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Blue economy risks and challenges in Ghana: a systematic literature review

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Although blue economy has become an integral part of national efforts towards promoting economic growth, the activities and policies have been notable sources of livelihood and survival risks in Ghana. It is, however, unclear how these unpacked risks have been anchored on a particular blue economy effort and the variety of risks a blue economy effort could produce. Through a systematic review of the literature, this study explores the sources of the blue economy risks and challenges as well as account for each blue risk and challenge as derivative of blue economy efforts. The results of the review demonstrate a myriad of risks and challenges in Ghana's blue economy which are developmental, natural and relational ranging from livelihoods vulnerabilities, insecurity, environmental pollution, overexploitation of fish resources, conflicts as well as dispossession and displacement. While the results reveal that each of the blue economy risks is a product of multiple industrial activities, the review also makes it clear that a single blue economy activity or policy could produce multiple blue economy risks and challenges. This creates a complex matrix of blue economy risks in terms of nature and sources. The results suggest that researchers have frequently displayed widespread and diverse blue economy risks which occur through varying processes from selected industry-related activities and rarely from enacted and implemented policies. As efforts towards the development of an omnibus blue economy policy in Ghana are underway, we regard them as prerequisites of a mixed method investigation into the risks embedded in all blue economy activities and policies in Ghana in a manner that it can lead to incomparably superior results across all studies.

KEYWORDS

blue economy risks, fish resource overexploitation, blue economy conflicts, blue-economy-induced vulnerabilities, multiple industrial activity

Introduction

The ocean, which covers approximately seventy percent of the earth's surface, including the seas, rivers, streams, and lakes (Allison et al., 2020) is increasingly becoming the centerpiece around which economic growth, employment, poverty eradication, and food security are organized and achieved (Bennett et al., 2021; United Nations Economic

Commission for Africa, 2016). The ocean also remains crucial for sustainable development not only in Africa but also globally (March et al., 2024; Popoola and Olajuyigbe, 2023) because it serves as humanity's most vital support system (Allison et al., 2020). Underpinned by the principle of social justice and social equity imperatives for sustainable and viable small-scale fisheries and coastal communities, the promises of the blue economy investments and policies represent new paradigm which emphasizes the creation of a context for people-oriented development.

However, while ocean-based economic development has been ramping up for decades, the speed and scope of blue growth is accelerating as the oceans have become part of a globalized discourse on economic growth (Jouffray et al., 2020). Evidently, multinational and local companies in the jurisdictions of sovereign states and beyond the frontiers of such jurisdictions are making significant investments in the marine resources (Campling and Colás, 2018; Zalik, 2018). Various governments are equally in the race to capitalize on marine resources (Bennett et al., 2021) with notable investments and complete blue economy policies or some other blue economy initiatives. Thus, the oceans are now attracting unprecedented attention from multitude of new actors in diverse industries (Jouffray et al., 2020). Globally, the exploitation of the ocean by these new set of actors in extraordinary, sophisticated and intense forms have permeated the oil and gas industry evident in the drilling of deep-sea oil reserves, extraction of mangroves and industrial fishing activities (Bennett et al., 2021).

In Africa, the Blue Economy is now a primary goal and priority of its regional body. Africa's "Agenda 2063: the Africa We Want", (Goal 6 focusing on the Blue/Ocean Economy for accelerated economic growth) as well as the 2050 African Integrated Marine Strategy, Policy Framework and Reform strategy for fisheries and aquaculture in Africa (Pretorius and Henwood, 2019) are evident to this. These two important frameworks which represent the region's commitment to the transformation of the socio-economic conditions through the use of marine resources while maintaining the cultural heritage and ecological sanity. The agenda, spearheaded by the African Union Commission has, by way of strategy, developed a panAfrican agreement on the Blue Economy as critical to structural transformation by 2030 (Popoola and Olajuyigbe, 2023) recognising Africa's marine environment and resources as central to the continent's sustainable development and actualising her ambitions (Okafor-Yarwood and Onuoha, 2023). A few African states have succeeded in developing a formally harmonised BE frameworks which identify, regulate and support blue economy activities. Others are drafting policies to include the approach in their national development plans (Lopes, 2016). Notable ones include Operation Phaskisa (unlocking the ocean's economy) launched in South Africa, for instance, which is meant to generate employment, reduce poverty, and improve social equity. In Seychelles, however, "The Seychelles Blue Economy Strategic Policy Framework and Road map: Charting the Future (2018– 2030)" was developed with four specific goals with an established ministry tasked to work and advance the course of the BE (Findlay and Bohler-Muller, 2018). Thus, in Africa, the BE concept is being

adopted internally and externally (Childs and Hicks, 2019). In Namibia, the Namibia Blue Economy Policy (2022-203) aims to "coordinate, manage and regulate aquatic economic activities towards the implementation a blue economy governance framework" (Carver, 2020; Ministry of Fisheries and Marine Resource, 2022:12). Namibia's blue economy policy is shaped by multiple and competing interests. Although Madagascar is still establishing its own BE framework, it has made significant progress towards sustainable practices (Popoola and Olajuyigbe, 2023). Though Ghana has not yet developed a blue economy policy, unlike South Africa, Seychelles and Namibia, there are plans to have one. The recent vetting by Ghana's parliament of the new minister for fisheries and aquaculture (Ms. Emelia Arthur) on 22nd January, 2025 reveals her plans to establish a blue economy commission in addition to the existing fisheries commission and the pre-mix secretariat (see. <https://www.google.com/search?q=vetting+of+fisheries+minister+22+january+2025&rlz>) under the ministry of fisheries and aquaculture. Numerous blue economy initiatives are in Ghana each of which seek to promote the economic, socio-cultural and ecological imperatives of the blue economy within specific industries. The fisheries co-management plan, the Ghana tourism development Plan, oil and Gas, are notable examples heralded by a neo-liberal fervor all of which seek to contribute to the blue economy growth in the country.

The eagerness associated with the projections which the development of the ocean, through activities and practices of the businesses and the governments can bring to individuals, groups, communities and states, may produce unanticipated and anticipated risks (Bennett et al., 2021). This lends credence to the claim that the blue economies are not inherently aligned with sustainable development goals (Niner et al., 2022). Researchers in Ghana and across the world have also been writing about, and bringing to light, observable social, economic, human and environmental injustices associated with Ghana's blue economy development. These are realities which have emerged as products of ocean-based development activities including oil and gas industry (Ackah-Baidoo, 2013; Adjei and Overå, 2019; Adusah-Karikari, 2015; Amongin, 2020; Ayelazuno and Ovadia, 2022; Egyir, 2012; Owusu, 2018, 2019) industrial fish trawling (Akpulu et al., 2018; Ayilu et al., 2023b), tourism (Boakye, 2012; Dodzi Dzitse, 2021; Dzitse et al., 2024; Eshun et al., 2019) artisanal fishing (Adjei and Chan, 2023; Akpulu et al., 2018; Amponsah et al., 2021; Ansah et al., 2022; Avormyo et al., 2023; Britwum, 2009; Ofori-Danson et al., 2019; The Ministerial Conference on Fisheries Cooperation among African States Bordering the Atlantic Ocean (ATFALCO), 2012), shipping (Afful, 1990), sea port construction (Ayilu, 2023) and the closed season policy (Asiedu et al., 2019; Kwadzo, 2022; Owusu and Andriesse, 2020). Within the framework of the ever-attractive concepts of 'blue justice' and 'blue degrowth' there are rolling discourses of the restructuring of rules and authority over the access, use, and management of marine resources (Cohen et al., 2019; Pinkerton, 2017; Syriopoulos and Kafka, 2024). Yet, the blue economy risks abound.

We are therefore of the views that, first, the risks of social, economic, human and environmental injustices stemming from blue growth are "insufficiently recognized by those advocating for

substantial increases to economic development activities in the oceans” (Bennett et al., 2021:1) and low prioritisation (Custer et al., 2018), globally. Secondly, in the special case of Ghana, these risks have not been holistically organized in a manner that could paint the comprehensive picture about the complex, fluid and nuanced nature and diverse sources of the blue economy risks and how they can be understood. Third, policy makers and law makers have been rarely and inadequately informed about the multifaceted contexts within which these risks occur most. This makes social justice notions and conversations, which include recognitional, procedural and distributive justice concerns (Bennett et al., 2019) a bit unfocused and somewhat misdirected. In addition, the policies may endure misuse or misinterpretation (Bednarek et al., 2018; Eikeset et al., 2018; Rose et al., 2020).

To address these knowledge and policy gaps, we review existing literature with evidence of or insights into social, economic, human and environmental injustices resulting from ocean-based economic development in Ghana and the contexts within which these blue economy-related risks and challenges occur. Through this review, we highlight the risks and challenges in Ghana’s blue economy as well as their sources and contexts of occurrence that should be given immediate and future attention. In this respect, we aim at giving direction to national and international decision-making related to the ocean economy and blue growth. We define risks as those unsurmountable conditions which predispose an individual or a group to situations where survival opportunities are compromised.

The paper is organized into six sections. The preceding section provided a general overview to the paper highlighting the intellectual and policy contexts within which the core issues in the paper could be situated. The next section specifies the frame of the blue economy that guides the discussion of the substantive issues in the paper. This is followed by a presentation of the study materials and methods. Section four analyses the results of the review with emphasis on how the blue economy industries and policies have produced risks and challenges. Section five discusses the results of the review followed in Section six by reflections on the review findings and new blue economy research frontiers in Ghana that can foster a meaningful blue economy policy.

In this paper, we observe that most studies have focused on blue economy risks which occur from industry-related activities. Indeed, studies on the risks associated with blue economy policies are rare. We therefore argue that there are diverse risks and challenges in Ghana’s blue economy which are developmental, natural and relational. Each of these set of risks emerges as a product of multiple industrial activities. At the same time, a single blue economy industry-based activity or policy produces multiple blue economy risks and challenges.

