



## Highlights

- The ocean is important for everyone—it produces oxygen and food, stores carbon and heat, offers space for economic activities and recreation, and continues to inspire and support culture and well-being.
- Access to ocean resources and sectors is rarely equitably distributed. Many of their benefits are accumulated by a few, while most harms from development are borne by the most vulnerable.
- Inequity is a systemic feature of the current ocean economy. It is embedded in existing political and economic systems, the result of historical legacies and prevailing norms. This has brought global environmental challenges and negative effects on human well-being.
- Legal frameworks to support equity exist but are not sufficiently developed. In practice, ocean policies are largely equity-blind, poorly implemented and fail to address inequity.
- Inequity manifests, for example, in unfair distribution of commercial fish catches; limited political power of small-scale fishers, particularly women and other minority groups; limited engagement of developing nations in high-seas activities and associated decision-making; and consolidated interests of global supply chains in a few transnational corporations, with evidence of poor transparency and human rights abuses.
- Climate change will create and worsen challenges of fairness and equity faced by developing countries, regions and communities reliant on marine livelihoods.
- Discussions on environmental sustainability have largely overshadowed concerns about social equity. Addressing inequalities and preventing the widening of ocean inequities are integral to a sustainable ocean economy; and promoting equity is essential for securing fair development, the legitimacy of policies, social stability and sustainability.

- A sustainable ocean economy should protect human rights, improve human well-being, stimulate inclusion and gender equity, and prioritise recognition, diversity and equal access to resources to provide fair opportunities consistent with sustainable development. It should also address corruption and tax evasion, demand responsible and transparent business practices and create a shared economy that facilitates a fair redistribution of wealth and benefits. A sustainable ocean economy should be aware of environmental and social limits on growth and consider degrowth where appropriate.
- Shifting a historical trajectory of persistent and increasing inequities will require strong leadership, inclusive governance and long-term planning that starts with a commitment to equity as integral to a sustainable ocean economy and relationships within and across nations.

## 1 Introduction

### 1.1 Overview

The blue economy is being promoted as capable of achieving sustainability and prosperity, fair use of the ocean and the UN Sustainable Development Goals (SDGs). Ensuring a more equitable distribution of goods and services provided by the ocean represents a major challenge. There is overwhelming evidence that current access to ocean benefits and resources, as well as exposure to harms, is distributed inequitably. This results in negative effects on the environment and human health, loss of livelihoods, limited financial opportunities for vulnerable groups and challenges to nutritional and food security. Powerful interests (including states, communities and economic entities) benefit from existing arrangements. Challenging inequality represents a direct

Originally published in:

Österblom, H., C.C.C. Wabnitz, D. Tladi et al. 2020. *Towards Ocean Equity*. Washington, DC: World Resources Institute. Available online at [www.oceanpanel.org/how-distribute-benefits-ocean-equitably](http://www.oceanpanel.org/how-distribute-benefits-ocean-equitably).

Reprint by Springer International Publishing (2023) with kind permission.

Published under license from the World Research Institute.

threat to such interests. Inequality is increasingly influencing economic development and political stability. Current and recent examples of social unrest are closely associated with concerns about inequality, climate change, corruption and related societal problems perceived as having an unfair impact. Increased scientific attention to inequality is starting to shape debates associated with the ocean. We argue that there is a general policy blindness to instruments and practices that maintain the unfair status quo, but that there are remedies to such blindness. The purpose of this Blue Paper is to explore ocean inequities and suggest approaches for the just inclusion of diverse actors in the blue economy agenda and the equitable distribution of ocean benefits. First, we define inequity terms and their drivers, as well as how they affect sustainability. Second, we explore policies and practices that have (or have not) worked in favour of equity, while also promoting ecological sustainability. Finally, we provide opportunities for action for policymakers, funding and research institutions, international and non-governmental organisations, business leadership as well as civil society to address systemic aspects of inequities along a spectrum of ambitions, from basic to transformative. These opportunities for action are not intended as alternatives. They constitute complementary and reinforcing action to support and inform pathways to a sustainable and just ocean economy.

## 1.2 Context

The ocean plays a critical role in securing human well-being, but marine ecosystems have a long history of overexploitation, habitat destruction and pollution (Jackson 2001; Roberts 2010; Halpern et al. 2008; Nash 2013; Reusch et al. 2018). The scale and impacts of these pressures, which now also include climate change, are critically undermining the function and role that the ocean plays.

Despite increasing knowledge of these pressures and their effects, the ocean continues to be perceived as an economic frontier: a resource with substantial potential to stimulate economic growth, employment opportunities and innovation (European Commission 2012; United Nations 2014; OECD 2016). Notions such as ‘the blue economy’ or ‘blue growth’ facilitate such perceptions. These concepts are used to legitimise and generate support for ocean-based economic development opportunities—including aquaculture, bio-prospecting, marine tourism, shipping, oil and gas, renewable energy and deep-sea mining (OECD 2016; Lloyd’s 2014; Economist 2015) and are often linked to the idea of environmental stewardship (Biermann et al. 2017; Brent et al. 2018).

Despite substantial differences in how ocean development concepts are presented and what they imply for economic and social development (Silver et al. 2015; Voyer et al. 2018; Bennett et al. 2019a, b), they are increasingly central to national and international ocean policies (European

Commission 2017; OECD 2016; World Bank and United Nations 2017; Childs and Hicks 2019). They have also gained broad levels of support across diverse actors, including small-island and developing states (Michel 2016; van Wyk 2015). A historical asymmetry between the capacity to grow the ocean economy and the capacity to regulate it raises questions about whether promoting growth in ocean use can be made compatible with sustainable use of marine resources and the protection of ecosystems (Ehlers 2016; Llewellyn et al. 2016; Golden et al. 2017; Niner et al. 2018; Laffoley et al. 2019).

The controversy and debate around the sustainable ocean economy illustrate the disparities among visions of the way humanity should relate to the ocean—arguably the greatest common global resource. Some believe that economic growth based on the ocean is critical to development—the foundation of human well-being—and can be made sustainable through technological innovation and regulations. Others are more sceptical and contend that current economic paradigms and power structures are the very reason for unsustainable development and inequities, that the potential for further expansion of ocean-based sectors is limited at best, and that achieving sustainability can only be accomplished by transitioning towards a collaborative economy, which would include limiting, or ‘degrowing’, economic ocean-based activities (Kostakis and Bauwens 2014; Hadjmichael 2018).

Concerns about environmental sustainability have overshadowed concerns about social equity (Stanton 2012; Halpern et al. 2013; Boonstra et al. 2015; Bennett et al. 2019b). Yet there is increased recognition that equity is necessary, if not sufficient, for sustainability (UN 2015; Raworth 2017a; Hamann et al. 2018; Leach et al. 2018; Cohen et al. 2019); that fairness and sustainability are ‘two sides of the same coin’ (Berg et al. 2012; Piketty 2014) and that any sustainable ocean economy investments predicated on fostering sustained economic growth must also pay attention to reducing inequality. These are arguments for explicitly considering inequality in national ocean economy plans, rather than addressing it through global blueprints. The shortcomings and failures of some of the International Monetary Fund (IMF) and World Bank structural adjustment programs of the 1980s and 1990s constitute warnings against the adoption of universal macro-economic recipes for economic management (Dollar and Svensson 2001).

Social equity (Box 13.1) in relation to the sustainable ocean economy includes a focus on the provision of social, cultural and economic benefits. A sustainable ocean economy should respect human rights and provide fair opportunities for employment. It should also improve wages, address workplace discrimination, stimulate gender equity and affirm the right to a healthy and safe work environment. A sustainable ocean economy should include aspects of recognition, equal access to resources and inclusivity, and should also support fair distribution of benefits and insulation for the most vulnerable from risks of harm, and where harm is

done, assign liability and responsibility for remedy (Klain et al. 2014; Klein et al. 2015; WWF 2018). This is generally not how ocean policies are designed or implemented.

**Box 13.1: Definitions: Equality, Equity and Fairness**

*Social equality* and *social equity* are closely related terms that merit clarification. *Social equality* refers to the level to which all members of a society are assigned the same status based on recognition, opportunity and outcomes. For example, different groups (such as genders, classes and ethnicities) could have the same status in terms of legal rights, economic opportunities or access to goods and services (Sen 1992; ISSC et al. 2016). Equality of recognition and protection under the law is a basic tenet of legal systems and constitutions in most countries, though application of this premise varies significantly. Under the ‘capability approach’, equality is recognised in terms of people’s assets, capitals or abilities to take advantage of development and livelihood opportunities (Sen 1992; Nussbaum 2011). Equality of access to assets is thus assumed to lead to improvements in equality of opportunities (Leach et al. 2010). Equality of outcomes refers to an objective comparison of the level of parity in terms of distribution of measures such as income, assets or wealth either within or across societies.

The term *social equity* goes further and combines a concern for equal treatment, with an assessment of what constitutes fair treatment across both substantive outcomes and procedural concerns. Fairness is most often addressed in terms of distributive equity, in other words the distribution of ‘goods’ and ‘bads’ across different individual and groups in society (McDermott et al. 2013; Tyler 2015; Bennett et al. 2019a). Achieving social equity may require redressing existing social inequalities so that members of disadvantaged social groups receive a fairer share of the benefits than they did in the past. What constitutes ‘fair distribution’ is subjective and needs to be understood in relation to the social beliefs, values, practices and institutions of different cultures and societies (e.g., Sandel 1990). Distributive equity may also be influenced by the level of procedural equity, which refers to the recognition of rights and stakeholders, inclusion and participation, as well as political power to influence decisions regarding management and distribution of goods and services (Pascual et al. 2014; Tyler 2015). True procedural equity requires that all actors have adequate capacity to participate, and benefit from information transparency and processes that ensure all voices are heard and can influence decisions (Bennett et al. 2019a).

### 1.3 Why Is Equity Important?

Inequity is most visible when there is great income disparity within and between countries. The challenges associated to wealth inequality have repeatedly been voiced by social justice non-governmental organisations (NGOs), with a particular focus on extreme differences in wealth between the super-rich and the ‘bottom billions’ of the world (Oxfam 2019). Concerns about wealth inequalities, their causes, possible solutions and consequences for economic growth and social well-being are also voiced by organisations commonly associated with growth-focused economic policies, such as the Organisation for Economic Co-operation and Development (OECD) (Cingano 2014), the International Monetary Fund (IMF) (Dabla-Norris et al. 2015), the *Economist* magazine (Economist 2015) and various banks (e.g., Camposi 2017). A recent survey among private corporations illustrates that 88% of chief executives believe our economic system needs to refocus on equitable growth (Global Compact 2019). These concerns arise because income and wealth inequality, having largely fallen from the 1920s until the early 1980s, have been rising since that time (Alvaredo et al. 2018).

Rises in inequality are associated with rapid economic growth in transitional countries (China, India, Indonesia and Brazil), economic liberalisation in Russia and, in some developed nations (particularly English-speaking ones), the adoption of ‘neoliberal’ economic policies (Kotz 2015). These policies include large-scale transfer of public goods to the private sector through the sale of previously state-owned companies, public lands, health and education services; the lowering of corporate taxes and tax rates on top earners; deregulation of financial markets; and liberalisation of trade. All are intended to boost growth, which under this development approach is supposed to reduce poverty through trickle-down effects. While there has undoubtedly been success in reducing global poverty, inequalities have widened both nationally and globally (Alvaredo et al. 2018) and include the emergence of highly consolidated industries (Blasiak et al. 2018b; Monacelli 2018; Folke et al. 2019).

The social democrat countries of Europe, conversely, have the lowest levels of wealth inequality (Alvaredo et al. 2018). These high-wage, high-taxation economies are effective in providing accessible public services and are funded by redistributive, or progressive, taxation schemes. In these countries, the sustainable ocean economy may well develop to deliver hoped-for gains in human welfare, as the institutions and practices are in place and operational. However, the use of tax havens by private corporations and citizens, and other mechanisms aimed to avoid or reduce taxation (see Galaz et al. 2018), represent a challenge also for countries with functional taxation schemes.

