and inclusive engagement of coastal communities, present and future. As our review highlights this is a result of structural inequalities, a lack of recognition for community knowledges, values, customary rights and small-scale practices, and difficulty engaging diverse and dispersed communities in decision-making processes that are not fit for purpose. Such inequalities become more pronounced when the other actors are powerful financial institutions, corporations and governments vying for political favour and competitive advantage in large EEZs and ABNJ with little regard for the downstream impacts on marine and coastal ecosystems and people. Inter-generational equity is particularly challenged by current narratives around blue growth.

Practical action can, however, be taken to address some of these key challenges. We propose four priority actions to advance a more inclusive SBE.

1. *Co-developing a shared vision and language on the SBE*: The discourses of the blue economy and sustainable blue economy have been dominated by multi-lateral actors such as the UN agencies, the European Commission, Commonwealth Secretariat and the Organisation for Economic Cooperation and Development (Childs and Hicks, 2019), as well as global NGOs, and blue economy policy and strategies are proliferating rapidly. Moving forward, it will be vital to include community representatives in co-developing regional, national and local SBE visions and plans, using a shared language that is accessible and can be deployed by governments, practitioners and communities alike. Developing plans at multiple levels will be better able to take into account the varied regional and local contexts that are so important to coastal communities and that shape their experiences of the blue economy.
2. *Mainstreaming social justice principles:* Mainstreaming recognition, procedural and distributive justice in decision-making for current and future generations is key to delivering an inclusive and equitable SBE (Österblom et al., 2020). Bennett et al. (2021), summarise key steps for advancing social justice, including: differentiating rights-holders and other stakeholders; acknowledging customary rights and tenure; building capacity for participation and co-management; respecting principles of free, prior and informed consent, and; providing fair compensation, mitigation and conflict management mechanisms. Implementing such solutions will require policy support, capacity building, access to sustainable and low-cost finance, and improved data and transparency (UNDP, 2018; Sumaila et al., 2021). Partnerships with rights-based organisations and building capacity in rights-based advocacy will be key. It may also be important to concentrate SBE resources on particularly vulnerable groups and communities, for instance, women, young people, Indigenous groups and communities in SIDS and LDCs to mitigate past inequalities (Sumaila et al., 2020; Gill et al., in press).
3. *Strengthening integrated governance across scales and sectors.* There are three important aspects to the governance of an inclusive SBE. First, existing governance mechanisms need to be effectively implemented. Many governance solutions are already in place–ranging from sectoral and inter-sectoral regulations, through to legislation designating rights to participation and legal redress, to principles for sustainable and ethical investment–but they are not sufficiently implemented, enforced and monitored (Sumaila et al., 2020; UNEP, 2021). Second, integrated governance is needed to strengthen and fill gaps in existing regulation and, importantly, to address the potential impacts and environmental and social implications of new and emerging sectors (UNEP FI, 2022). Strategies to integrate ministries, strategies and approaches will be critical to ensuring that equity and sustainability remain primary objectives of key decision makers as well as offering necessary efficiencies (Govan, 2017). Third, specific policy and institutions are required to more comprehensively protect the rights of coastal communities to a healthy environment, to food, nutrition and health, and to participation and inclusive decision-making, among other rights (Jouffray et al., 2020; Österblom et al., 2020). To date, even examples of new and relatively progressive policy and legislation, for instance, regional management of fisheries by the Pacific Island States, highlight the continued imbalances in negotiating power and how benefits from the blue economy are distributed (Govan, 2017). Furthermore, an important task of sustainable blue economy governance will be to recognise and manage tensions and potential trade-offs among multiple and equally important environmental, economic and social objectives such as marine protected areas, marine renewables, small-scale fisheries livelihoods, sustainable aquaculture, and food and nutritional security–not all of which may be able to be reconciled.

4. *Bridging different scales of action and opportunity*: There is notable under-investment by the public and private sector in sustainability (Österblom et al., 2020; Sumaila et al., 2020) and in marine resource-dependent coastal communities. Knowledge of and access to available finance can be limited for the countries and communities that need it most (UNDP, 2018; Okafor-Yarwood et al., 2020). For an inclusive SBE, it will be critical to develop mechanisms and approaches that support the flow of sustainable finance and other resources and opportunities to the community level, to support their sustainable development ambitions and needs, as well as their role as stewards of coastal ecosystems. Voyer et al. (2021), highlight the importance of innovative financing linking community and civil society expectations with private and public sector investment, giving the recent example of the Global Fund for Coral Reefs[8]; a finance initiative which could foster a blue COVID-19 recovery. Opening up coastal communities' access to environmentally appropriate technology solutions, sustainable infrastructure, education and skills training, and knowledge and research processes, as advocated by SDG 17, will also be integral to more equitable development of the sustainable blue economy (UNEP, 2021; Voyer et al., 2021). Equitable partnerships across scales, stakeholders and sectors are fundamental (UNDP, 2018; Okafor-Yarwood et al., 2020).

5. Conclusion

To conclude, our review reiterates that coastal communities are facing an uncertain future. Whilst coastal ecosystems can offer substantive goods and services that support their societal needs, these ecosystems are under severe threat from over-exploitation and direct destruction due to escalating coastal development, pollution and climate-related impacts. Trillions of dollars of public and private sector finance is expected to be targeted at coastal development over this decade which, alongside COVID-19 stimulus finance, could further exacerbate the biodiversity crisis and negatively impact coastal communities if not directed towards sustainable development pathways.

Equity is a prime issue when considering how such large-scale coastal development is affecting coastal communities. Communities have *the right* to sustain their way of life and develop in ways that support their future aspirations and underpin their environmental, social and economic resilience. They also have a distinctive and critical role to play as stewards of our coastal ecosystems, and whilst many self-organise around community-based conservation, locally managed marine areas or other governance structures to fulfil this role, our review shows that they face significant barriers in accessing income or finance to support key functions relating to restoration and protection and to take up other opportunities from a SBE. Importantly, many coastal communities are also themselves developing in ways that don't always serve their long-term needs. Modern approaches to small-scale fishing and increasing access to domestic and international markets, as well as increasing population sizes and limitations on available income and food sources due to degraded ecosystems, are all placing additional pressures on diminishing ecosystem goods and services.

Business-as-usual is a lose-lose situation for all–developers, maritime sectors, financiers and dependent coastal communities. It is crucial that the transition to a sustainable blue economy is delivered at all levels–ensuring that coastal communities are empowered to develop in ways that secure their long-term needs without negatively affecting the natural ecosystems on which they depend. They also need to be supported in their role as environmental stewards of coastal ecosystems, through free, prior and informed consent and recognition of their customary rights, territories and practices.

This paper has outlined the risks associated with current business-as-usual practices to coastal ecosystems and the communities dependent upon them and how the voice and actions of communities might be better included into sustainable blue economy strategies, planning approaches, and decision-making, in order to deliver a more equitable and sustainable development trajectory within the blue economy.

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MH and LH commissioned the review. LE, PB, and MF designed and conducted the review and wrote the first draft of the paper. All authors contributed to editing and refining key messages.

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The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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8 https://www.undp.org/press-releases/new-un-multi-partner-trust-fund-coral-reefs

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Supplementary material

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