Framing the blue economy

The concept of the blue economy, in terms of focus, processes, actors and intent, keeps evolving thereby accommodating new realities and perspectives. In the course of this evolutionary pattern, the term blue economy has been used not only in

different ways but in different contexts. Its understanding and applicability are evident in many academic discourses, and are becoming widespread across the globe moving from the global north at the early turn of the millennium (Pauli, 2010) and assuming ‘newness’ in Bangladesh and South Asia (Bari, 2017), Africa in 2013 (UNECA, 2016) and Latin Americana and the Caribbean, accordingly (Martínez-Vázquez et al., 2021).

In simple terms, blue economy implies the use of marine space and its resources for the simultaneous improvements for economic, social, and environmental outcomes (Silver et al., 2015) in a sustainable fashion so that it can continue to provide the goods and services that sustain humanity (Spalding, 2016; Martínez-Vázquez et al., 2021). With time, the frontiers of the blue economy have further broadened serving as a pathway towards building resilience (Syriopoulos and Kafka, 2024). These can be achieved by decoupling socio-economic activities and development from environmental degradation (Bari, 2017) introducing new technologies and improving access to financing instruments that empower the blue economy to address the risks of the new era (Syriopoulos and Kafka, 2024). The sustainable use of the resources also relies largely on mindset. Attri (2023) therefore argues that blue economy may be “understood as the perceptions about oceans and the world’s future” (p.3).

From a structural point of view, blue economy policies are the functional imperatives to the achievement of the optimal socio-cultural and environmental benefits derived from the use of marine resources. Hence, Silver et al. (2015) emphasise that ocean use sustainability works efficiently through “broad set of policies aiming to support ocean-based economic activities...(p.1) The policies are expected to be guided by the principles of good governance (Attri, 2023; Ayilu et al., 2022; Jimu et al., 2024; Rout et al., 2024), the values and images of blue justice (Schutter et al., 2021) and inclusiveness in economies with equal opportunities (Jimu et al., 2024; Syriopoulos and Kafka, 2024). Moreover, the blue economy policies are, and expected to be, organized through international and regional cooperation (Attri, 2023; Failler et al., 2020; Karani et al., 2022). Subsequently, it produces global attention to the blue economy which has been, and expected to be, matched and enacted at national levels (Bari, 2017; Colgan, 2018; Syriopoulos and Kafka, 2024).

Thus, in India, Bangladesh, Australia, Indonesia, South Africa, Seychelles and Namibia, for example, blue economy policies are structured around economic, social, environmental and cultural needs. These policies identify, provide, regulate and support the ocean-based activities that are embedded in a range of economic sectors including, fisheries, oil and gas (petroleum) tourism, recreation, marine (sea port) construction, marine transportation and shipping (Smith-Godfrey, 2016; Spalding, 2016). Further, these blue economy policies, according to Spalding (2016) “allow countries to account for and align their systems of accounting and metrics to both define and enhance ocean-positive economies that are universally understood and integrate those definitions into standard accounting practices globally” (p.2). An important challenge of the blue economy, however, is to understand and better manage the many aspects of oceanic sustainability ranging from sustainable fisheries and ecosystem health to pollution.

Indeed, no matter how blue economy is framed, we cannot deny the reality that the blue economy has such ambiguity that it can be difficult to specify its influence on policy and practice (Schutter et al., 2021). This ambiguity is reflected in the varied contents and strategies embedded in the country-specific policies and the fact that a variety of different actors differently interpret and define the concept with simmering dissent among policy makers, practitioners, and resource users. Thus, blue economy is not very well understood and is contested in (inter)national arenas (Silver et al., 2015; Voyer et al., 2018) perhaps also because of the versatility of the concept. So, currently, there are two broad sides surrounding the contestations of the blue economy. While others are using blue economy to describe oceans as economic frontiers, others emphasise the ocean's unique biodiversity that needs to be protected (World Wildlife Fund, 2015). Though the ambiguities and the tensions can be reduced by using social power relations and depoliticisation leading to the quest to make the blue economy a 'powerful' concept (Schutter et al., 2021), the contestations have not subsided in any measure. This is occurring as competing discourses on the blue economy in international oceans governance continue to take a center stage in academic discourses that seek to gain understanding of the space and what it has to offer (Silver et al., 2015) in an era when the oceans undergo constantly systemic reconfigurations.

Discourses on the intentions and the promises are not immune to these contestations. While discourses on the intention for the promotion of the blue economy produce spaces where one finds grounds for convergence, there are sufficient bases for which divergent and contradictory positions abound. Undoubtedly, the general point of convergence hovers around the concept blue (economic) growth aptly summarized by Colgan (2018) that "blue economy deployment leans high financial return investment" (p.3). This direction is spawned on the popularization of neo-liberal capitalist agendas, which have become dominant in blue economy discourse. Thus, the blue economy which was originally conceptualised as having a strong focus on social equity considerations (Croft et al., 2024). Yet, it is gradually being drifted, intentionally and unintentionally, into the abyss of perussing all forms of social injustices. This thereby overshadows the equity considerations many of which this study seeks to unearth and discuss. Consequently, the blue economy which has emerged as a heralded concept emphasising a new approach to ocean governance which places economic growth from oceans centrally within contemporary environmental governance (Schutter et al., 2021).

Having an appreciation of the existing positions about the blue economy, we reckon that irrespective of the misunderstandings and the contestations, the heart of blue economy framing is about the sustainability in the use of ocean resources. In this regard, we define blue economy as those sectors, processes and policies that serve as the fulcrum around which the ocean space and resources are used in a manner that optimally satisfies the economic, social and cultural needs of the current generation in just and equitable frames while, at the same time, sustaining the availability of these resources to safeguard the interest of future generations.

Materials and methods

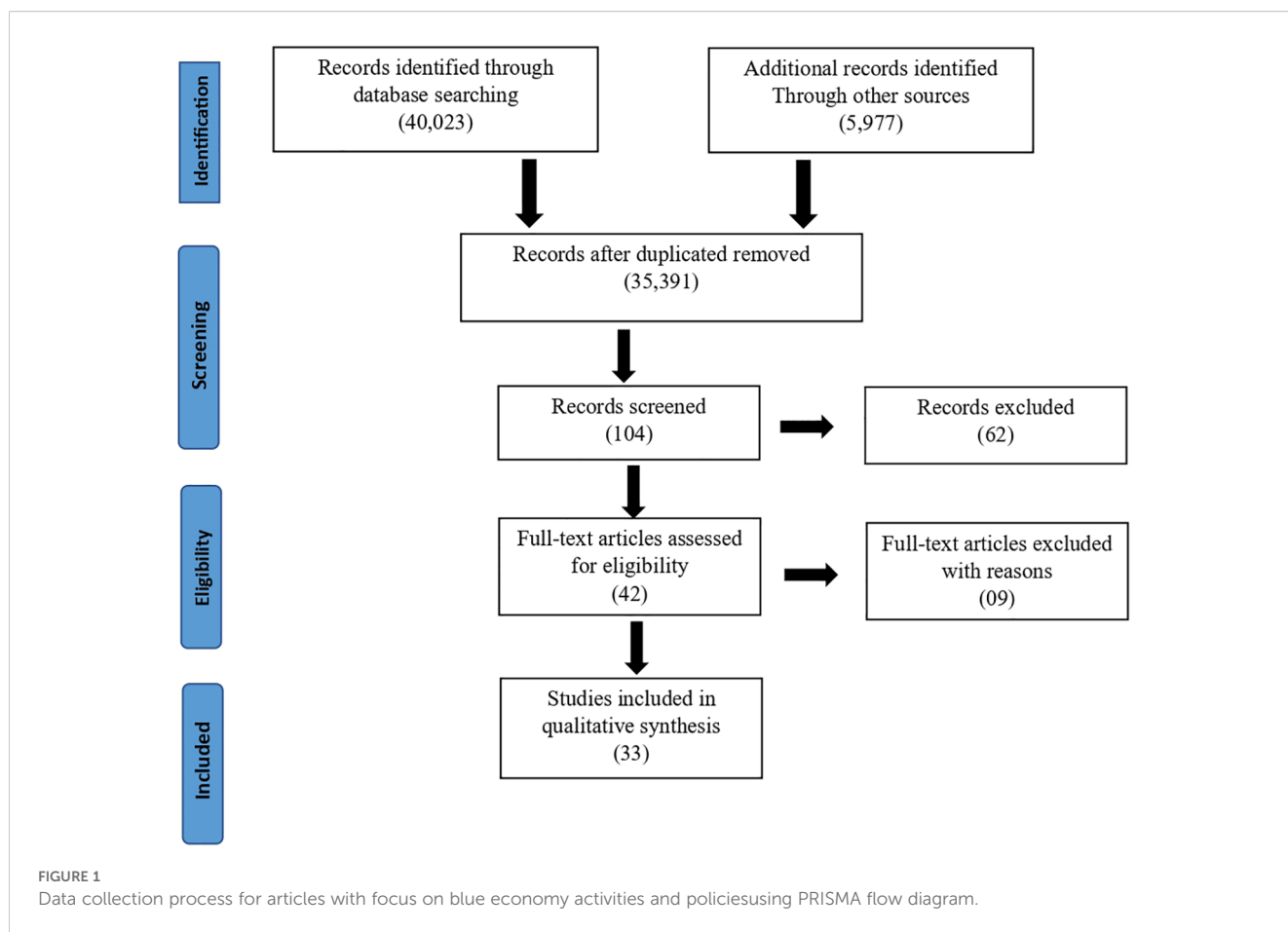
We engaged two trained research assistants and used one and half months (15th February to 29th March, 2024) in search of publications which focused on the exploitation of the blue economy space and the impacts of such exploitations on the ocean and its habitat, the people living in coastal areas and the fishers in the artisanal sector. Within the one and half month period, we (authors) and the research assistants started the literature search by using the keywords "blue economy risks in Ghana", "blue economy activities in Ghana", using Google search engine to extract publications from Google scholar which were published in journals listed in Scopus, Web of Science, EBSCOhost, and university repositories. These are four frequently used databases by researchers in the field of blue economy. Our emphases were on contents which demonstrated the concrete impacts of blue economy activities in Ghana. Our search was guided by our understanding of the conceptual definitions of blue economy, blue justice and blue economy risks as well as the sectors, subsectors and the industries which fall within the conceptual scopes offered, but not limited to, by Smith-Godfrey (2016) and Bennett et al. (2021).