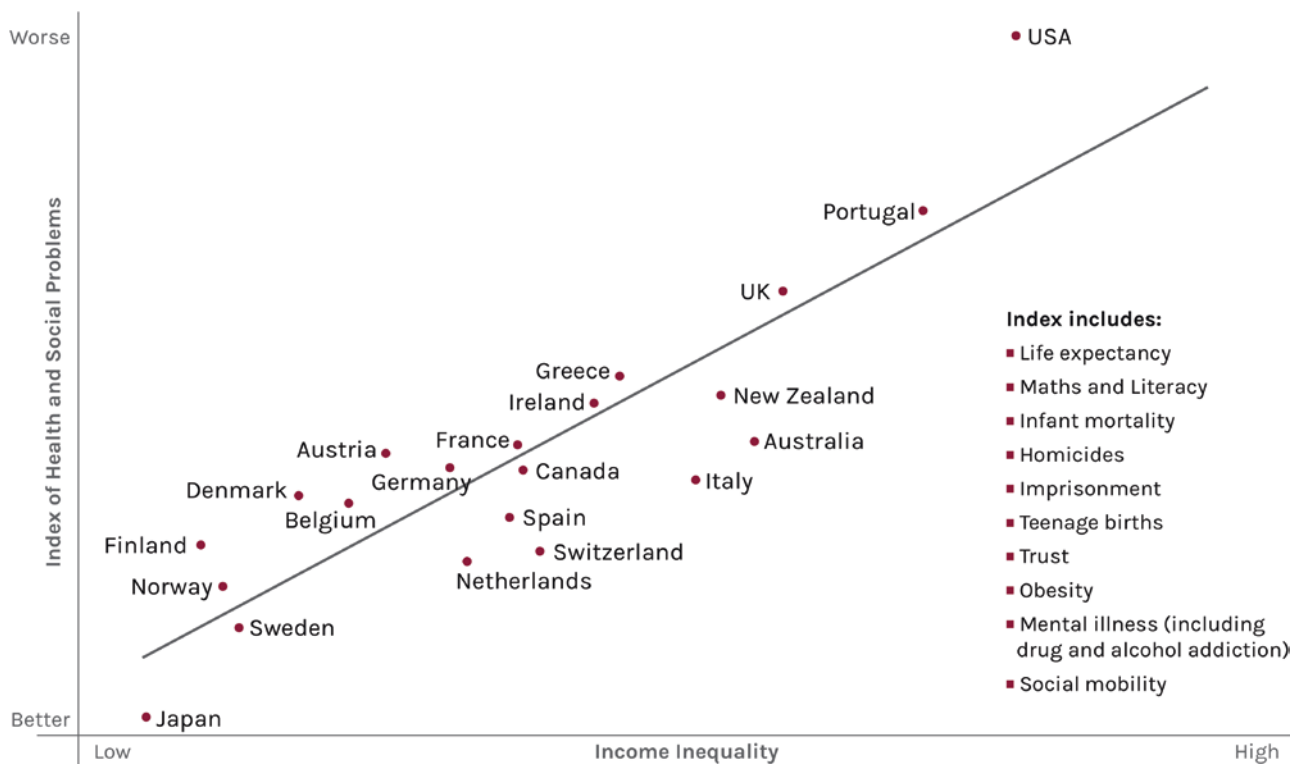
The Sustainable Development Goals (SDGs) cannot be achieved when a billion or more people remain in poverty and inequality is systemic. However, there is no simple, universal relationship between inequality and economic growth. The empirical literature is converging on a tentative consensus that inequality is generally harmful for the pace and sustainability of economic growth over the medium run (Berg et al. 2018). In their study Berg et al. (2018) reach the following conclusions:

*First, lower net inequality is strongly and robustly correlated with faster and more durable growth, controlling for the effect of redistribution. Second, redistribution appears generally benign in terms of its impact on growth; only when redistribution is very large is there some evidence that it may have direct negative effects on the durability of growth. Third, we find preliminary evidence that inequality's impact on growth works through lower education and life expectancy, and higher fertility.*

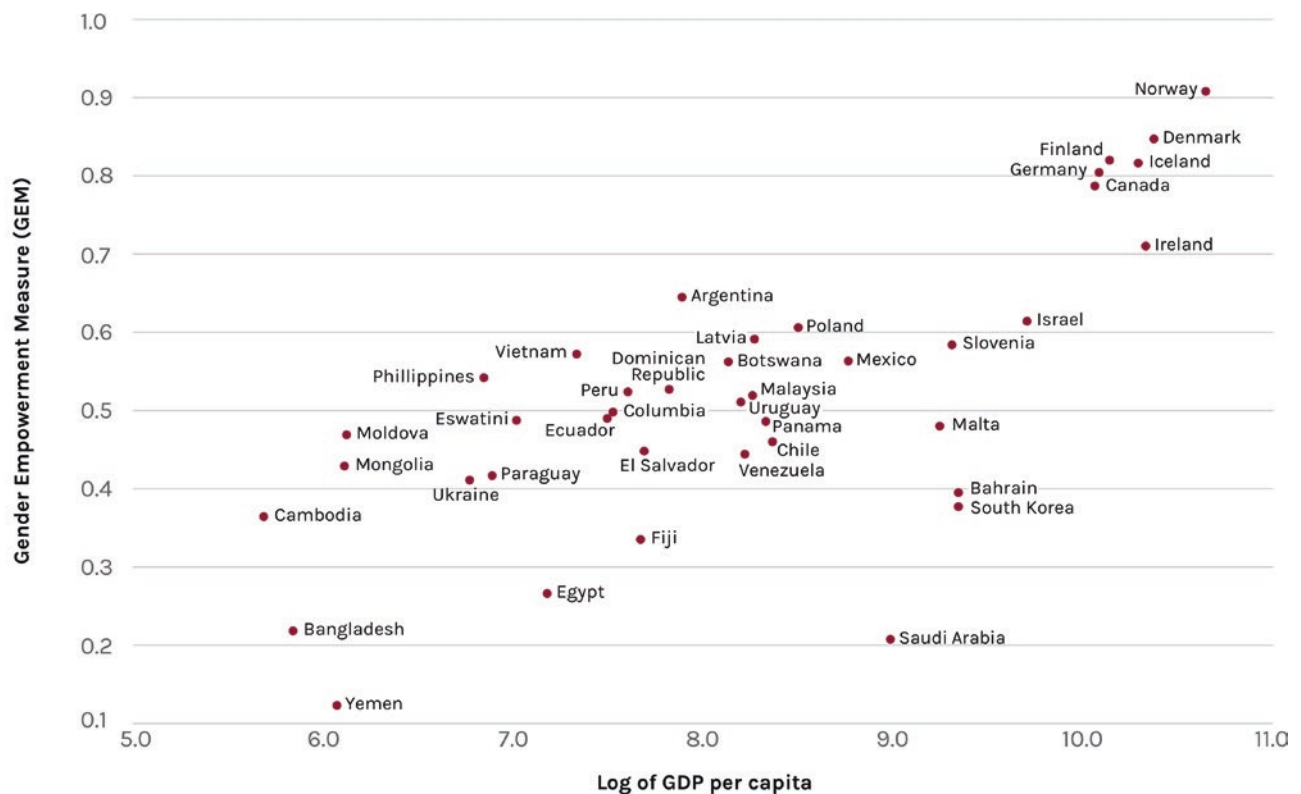
Beyond negative impacts on national economies, for example through limited participation in formal markets, evidence is also accumulating that links inequality with social 'bads', such as increases in child mortality, increas-

ing crime rates, declines in social trust, mental health problems and rising rates of incarceration (Wilkinson and Pickett 2009, Fig. 13.1). Inequality is also associated with social conflict and political instability (Scheffer et al. 2017), both within and between nations. Signals of such conflict and instability have become increasingly evident in recent years (Østby 2008; Cederman et al. 2011; Dabla-Norris et al. 2015).

Within the more general concerns about inequality and its effects on society and growth, there is a particular focus on the impacts of gender inequities. A review of studies focusing on the correlation between gender equality and economic growth (Nallari and Griffith 2011) suggests that gender equality, measured in terms of education and employment (Kabeer and Natali 2013), is positively linked to economic growth. The contrast between women in poor and rich countries is striking, with women in poorer countries faring much worse on indicators of gender equality such as education, health, economic rights, marriage rights and participation in parliament. The International Finance Corporation (IFC 2017, p. 3) concludes that gender equality is 'a key contributor to growing and strength-



**Fig. 13.1** Health and social problems are worse in more unequal countries. Note: Inequality has negative societal consequences for both rich and poor nations. (Sources: Wilkinson and Pickett 2009 and [www.equalitytrust.org.uk](http://www.equalitytrust.org.uk))



**Fig. 13.2** Relationship between Gender Empowerment Index (GEM) and Gross Domestic Product (GDP). Relationship between Gender Empowerment (GEM) index and gross domestic product (GDP), from

data for every third country in the IMF database (ordered alphabetically). If data were missing, the next country on the list was chosen. (Source: Stotsky 2006, pp. 23–24)

ening national, regional, and global economies’. While correlations between gender equality and growth are strong (Fig. 13.2), they appear to be asymmetrical. Gender equality contributes to growth, but findings are much less consistent when it comes to growth redressing critical dimensions of gender equality (Kabeer and Natali 2013; Kabeer 2016). Investments and processes of growth consequently need to be accompanied by specific gender equality-oriented public and private sector measures (Kabeer 2012; IFC 2017).

Any future sustainable ocean economy strategy should include means of reducing existing inequalities as well as preventing the widening of ocean inequities, both within and among countries. A sustainable ocean economy should ensure that the potential gains in wealth from the development of new ocean industries are distributed to address social problems seen in more unequal societies. The development approaches and policy strategies designed within a sustainable ocean economy must also shape existing ocean sectors (e.g., fisheries, maritime transport, aquaculture) so that they too recognise and include social equity concerns (Bennett et al. 2019a, b).

Extreme inequality is a social ‘bad’, for both moral and instrumental reasons. Addressing inequalities should include

addressing issues of governance, social norms, gender, global inequalities (e.g., between North and South), inequalities at national scales and intergenerational inequities. Borrowing from the definition of the ‘green economy’, a sustainable ocean economy should thus include opportunities for economic development that result in ‘improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities’ (UNEP 2011, p. 16; UNCTAD 2014, p. 2).

#### 1.4 Equity in an Ocean Context

The inequitable distribution of benefits is not consistent with a global policy agenda advocating for sustainable ocean use for the benefit of all (UN 2015). In short, concerns associated with social equity and an ocean economy are related to (1) the way benefits are shared and (2) the distribution of harms, both of which include the level to which different groups are included in or excluded from decision-making.

In this Blue Paper, we assess the fairness of the current global ocean economy and explore what can be done to facilitate fair sharing of the benefits from ocean use,

with an aim to align concerns for social equity with concerns about environmental sustainability. The fairness issues we address exist at and across multiple scales (from global and national levels to those of communities and subgroups) and involve relationships (bilateral or otherwise) among multiple types of actors (governments, civil society, international agencies, and private corporations) with different levels of power, capacities and incentives to address ocean equity. Where actors have the power to disregard equity concerns, there has to be some mechanism to bring fairness issues to bear; for example, through multi-lateral agreements and/or regulatory approaches. Without an active championing of equity, inequality will be the default outcome.

This Blue Paper addresses the following central questions:

- What types of inequity are prevalent in the use of marine resources? How can differences in fairness be explained?
- How are sustainable and fair use of marine resources interrelated? Why is it important to strive for both simultaneously?
- What can be done in terms of policy and practice to improve social equity in relation to people's use of the ocean?

In the following sections, we explore different types of equity, describe why inequity is a challenge in relation to sustainability and conclude with opportunities for action aimed to foster just ocean sustainability.

## 2 Key Findings

### 2.1 How Are Ocean Benefits and Harms Distributed?

The ocean produces oxygen, stores carbon and heat, produces food, offers space for economic activities and facilitates international trade and the transport of goods (White et al. 2012; Resplandy et al. 2018). It also provides non-monetary benefits in the form of advances in scientific knowledge, opportunities for collaboration, sense of place, feelings of wonder and worship, and a free place to play or gather with family and friends (Fraser and Spencer 1998; Whitehead et al. 2008; Garcia Rodrigues et al. 2017). The ocean and all its benefits should be enjoyed by all.

The potential benefits from ocean-based economic activities, include taxation and rents for governments, payments for access agreements, financial and employment benefits for national economies, as well as livelihood opportunities and social benefits for local communities and tourists visiting coastal and marine environments. Globally, the value of key ocean assets has been estimated at US \$24 trillion and

the value of derived services at between \$1.5 trillion and \$6 trillion per year (Hoegh-Guldberg 2015; Lillebø et al. 2017; Cicin-Sain 2015; OECD 2016).

Generally, however, the distribution of benefits from ocean use flows disproportionately to some actors (Klain et al. 2014; Wynberg and Hauck 2014). Focusing on fisheries as a sectoral example, between 2004 and 2014, 25 countries were responsible for roughly 82% of global catches (FAO 2018). The concentration of national actors is substantially higher on the high seas, beyond exclusive economic zones (EEZs) (Tickler et al. 2018), where five high-income countries are responsible for 86% of total fishing effort (McCauley et al. 2018). In the corporate sphere, some companies are becoming more powerful than countries, and industry consolidation is prevalent. In seafood production, for instance, 13 companies control 11–16% of global catches (Österblom et al. 2015). A similar analysis for genetic resources shows that 1 company has registered 47% of all known marine genetic sequences, thereby exceeding the share of 220 other companies (Blasiak et al. 2018b). Consolidation is also prevalent in the seed industry, agriculture, forestry, mining and other sectors influencing the planet and its people (Folke et al. 2019). Ongoing analysis of ocean industries indicates substantial consolidation in maritime transport, cruise industries, offshore wind, ports, shipbuilding and repair, as well as offshore oil and gas, with the majority of companies headquartered in a small number of countries (Monacelli 2018; John Virdin, Duke University, unpublished data). Such patterns highlight the unequal control of access to and distribution of benefits arising from ecosystems all over the world (Wynberg and Hauck 2014).

The ocean economy can produce a number of social harms, undermine the productivity and abundance of marine resources that local communities rely on, and pollute the marine environment, thereby compromising the safety of food resources and local people's health, recreation and well-being (Stonich et al. 1997; Stonich 1998; Page 2007). Development activities can also undermine people's rights or displace them from areas they have historically and/or traditionally used (Zalik 2009; Bennett et al. 2015; Barbesgaard 2018).

Inequity arises from a number of social factors. These include not only the different stakeholders involved and the power they can wield but also the social institutions and structures through which the economy operates (Ciplet et al. 2015; Crona and Bodin 2010; Felipe-Lucia et al. 2015). Mechanisms that can uphold inequities from the ocean economy include historical and colonial legacies, lack of access to and allocation of resources, insecure territorial and tenure rights, financial resources and technological capacity (Abdullah et al. 2017; Bourguignon 2015).

Value chains, market policies and investments similarly shape equity in terms of access, benefits and costs, and work-

ing conditions. Not taking the full value chain of the ocean economy into account hides inequitable opportunities and impacts on women, for instance, who tend to be less involved in the extractive part of the value chain but are engaged in processing and marketing (Harper et al. 2013; Kruijssen et al. 2016). Invisible value chains, based on unreported catches and illegal activities, can mask labour trafficking, peonage systems, unsustainable resource use or health and sanitary issues while simultaneously detracting from wider economic benefits and avoiding taxation (Lopes et al. 2017; Moreto et al. 2019).

Insufficient consideration or inclusion of developing states or local populations in decision-making processes related to ocean development is a substantial concern. Representatives from coastal communities and groups often marginalised (e.g., women, indigenous groups, individuals with disabilities and poor people) are frequently not, or not adequately, included in decisions related to development (e.g., site selection of ports, energy and oil development, aquaculture) that will impact them (Kerr et al. 2015; Flannery et al. 2018). Fisheries agreements have, for instance, been described as primarily commercial deals negotiated by governments behind closed doors, with few benefits accruing to local economies (Kaczynski and Fluharty 2002; Le Manach et al. 2012). See, however, Almeida et al. (2009) for an example of fair and participatory fisheries agreements.

## 2.2 Why Is Social Equity Important in a Sustainable Ocean Economy?

The idea of fairness in relation to use of natural environments can be explained by the concepts of ‘environmental justice’ (Schlosberg 2009) and ‘ecological justice’ (Baxter 2004). Environmental justice bridges key goals of environmental protection and social justice by focusing on correcting maldistribution, or how less powerful groups in societies derive fewer environmental benefits and are exposed to more environmental harms (Schlosberg 2009) (see Box 13.1). In essence, ‘Environmental justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation and enforcement of environmental laws, regulations, and policies’ (EPA 2017). Ecological justice, in contrast, focuses on preventing, mitigating or repairing environmental harm brought about by human activities and the granting of fundamental rights to non-humans. This Blue Paper is concerned with the former only, in other words—equity and fairness in relation to the access to and control over ecosystem benefits (Leach and Mearns 1998; Ribot and Peluso 2003).

A number of academic fields have focused explicitly on environmental justice. Central to this literature is the idea

that people and groups appropriate ecosystem services and benefits through claims, underpinned by various abilities, or power bundles (Ribot and Peluso 2003; Boonstra 2016) sanctioned by law, custom or convention. These powers, in turn, are ultimately rooted in people’s ability to influence the behaviour of others and the social and ecological conditions in which others operate (Boonstra 2016).

We suggest that social equity provides an all-encompassing framework and define two specific sub-categories of social equity: procedural equity and distributional equity (Franck 1995; McDermott et al. 2013; Pascual et al. 2014; Zafra-Calvo et al. 2017) (see also Box 13.1). These two sub-categories can be defined as follows:

1. **Procedural equity** refers to the recognition of rights and needs of all groups and the level of inclusion and participation in decision-making related to ocean development.
2. **Distributional equity** refers to fairness in the sharing of benefits and the minimisation of harms across all groups from ocean development.

There are two broad reasons why pursuing equity should be a central concern for a sustainable ocean economy (Bennett 2018). The first is a normative argument: extremes of inequality challenge universal notions of fairness. Including people in decision-making as well as improving how benefits are distributed is simply the right thing to do. Indeed, these are global norms contained in many guiding policy documents and international commitments related to human rights, sustainability and development (see Sect. 2.3). The second is an instrumental argument: equitable procedures and outcomes can be important for supporting the achievement of sustainability objectives.

Equity is an increasingly critical component of ensuring that ocean-based economic and other activities have a social license to operate (Mather and Fanning 2019; Voyer and van Leeuwen 2019). Taking social equity considerations into account will lead to a fairer distribution of benefits to different segments of society and maintain the legitimacy of the ocean economy. What is considered fair and what levels of inequality a society tolerates vary from place to place (Box 13.1). This is a decision for individual societies to make, however, as part of their commitments to achieving the SDGs, and in line with existing legal frameworks.

## 2.3 What Rules and Principles Exist to Support Equity?

The international community increasingly recognises equity as central to achieving the SDGs. A number of the global goals spell this out explicitly, including SDG 1 (Ending Poverty), SDG4 (Education), SDG5 (Gender Equality) and

SDG 10 (Reduced Inequalities). SDG 14 (Life under Water), also has a number of equity-related targets, such as Targets 14.6 and 14.7. The desire to address inequality is most clearly spelled out in the overall ambition of the UN Agenda 2030 to ‘leave no-one behind’. Despite the recognition of the importance of equity in international law (Franck 1995), equity is not, as such, a general rule. Rules and principles to achieve equity may, however, be established through law-making processes such as treaties and customary international law. Soft-law instruments can contribute to both the making of a treaty, as standard setting, and to customary international law, as state practice.

Guiding principles of equity are relevant in addressing two categories of ocean equity. The first, *intergenerational* equity (Sect. 2.3.1), relates to the conservation and sustainable use of the marine environment in a manner that ensures the ability of future generations to reap its benefits also (Brown-Weiss 1990; Tladi 2007). The second, *intragenerational* equity (Sect. 2.3.2) is more immediate and concerned with ensuring equitable distribution of benefits and resources within the current generation (Okereke 2006; Tladi 2007). It calls for solidarity in uplifting those who are marginalised and underprivileged. The sentiment is expressed in, for example, the call by the Conference of the Parties of the Convention on Biological Diversity that ‘ecosystems should be managed for their intrinsic value and for the tangible or intangible benefits for humans, in a fair and equitable way’ (CBD 2000).

### 2.3.1 Intergenerational Equity: Protection of the Marine Environment

Three key principles have been designed to enhance *intergenerational* equity. First and foremost, the precautionary principle (Freestone and Hey 1996, p. 3; Tladi 2014, p. 108) stipulates that scientific uncertainty should not be used as a reason not to adopt measures to protect the environment. It represents a central element of the Fish Stocks Agreement (UNGA 1995, Arts. 5 and 6) and the 2012 Rio Plus 20 outcome document, *The Future We Want* (para. 58).

Second, the duty to prevent transboundary harm to common areas, including the ocean, is clearly spelled out in Article 3 of the Convention on Biological Diversity: ‘[States have] the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction’ (ICJ 2010; Murase 2015, paras. 55–59).

Third, the duty to perform environmental impact assessments for activities that may cause harm to the marine environment (ICJ 2010; ILC 2018), and may therefore negatively impact future generations, is also firmly rooted in laws and policies relevant to the management of the ocean (ITLOS 2011; UNGA 2018, Art. 206; ICJ 2010).

The UN Convention on the Law of the Sea (UNCLOS 1982) contains general provisions on the duty to protect the marine environment (UNCLOS Part XII). The convention also contains particular rules applicable to the different maritime zones. Even with the numerous provisions on environmental protection, the environmental regulations in the convention are seen as insufficient (Gjerde 2006). Other regulatory tools exist that can complement the legal framework established by UNCLOS. For example, although the Convention on Biological Diversity in principle only applies to areas within national jurisdiction (CBD Art. 4[a]), its provisions can be applied to the ocean, including areas beyond national jurisdiction, with respect to ‘processes and activities’ (CBD Art. 4[b]).

Relevant CBD processes include, for example, the criteria for the establishment of Ecologically or Biologically Significant Marine Areas (EBSAs) (CBD 2008). The annual General Assembly resolutions on oceans and the law is another avenue relevant for the interpretation of obligations under UNCLOS. They contain provisions addressing the marine environment, including the call for an ecosystem approach (UNGA 2018, para. 187). A number of other environmental rules, such as several International Maritime Organisation conventions and rules under the Regional Seas Program can complement UNCLOS. Overall, however, these rules are fragmented and there is insufficient coordination in their application, resulting in uneven protection of the marine environment, thus undermining intergenerational equity.

Intergenerational rights to a healthy environment are also specifically considered in the constitutions of 74% of the world’s nations—in theory therefore offering the best hope to protect future citizens as constitutions supersede other laws in a jurisdiction by establishing sovereignty (Treves et al. 2018). If these frameworks were to be enforced by decision-makers and courts, they would sustainably protect the biosphere and substantially contribute to equity in a sustainable ocean economy. ‘Enforcing constitutional and public trust frameworks for intergenerational equity will be more feasible in jurisdictions that grant legal standing to youths and the legitimate representatives of future generations’ (Treves et al. 2018).

### 2.3.2 Intragenerational Equity: Promoting Economic Equity

The *intragenerational* dimension of equity requires that efforts to protect the environment account for the needs of the most vulnerable in society (Brundtland 1987). However, this sentiment is not well developed in international environmental law, policy and practice. Nevertheless, policy options for addressing intragenerational equity, which may be collectively referred to as common-but-differentiated responsibilities, include the idea of differentiation of obliga-



tions, transfer of technology and funds, as well as capacity-building. In relation to ocean governance, all of these options are possible.

The principle of the common heritage of mankind, which has been described as a norm that combines the intragenerational with the intergenerational dimensions of equity (Tladi 2015), is the principle most synonymous with equity under UNCLOS. Through the application of Part XI of UNCLOS, this principle requires that activities in the deep seabed (the ‘Area’) ‘be carried out for the benefit of mankind as a whole, irrespective of the geographical location of the States, whether coastal or landlocked’. While application of this principle beyond the ‘Area’ is not accepted by all, one of its central tenets, benefit-sharing, remains an important policy option to ensure a more equitable allocation of benefits from the ocean (Morgera 2016). Other provisions geared towards intragenerational equity include capacity-building and technology transfer provisions (UNCLOS, part XIV).

Technology and fund transfer to developing countries will be key to protecting marine biodiversity in areas within and beyond national jurisdiction (IGC 2018; Voigt-Hansen 2019), to enable developing countries to meaningfully participate at international fora and meet their international obligations. However, while UNCLOS and the Convention on Biological Diversity include absolute obligations to transfer technology (Morgera and Ntona 2018; CBD 2004, Annex, para. 11), the meaning of ‘transfer of technology’ is very broad and all-encompassing, with those obligations couched with qualifiers such as ‘in accordance with capabilities’ or ‘endeavour to promote’ and closely tied with scientific knowledge. This leaves much open to interpretation and makes it difficult to evaluate how international cooperation is to work in practice (Harden-Davies 2017). While capacity-building and transfer of technology obligations in UNCLOS and other instruments are qualified, the commitments to ‘increase scientific knowledge, develop research capacity and transfer marine technology’ under the SDGs are not (SDG14a). Even if these commitments are not legally binding, they do provide a political springboard for the elaboration of unqualified, legally binding commitments in new instruments and legal frameworks.

The 2001 International Treaty on Plant Genetic Resources for Food and Agriculture provides a useful model regarding the sharing of benefits from genetic resources beyond national jurisdiction. Articles 10 to 13 provide for a multi-lateral access and benefit-sharing regime based on four pillars: (a) exchange of information; (b) access to and transfer of technology; (c) capacity-building and (d) sharing of benefits arising from commercialisation. A similar framework forms the basis of the access and benefit-sharing regime for genetic resources established by the 2010 Nagoya Protocol, to ensure that states in whose territories—including in maritime areas—genetic materials are sourced are able to enjoy

the benefits arising from the use of those resources (Voigt-Hansen 2019; Harden-Davies and Gjerde 2019; however, see Blasiak et al. 2018b for some of the protocol’s limitations). Beyond benefit-sharing alone, capacity-building and technology transfer are key to fostering distributive and procedural equity (see also Leape, Abbott, Sakaguchi et al. Blue Paper: ‘Technology, Data and New Models for Sustainably Managing Ocean Resources’).