We then narrowed our focus by using specific keywords which reflect the elements of blue economy. These elements included such economic activities as artisanal fisheries, coastal tourism, shipping, sea food, marine energy, transportation, flight recreation, oil and gas (petroleum) production and industrial fish trawling. We also explored other secondary sources which contained information about the impact of blue-economy-related policies, regulations and programmes such as the closed season policy, and the oil and gas regulations.

We conducted an extensive search using keywords/phrases which centered attention on Ghana. They include "coastal tourism in Ghana", "fish stock and artisanal fishing in Ghana", "illegal, unreported unregulated (IUU) fishing in Ghana", "industrial trawling in Ghana", "shipping and fishing in Ghana", "oil and gas exploration in Ghana and implications for fishing in Ghana", "seaport construction and fishing in Ghana", "ocean culture and blue economy in Ghana", "closed season in Ghana", "gender and the closed season", as well as "women and the fisheries in Ghana".

A careful screening, test for three-point eligibility of identified publications was conducted using the PRISMA approach (see Pati and Lorusso, 2018; Shamseer et al., 2015; Xiao and Watson, 2019). (1) Peer-reviewed articles published in English. (2) Articles and reports published between 1999 and 2024. (3) Articles that discussed blue economy risks and challenges in Ghana between the same period. As shown in Figure 1, a total of 46,000 documents (40,023 articles and 5,977 reports) were identified from the initial keyword search. We crossed-check the articles and removed all duplicated articles resulting in 35,291 articles. For each manuscript, preliminary relevance was determined by title. From the title, if the content seemed to discuss the blue economy risks and challenges, we obtained its full reference, including author, year, title, and abstract, for further evaluation.

After reading and screening titles for relevance, we removed articles with focus on blue economy activities and policies that did not relate to



Ghana. The remaining number of articles was 104. We then extracted information from articles for verification on whether an article was focused on a blue economy activity or a blue economy policy initiative in the Ghanaian context. After this, we checked the content of the articles to identify risks and challenges observed and discussed by the authors. We then proceeded by removing articles which did not conduct an assessment of the risks and challenges of the blue economy practices, activities and policies in Ghana. The remaining number of articles deemed eligible was 42 and we obtained the full-text article for quality assessment and review. The authors performed parallel independent assessments of the abstracts to reduce overall execution time and improve efficiency needed for the writing of the paper. We did a speed-read through the full-text articles to further evaluate the quality of the studies for inclusion. A total of 33 studies were included for the systematic review.

In the course of reviewing the included articles, we, by consensus, engaged in coding of the risks and challenges. We then proceeded with categorisation and recategorisation of the risks and challenges by subdividing some and merging some others, where necessary, based on the uniqueness of the risk and challenges in some cases as well as their conceptual proximities in other cases.

From the coded risks and challenges, as derived from the articles, we arrived at the following two subtopics: (1) developmental non-relational dynamics of blue economy risks and challenges and (2) relational dynamics of blue economy risks and challenges. These

subtopics were further broken down into specific blue economy risks and challenges. They include (a) restriction in access, dispossession and displacement of fishers and congestions of canoe bays; (b) environmental pollution, (c) gender inequalities, (d) marginalization, (e) insecurity, (f) livelihood challenges and vulnerabilities, (g) destruction and confiscation of fishing gear, (h) fish overexploitation and (i) conflicts.

All data extracted on the blue economy activities as well as the risks and challenges were also coded numerical interpretations. This was manually done by using frequency tables to produce three main issues. Two of the issues were converted in bar graphs for presentation and analysis. They include (1) descriptive distribution of the industry-specific studies and (2) recorded counts drawn from the nine broad risks and challenges. The third issue was converted into a diagram in a manner which demonstrates a matrixed relationship between blue economy activities and blue economy policies on the one side and risk outcomes. We Performed the third analysis was anchored on two hypotheses. First, to check whether a blue economy activity or policy could produce two or more risks. Second, to check whether a blue economy risk or challenge could be a product of two or more blue economy activities or a combination of a blue economy activity (ies) and a policy(ies).

Then, the researchers split up the work (results section) by sharing the sub-topics (risks and challenges). The two researchers maintained

frequent communication during the write up and exchanged ideas through back-and-forth reviews of the write ups.

Results

The analysis of the risks and challenges of the blue economy in Ghana was carried out using 33 studies. Out of the 33 articles, 29 articles investigated how activities and practices in the various industry-related spaces in the blue economy space have generated risks and challenges while 4 studies concentrated on the how blue economy policies and initiatives have produced risk outcomes. Out of the 29 industry-related articles, 23 focused on the activities and practices in specific industries in the blue economy space and how they have, severally, produced risks and challenges to individuals and groups in coastal communities. The 6 remaining articles analysed the risk and challenging implications of blue economy activities and practices in a composite manner. They discussed the risk implications of the general blue economy space [in this case emphasising on the effects of the combined blue economy industrial and policy actions]. Among these 6 articles, each of them emphasized two or more industries and explored how these industries have jointly produced risks and challenges as depicted on Figure 2.

A cursory look at the descriptive distribution of the industry-specific studies indicates that the number of studies on the risks of the blue economy is highly unbalanced among the industries. This is indicated on Figure 2 where the oil and gas industry attracted the highest number of eight studies and single research each for shipping and sea port construction industries.

This high number of studies attracted by the oil and gas industry is a result of the euphoria and growing interests in and life-improvement expectations that occasioned the oil discovery in the Western Region of Ghana. This was coupled with frequent

media reportage on the negative impacts of oil and gas industrial activities in communities around the oil fields. Based on experiences in other oil-rich countries such as Nigeria, Angola, and Norway research funding drifted into the activities of the oil and gas industry to interrogate their livelihood outcomes.

Given the multi-focused nature of the studies among the 33 articles, our review made a total recorded number of 75 counts drawn from 9 broad risks and challenges as indicated on Figure 3.

From Figure 3, while it remains visible that a risk may occur from more than one blue economy activity or policy, these risks and challenges may be broadly categorized as developmental, relational and environment-based. The risks include livelihood vulnerabilities ($n = 26$), restriction in access, dispossession and displacement of fishers and congestions of canoe bays ($n = 13$), environmental concerns (oil spillage, washing residues, seaweed, sea level rise ($n = 9$), conflicts ($n = 6$), overexploitation of fish stock ($n = 6$), destruction and confiscation of fishing gear ($n = 5$), gender inequalities ($n = 5$), insecurity ($n = 3$) and marginalisation ($n = 2$). In the subsequent subsections, we analyse the processes through which these risks and challenges occur.

Restriction in access, dispossession and displacement of fishers and congestions of canoe bays

Of importance to many international and regional bodies seeking to address the problems of fishers is the issue of promoting entitlements and protecting natural rights to access and use of ocean resources. However, these rights are systematically being eroded in areas where blue economy is being developed leading to the risk of restriction in access, dispossession and displacement of artisanal fishers. These risks and challenges are largely a result of oil and gas activities where hitherto fishing spaces

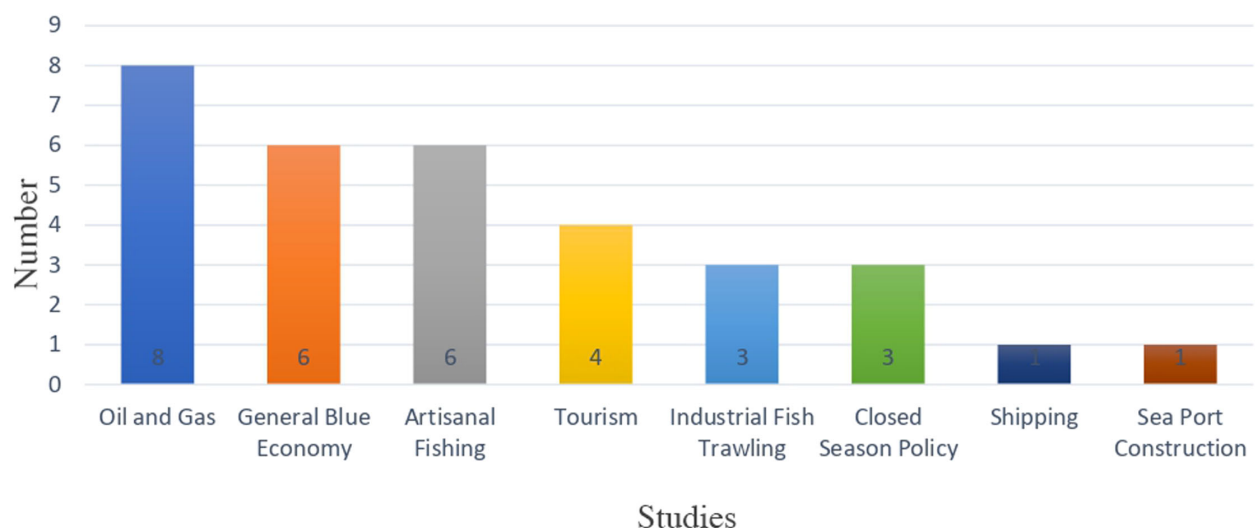


FIGURE 2
Number of industry/policy-specific blue-economy-related studies in Ghana (1999–2024).