A striking example of the challenge of achieving both procedural and distributive equity concerns landlocked states, which are without physical access to the sea and almost by definition excluded from enjoying ocean benefits. To remedy this inequity, UNCLOS creates rules to facilitate the rights of landlocked states ‘to participate, on equitable basis, in the exploitation...of the surplus of the living resources of the exclusive economic zone of coastal states’ in the same region (UNCLOS, Art. 69). However, the right to participate is limited to ‘an appropriate part of the surplus’; if a coastal state was to claim that it does not have a surplus, then arguably the right cannot be claimed, and the right to participate is subject to agreement between states. Provisions, therefore, while present, tend to be filled with many caveats making their implementation difficult.

### 2.3.3 Human Rights

While international human rights are not typically seen as directly applicable in ocean governance, they should be included and applied in the search for equity in a sustainable ocean economy. Human rights obligations apply not only within the territories of states, but also over an activity under the control or jurisdiction of states, including vessels flying the flag of a state and activities in the high seas or the Area under the control of states (Wenzel 2008).

A number of rights may be particularly relevant in the pursuit of ocean equity. First, the right to development, which calls for solidarity and uplifting the poor and marginalised, is directly related to the intragenerational equity described above. It is contained in, among other instruments, the African Charter on Human and Peoples’ Rights (Art. 22), the 1993 Vienna Declaration and Programme of Action (para. 10) and the 2000 Millennium Declaration (para. III). It can also be inferred from other instruments such as the International Covenant on Economic, Social and Cultural Rights and the Rio Declaration on the Environment and Development. Second, the right to equality and non-discrimination can further support fairness in an ocean governance context (Universal Declaration of Human Rights Art. 2, International Covenant on Economic, Social and Cultural Rights, Art. 2, International Covenant on Civil and Political Rights, Arts. 2 and 26).

Some prohibited grounds of discrimination have also been the subject of specific treaties, such as the Convention on the Elimination of All Forms of Racial Discrimination

and the Convention on the Elimination of All Forms of Discrimination against Women. These rights could potentially be made applicable to, for example, fishing permits. While regional fisheries management organisations do not, typically, consider race and gender when establishing allowable catch requirements, national authorities should, in keeping with human rights standards, account for the needs of the most disadvantaged and marginalised.

Labour rights is one area in which the protection of human rights has been directly applied in ocean governance. Labour or employment rights are contained in, for example, the International Covenant on Economic, Social and Cultural Rights, including the right of ‘just and favourable conditions of work’ (Art. 7). The Maritime Labour Convention (Arts. III and IV) includes requirements for regular payment and processes to ensure fair wages (e.g., Regulation 2.2). The Work in Fishing Convention C188, adopted in 2007, aims to ensure that all fishers have decent working conditions on board fishing vessels.

One area with much room for improvement is the role of business in enhancing equity. While human rights obligations are binding on states, business entities have the greatest potential to impact human rights and the environment (Ratner 2007; Oyewande 2008). Business entities, including those fishing and mining in the ocean, do not have direct obligations under international law. This creates difficulties where business entities act in the territo-

ries of third states and areas beyond national jurisdiction (Duruigbo 2003; Muchlinski 2007). To address this issue, the obligations of states in human rights treaties to ‘protect, respect and fulfil’ have been interpreted as establishing a duty on the state to ensure that rights are protected in private relationships, including between corporations and other persons (Ruggie 2008), thus creating an indirect duty of ‘non harm’ on the corporations. Moreover, the United Nations is currently considering the possibility of a treaty to regulate the activities of multinational corporations that impact on the environment and the enjoyment of human rights (Meyer 2017).

## 2.4 Case Studies of Hope and False Hope

The following sections focus on concerns for ocean equity across a variety of ocean-related sectors and equity dimensions, including the distribution of burdens and benefits on the high seas, inequalities associated with infrastructure development and the role of transnational corporations in a sustainable ocean economy (see Table 13.1 for an overview). Although much of the scientific work to date has revolved around gender equity and the rights of small-scale fisheries and coastal communities (Tables 13.1 and 13.2 and Appendix 1), there is increasing interest in engaging with inequalities in other areas.

**Table 13.1** Key points from case studies

Case study	Summary
Equity and sustainable fisheries	Substantial attention has been devoted to addressing ecological sustainability in fisheries, and the FAO Code of Conduct for Responsible Fisheries is an important example. Endorsement of the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries (SSF) in the Context of Food Security and Poverty Eradication may contribute to improvements in the equitable distribution of benefits by giving a voice to, as well as representing the interests and respecting the human rights of small-scale fishers. However, implementation of existing international guiding policies remains a challenge
Gender-transformative approaches	Existing training opportunities, targeting only women in ‘accommodating’ ways, have had limited impact because they have failed to address underlying harmful power structures and norms restricting women from equitably engaging in and benefitting from ocean-based activities. Gender-transformative approaches encourage men and women to shift these barriers and catalyse fair development outcomes
Ocean-based infrastructure and coastal community equality	Coupling of offshore activities with a regular compensation mechanism to coastal communities in the United Kingdom is an example of how to support the fair distribution of benefits from ocean-based industry. While this is an example from a wealthy state where institutions are prepared to set up and control such a system, it illustrates a possible framework through which vulnerable coastal communities can be associated with offshore activities
Equity in areas beyond national jurisdiction	Pelagic fish stocks and marine genetic resources (MGRs) are two examples of transboundary resources often shared at one stage or the other (of their life cycle or migration routes) between exclusive economic zones (EEZs) and areas beyond national jurisdiction (ABNJs). Fisheries on and conservation of highly migratory stocks may disproportionately affect developing states. In the case of MGRs, an imbalance in patent ownership is problematic from an equity perspective. Ongoing negotiations on an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction are attempting to redress these inequities by developing strong and sustained mechanisms for capacity-building and technology transfer at global, regional and national scales
Can corporate actors promote equity?	While corporate bodies operate within legislative and other norm-based frameworks, they also shape expectations as to what constitutes appropriate behaviour as well as aspirational desires for future relationships. Although several ocean-based sectors have paid substantial attention to ocean sustainability, equity concerns remain poorly addressed. Prioritisation of equity by major actors has the potential to influence entire sectors

**Table 13.2** Scientific documentation of inequities in small-scale fisheries, undermining sustainable livelihoods and contributing to loss of well-being

	Outcomes	Examples
Inequity of benefits		Canada, Kenya, Indonesia, Philippines
Structural inequalities in value chains	Unequal trading relationships and inability to obtain fair value of catch. Limited capacity to compete with more powerful actors	Wamukota (2009), Cinner et al. (2012), Knudsen (2016), Fabinyi (2012), Trinidad et al. (2014), Crona et al. (2016), Rosales et al. (2017), Purcell et al. (2017), Hicks et al. (2019)
Vulnerability to degradation of resources	Loss of food security, cultural practices and well-being. Compelled by subsistence needs, may also increase destructive behaviour, resource use or non-compliance	Cinner (2009), Cinner et al. (2009), Crona et al. (2015), Sadovy de Mitcheson et al. (2018), Yamazaki et al. (2018), Frid et al. (2016), Baker-Médard (2017)
Invisible inequities		Multiple locations
Gendered invisibilities	Women are often invisible, and hence marginalised in the management of marine resources (e.g., due to gender-blind policies, focus on formal and paid fishing activities, or the production segment of fisheries value chains) Difficult to know how women are affected as the fisheries sector develops	Yodanis (2000), Bennett (2005), Williams (2008), De Silva (2011), World Bank (2012), Harper et al. (2013), Daw et al. (2015), Lentisco and Lee (2015), Schwerdtner Máñez and Pauwelussen (2016), Kleiber et al. (2017), Harper et al. (2017), Fortnam et al. (2019)
Inequity in access		Bangladesh, Brazil, Canada, Ghana, Kenya, Madagascar, Norway, Philippines, Zambia
Gendered access barriers	Barriers to profitable segments of supply chains, and/or access to fishing grounds, boats, fishing gear, financial capital, credit, education, alternative livelihoods	Yater (1982), O'Neill and Crona (2017), Walker (2001), Eder (2005), Matsue et al. (2014), Wamukota (2009), Cole et al. (2015), Kruijssen et al. (2016), Baker-Médard (2017), Cole et al. (2018), Kleiber et al. (2017), Gerrard and Kleiber (2019)
Decision-making and governance		Bangladesh, Brazil, Canada, Tanzania, Indonesia, Solomon Islands
Access to governance	Women and minority groups—such as indigenous groups, disabled and poor people—face access barriers to governing institutions (e.g., as a result of customary rules and norms) and are not accounted for in fisheries management, leading to policy interventions that undermine sustainable livelihoods	Bennett et al. (2018), Thorburn (2000), Fröcklin et al. (2013), Kleiber et al. (2017), Ban et al. (2018), Bennett (2005), Daw et al. (2015), Baker-Médard (2017)

*Note: The countries specified in the table represent examples of places where inequities have been scientifically studied. Some of these countries have recently invested in human, financial and/or technical capacity to address challenges identified, but, at the time of publication of this blue paper, no peer-reviewed scientific documentation was available that had assessed the effectiveness of such recent efforts. Details in Appendix 1*

#### 2.4.1 Equity and Sustainable (Small-Scale) Fisheries

Small-scale fisheries support the majority of the world's fisherfolk (47 million women and men in developing countries alone) and utilise the least capital, fuel and technology (World Bank 2008, 2012; Schuhbauer et al. 2017; Zeller and Pauly 2019). While landing the bulk of catches for human consumption, large-scale industrialised fleets, in contrast, are highly subsidised, employ relatively few fisherfolk and have high discard rates (World Bank 2008; Carvalho et al. 2011; Sumaila et al. 2016; Zeller and Pauly 2019). Large-scale industrial fisheries and associated value chains can undermine the catches, livelihoods and food security of small-scale fishers and coastal communities (De Schutter 2012; Gagerm and van den Bergh 2013; Pauly et al. 2014). There is a risk that intensification of economic use of the ocean and coasts for mining, logging, infrastructure development, coastal tourism and aquaculture can reinforce the weak position and vulnerability of small-scale fishers (Bavinck et al. 2017, 2018; Carver 2019; Cohen et al. 2019).

Small-scale fishing communities, particularly indigenous and women subgroups, often have relatively limited political power compared to large-scale fisheries actors (Table 13.2). Small-scale fishers are at times depicted by policymakers as ignorant, inefficient or environmentally destructive, leading to policies that target them with negative livelihood effects (Lowe 2013; Cohen et al. 2019). Blaming small-scale fisheries for problems often misses systemic inequalities that can be driving far more significant environmental degradation, including illegal fishing and corruption (Eder 2005; Fabinyi 2012; Li 2007; Segi 2014; Finkbeiner et al. 2017; Sumaila et al. 2017).

Inequities are apparent also within small-scale fish-producing communities. These are often structured along intersecting social categories such as wealth, gender, age, religion, migrant-status and ethnicity. Inequities in ocean resource benefits may reinforce existing inequities experienced by particular groups in access to healthcare, education and rights over land (Béné and Friend 2011; Jentoft and Eide 2011; Mills et al. 2011; Allison et al. 2012).

The Food and Agriculture Organization of the United Nations (FAO) Code of Conduct for Responsible Fisheries (CCRF), adopted in 1995, is an important tool for fisheries sustainability and has advanced equity through development of the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries (SSF) in the Context of Food Security and Poverty Eradication (FAO 2015). These guidelines are closely related to the Voluntary Guidelines for the Responsible Governance of Tenure of Land, Fisheries and Forestry in the Context of National Food Security (VGGTs). Both instruments are grounded in a human rights-based approach and specifically include equity and equality among their guiding principles.

The SSF guidelines have been embraced by several regional organisations (TNI 2016): the Central America Fisheries and Aquaculture Organization, the Fishery Committee for the Eastern Central Atlantic, the Southeast Asian Fisheries Development Center, the African Union and the General Fisheries Commission for the Mediterranean. The General Fisheries Commission's 10-year Regional Plan of Action for Small-Scale Fisheries is expected to increase social equity within the fisheries sector in that region. A draft law in Costa Rica, aiming to overcome the voluntary nature of the SSF guidelines, will likely contribute to improvements in the equitable distribution of benefits.

More generally, the CCRF has also been integrated into national regulatory frameworks with technical guidance and voluntary guidelines aimed to facilitate its operationalisation. Examples of particular relevance to social equity include the Ecosystem Approach to Fisheries in the FAO Technical Guidelines for Responsible Fisheries, which specifically encompasses improving human well-being and equity (FAO 2003). The FAO Technical Guidelines for Responsible Fisheries on the management of marine protected areas and fisheries aim at balancing environmental and social outcomes in a domain often dominated by conservation goals (Westlund et al. 2017).

Although an international framework of guidance is in place to support social equity in the fisheries sector, implementation often remains a challenge. Scientists, civil society organisations and social movements are analysing threats posed by ocean economy developments in terms of justice and equality (TBTI 2016) to understand how implementation can be accelerated.

#### 2.4.2 Gender-Transformative Approaches

Significant efforts have been made to mainstream gender in fisheries policy and investments. These have mainly focused on visible gender gaps, such as gender imbalances in who accesses and participates in extension programs (Kleiber et al. 2017) and typically have consisted of 'accommodating' and 'gap-filling' approaches. For instance, in

Bangladesh, women are targeted for capacity-building activities in ways that accommodate their practical needs (Choudhury et al. 2017; Behailu et al. 2019). Trainings may be held close to women's homes, at a time convenient for them, and the skill or technology transferred may feed into a livelihood option that can be performed at home. While socially acceptable, interventions that only build women's capacity, target women or deploy gender-responsive technologies at women have limited impact (Morgan et al. 2015; Farnworth et al. 2015; Behailu et al. 2018; Choudhury et al. 2017). Indeed, they fail to address underlying barriers that perpetuate gender inequities, including stereotypes, non-recognition of women as fishers or contributors along the value chain, and harmful norms restricting men and women from engaging in and benefitting from activities equitably (Kantor et al. 2015; McDougall et al. 2015; Choudhury and McDougall 2019).

Gender-transformative approaches in natural resource management are meant to address these underlying normative barriers (Wong et al. 2019; Cole et al. 2018), yet their implementation in developing countries remains limited. In Indonesia, for example, despite women being reached by many project activities since 1998, only two projects (10%) applied a gender-transformative approach (Stacey et al. 2019). A case from Bangladesh (see Box 13.2) illustrates the potential of transformative approaches to catalyse greater development and gender outcomes. While focused on a freshwater context, the framework is likely also relevant for marine resources (see Promundo-AAS 2016; Cole et al. 2018). More generally, advancing public discussion of gender equality in fisheries and making progress in women's empowerment requires effective messaging and awareness, political and social will, and support from the government, NGOs and the private sector.

#### Box 13.2: Transforming Underlying Gender Barriers in Bangladesh

Introducing innovations, such as more intensive homestead-based pond polyculture that can provide nutrient-dense small fish to low-income and coastal communities often struggling with nutrient deficiencies, is a priority for Bangladesh's government, NGOs and international research for development. Interventions have commonly targeted and trained women, but because the latter were not given control over ponds, and because investments in ponds have largely depended on the support of male household members, women were not able to implement and optimise innovations (Morgan et al. 2015). Women were also reluctant to get into ponds for practical reasons (because their wet clothing is difficult to dry).

The development of an affordable small-mesh gillnet that women could use from the pond banks did not resolve the problem, because women's use of such nets was constrained by gendered roles that see 'fishing' as a men's domain. Women therefore faced social repercussions for harvesting (Kruijssen et al. 2016), despite the strong nutritional need for fish for families and children in this area (Bogard et al. 2015).

Building on pre-pilots (Farnworth et al. 2015; Kantor et al. 2015; McDougall et al. 2015), the gillnet intervention was redesigned to build commitments for family support for women as fishers (aquaculturalists) and innovators. The transformative measures involved spouses and more powerful household members in critical reflection and dialogue (Promundo-AAS 2016) around gender dynamics ranging from intra-household gender power hierarchies to food distribution. Interventions also sought to discuss how current norms limited individual and family well-being and what steps could be taken collaboratively to shift gender relations. Women were also coached in self-confidence, negotiating skills and assertiveness. Results showed changed attitudes amongst men and women, enhanced collaboration among family members and greater acceptance of technology use by women.

Despite repression, by drawing strength and inspiration from their traditional identities and power within their society, women themselves can be agents of change. In British Columbia, First Nations Heiltsuk women drew on their traditional and contemporary roles as mothers, teachers, organisers and political leaders to oppose a controversial commercial herring (*Clupea pallasii pallasii*) sac-roe fishery. By taking on leadership roles, increasing social cohesion, facilitating information flow and engaging in critical negotiations, women demanded care over traditional marine resources for their children, culture and future generations and helped transform governance of herring on British Columbia's Central Coast (Harper et al. 2018). This example illustrates the importance of social equity and the potential strength of (indigenous) women as agents of change in fisheries governance. However, in many socio-political contexts gender dynamics limit women from exerting this level of leadership, voice and agency.

### 2.4.3 Ocean-Based Infrastructure and Coastal Community Equality

Activities in the ocean raise questions about how their costs and benefits are distributed among coastal communities. The onshore pollution effects of offshore accidents are well documented, including the Gulf of Mexico Deepwater Horizon

accident (Hayworth et al. 2011; Michel et al. 2013), the Erika disaster (Čović et al. 2013) and the recent Brazilian oil spill (Reuters 2019). Yet more enduring relationships between ocean industries, such as oil and gas and offshore renewable energy, and coastal communities also exist. In the United Kingdom, for example, a number of coastal communities have long-standing experience interacting with the offshore oil and gas industry, with new questions being asked about ocean-coastal connections as the number of offshore renewable energy developments increases.

Exploitation of oil and gas in the United Kingdom began in the 1970s and included the construction of onshore facilities to receive crude oil via pipeline, ahead of onward transportation by tankers at the Sullom Voe Terminal in the Shetland Islands. The project remains one of the largest construction sites in Europe and the largest oil terminal ever built at once (Carr and Williamson 1982). At its peak, it processed over 1.5 million barrels of oil a day (Sullom Voe terminal 2018). At the time the terminal was being proposed, the local authority negotiated a compensatory agreement to account for the terminal's negative impacts on Shetland during the course of activities. Compensation was not a one-off payment but a disbursement placed into a trust and linked to activity levels until 2000, after which the money was invested on the stock exchange and in local subsidiary companies (Morgan 2009). The funds are governed by the Shetland Charitable Trust. Financial flows have been substantial and have supported onshore benefits through important investments in community assets, such as sports and cultural venues as well as a district heating scheme. In 2018, closing reserves topped £300 million (Sullom Voe terminal 2018). In this case, local and national governance processes support a third-sector organisation (the charity) to mediate the impact of corporate activity. The beneficiaries of this activity are local community members.

There are also examples of approaches where the potential for unequal experiences of the costs and benefits of development are addressed through formal sharing of benefits (rather than compensation for negative impacts). The idea of 'community benefit' payments first emerged in the onshore renewable energy sector, whereby communities located near renewable assets receive annual payments, often linked to energy production capacity or performance, as part of sharing the benefits of the energy scheme (Kerr et al. 2017; Rudolph et al. 2014; SSE 2019). Community benefit payments are in addition to any positive supply chain effects. Although not mandated by law, on-land community benefit packages have developed through the dynamic interplay between energy developers and communities, under the watchful eyes of governments. The rationale behind community benefit payments is 'driven by a desire to equitably share the benefits gained by harnessing a national natural resource' (Scottish Government 2018, 7). In the United Kingdom, if

and how such principles might apply to offshore energy developments is a matter of ongoing consultation.

Arrangements therefore exist that consider the distribution of costs and benefits of ocean-based developments affecting coastal communities. There is also an opportunity to transfer learning from experiences of land-based developments, especially in the context of renewable energy, to ocean-based settings. The particular set of arrangements made will vary depending on the location of developments, the governance context and the power that communities have in their interactions with corporations. Coastal communities are often economically vulnerable and financially subject to fluctuations in the resources they depend upon. Addressing this vulnerability will enhance the equalities profile of the sustainable ocean economy. The two examples above focus on a country with institutional capacity to ensure that development is equitable; regions and countries exposed to ocean-related developments where this may be lacking will need support to avoid inequitable outcomes.

#### 2.4.4 Equity in Areas Beyond National Jurisdiction

Discussions of equity frequently centre on communities, local resource users, traditional knowledge and associated governance and regulatory regimes. The majority of the ocean, however, is more than 200 nautical miles (370 km) from national coastlines, and thus remarkably remote from the daily lives of most people. Indeed, marine ‘areas beyond national jurisdiction’ (ABNJs) account for some 64% of the ocean. A growing body of research underscores the degree of ecological connectivity between ABNJs and coastal communities, and their importance for the functioning of the biosphere (Popova et al. 2019; Ramesh et al. 2019; Cheung et al. 2019). The life cycles of whales, sharks, seabirds, turtles and tuna species, as well as microorganisms and all species with a pelagic larval development or adult stage, crisscross ABNJs and national jurisdictions (Block et al. 2011; Bierne et al. 2016).

Among the industries active in ABNJs, the fishing industry draws a substantial proportion of the questions about justice, fairness and equity. Fisheries in ABNJs are heavily subsidised, and an estimated 54% of current high-seas fishing grounds would be unprofitable if these subsidies were removed (Sala et al. 2018). Three species account for 42% of the fish caught in ABNJs: skipjack (*Katsuwonus pelamis*), yellowfin (*Thunnus albacares*) and bigeye tuna (*Thunnus obesus*) (Schiller et al. 2018). All three move across vast ocean territories and in and out of national jurisdictions. Several Pacific atoll countries and territories (Kiribati, Tuvalu, Marshall Islands and Tokelau) are extraordinarily dependent on the access fees that they receive from distant water-fishing nations (DWFNs) who fish for tuna in their EEZs. These fees contributed 60–98% of all (non-aid) government revenue

in 2016 (FFA 2017). In a number of countries, tuna caught within their EEZs also play a crucial nutritional role (Bell et al. 2018, 2019; Yadav et al. 2019). In many low-income, food-deficit countries, fish is a key source of micronutrients crucial for human health, and nutritionally rich alternatives are not readily available (Golden et al. 2016; Hicks et al. 2019). Poor governance on the high seas and mismanagement of fisheries can therefore result in not only economic losses for global seafood operations but also negative health outcomes and loss of livelihoods in coastal communities.

While the UN Fish Stocks Agreement requires that conservation and management measures for fisheries targeting highly migratory species such as tuna not disproportionately penalise developing states, fulfilling this obligation has been difficult (Hanich et al. 2015). Addressing these governance challenges requires encouraging the development of, for instance, applied research methodologies that can contribute to practical governance solutions that resolve or mitigate conservation burden obstacles and concerns in transboundary fisheries (see FERN 2019; Hanich et al. 2015).

Scientific exploration of ABNJs has yielded deeper insights into life in extreme environments of the deep and open ocean, including hydrothermal vent systems. New techniques have resulted in a rapid fall in the cost of genetic sequencing of collected organisms, supporting the exponential growth of public repositories of genetic sequence data (Laird and Wynberg 2018; see also Blasiak et al. Blue Paper: ‘The Ocean Genome: Conservation and the Fair, Equitable and Sustainable Use of Marine Genetic Resources’). While the number of commercial applications is clearly accelerating (Arrieta et al. 2010; Blasiak et al. 2018b), the marine biotechnology industry is highly concentrated in a handful of countries. In 2011, ten countries owned 90% of patent claims; 7 years later the same countries own 98% of patent claims (Arnaud-Haond et al. 2011; Blasiak et al. 2018b). Absence of requirements for sample origin data, or even of taxonomic information in patent filings, makes it virtually impossible to determine which of these are associated with genes collected in ABNJs (Arnaud-Haond et al. 2011; Blasiak et al. 2019).

Scientific advances in the biotechnology and data analytics sector have consistently and dramatically outpaced the development of appropriate regulatory policy (Wynberg and Laird 2018). Publicly accessible open-access databases are one of the cornerstones of capacity-building and should result in a more equitable system of access to and sharing of knowledge. By themselves, however, they do not solve the problem of limited scientific capacity to access and use genetic resources from ABNJs (UNESCO 2017; Salpin et al. 2018), or to use (digital sequence) information. Hence, many developing states cannot explore commercially valuable potential benefits from open access information on the sole basis of information-sharing through open access databases.

In fact, by itself, this needed step does not obviate the need for capacity-building in scientific disciplines (e.g., molecular biology), and research infrastructure—the main drivers of inequalities (Arnaud-Haond et al. 2011).

Operationalising equity commitments in the SDGs with regard to ABNJs has proven challenging. In the context of the ongoing negotiations for an international legally binding instrument under UNCLOS on the conservation and sustainable use of marine biological diversity of ABNJs, states have an opportunity to reshape activity in these areas<sup>1</sup>. However, least developed countries (LDCs) and small island developing states (SIDS) have been underrepresented in the negotiations around biodiversity in areas beyond national jurisdiction (BBNJ) and face technical and legal capacity constraints (Blasiak et al. 2016, 2017a), raising questions about equity in the context of the negotiations. Capacity-building has been seen as one vehicle to move towards greater equity. A voluntary fund was established by the UN Division for Ocean Affairs and the Law of the Sea (UNDOALOS) to help LDCs, SIDS and landlocked developing countries participate in the BBNJ negotiations. If the BBNJ agreement is to be implemented and equitable outcomes achieved, strong and sustained mechanisms for capacity-building and technology transfer at global, regional and national scales will be crucial (Minas 2018). Building on the unqualified capacity-building and technology transfer commitments in the SDGs, negotiators should consider developing a capacity-building and technology transfer regime without the qualifiers contained in UNCLOS. One possibility to consider, among others, is a capacity-building and technology-transfer fund resourced from assessed contributions.