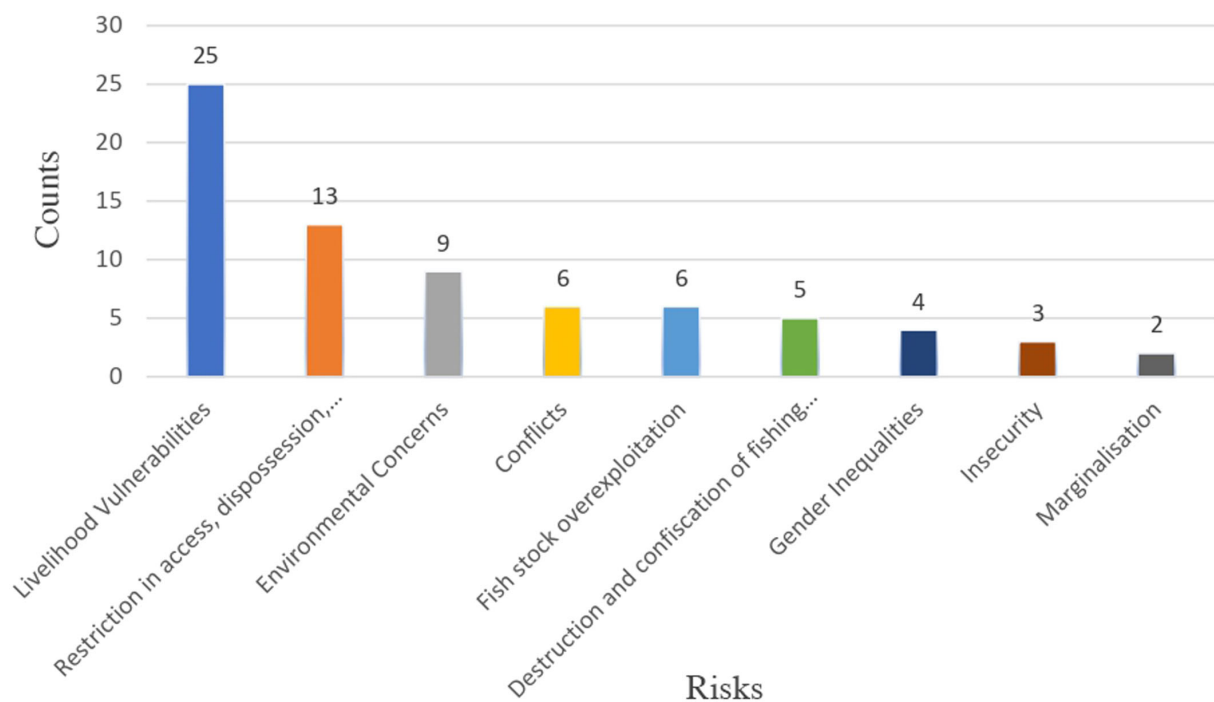


FIGURE 3
Extracted counts of blue-economy risks in Ghana (1999–2024).

are now occupied with rigs operated by players in the oil and gas industry as found in the works of (Ayelazuno and Ovadia, 2022; Egyir, 2012; Owusu, 2019). A few studies, however, demonstrated how these risks were also accounted for by sea port construction (Ayilu, 2023) which dispossess them from space where they could dock their canoes. Asiedu et al. (2019); Kwadzo (2022) and Owusu and Andriesse (2020) considered the closed season policy as a source of dispossession as it disallows artisanal fishermen from fishing for a month. Though rarely, Appiah et al. (2023) demonstrated that tourism could dispossess fishers and coastal communities of their naturally entitled access to the ocean. Thus, the risk of fishermen being dispossessed, displaced and experiencing congestion at canoe bays can be attributed to the three industrial activities and a policy which impose complexities and dynamics in terms of the efforts to avert them.

Environmental pollution

Concerns about environmental pollution in Ghana's blue economy space are rife. They are contoured by the diverse blue economy activities around which environmental sustainability conversations will coalesce. Environmental pollution and its sources reflect one of the environmental dimensions of the blue economy risks and touches the core of the survival of people living in coastal communities. While this risk was found to be occasioned by seaweed (Owusu, 2019) and oil spillage (Ackah-Baidoo, 2013; Egyir, 2012), Afful (1990) argued that environmental pollution is a function of shipping activity through discharge of washing residues

from tankers. Drawing on another blue economy activity, a review of the works of Dodzi Dzitse (2021), Dzitse et al. (2024)) and Eshun et al. (2019) suggest, in a different vein, that tourism activities have practically worsened the problem of environmental pollution in Ghana with plastics. This is largely associated with the consumption of food items in varied kinds of plastic containers which are, most often, indiscriminately dumped by tourists at beaches and improperly managed by city authorities. One study discovered that blue economy activities have contributed to sea level rise (Avornyo et al., 2023).

Conflicts

The realities about conflicts in Ghana's blue economy space suggest probable trends of protracted vulnerabilities and loss of livelihoods. While they require attention, these conflicts are to be understood as anchored on a complex array of undercurrents within three blue economy spaces, per our review. Though fishermen are at the center of these conflicts, the contexts and the process through which the conflicts occur vary. Conflicts in Ghana's blue economy spaces, by this review, are spawned by the activities in the industrial fish trawling, sea port construction and the oil and gas (petroleum) industries. The works of Akpalu et al. (2018); The Ministerial Conference on Fisheries Cooperation among African States Bordering the Atlantic Ocean (ATFALCO) (2012) and Ayilu, et al. (2023) explain that industrial fish trawling creates tension between the artisanal fishermen and industrial fish trawlers. The trawlers' encroachment into the ocean spaces used by the artisanal

fishermen worsened by disparities in levels of technological sophistications which disfavor the artisanal fishermen. Out of the eight studies in the oil and gas (petroleum) industry all the two of them (Ackah-Baidoo, 2013; Owusu, 2018) discuss the tensions between the artisanal fishermen and the oil and gas industries. According to their works, the tensions arise when the industry delineates off-shore spaces, hitherto used for fishing, for oil exploration and rig siting purposes. As this process tends to reduce access to fishing space for fishermen, they eventually become disgruntled and struggle with oil and gas authorities over the lost fishing space given the attendant loss of livelihoods occasioning the space loss. Additionally, sea port construction generates conflicts when artisanal fishermen are deprived from using fishing spaces used as sea ports with interventions by the maritime police and naval officers among other actors (Ayilu, 2023).

Fish overexploitation

Fish overexploitation has been experienced in Ghana's fisheries sector about three decades ago contributing to a decline in fish stocks at an increasing rate. Discussions in the literature we reviewed suggest that the phenomenon of fish overexploitation is a function of actions and inactions of the actors in both the industrial fish trawling and artisanal fishing industries. However, the processes with which the actions and inactions of the actors in the various industries in the fishing sub-sector contribute to fish overexploitation differ from each other. While the industrial fish trawling accounts for fish overexploitation through the use of highly sophisticated technologies contributing to by-catches (Akpalu et al., 2018; Asiedu et al., 2019; Ayilu et al., 2023b), the artisanal industry players deploy illegal fishing methods such as light fishing, dichloro-diphenyl-trichloroethane, dynamite and monofilament net (Akpalu et al., 2018; Ofori-Danson et al., 2019; The Ministerial Conference on Fisheries Cooperation among African States Bordering the Atlantic Ocean (ATFALCO), 2012). Further, the violation of fisheries-related customs such as the observance of the Tuesday non-fishing days contribute to the overexploitation (Ansah et al., 2022; Asiedu et al., 2019). It will be instructive to note that even though the processes with which the actions and inactions in the fishing sub-sector industries contribute to fish overexploitation may differ from each other, they are not mutually exclusive. Artisanal fishermen phenomenologically attribute fishing overexploitation and reduced fish stock to the lack of enforcement of industrial fisheries laws. The artisanal fishermen then use illegal fishing as an adaptation strategy to the dwindled fish stock in Ghana's marine space.

Destruction and confiscation of fishing gear

Destruction and confiscation of fishing gear are experienced by Ghanaian artisanal fishermen under two distinct conditions largely

associated with two key blue economy industries. The destruction of fishing gear occurs when the artisanal fishermen encounter industrial fish trawlers on the high seas (Akpalu et al., 2018; Ayilu, et al., 2023). Trawlers illegally operate in spaces allocated to artisanal fishermen and they refuse to properly use light to delineate boundaries within which they operate. Moreover, the confiscation of fishermen's gears by security officials of oil and gas companies is observed to have occurred because they are usually found to be intruding spaces occupied by oil and gas companies. In our review, we discovered that all the six studies which investigated the impact of the oil and gas on fishing gears published within a decade (between 2012 and 2022) (Adjei and Overå, 2019; Adusah-Karikari, 2015; Ayelazuno and Ovia, 2022; Egyir, 2012; Owusu, 2018, 2019) point to its high intensity and frequency with all the socio-economic and psychological ramifications.

Livelihood challenges and vulnerabilities

The socio-economic development promised by the blue economy is being threatened, systematically, evident in diverse forms of livelihood challenges. This is inextricably linked with the overemphasis on blue economy growth and the apparent protection of ocean resources i.e the fish stock. Out of the 32 studies we reviewed, 12 of them demonstrated some challenging livelihood effects of the blue economy on people living in coastal communities and fishers. The studies we reviewed showed that the myriad blue economy livelihood risks are products of oil and gas [n=4], industrial trawling [n=2] artisanal fishing [n=2] and sea port [n=1] activities. Three studies investigated the livelihood implications of the closed season policy, while one studied general blue economy livelihood implications. First, the declining livelihoods uncovered as products of oil and gas were spawned by disruptions of agrarian activities (Ayelazuno and Ovia, 2022) and decreased fish catch (Ackah-Baidoo, 2013; Adusah-Karikari, 2015; Owusu, 2019). Additionally, coastal livelihood vulnerabilities discovered to be products of industrial fishing include depletion of coastal fisheries resources, compromised market systems, threatened viability of small-scale fisheries and reduced incomes (The Ministerial Conference on Fisheries Cooperation among African States Bordering the Atlantic Ocean (ATFALCO), 2012; Ayilu et al., 2023a, 2023b). The effects of the closed season on livelihood vulnerabilities were diverse. They ranged from declining small-scale fish catch and fish trading activities, increase in fish price, reduced availability of fish in the diet, inability of parents to care for children, an increase in poverty and negative nutritional impacts to decreased financial profits and capital (Ofori-Danson et al., 2019; Owusu and Andriesse, 2020; Ansah and Oduro, 2024). In the work of Asiedu et al. (2019), they observed a decline in the quantity of harvested fish stock in the last decade by an average of 7% largely attributed to the unsustainable fishing practices carried in marine spaces by artisanal fishers. In addition, the rising cost of living in fishing communities with reduced fishing incomes in fishing communities were outcomes of sea port activities exacerbated by increased urbanisation (Ayilu, 2023). At the same

time, Karakara et al. (2023) observed compromised social identities and ill-health, appalling socioeconomic living conditions and poor amenities (like toilet facilities and waste disposal) in coastal communities. However, these were found to be more pronounced in the rural coastal areas than in the urban ones. Clearly, as blue economy activities upsurge, fishers and coastal communities become prone mostly to economic vulnerabilities, then social vulnerabilities. While some livelihoods vulnerabilities were as a result of activities organized by the locale, many were outcomes of exogenous, large, commercial and capital-intensive blue economy activities.