#### 2.4.5 Can corporate Actors Promote Equity?

The increasing power and influence of transnational corporations has attracted scientific attention to their activities and agency (Dauvergne and Lister 2012; Griffin 2017). Historical analysis of corporate engagement in policy development suggests that businesses rarely play a progressive and ambitious role in sustainability efforts; in fact, the opposite is true (Clapp and Fuchs 2009; Oreskes and Conway 2011; Murphy et al. 2012). Where regulations exist, particularly in places with limited capacity, companies can incentivise compliance, through voluntary reporting, naming and shaming, or enforcement activi-

ties themselves (e.g., as observed in efforts to reduce illegal fishing in the Southern Ocean: Österblom and Bodin 2012).

Corporate engagement in, and reporting of, sustainability has generated mixed results, ranging from ‘greenwashing’ to substantial reductions in environmental impacts (Folke et al. 2019). A wide range of voluntary environmental programs (Appendix 2) have engaged multiple ocean-based industries in sustainability. These programs vary in their membership standards, compliance mechanisms, focus and effectiveness. While most focus on environmental and legal concerns rather than equity, these initiatives indicate that platforms exist for engaging corporations in equity. The UN Global Compact (n.d.) represents an important platform for corporate sustainability, with its 10 principles focusing on human rights, labour, environment and anti-corruption.

Whereas ecosystem sustainability is evidently important for corporations whose activities depend on a functioning planet, the case for equity is not as straightforward. What would the incentives be for corporations to share, or give up, some of their powers? Why would a corporation want to pay more taxes or engage in other forms of benefit-sharing mechanisms? Increased attention to global inequalities, in science, among policymakers, and within established, mainstream economic institutions indicates that addressing inequality is likely to be an important aspect of major corporations’ future legitimacy and their continued license to operate.

Identifying the relevant companies, where they are operating and what their associated impacts are is a foundation for action. Companies can demonstrate leadership through both better practice and reporting, as well as through active engagement with policymakers for an improved focus on equity. Greater attention to both human rights and the environment by legislators, combined with improved corporate reporting and increased transparency in global supply chains, is incentivising corporations to operate responsibly (Folke et al. 2019). Recent engagement with representatives from 10 of the largest seafood sector companies through the Seafood Business for Ocean Stewardship (SeaBOS) initiative is an example of science-business collaboration in this domain (Österblom et al. 2017). The exposure of slavery and human rights abuses in seafood production (Mendoza et al. 2016; Kittinger et al. 2017) is one reason for increased corporate engagement in sustainability associated with seafood, as reputational risks are incentivising companies to ‘do the right thing’ (Lubchenco et al. 2016).

Owners, banks, investors and shareholders are able to influence companies to take on a larger responsibility for sustainability and equity. Improved legislation and consumer demands, combined with economic incentives, can stimulate corporations to adopt and integrate environmental and social responsibility (Folke et al. 2019; Jouffray et al. 2019).

<sup>1</sup>The “negotiations shall address the topics identified in the package agreed in 2011, namely, the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, in particular, together and as a whole, marine genetic resources, including questions on the sharing of benefits, measures such as area-based management tools, including marine protected areas, environmental impact assessments and capacity- building and the transfer of marine technology” (UNGA 2017).

## 2.5 Equity and Climate Change

The above case studies showcase the possibilities and barriers associated with promoting more equal distribution of access to, and benefits from, goods and services in a sustainable ocean economy. Current trajectories of global change (IPCC 2019) and associated risks of conflict among resource users (Pinsky et al. 2018; Spijkers et al. 2019) under future conditions further suggest that shifting towards more equitable and inclusive resource use and access will be difficult. Equity approaches are supported in the Paris Agreement. Yet national targets are currently insufficient to meet the 2 °C warming target, with additional commitments needed by the G8 and China.

Climate change is projected to disproportionately affect ecosystems and communities in some of the least developed countries, particularly SIDS (Campbell and Barnett 2010; Sovacool et al. 2015; Hallegatte et al. 2016; Burke et al. 2015; Diffenbaugh and Burke 2019), with the potential to reverse significant development gains. Climate change in the poorest countries is more than 90% likely to have resulted in decreased economic output, whereas the effect is less pronounced in developed nations (Diffenbaugh and Burke 2019). Inequality will cause disadvantaged groups, especially women, girls and indigenous communities, to suffer disproportionately from the adverse effects of climate change, deepening existing social inequalities (Althor et al. 2016; Islam and Winkel 2017), possibly leading to unrest and severe social disruption (see Gaines et al. Blue Paper: ‘The Expected Impacts of Climate Change on the Ocean Economy’).

The rise in developing nations’ inequality is due not only to projected climatological changes but also to the sensitivity of coastal communities to shifts in the distribution and abundance of fish stocks, crucial for livelihoods and nutrition (Blasiak et al. 2017b). This accentuated sensitivity is coupled with comparatively low levels of adaptive capacity, as remote coastal communities often lack the connectivity to urban and peri-urban areas where greater access to education, health services and alternative livelihoods could buffer negative impacts (Cinner et al. 2018).

Some researchers are suggesting that support be provided to countries projected to experience high levels of impact and greater financial cost in terms of lost benefits and opportunities as well as more extensive adaptation measures (Wolff et al. 2015). Specifically, international adaptation funds, such as the Green Climate Fund, could be determined and disbursed to be commensurate with impacts to the country’s ecosystem, and a metric of equity could be included within a vulnerability framework (Wolff et al. 2015). Further analyses and mechanisms that systematically consider ‘equity’ to understand the impact of climate policies are needed to inform efforts to achieve adequate and fair climate action

for present and future generations (Klinsky et al. 2017). Addressing equity is increasingly recognised as an important mechanism to develop more effective solutions, support buy-in to climate change policies, and improve adaptive capacity and wholesale system transformation to create climate resilience (see Gaines et al. Blue Paper: ‘The Expected Impacts of Climate Change on the Ocean Economy’).

Climate scientists, economists and energy systems modellers have developed a range of storylines that examine how society, demographics and economics might change over the next century. These descriptive storylines are collectively known as shared socioeconomic pathways (SSPs) (Riahi et al. 2017) and explore five trajectories that the world could take based on contrasting societal choices—including economic growth, education, urbanisation and the rate of technological development (Table 13.3).

From an equity perspective, SSP1 (Sustainability) and SSP4 (Inequality) represent two extremes. In one possible future (SSP1), an emphasis is placed on improving management of the global commons and investing in health services and education. Consequently, SSP1 leads to a world in which inequality declines both across and within countries and where greater emphasis is placed on human well-being than on economic growth (O’Neill et al. 2017). By contrast, SSP4 is characterised by large, unequal investments in human capital, which together with increasing disparities in economic opportunity and political power increase stratification within and across countries, as a growing majority of the world’s resources and trade are controlled by a small group of global elites (O’Neill et al. 2017). In this ‘Fortress World’, societies grow increasingly fragmented and investments in social and environmental policies are focused on the richest areas (Calvin et al. 2017). Recent years have seen politicians in some of the world’s most powerful economies adopting increasingly protectionist or even xenophobic attitudes that align with the narrative of the ‘Fortress World’ of SSP4.

The narrative of a burgeoning ocean economy suggests an opportunity to align more closely with an equitable future development trajectory (SSP1). Such a scenario is consistent with promoting and supporting international cooperation on climate change mitigation, shown to be critical to lowering emissions. Indeed, recent modelling work found that in scenarios in which individual nations undertake self-serving policies, global cumulative CO<sub>2</sub> emissions are twice those of more cooperative scenarios (Mi et al. 2019). Being able to participate competitively in emerging ocean-based industries requires adequate capacity and research that follows the Findable, Accessible, Interoperable and Reusable (FAIR) data principles (Wilkinson et al. 2016). Researchers and entrepreneurs in low- and middle-income countries are still likely to face an uphill battle to secure financing, market access and highly trained collaborators. Capacity-building and provision of funds remains a ubiquitous target and prior-



**Table 13.3** Summary of SSP narratives

Scenario	Scenario name	Outcome and key characteristics
SSP1	Sustainability— Taking the Green Road	A world focused on sustainable growth and equality <i>‘The world shifts toward a more sustainable path, emphasizing more inclusive development that respects perceived environmental boundaries. Management of the global commons slowly improves, educational and health investments accelerate the demographic transition, and the emphasis on economic growth shifts toward a broader emphasis on human well-being. Driven by an increasing commitment to achieving development goals, inequality is reduced both across and within countries. Consumption is oriented toward low material growth and lower resource and energy intensity’</i>
SSP2	Middle of the Road	A world where trends broadly follow current and historical patterns <i>‘The world follows a path in which social, economic, and technological trends do not shift markedly from historical patterns. Development and income growth proceeds unevenly. Global and national institutions work toward but make slow progress in achieving sustainable development goals. Environmental systems experience degradation, although there are some improvements and overall the intensity of resource and energy use declines... Income inequality persists or improves only slowly and challenges to reducing vulnerability to societal and environmental changes remain’</i>
SSP3	Regional Rivalry—A Rocky Road	A fragmented world <i>‘Resurgent nationalism, concerns about competitiveness and security, and regional conflicts push countries to increasingly focus on domestic or, at most, regional issues. Policies shift to become increasingly oriented toward national and regional security issues... Investments in education and technological development decline. Economic development is slow, consumption is material-intensive, and inequalities persist or worsen over time... A low international priority for addressing environmental concerns leads to strong environmental degradation in some regions’</i>
SSP3	Inequality—A Road Divided	A world of ever-increasing inequality <i>‘Highly unequal investments in human capital, combined with increasing disparities in economic opportunity and political power, lead to increasing inequalities and stratification both across and within countries. Over time, a gap widens between an internationally-connected society that contributes to knowledge- and capital-intensive sectors of the global economy, and a fragmented collection of lower-income, poorly educated societies that work in a labor intensive, low-tech economy. Social cohesion degrades and conflict and unrest become increasingly common... Environmental policies focus on local issues around middle and high income areas’</i>
SSP5	Fossil-Fueled Development— Taking the Highway	A world of rapid technological progress and development <i>‘This world places increasing faith in competitive markets, innovation and participatory societies to produce rapid technological progress and development of human capital as the path to sustainable development. Global markets are increasingly integrated. There are also strong investments in health, education, and institutions to enhance human and social capital. The push for economic and social development is coupled with the exploitation of abundant fossil fuel resources and the adoption of resource and energy intensive lifestyles around the world... There is faith in the ability to effectively manage social and ecological systems, including by geo-engineering if necessary’</i>

Source: Riahi et al. (2017)

ity in international agendas and frameworks, with a continuous lineage from Part XIV of UNCLOS on the development and transfer of marine technology to the 2030 Agenda and 17 Sustainable Development Goals.

## 2.6 Summary of Findings

Inequity is a systemic feature of the ocean economy. Lack of fairness is embedded in existing political and economic systems, and is the result of historical legacies and existing norms. There are, however, multiple ways to promote and advance equity—inequity can be addressed with directed policies and practices that explicitly reflect on and address existing approaches. An increased understanding of the intertwined dynamics of sustainability and equity shows that addressing equity is good for economic growth, policy legitimacy, social stability and sustainability. A failure to address equity risks accelerating social tension and erod-

ing credibility in blue growth agendas, while also increasing reputational risks for corporations and trust in existing development approaches. Inequity is also increasing vulnerabilities to climate change. Although legal frameworks partially exist to support equity, they are not sufficiently developed. In practice, ocean policies are largely equity-blind, contributing to current patterns of inequity (Fig. 13.3). The presented case studies identify current barriers to the implementation of equitable principles across ocean-based sectors as well as illustrate successful measures in and developments towards achieving greater fairness.

People will increasingly turn to the ocean to meet their food, nutrition, livelihood and energy needs. Shifting the current trajectory of persistent and increasing inequities will require strong leadership and intentional and long-term planning that starts with a clear commitment to equity. Achieving true equity will only be possible if inclusive consideration is given to all uses and value systems and if destructive or degrading activities are halted (Agardy 2016). Climate



**Fig. 13.3** Differences between equity-blind and equity-activating policies and practice

change projections indicate increasing impacts on already vulnerable nations and urgently demand that justice be considered in all sectors, at all political levels, and that policies to increase equity be urgently implemented.

### 3 Opportunities for Action

We outline opportunities for action, for policy development, business leadership and civil society. These range from the essentials (safeguards, or no-regrets, policies), to the more ambitious (mainstreaming approaches), to transformative approaches (see also Swilling et al. Blue Paper: ‘The Transformation to a Sustainable Ocean: A Systems Transition Perspective’) aimed at ensuring a fair, equitable, inclusive and sustainable approach to ocean-based development and protection (Table 13.4). These opportunities for action represent reinforcing levels of ambition that acknowledge ‘the unique vulnerability and capacity challenges faced particularly by least developed, small coastal and island states, and landlocked states, and therefore the importance of [international] cooperation’ (Commonwealth Secretariat 2018, p. 5).

Critical to achieving equity is access to information, promotion of environmental literacy, and engagement, coordination and collaboration across diverse actors, with different skills, capacities and powers. Building local capacity is fundamental to achieving equity and includes human (e.g., skills, education), social (e.g., connections, organisations), financial (e.g., access to capital) and physical (e.g., infra-

**Table 13.4** Overview of opportunities for action for achieving equity in a sustainable ocean economy

Category	Opportunities for action
Safeguards—No regrets	<ol style="list-style-type: none"> <li>1. In development activities and conservation initiatives, engage and include developing states and local populations in decision-making processes</li> <li>2. Recognise the rights and needs of women, individuals with disabilities, small-scale fishers, indigenous and other minority groups and lift existing access barriers</li> <li>3. Protect human rights and the rights of indigenous groups</li> <li>4. Address corruption and tax evasion</li> </ol>
Mainstreaming equity—Doing what’s right	<ol style="list-style-type: none"> <li>5. Recognise, protect and operationalise equity and access rights</li> <li>6. Build local capacity—including access to low-cost and accessible technologies—to establish equality of opportunity</li> <li>7. Understand social-ecological causality in ocean environments to assign responsibility and liability, and secure an equitable distribution of social gains</li> <li>8. Demand, require and stimulate transparent, responsible business practices</li> </ol>
Transformative approaches—The bold policies	<ol style="list-style-type: none"> <li>9. Create a shared ocean economy that facilitates redistribution of wealth and benefits</li> <li>10. Democratise ocean knowledge</li> <li>11. Create inclusive governance processes by incorporating local voices and visions into plans for the ocean economy, at all scales</li> <li>12. Be aware of environmental and social limits on growth and consider degrowth</li> </ol>

structure, transportation) assets (Sen 1992; Nussbaum 2011; Bennett et al. 2018).

### 3.1 Safeguards: No Regrets

When governments and agencies engage in development activities, such as foreign direct investment, offshore energy and allocating of access programs, equity should be a cross-cutting concern. This is equally true for conservation initiatives, such as the identification of marine protected areas' location, or protecting individual species. Governments should invest in dialogue, capacity-building, education and training programs for women, girls, boys and men, combined with data collection and monitoring of equity. Tackling corruption and tax evasion is important to advancing ocean equity. Corporations, scientists and science funders also have a role to play in advancing equity safeguards.

#### 3.1.1 Consider the Social Context and Engage Diverse Actors in Decision-Making

Development activities and conservation initiatives should engage and include developing states and local populations in decision-making processes. Women, indigenous groups, individuals with disabilities, and other minorities are key in these processes even when they are not harvesting resources themselves or part of the market chain. Context, values and cultures influence the adoption rate and effectiveness of implemented measures. Thus, activities that work in one community or country may not work in another. Failure to consider context (socioeconomic, political, cultural or ecological) often represents a missed opportunity, is inefficient, and can be counterproductive (see also Gaines et al. Blue Paper: 'The Expected Impacts of Climate Change on the Ocean Economy').

	Opportunities for action	Main target actors	Barriers	Overcoming barriers
a	<i>Recognise</i> that people are part of the ocean, and ensure recognition of rights, needs and priorities of developing nations, local people and marginalised groups in development and conservation.	Governments, international organisations, NGOs, funding agencies, private corporations	Equity-blind policies and practice, established norms	Teaching, training and main-streaming knowledge about equity
b	<i>Develop</i> policies and planning processes that mandate consideration of local people and communities in development.	Governments	Equity-blind policies and practice, established norms	Training and mainstreaming knowledge about equity

	Opportunities for action	Main target actors	Barriers	Overcoming barriers
c	<i>Develop and employ</i> social and economic science to guide decision-making (development policies, marine spatial planning and economic development initiatives). <i>Document</i> pre-existing rights, livelihoods and socioeconomic status of relevant communities and consider the implications for producing equitable development.	Research institutions, NGOs, funding agencies	Established practices; limited focus on inter- and transdisciplinary science	Establishing funding mechanisms, piloting and mainstreaming of practice

#### 3.1.2 Recognise the Rights and Needs of Women, Individuals with Disabilities, Small-Scale Fishers, Indigenous and Other Minority Groups

Many groups are marginalised from decision-making processes but rely on ocean resources and play a critical, but overlooked, role in the ocean economy. Recognising their roles, strengths, interests and responsibilities and lifting existing access barriers will engage new groups of leaders, negotiators, decision-makers and entrepreneurs. This will alleviate poverty, strengthen food security, reinforce adaptive capacities and increase development opportunities, in addition to stimulating new mind-sets and innovation. Steps taken towards implementing gender equality considerations, for example, need to be taken in conjunction with action (e.g., education) to address systemic hurdles limiting vulnerable groups from accessing and benefitting from the ocean equitably. A 'gender lens' in all sustainable ocean economy development programs will generate economic opportunities for women, empower them and provide opportunities to engage in decision-making and leadership (Williams et al. 2012; see also USAID 2019 and Barclay et al. 2019 for how to effectively integrate gender considerations in a fishery policy context).

	Opportunities for action	Main target actors	Barriers	Overcoming barriers
a	<i>Integrate and implement</i> gender equality considerations as part of policymaking, data collection, stakeholder engagement and education	Governments, international organisations, NGOs, research institutions, corporations, funding agencies	Outdated practices, established norms	Education, targeted training, empowerment, critical reflection and championing of minority leaders

	Opportunities for action	Main target actors	Barriers	Overcoming barriers
b	<i>Recognise and respect</i> pre-existing property rights, tenure and adjacency of coastal communities and indigenous populations to areas of the ocean and marine resources. <i>Consider</i> how the above factors need to be accounted for in development planning	Governments, corporations	Equity-blind policies and practice	Establishing practice through learning by doing
c	<i>Foreground</i> the needs and rights of small-scale fishers in resource management and development decisions (e.g., in accordance with the FAO Small-Scale Fisheries Guidelines)	Governments	Vested interests	Actively acknowledging the needs and rights of small-scale fishers and enforcing supportive policies

### 3.1.3 Protect Human Rights and the Rights of Indigenous Groups

At the very least, sustainable ocean development must ‘do no harm’. Development activities must protect fundamental human rights, paying particular attention to indigenous rights and workers’ rights, and ensuring that supply chains are free from unsafe working conditions, child labour and slavery (Kittinger et al. 2017; Teh et al. 2019).

	Opportunities for action	Main target actors	Barriers	Overcoming barriers
a	<i>Adhere</i> to international legally binding treaties, such as the UN Declaration on Human Rights and the UN Declaration on the Rights of Indigenous Peoples <i>Ratify</i> relevant legal conventions and ensure relevant complaint and compliance mechanisms are implemented by national governments	Governments, corporations	Limited capacity and knowledge, vested interests	Investment in capacity-building and knowledge development

### 3.1.4 Address Corruption and Tax Evasion

Corruption, environmental crime and tax evasion represent severe threats to the effectiveness of resource management and perpetuate as well as accentuate inequities in access to resources and benefits derived from them (Le Billon 2014). Corruption can be so ingrained that resource users will practice it without realizing it. Understanding and addressing corruption and other crimes requires education, regulations and enforcement. Systemic corruption is best seen as a collective action problem (Ostrom 1998; Le Billon 2014). Ending it may require transformational change in institutions (see Diamond 2008; and Swilling et al. Blue Paper: ‘The Transformation to a Sustainable Ocean: A Systems Transition Perspective’). Identifying who engages in corruption and for what reasons first requires identifying how to incentivise compliance (Sundström 2012; Williams and Le Billon 2017). Leaders in policy, business and practice should lead by example and be role models (Persson et al. 2013).

	Opportunities for action	Main target actors	Barriers	Overcoming barriers
a	<i>Ensure</i> that mechanisms are in place to pay greater attention to systemic corruption or tax evasion, by <i>monitoring</i> the extent of corruption, <i>identifying</i> who engages in corruption or tax evasion and <i>examining</i> for what reason	Governments, NGOs, research institutions, corporations	Lack of knowledge, vested interests, dangerous to investigate	Education, regulations, monitoring, enforcement, promoting reciprocity and trust, championing of leaders and role models
b	<i>Implement</i> and <i>enforce</i> sanctions for corruption and tax evasion	Governments, international organisations	Established norms and legal grey zones	Obtaining convictions and sentences, active leadership in changing corporate practice
c	Increase <i>monitoring</i> and <i>reporting</i> of social and environmental impacts to ensure accountability and transparency	Governments, funding agencies, international organisations	Limited monitoring	Independent follow-up of development programs

### 3.2 Mainstreaming Equity: Doing What’s Right

Systematically addressing issues of inequity needs to be mainstreamed into development, management and conservation interventions at all scales, from local marine protected areas to global treaty negotiations on ocean governance. As new treaties are being negotiated, active steps need to be taken to ensure that all states and international organisations have the necessary capacity and sense of responsibility to safeguard equity, irrespective of policy positions or financial resources. In addition, analyses and estimates of the economic consequences of unmanaged development in the ocean need to be improved upon and communicated.

#### 3.2.1 Recognise, Protect and Operationalise Equity and Access Rights

The provision of access to local resources is imperative for the establishment of equality and equity at community levels (WRI et al. 2005). Equity and access rights are already enshrined in conventions, international agreements and policies, but they are insufficiently operationalised (see Sect. 2.3). Restricted and unequal access to local ecosystems and resources constitutes a barrier that makes it more difficult for vulnerable groups, such as the poor, to improve their conditions (Bennett et al. 2018; Cisneros-Montemayor et al. 2016; Haider et al. 2018). Access to local ecosystems has to be informed by customs and traditions, grounded in both formal and informal institutions, but it needs to also reflect current scientific knowledge.

	Opportunities for action	Main target actors	Barriers	Overcoming barriers
a	<i>Implement</i> policies that require consideration of historical and pre-existing access to natural resources, how these will be impacted by development, what mitigation can minimise impacts on access and how compensation mechanisms might be employed when impacts cannot be avoided	Governments, international organisations, research institutions, NGOs, corporations	Established practice and limited knowledge	Recognition of indigenous or cooperative governance and effective implementation of existing commitments (i.e., legitimising decentralised governance) Promoting co-management and building capacity and skills of all actors

#### 3.2.2 Build Local Capacity to Establish Equality of Opportunity

The ability of coastal populations and coastal island and developing nations to benefit from ocean resources and development depends on their capacity to do so—in other words, equality of benefit requires equality of opportunity. Capacity is provided by human (e.g., skills, education), social (e.g., connections, organisations), financial (e.g., access to capital) and physical (e.g., infrastructure, transportation) assets (Sen 1992; Nussbaum 2011; Bennett et al. 2018). Enhancing the commitment to capacity-building and the transfer of marine technology, including through strengthening existing legal frameworks, constitutes an important priority. Access to low-cost and accessible technologies that support the SDGs represents a significant and increasingly relevant mechanism for developing adequate capacity (Meikle and Sugden 2015; see also Leap et al. Blue Paper, ‘Technology, Data and New Models for Sustainably Managing Ocean Resources’, on, for instance, the risk of widening the gap if equitable development and access are not considered). Local ownership of businesses that harvest ocean resources and of businesses that provide labour, services, goods or supplies can increase local benefit from economic development (Bennett et al. 2019b).

	Opportunities for action	Main target actors	Barriers	Overcoming barriers
a	<i>Develop</i> policy mechanisms and programs that provide opportunities by <i>bolstering</i> physical assets and <i>building</i> human skills and capabilities among local constituents prior to and during development	Governments	Established practice, lack of knowledge	Adjusting policies, targeting funding, piloting of practice, strong leaders
b	<i>Strengthen</i> legal obligations on capacity-building and transfer of technology	Governments	Priorities, limited funding, intellectual property concerns	Political will
c	<i>Create</i> low-cost and accessible technology	Governments, corporations, venture capital investors, funding agencies	Limited access to markets, funds and information	Establishing targeted funding schemes, supporting creative solutions and innovation

	Opportunities for action	Main target actors	Barriers	Overcoming barriers
d	<i>Support</i> local ownership of ocean businesses <i>Set up</i> entrepreneurship training programs and create credit schemes <i>Facilitate</i> connections to markets	Governments, corporations	Limited experience, knowledge and capacity	Effectively communicating existing knowledge and practice, investing in teachers and trainers, developing effective collaboration
e	<i>Create</i> user-friendly information-sharing mechanisms to monitor and communicate capacity needs and impacts of capacity-building efforts on local communities	Research institutions, governments, international organisations, NGOs	Limited information availability and infra-structure	Collaborating with UN Decade of Ocean Science

### 3.2.3 Understand Social-Ecological Causality, Assign Responsibility and Secure Equitable Distribution of Benefits

Development opportunities in ocean environments can entail social gains and harms. Some progress has been made in understanding and monitoring ecological harms, such as overfishing or eutrophication, and how these impact people. However, more knowledge needs to be gained about how ocean-based economic development can produce both direct and indirect social benefits and harms. Understanding causality in ocean environments is important to assigning responsibility and liability and securing an equitable distribution of social gains and avoidance of harms. Economic instruments such as taxes and fees need to be leveraged to internalise environmental and social benefits, costs and risks to society (WWF 2018).