Insecurity

While maritime security and the blue economy mutually enable each other (Preko, 2021; Menzel, 2022; McCabe, 2023), there are clear indications that the framing of what constitutes threats and associated resourcing of responses to counter them is selective. These responses are often dictated by foreign interests and undermines a holistic notion of maritime security that would benefit local people (Okafor-Yarwood and Onuoha, 2023). In this systematic review, even though, a range of maritime insecurities have not been extensively analysed, we establish a direct association between tourism and fishing on the one side and insecurity in Ghana's blue economy space on the other side. Indeed, despite the supposed selectivity associated with security responses, both foreign companies and the locales are affected. Out of three studies on blue economy security in Ghana, one was related to high sea expeditions while two were related to tourism. As noted by Amarh (2019), one set of the many challenges of the blue economy in Ghana is terrorism and piracy which happen on the high seas. With regard to on-land terrorism, it is clear in the literature, through a systematic review by Krajňák (2021), that terrorism negatively affects tourism demand in Ghana. Evident in Boakye (2012) study, it was observed that tourists felt most unsafe at tourist attraction sites which varied significantly across important socio-demographic variables, especially age. Dodzi Dzitse's study in 2021 suggests that the unsafe conditions at the beaches is contributed by the visibility of attacks and the threat of attacks by terrorists on some tourists. The studies, though few, give ground for analysts and policy makers to gain an integrated perspective for understanding how blue economy policies could work to secure the maritime domain (McCabe, 2023) and the vice versa.

Marginalization

Marginalization reflected in denials, powerlessness, social exclusion and lack of access to some resources within the blue economy space also emerged in our systematic review. These were mostly found in the domains of industrial fish trawling, sea port construction, oil and gas (petroleum) industry and general blue economy space. Ayilu et al. (2023) in their review entitled 'Blue economy: industrialisation and coastal fishing livelihoods in Ghana'

observed how the industrialised capital intensive fishing transitions have disrupted the social and economic organization of small-scale fishers thereby negatively affecting their income and livelihoods in addition to creating disconnections and socially excluding them from many marine resources and their indigenously entitled coastlines. Ayelazuno and Ovidia (2022) also highlighted how the oil and gas industry in Ghana was contributing to marginalisation. While the discovery of oil in Ghana's Western Region and the country at large contributed to job creation, the indigenes in these areas found themselves excluded from such job opportunities. Evidence revealed their displeasure and moanings about their marginalization. Ayilu (2023) and Okyere et al. (2023) in different studies also showed how the dynamics of sea port construction, closed season and fisheries governance contributed to the marginalization for most small-scale fishers.

Gender inequalities

Access to ocean, ocean resources and other blue economy socio-economic outcomes vary between men and women in the fishing subsector, traditionally. However, the dynamics of the gender inequalities between actors in the fishing subsector, in current times, are being systematically reconfigured owing to the complex array of blue economy activities. This is anchored on three main variables. First is the social status a gender group occupies. Second is the respective roles played in the fishing value chain. The third is the existing alliances between the gender groups and other actors in the fisheries sector. These variables serve to either create or erode opportunities for each of the gender groups in the blue economy space. In our review, we found five studies that have unearthed gender inequalities in terms of access to fish at the expense of women. For example, the industrial fish trawling business and one of its associated activities – saiko (fish transshipment) – tend to favor the males more than the females because of their roles as fish harvesters which enable them to access the fish being transshipped by the fish trawlers (Ayilu et al., 2023b). Two studies by Amongin (2020) and Adusah-Karikari (2015), which examined the gendered disparities embedded in relations between offshore oil extraction and livelihoods of women in Ghana; reveal how the intersection of culture, geography, politics, race and class foster the dispossession of coastal women thereby worsening their livelihoods. In some other contexts, men experience higher risks than women. Such risks originate from the oil and gas industry, the sea port construction industry, shipping, closed season and the industrial fish trawling. As males, their direct contact with the ocean because of their cultural role as fish harvesters and their cultural orientation of fishing overdependence (Torell, 2019; Ansah and Oduru, 2024). These risks are evident in displacements, loss of fishing equipment through destruction and confiscation as well as restriction of access to hitherto fishing spaces. In the artisanal fishing industry, two studies on gender inequality have discussed cultural and the socio-economic foundations upon which it occurs. In consonance, they find that patriarchal tradition which underscores practices among couples in the fishing industry promotes men's control over

their wives. At the same most women do not own fishing assets let alone enjoy Ghanaian government's periodic distribution of subsidized equipment. These conditions reduce their financial contributions and reduce their decision-making power (Britwum, 2009; Adjei and Chan, 2023). This inequality is exacerbated when women are compelled, sometimes through punishment, to conform to traditional role expectations which limit their ability to undertake masculine fishery tasks such as fishing and pulling of heavy nets.

Discussion

This systematic review explored the blue economy risks and challenges in Ghana and the contexts within which they have occurred. Even though, Ghana's blue economy space has demonstrated remarkable performance in promoting blue growth and still has the potential to unlock opportunities for economic growth, food security and human development (Appiah et al., 2023), the results reveal myriad of risks and challenges in Ghana's blue economy. These risks are inherently developmental (human and environmental) and relational ranging from livelihoods, insecurity, environmental pollution, overexploitation, conflict to dispossession and displacement, loss of fishing gears and sea level rise.

While the analysis demonstrates that a blue economy activity, be it industrial or policy, produces a dominantly notable risk, the results also show that same blue economy industry-based activity or policy produces multiple blue economy risks and challenges. The results also suggest that blue economy researchers focusing on Ghana have frequently analysed and discussed widespread and diverse blue economy risks which occur through varying processes from selected industry-related activities and rarely from enacted and implemented policies as shown on Figure 4.

For example, oil and gas (petroleum) activities and the closed season policy produce such multiple risks as restriction in access to fishing, dispossession loss in the quantity of fish catch and decreased trading activities. Oil and gas (petroleum alone produced oil spillage and pollution as well as loss of fishing gear (destruction of fishing gear, confiscation of gear presence of seaweed in ocean. The results also show that most of the blue economy risks are a product of the activities of two or more industries or policy. This implies that blue economy risks have multiple dimensions and origins. However, it is instructive to note that, the nature, dynamics and the processes with which a blue economy risk or challenge emerges out of the 'womb' of a blue economy industry or policy vary from one industry or policy to the other. These findings are consistent with Niner et al. (2022) who, in an analysis of the synergies and conflicts between blue economy policies and UN Sustainable Development Goals, concluded that blue growth and blue economy agenda have the tendency to further marginalize and disadvantage small-scale fisheries. These findings are also consistent with Bennett et al. (2021) who, in a literature review to highlight ten social injustices associated with blue growth, concluded that rapid and unchecked economic development in the ocean produces substantial risks for the people and the environment. Ghana's situation, in terms of the

actor effect of the blue economy, thus, markedly fits into the bigger African picture. The emphasis on blue economy is placed on economic gains by international corporations and government initiatives (Bond, 2019; Childs and Hicks, 2019) at the expense of small-scale local fish operators' livelihoods. Despite these corroborations, we, nevertheless, find an additional reality that government's blue economy initiative [in this case, the closed season policy] which seeks to check artisanal fishing has produced livelihood challenges.

The problem of environmental pollution implies that there is little or no regard for environmental sustainability evident in the vigorous pursuit of development projects that have negative consequences for natural resources and those who are directly dependent on them (Okafor-Yarwood, 2020; Odhiambo et al., 2025). These are accounted for by the exclusion of coastal communities, small-scale sectors, and minority groups and vulnerable from the high-level decision-making processes that are defining the blue economy, and from its implementation and governance (Akpomera, 2020; Cohen et al., 2019). While these suggest a lack of connection between more remote or grassroots initiatives and coastal communities (Evans et al., 2023; Ansah et al., 2024) the risks and challenges occur, also, when policies weakly support capacity development that are expected to address complex societal issues (Niner et al., 2022). At the same time, coastal communities lack financial and technological capacity to harvest ocean assets (Akpomera, 2020; Syriopoulos and Kafka, 2024) coupled with corrupt tendencies of the political elite (Akpomera, 2020). Undoubtedly, the viewpoints of academics on blue economy emphasizes a new paradigm of people-oriented sustainability (Attri and Bohler-Mulleris, 2018). However, translating international objectives of sustainability is challenging (Niner et al., 2022) in terms of how to better manage the many aspects of oceanic sustainability ranging from sustainable fisheries and ecosystem health to pollution (Attri, 2023). This challenge, in the Ghanaian context, is further exacerbated by the fact that a blue economy risk can be produced by two or more blue economy industrial activities or policies creating difficulties in using a one-dimensional approach to address the risks. The multiple origins of the risks also possess an enormous complexity in the conceptualization of blue economy risks where a blue economy risk is not defined in terms of the nature of its occurrence but by the source of the nature of the occurrence. For example, a blue economy risk such as overexploitation cannot be understood by the mere ontology of overuse of the ocean and depletion of the fish stock. Rather, the risk of over exploitation is understood in terms of its epistemics thereby acknowledging the varying contexts within which it occurs as a product of both artisanal fishing and industrial fishing. Such an understanding of overexploitation as a blue economy risk and many other risks is important given its potential implications for making blue economy policies more comprehensive. Another example is conflict. To define the phenomenon of conflict as a blue economy risk as a mere struggle over ocean space between two sets of actors with dialectical interests is admissible. However, conflict as a blue economy risk, in our view, is contextually complex and can be defined and understood in terms of the industry where it is

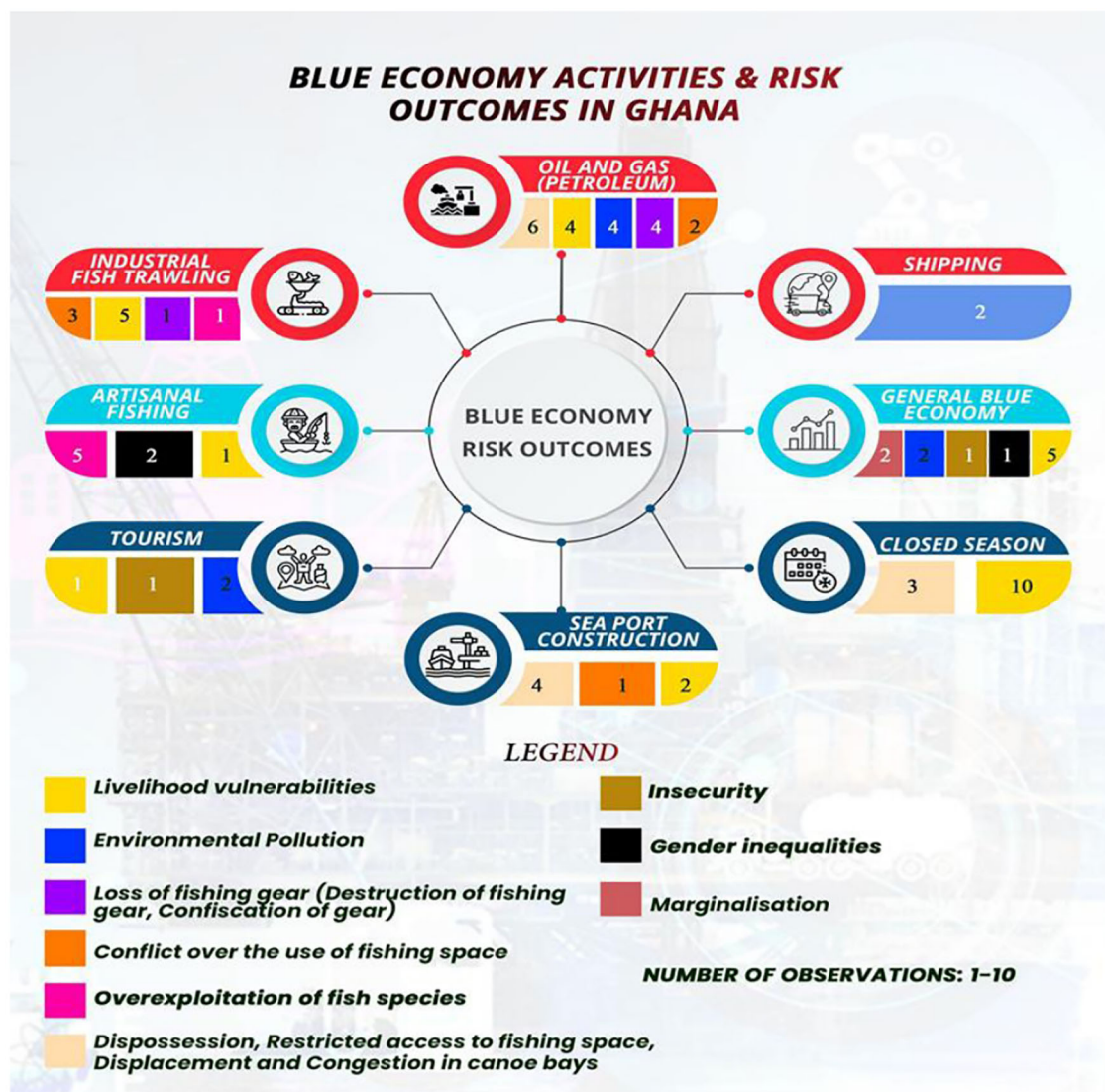


FIGURE 4
Blue economy and multiple risk outcomes in Ghana (1999–2024).

emerging from or occurring in. The conflict which emerges from the industrial fishing space is fundamentally different from the sea construction or the oil and gas spaces in terms of how it occurs (i.e. the triggers), the geographical spaces where it occurs, the actors involved, the frequency of occurrence and the intensity thereof. We therefore contend that the blue economy risk discourses should be surrounded by how they emerge and who is involved in them and not merely what they are. To this end, our story in essence, is that blue economy risks are products of multiple sources and this is validated via the synthesis thereby making the conceptualization of blue economy risks more complex and integrated.

In this review, we use the risks associated with the closed season policy to argue that blue economy policies may produce unanticipated risks. While this is true, we equally observed an unequal attention to the blue economy industries in Ghana in terms of research. In this regard, future research should focus more extensively on the implications of tourism and closed season and

their associated risks. Likewise, a study on the risks of aquaculture in the Ghanaian context is required. Additionally, future studies should focus on some of the unanticipated and anticipated risks of blue economy risk interventions in Ghana. Further, scholarly studies on Ghana's blue economy should, in the future, focus on the human rights dimensions of the blue economy. This should be carried out in a manner which frames the risks within the contexts of 'freedom', 'capabilities', 'entitlements', 'indigenous rights' and the 'existential rights of customary fishing' (Allison and Ellis, 2001; Fukuda-Parr, 2003; World Wildlife Fund, 2015; Jahan, 2017; Sen, 2008). In this regard, conversations surrounding blue economy risks can render them to be considered as a set of phenomena which require both legal and policy responses through co-produced and co-created knowledge involving all relevant stakeholders. The relevance of these studies is underscored by the significant data they will produce to provide nuanced insights about the implications of the industries and policies which have received

less attention by researchers. This will create a more scientific grounds for a pragmatic blue economy strategy.

The strength of this paper lies in its extensive character which drew on numerous databases comprising literature which highlight blue economy risks in Ghana from interdisciplinary and multidisciplinary perspectives. It also touches on risk and challenges within different subsectors of the blue economy instead of focusing on only one or two. However, a major limitation was the relatively few number of studies on Ghana's blue economy risks which rendered the articles which fit into the inclusion criteria being quite small. Consequently, our synthesis of Ghana's blue economy risks was limited. Further, this paper did not focus on a description of the socio-demographic backgrounds such as gender, location, and occupation of the victims and blue economy risks and challenges in Ghana. Subsequently, this review did not focus on the relationship between the nature of the blue economy risks and the socio-demographic backgrounds of the victims of the risks.

Final conclusion

This study sought to conduct a systematic review of blue economy risks and challenges in Ghana. The aim was to provide complex and nuanced narratives about the adverse implications of the blue industrial activities and policies to inform Ghana's blue economy strategy. Our systematic review revealed that while blue economy risks are products of numerous sources a single blue economy industrial activity or policy can produce multiple risks and challenges. Given the limitations of the study, a general and comprehensive picture about the blue economy can replace the siloed ones we sought to synthesise. Moreover, the deductive approach of some of the studies in terms of variables they searched into and the objectives they sought to achieve also blurs the visibility of some risks which could have been discovered if inductive and abductive approaches were used. As more research is needed to deepen our understanding of Ghana's blue economy and the risks associated with it, a national research deliberately centered on the blue economy risks in terms of nature, severity, frequency, actors, process, and praxis is required.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material. Further inquiries can be directed to the corresponding author.

References

Ackah-Baidoo, A. (2013). Fishing in troubled waters: oil production, seaweed and community-level grievances in the Western Region of Ghana. *Community Dev. J.* 48, 406–420. doi: 10.1093/cdj/bst022

Author contributions

JA: Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. GO: Formal Analysis, Investigation, Methodology, Writing – review & editing.

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Conflict of interest

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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Adjei, M., and Chan, A. H. N. (2023). What women do, believe in, and financially contribute—what matters more in couples' decision making? Gender inequality in Ghana's small-scale fisheries. *Rural Sociology* 88, 220–251. doi: 10.1111/ruso.12474

- Adjei, M., and Overå, R. (2019). Opposing discourses on the offshore coexistence of the petroleum industry and small-scale fisheries in Ghana. *Extractive Industries Soc.* 6, 190–197. doi: 10.1016/j.exis.2018.09.006
- Aodusah-Karikari, A. (2015). Black gold in Ghana: Changing livelihoods for women in communities affected by oil production. *Extractive Industries Soc.* 2, 24–32. doi: 10.1016/j.exis.2014.10.006
- Afful, K. D. (1990). *Marine oil pollution on the coast of Ghana* (Malmo, Sweden: World Maritime University).
- Akpalu, W., Eriksen, S. S., and Vondolia, G. K. (2018). The fisheries sector in Ghana. *A political economy analysis. Norwegian Institute Int. Affairs* 7.
- Akpomera, E. (2020). Africa's Blue Economy: potentials and challenges for more locally beneficial development. *Rev. Afr. Political Economy* 47, 651–661. doi: 10.1080/03056244.2020.1853517
- Allison, E. H., Arnaud-Haond, S., Bebbington, J., Bennett, N., Blasiak, R., Boonstra, W., et al. (2020). Towards ocean equity. *World Resour. Institute*. Available online at: www.oceanpanel.org/how-distribute-benefits-ocean-equitably.
- Allison, E. H., and Ellis, F. (2001). The livelihoods approach and management of small-scale fisheries. *Mar. Policy* 25, 377–388. doi: 10.1016/S0308-597X(01)00023-9
- Amarh, B. A. (2019). The Challenges of the Blue Economy in Ghana and the way forward. *Texila Int. J. Manage.* 5, 1–8. doi: 10.21522/TIJMG.2015.05.01.Art006
- Amongin, S. (2020). *Engendering the blue economy: offshore oil extraction and the livelihoods of women in Ghana*. (Doctoral dissertation). (Canada: University of Northern British Columbia). doi: 10.24124/2020/59026
- Amponsah, S. K. K., Asiedu, B., Avornyo, S. Y., Setufe, S. B., and Failler, P. (2021). Growth, mortality and exploitation rates of african moonfish (*Selene dorsalis*, gill 1863) encountered in the coast of Ghana (West Africa). *Eur. J. Biol. Biotechnol.* 2, 6–10. doi: 10.24018/ejbio.2021.2.2.154
- Ansah, J. W., and Oduro, G. Y. (2024). Gender dimensions of vulnerabilities, adaptations and alternative livelihoods of the closed season in Elmina–Ghana: A qualitative study. *Coast. Manage.* 52, 250–269. doi: 10.1080/08920753.2024.2409055
- Ansah, J. W., Oduro, G. Y., and Boswell, R. (2024). Integrating asaf companies for sustainable ocean and coastal heritage management in Ghana. *Modern Africa: Politics History Soc.* 12, 31–55. doi: 10.26806/modafr.v12i2.572
- Ansah, J. W., Oduro, G. Y., and Wilson, D. (2022). "Narratives of Non-Compliance in "Tuesday Non-Fishing Day" in Ghana," in *The Palgrave Handbook of Blue Heritage*. Eds. R. Boswell, D. O'Kane and J. Hills (Palgrave Macmillan, Cham). doi: 10.1007/978-3-030-99347-4_19
- Appiah, M. K., Ameko, E., Asiamah, T. A., and Duker, R. Q. (2023). Blue economy investment and sustainability of Ghana's territorial waters: an application of structural equation modelling. *Int. J. Sustain. Eng.* 16 (1), 1–15. doi: 10.1080/19397038.2023.2195422
- Asiedu, B., Baah, G. A., Annor, P. B., Nunoo, F. K. E., and Failler, P. (2019). Illegal, Unreported and Unregulated (IUU) fishing activities on fisheries sustainability: Evidence from Lake Volta, Ghana. *Int. J. Fisheries Aquat. Stud.* 7, 14–20.
- Attri, V. N. (2023). "Developments in Sustainable Blue Economy in South Asia," in *The Routledge Handbook of South Asia*. (India: Routledge), 227–242.
- Attri, V. N., and Bohler-Muller, N. (Eds.) (2018). *The blue economy handbook of the Indian Ocean region* (Pretoria, South Africa: Africa Institute of South Africa).
- Avornyo, S. Y., Addo, K. A., Teatini, P., Minderhoud, P., Woillez, M. N., Jayson-Quashigah, P. N., et al. (2023). A scoping review of coastal vulnerability, subsidence and sea level rise in Ghana: Assessments, knowledge gaps and management implications. *Quaternary Sci. Adv.* 12, 100108. doi: 10.1016/j.qsa.2023.100108
- Ayelazuno, J. A., and Ovadia, J. S. (2022). Ocean and land grabbing in Ghana's offshore petroleum industry: From the agrarian question to the question of industrialization. *J. Agrarian Change* 22, 673–702. doi: 10.1111/joac.12502
- Ayilu, R. K. (2023). Limits to blue economy: challenges to accessing fishing livelihoods in Ghana's port communities. *Maritime Stud.* 22, 11. doi: 10.1007/s40152-023-00302-8
- Ayilu, R. K., Fabinyi, M., and Barclay, K. (2022). Small-scale fisheries in the blue economy: Review of scholarly papers and multilateral documents. *Ocean Coast. Manage.* 216, 105982. doi: 10.1016/j.ocecoaman.2021.105982
- Ayilu, R. K., Fabinyi, M., Barclay, K., and Bawa, M. A. (2023a). Blue economy: industrialisation and coastal fishing livelihoods in Ghana. *Rev. Fish Biol. Fisheries* 33, 801–818. doi: 10.1007/s11160-022-09749-0
- Ayilu, R. K., Fabinyi, M., Barclay, K., and Bawa, M. A. (2023b). Industrial and small-scale fisheries relations in Ghana: A political ecology perspective on blue economy exclusion. *J. Rural Stud.* 102, 103085. doi: 10.1016/j.jrurstud.2023.103085
- Bari, A. (2017). Our oceans and the blue economy: Opportunities and challenges. *Proc. Eng.* 194, 5–11. doi: 10.1016/j.proeng.2017.08.109
- Bednarek, A. T., Wyborn, C., Cvitanovic, C., Meyer, R., Colvin, R. M., Addison, P. F., et al. (2018). Boundary spanning at the science-policy interface: the practitioners' perspectives. *Sustainability Sci* 13, 1175–1183. doi: 10.1007/s11625-018-0550-9
- Bennett, N. J., Blythe, J., Cisneros-Montemayor, A. M., Singh, G. G., and Sumaila, U. R. (2019). Just transformations to sustainability. *Sustainability* 11, 3881. doi: 10.3390/su11143881
- Bennett, N. J., Blythe, J., White, C. S., and Campero, C. (2021). Blue growth and blue justice: Ten risks and solutions for the ocean economy. *Mar. Policy* 125, 104387. doi: 10.1016/j.marpol.2020.104387
- Boakye, K. A. (2012). Tourists' views on safety and vulnerability. A study of some selected towns in Ghana. *Tourism Manage.* 33, 327–333. doi: 10.1016/j.tourman.2011.03.013
- Bond, P. (2019). Blue Economy threats, contradictions and resistances seen from South Africa. *J. Political Econ.* 26, 341–362. doi: 10.2458/v26i1.23504
- Britwum, A. O. (2009). The gendered dynamics of production relations in Ghanaian coastal fishing. *Feminist Afr.* 12, 69–86. Available online at: <https://www.jstor.org/stable/48725912>.
- Campling, L., and Colás, A. (2018). Capitalism and the sea: Sovereignty, territory and appropriation in the global ocean. *Environ. Plann. D: Soc. space* 36, 776–794. doi: 10.1177/0263775817737319
- Carver, R. (2020). Lessons for blue degrowth from Namibia's emerging blue economy. *Sustainability Sci* 15, 131–143. doi: 10.1007/s11625-019-00754-0
- Childs, J. R., and Hicks, C. C. (2019). Securing the blue: political ecologies of the blue economy in Africa. *J. Political Econ.* 26, 323–340.
- Cohen, P. J., Allison, E. H., Andrew, N. L., Cinner, J., Evans, L. S., Fabinyi, M., et al. (2019). Securing a just space for small-scale fisheries in the blue economy. *Front. Mar. Sci* 6, 171. doi: 10.3389/fmars.2019.00171
- Colgan, C. S. (2018). "Climate change and the Blue Economy of the Indian Ocean, in *The Blue Economy Handbook of the Indian Ocean Region*", Eds. V. N. Attri and N. Bohler-Muller (Pretoria: African Institute of South Africa), 349–371.
- Croft, F., Breakey, H., Voyer, M., Cisneros-Montemayor, A., Issifu, I., Solitei, M., et al. (2024). Rethinking blue economy governance—A blue economy equity model as an approach to operationalise equity. *Environ. Sci. Policy* 155, 103710. doi: 10.1016/j.envsci.2024.103710
- Custer, S., DiLorenzo, M., Masaki, T., Sethi, T., and Harutyunyan, A. (2018). *Listening to leaders 2018: Is development cooperation tuned-in or tone-deaf* (Williamsburg, VA: AidData at the College of William & Mary).
- Dodzi Dzitse, C. (2021). *Visitors' Perceptions and Experiences of Pollution at Beaches in the Accra Metropolis* (Cape Coast, Ghana: UCC).
- Dzitse, C. D., Doku, S., Dogbe, J. A., and Nkrumah, M. (2024). Towards sustainable beach tourism: analysis of beach attractiveness, overall experience, and revisit intention in coastal Ghana. *Int. J. Contemp. Tourism Res.* 8, 13–30. doi: 10.30625/ijctr.1475429
- Egyir, I. K. (2012). *The impacts of oil and gas activities on fisheries in the Western Region of Ghana*. Universitetet i Tromsø, Tromsø, Norway.
- Eikeset, A. M., Mazzarella, A. B., Davíðsdóttir, B., Klinger, D. H., Levin, S. A., Rovenskaya, E., et al. (2018). What is blue growth? The semantics of "Sustainable Development" of marine environments. *Mar. Policy* 87, 177–179. doi: 10.1016/j.marpol.2017.10.019
- Eshun, G., Tichaawa, T. M., and Appiah, D. O. (2019). Towards a sustainable coastal tourism development in Ghana. *Afr. J. Hospitality Tourism Leisure* 8, 1–18.
- Evans, L. S., Buchan, P. M., Fortnam, M., Honig, M., and Heaps, L. (2023). Putting coastal communities at the center of a sustainable blue economy: A review of risks, opportunities, and strategies. *Front. Political Sci* 4, 1032204. doi: 10.3389/fpos.2022.1032204
- Failler, P., Ndende, M., Karani, P., Gilau, A. M., Hamukuaya, H., and Diop, S. (2020). Africa blue economy strategy–blue governance framework. African Union – Inter-African Bureau for Animal Resources (AUIBAR), Nairobi.
- Findlay, K., and Bohler-Muller, N. (2018). "South Africa's ocean economy and Operation Phakisa," in *The blue economy handbook of the Indian Ocean region* (Pretoria, South Africa: Africa Institute of South Africa), 231–255.
- Fukuda-Parr, S. (2003). The human development paradigm: operationalizing Sen's ideas on capabilities. *Feminist Econ* 9, 301–317. doi: 10.1080/1354570022000077980
- Jahan, S. (2017). Human development report 2015: Work for human development. (New York, USA: United Nations Development Programme (UNDP)).
- Jimu, T., Magidi, M., and Gukurume, S. (2024). "Governance, Power Dynamics, and Conflicts in Norton's Small-Scale Fisheries," in *Natural Resource-Based Conflicts in Rural Zimbabwe* (Routledge), 153–169.
- Jouffray, J. B., Blasiak, R., Norström, A. V., Österblom, H., and Nyström, M. (2020). The blue acceleration: the trajectory of human expansion into the ocean. *One Earth* 2, 43–54. doi: 10.1016/j.oneear.2019.12.016
- Karakara, A. A. W., Peprah, J. A., and Dasmani, I. (2023). Analysing the socioeconomic characteristics of fisheries-dependent communities in the context of the blue economy in Ghana. *Afr. J. Science Technology Innovation Dev.* 15, 779–795. Available online at: https://hdl.handle.net/10520/ejc-aa_astid_v15_n6_a779.
- Karani, P., Failler, P., Gilau, A. M., Ndende, M., and Diop, S. (2022). Africa blue economy strategies integrated in planning to achieve sustainable development at national and regional economic communities (RECs). *J. Sustainability Res.* 4, e220011. doi: 10.20900/jsr20220011
- Krajňák, T. (2021). The effects of terrorism on tourism demand: A systematic review. *Tourism Econ* 27, 1736–1758. doi: 10.1177/1354816620938900

- Kwadzo, M. (2022). Effects of the closed fishing season on the livelihood of fisheries workers: A case study of fisheries workers in elmina in the central region of Ghana. *World J. Agric. Res.* 10, 102–110. doi: 10.12691/wjar-10-4-1
- Lopes, C. (2016). Africa's blue economy: An opportunity not to be missed. Development Matters. Available online at: <https://oecd-development-matters.org/2016/06/07/africas-blue-economy-an-opportunity-not-to-be-missed/> (Accessed June 1, 2023).
- March, A., Bennett, M., Germishuizen, M., Evans, T., and Failler, P. (2024). The status of Blue Economy development in Africa. *Mar. Policy* 165, 106205. doi: 10.1016/j.marpol.2024.106205
- Martínez-Vázquez, R. M., Milán-García, J., and de Pablo Valenciano, J. (2021). Challenges of the Blue Economy: evidence and research trends. *Environ. Sci. Europe* 33, 61. doi: 10.1186/s12302-021-00502-1
- McCabe, R. (2023). Environmental drivers of maritime insecurity: governance, enforcement and resilience in the western Indian Ocean. *Conflict Secur. Dev.* 23, 237–265. doi: 10.1080/14678802.2023.2256251
- Menzel, A. (2022). "Maritime Security and the Blue Economy," in *Routledge Handbook of Maritime Security*. Eds. R. Bosilca, S. Ferreira and B. J. Ryan (London: Routledge), 265–275. doi: 10.4324/9781003001324
- Ministry of Fisheries and Marine Resources. (2022). *Namibia Blue Economy Policy* (Windhoek: Republic of Namibia), 2022–2031.
- Niner, H. J., Barut, N. C., Baum, T., Diz, D., del Pozo, D. L., Laing, S., et al. (2022). Issues of context, capacity and scale: Essential conditions and missing links for a sustainable blue economy. *Env. Sci. & Pol.* 130, 25–35. doi: 10.1016/j.envsci.2022.01.001
- Odhiambo, L. A., Oduro, G. Y., Ansah, J. W., Adade, R., and Ahetu, D. W. (2025). Marine plastics and the circular economy: A review of policy frameworks in Mombasa County, Kenya. *Waste Manage. Res.*, 1–18. doi: 10.1177/0734242X251331339
- Ofori-Danson, P. K., Asiedu, B., Amponsah, S. K. K., and Crawford, B. (2019). *Assessment of the Socio-Economic, Food Security and Nutrition Impacts of the 2019 Canoe Fishery Closed Fishing Season in Ghana*. USAID/Ghana Sustainable Fisheries Management Project (Narragansett, RI: Coastal Resources Center, Graduate School of Oceanography, University of Rhode Island), 109.
- Okafor-Yarwood, I. (2020). The cyclical nature of maritime security threats: Illegal, unreported, and unregulated fishing as a threat to human and national security in the Gulf of Guinea. *Afr. Secur.* 13, 116–146. doi: 10.1080/19392206.2020.1724432
- Okafor-Yarwood, I. M., and Onuoha, F. C. (2023). Whose security is it? Elitism and the global approach to maritime security in Africa. *Third World Q.* 44, 946–966. doi: 10.1080/01436597.2023.2167706
- Okyerere, I., Chuku, E. O., Dzantor, S. A., Ahenkorah, V., and Adade, R. (2023). Capacity deficit and marginalisation of artisanal fishers hamper effective fisheries governance in Ghana: Insights and propositions for promoting sustainable small-scale fisheries. *Mar. Policy* 153, 105640. doi: 10.1016/j.marpol.2023.105640
- Owusu, B. (2018). 'Doomed by the 'resource curse'? Fish and oil conflicts in the Western Gulf of Guinea, Ghana. *Development* 61, 149–159. doi: 10.1057/s41301-018-0189-y
- Owusu, V. (2019). Impacts of the petroleum industry on the livelihoods of fisherfolk in Ghana: A case study of the Western Region. *Extractive Industries Soc.* 6, 1256–1264. doi: 10.1016/j.exis.2019.11.002
- Owusu, V., and Andriess, E. (2020). From open access regime to closed fishing season: Lessons from small-scale coastal fisheries in the Western Region of Ghana. *Mar. Policy* 121, 104162. doi: 10.1016/j.marpol.2020.104162
- Pati, D., and Lorusso, L. N. (2018). How to write a systematic review of the literature. *HERD: Health Environments Res. Design J.* 11, 15–30. doi: 10.1177/1937586717747384
- Pauli, G. A. (2010). *The blue economy: 10 years, 100 innovations, 100 million jobs* (Taos, New Mexico: Paradigm publications).
- Pinkerton, E. (2017). Hegemony and resistance: disturbing patterns and hopeful signs in the impact of neoliberal policies on small-scale fisheries around the world. *Mar. Policy* 80, 1–9. doi: 10.1016/j.marpol.2016.11.012
- Popoola, O. O., and Olajuyigbe, A. E. (2023). Operationalizing the blue economy in the Gulf of Guinea, Africa. *Front. Political Sci.* 5, 1070508. doi: 10.3389/fpos.2023.1070508
- Preko, A. (2021). Safety and security concerns at the beach: Views of migrant visitors in Ghana. *Tourism Hospitality Res.* 21, 73–85. doi: 10.1177/1467358420954504
- Pretorius, R., and Henwood, R. (2019). Governing Africa's blue economy: the protection and utilisation of the continent's blue spaces. *Studia Universitatis Babeş-Bolyai Europaea* 2, 119–148. doi: 10.24193/subeuropaea.2019.2.05
- Rose, D. C., Mukherjee, N., Simmons, B. I., Tew, E. R., Robertson, R. J., Vadrot, A. B., et al. (2020). Policy windows for the environment: Tips for improving the uptake of scientific knowledge. *Environ. Sci. Policy* 113, 47–54. doi: 10.1016/j.envsci.2017.07.013
- Rout, M., Mika, J. P., Reid, J., Whitehead, J., Gillies, A., Wiremu, F., et al. (2024). How to indigenise the blue economy in Aotearoa New Zealand. *Kōtuitui: New Z. J. Soc. Sci. Online* 20 (4), 1–20. doi: 10.1080/1177083X.2024.2360024
- Schutter, M. S., Hicks, C. C., Phelps, J., and Waterton, C. (2021). The blue economy as a boundary object for hegemony across scales. *Mar. Policy* 132, 104673. doi: 10.1016/j.marpol.2021.104673
- Sen, A. (2008). The idea of justice. *J. Hum. Dev.* 9, 331–342. doi: 10.1080/14649880802236540
- Shamseer, L., Moher, D., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., et al. (2015). Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation. *Bmj* 349. doi: 10.1136/bmj.g7647
- Silver, J. J., Gray, N. J., Campbell, L. M., Fairbanks, L. W., and Gruby, R. L. (2015). Blue economy and competing discourses in international oceans governance. *J. Environ. Dev.* 24, 135–160. doi: 10.1177/1070496515580797
- Smith-Godfrey, S. (2016). Defining the blue economy. *Maritime affairs: J. Natl. maritime foundation India* 12, 58–64. doi: 10.1080/09733159.2016.1175131
- Spalding, M. J. (2016). The new blue economy: the future of sustainability. *J. Ocean Coast. Econ* 2, 8. doi: 10.15351/2373-8456.1052
- Syriopoulos, T., and Kafka, K. (2024). "Pathways to Resilient and Sustainable Economic Development Through the Blue Economy," in *Economic Recessions – Navigating Economies in a Volatile World and the path for Economic Resilience and Development*. Ed P. C. Kostis (London: Intechopen). doi: 10.5772/intechopen.1002169
- The Ministerial Conference on Fisheries Cooperation among African States Bordering the Atlantic Ocean (ATFALCO) (2012). *Fishery and aquaculture industry in Ghana Series Report No.1 of the Review of the fishery and aquaculture industry in the 22 ATALCO Member States*. (Rome: ATFALCO).
- Torell, E., Bilecki, D., Owusu, A., Crawford, B., Beran, K., and Kent, K. (2019). Assessing the impacts of gender integration in Ghana's fisheries sector. *Coast. Manage.* 47, 507–526. doi: 10.1080/08920753.2019.1669098
- United Nations Economic Commission for Africa (2016). *Africa's Blue Economy: A Policy Handbook*. Addis Ababa, Ethiopia: United Nations Economic Commission for Africa. Available online at: https://www.un.org/africarenewal/sites/www.un.org.africarenewal/files/Africa%27s_Blue_Economy_A_policy_handbook.pdf (Accessed June, 2024).
- Voyer, M., Quirk, G., McIlgorm, A., and Azmi, K. (2018). Shades of blue: What do competing interpretations of the Blue Economy mean for oceans governance? *J. Environ. Policy Plann.* 20, 595–616. doi: 10.1080/1523908X.2018.1473153
- World Wildlife Fund (2015). *Principles for a sustainable Blue Economy*. Available online at: http://d2ouvy59p0dg6k.cloudfront.net/downloads/15_1471_blue_economy_6_pages_final.pdf (Accessed June 2024).
- Xiao, Y., and Watson, M. (2019). Guidance on conducting a systematic literature review. *J. Plann. Educ. Res.* 39, 93–112. doi: 10.1177/0739456X17723971
- Zalik, A. (2018). Mining the seabed, enclosing the Area: ocean grabbing, proprietary knowledge and the geopolitics of the extractive frontier beyond national jurisdiction. *Int. Soc. Sci. J.* 68, 343–359. doi: 10.1111/issj.2018.68.issue-229-230