	Opportunities for action	Main target actors	Barriers	Overcoming barriers
a	<i>Document, project, forecast and report</i> social benefits and harms, both those that occur indirectly via environmental impacts and those that impact humans directly <i>Assign responsibility and implement</i> mechanisms to equitably redress socioeconomic and ecological impacts of development activities	Governments, NGOs, research institutions, international organisations	Limited information and practice	Developing knowledge and practice

	Opportunities for action	Main target actors	Barriers	Overcoming barriers
b	<i>Develop</i> compensation, remediation and redress mechanisms for past or future impacts. <i>Eliminate</i> harmful subsidies. <i>Regulate</i> harmful industries <i>Enforce</i> existing laws and principles <sup>a</sup> <i>Strengthen</i> instruments and introduce social impact bonds or environmental taxes	Governments	Limited practice and capacity	Mentoring of strong leadership, piloting of practice; sharing of experiences; coaching and support for active participation in the international policy arena
c	<i>Develop</i> means to ensure equitable distribution of benefits derived from ocean services	Governments, corporations	Limited practice and capacity, vested interests	Supporting active participation in international policy; promoting multi-lateral benefit sharing mechanisms

a. Such as by applying the polluter-pays principle, through the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea.

### 3.2.4 Demand, Require and Stimulate Responsible Business Practices

Ocean industries derive substantial wealth and income from ocean environments. However, like most industries, they operate with limited transparency, which hinders the monitoring of their impact on society and ecological well-being, and thus the granting of a social license to operate. Incentives that shape a positive competitive environment can encourage industry to adopt corporate social responsibility practices to preserve their social license to operate (McGee 2013; Aguilera et al. 2007). Increased transparency will stimulate the private sector to respect and advance ocean equity and stewardship, while also encouraging learning across corporations.

	Opportunities for action	Main target actors	Barriers	Overcoming barriers
a	<i>Demand</i> full transparency of ongoing and planned activities and acceptance of liability and social responsibility, as well as limits on growth (within environmental capacities), as preconditions for engagement in ocean-based industries	Governments	Limited corporate reporting; limited monitoring, control and enforcement capacity; corruption	Developing practice and capacity, active leadership

	Opportunities for action	Main target actors	Barriers	Overcoming barriers
b	<i>Amend</i> legal duties and corporate laws to account for negative externalities <i>Encourage</i> companies to include ‘social responsibility’ provisions in articles of incorporation to support and promote equitable choices	Governments, corporations	Limited legislation; lack of monitoring, control and enforcement; limited capacity	Developing practice and capacity, providing incentives to ‘do the right thing’
c	<i>Require</i> companies to submit strategic plans, along with reporting and auditing reports, detailing how their activities support smallscale fishers, local communities and ocean stewardship	Governments, international organisations	Limited legislation; lack of monitoring, control and enforcement; limited capacity	Developing practice and capacity
d	<i>Showcase, incentivise</i> and <i>stimulate</i> positive leadership	Governments, research institutions, corporations	Limited history of collaboration, fragmented knowledge	Synthesising knowledge and critically reflecting on progress made

### 3.3 Transformative Approaches: The Bold Policies

Discussions of systemic change to the global economy are no longer unusual (Jackson 2009; Hickel and Kallis 2019; Hadjmichael 2018; IPBES 2019). An acceleration of the ocean economy, along current trajectories, will continue to deliver the greatest benefits to a small subset of high-income countries, corporations and individuals. The scientific literature is increasingly exploring purposeful and meaningful steps to change course. Allocation of rights (including prop-

erty rights for fisheries, offshore wind and aquaculture) and development of new knowledge and technologies are often regarded as necessary to facilitate environmental sustainability and economic viability, but they also risk reinforcing existing power structures and limiting the development of low- to middle-income regions. Given the global nature of the ocean, the scale of the challenges and the slow pace of international policy development, immediate and concrete steps are needed to develop and evaluate alternative approaches to economic growth and allocation of social, economic and technological capital (Raworth 2017b). Transformative approaches require redistribution of power and resources to improve longer-term equity perceptions and outcomes. Limits on growth, and even degrowth, of some sectors may need to be considered. Changes to the status quo will not be easy, but—as this Blue Paper has illustrated—they could substantially advance progress towards the SDGs.

#### 3.3.1 Create a Shared Ocean Economy that Facilitates Redistribution of Wealth and Benefits

The ocean’s global nature and the current unequitable distribution of access, benefits and negative impacts from ocean sectors requires bolder approaches. If such approaches are not taken, there is a real risk that the legitimacy of the current ocean policy agenda will be substantially eroded. Current ocean-related fund allocations from high-income countries to middle- and low-income ones are primarily handled through bilateral and multilateral official development aid (ODA) financial flows. While the source of many positive impacts, these allocations are dwarfed by the size of the ocean economy. Just 1% of the global ocean economy represents US \$15 billion per year generated from the world’s ocean and coasts (OECD 2016). New ways of thinking, creative policies and accounting mechanisms that internalise externalities and include long-term economic and environmental considerations, and the use of progressive and affordable technologies are needed to facilitate a redistribution of wealth and benefits from the ocean economy.

	Opportunities for action	Main target actors	Barriers	Overcoming barriers
a	<i>Develop and implement</i> a global ocean tax to reallocate parts of profits to places where environmental resources are harvested and where management actions, capacity-building, conservation or restoration are required	Governments, international organisations	Politically charged questions, vested interest in the status quo	Collaboratively investigating ideas and potential effects
b	<i>Apply</i> scenarios to understand how future benefits and harms might or should be distributed to different local groups and to current and future generations (see Bennett et al. 2019a, Box 13.1) <i>Incorporate</i> intergenerational accounting (Sumaila and Walters 2005) and climate change impacts into projection models and planning	Governments, researchers, development planners, investors, loan officers, funding agencies	Powerful interest groups, practice of discounting future harms in favour of present gains	Developing capacity to build on existing models, developing collaboration to model distribution of impacts
c	<i>Centralise</i> human well-being as both a proximate and ultimate goal of ocean economy development (Cisneros-Montemayor et al. 2019), within the capacity of the biosphere	Governments	Focus on economic profits	Managing for long-term local livelihood and food security objectives, ensuring that new developments support human well-being
d	<i>Develop and stimulate</i> access to low-cost, low-tech, long-term transformative solutions for equity and sustainability (aiming to increase access for communities, improve monitoring and enforcement, report on corruption and promote knowledge exchange)	Governments, funding agencies, international organisations	Many technologies primarily focused on generating capital and facilitating control over resources, lack of capacity to use technologies among key groups	Issuing global call (or challenge fund) and deploying sustainable and equitable technologies; building visibility and capacity to develop and utilise these technologies
e	<i>Develop and implement</i> mechanisms to redistribute wealth <i>Reallocate</i> shares to local communities and workers <i>Contribute percentage</i> of profits to local government or community trust funds <i>Reform</i> subsidy programs (Cisneros-Montemayor and Sumaila 2019)	Governments, corporations	Disproportionate concentration of value and power	Strong leadership, disincentives for not contributing to redistribution programs, support for effective policy mechanisms

### 3.3.2 Democratise Ocean Knowledge

Knowledge is power, and ocean knowledge is primarily generated in high-income countries. The current scientific understanding of the ocean and its associated industries, technologies and impacts is not well-suited to addressing issues of global ocean equity. Greater attention is needed to democratise knowledge, train international researchers (in social and transdisciplinary science) and document how benefits of the ocean and ocean-related knowledge flow to different groups (see also Fenichel et al. Blue Paper: ‘National Accounting for the Ocean and Ocean Economy’). Knowledge exchange, co-production and transfer (Pohl et al. 2010) can be stimulated

by cross-regional exchanges to compare lessons learned and the benefits of diverse approaches, cultures, values and understanding. Programs of this nature should aim to modify academic incentives that militate against equitable knowledge production and sharing (e.g., the emphasis on publishing and barriers to open-access work). It should value and promote effective and equitable partnerships with scientific researchers in low- and middle-income countries. Governments, scientists and communities should make concerted efforts to co-develop mechanisms for identifying, considering and expressing benefits gained from the ocean so that these can be integrated into development policies across scales.



	Opportunities for action	Main target actors	Barriers	Overcoming barriers
a	<i>Increase</i> knowledge co-production, exchange, capacity-building, technology transfer and availability, and knowledge infrastructure <i>Develop</i> multilateral networks capable of harnessing technological capacities to facilitate marine technology transfer <i>Foster</i> an integrated approach to the advancement, sharing and application of scientific knowledge (Harden-Davies 2017)	Governments, research institutions	Access to information, lack of capacity	Mandating high-income countries to commit to long-term funding of ocean science centres in low-income countries, providing access to knowledge networks and mentoring, developing partners in scientific endeavours and closing data gaps
b	<i>Recognise</i> that people are part of the ocean. A broader vision for ocean science, one that includes the human dimensions and marine social sciences (Bennett 2019), is needed to identify how to produce more equitable outcomes from ocean development	Governments, funding agencies, NGOs, civil society	Lack of knowledge and capacity	Developing collaborations, building capacity, fostering mentorships, obtaining support from the UN Decade of Ocean Science
c	<i>Train</i> international networks of young students and cross-regional exchanges to compare lessons learned and understand the benefits of human diversity	Research institutions, governments, funding agencies	Lack of capacity, time and cost investment	Developing collaborations, providing mentorship, leading by example
d	<i>Understand</i> and <i>develop</i> transparent accounting of how the benefits of ocean activities, resources and ecosystem services flow to different nations and groups of people within nations so that this understanding can be integrated into development policies across scales <i>Co-develop</i> mechanisms for identifying, considering and expressing the benefits gained from the ocean in ways that respect cultural norms and do not appropriate traditional knowledge	Governments, research institutions, NGOs, international organisations, civil society	Self-interest, established norms	Ensuring that information on ocean resources is publicly available, promoting transparent practices, rewarding exemplary behaviour

### 3.3.3 Create Inclusive Governance Processes at All Scales

*Governance* refers to who makes decisions and how decisions are made, which can significantly impact both what management actions are taken and to what effect. In terms of the blue economy, governance can impact ‘how the ocean will be developed and by whom, how and to whom benefits will be distributed, how harms will be minimised and who will bear responsibility for environmental and social outcomes’ (Bennett et al. 2019b, p. 2). In short, equity can depend on governance, and creative processes can be developed to incorporate local voices and visions into plans for the ocean economy. Many successful marine governance initiatives in the developing world are based on grassroots efforts. The FAO Small-Scale Fisheries guidelines is an example of a bottom-up initiative that resulted in a set of broad-scale instruments aimed at all actors striving to secure sustainable small-scale fisheries, end hunger and poverty, as well as strengthen human rights.

	Opportunities for action	Main target actors	Barriers	Overcoming barriers
a	<i>Design</i> governance processes at all scales—from global deliberations, to negotiations related to local ocean development initiatives—to be inclusive of governments, business and civil society, focusing on marginalised groups such as women, small-scale fishers and Indigenous Peoples	Governments, international institutions, NGOs	Lack of time and funds	Highlighting as priority to funding and development partners, developing mechanisms to ensure participation
b	<i>Allow</i> solutions to emerge from the bottom up.	Governments, international institutions	Lack of time, capacity and knowledge	Developing and implementing codes of practice that enable active engagement with grassroots initiatives

### 3.3.4 Place Limits on Growth and Consider Degrowth Within the Capacity of the Biosphere

There are numerous examples around the world where economic development activities have produced or are producing ecological and/or social impacts that could be deemed to have gone beyond acceptable thresholds. Some examples include oil development in Nigeria or Venezuela and overfishing in Mauritania or Senegal (Belhabib et al. 2016; Doumbouya et al. 2017). When thresholds are being exceeded, limiting growth or even degrowing the ocean economy to bring it in line with the capacity of the biosphere may be an obvious alternative. In this context, ‘degrowth’ means scaling back overexploitation that gives the illusion of what is in fact merely temporary growth and ultimately disastrously exhausts natural capital. Given the increasing debate about inequities, governments, corporations and scientists should consider alternative approaches to the ocean economy based on collaborative and equitable approaches that make well-being, livelihoods and natural resource maintenance their primary goals (Kostakis and Bauwens 2014).

Opportunities for action	Main target actors	Barriers	Overcoming barriers
<i>Investigate and pilot</i> approaches to limits on growth and degrowth	Governments, international institutions, research institutions	Existing narratives of perpetual growth and growth first, environment later	Constructive and science-based conversations, scenarios, piloting of approaches

## 4 Conclusions

This Blue Paper has illustrated that access to ocean resources and benefits is distributed inequitably, as is exposure to harms, resulting in negative effects on the environment and human well-being. Challenging this inequality directly threatens powerful interests that benefit from existing arrangements. However, inequality is increasingly endangering ecological sustainability, economic development and longer-term political and social stability. Increased scientific attention to inequality is starting to shape debates associated with the ocean. We argue that addressing issues of equity is critical to a sustainable ocean economy. We provide a set of complementary reinforcing opportunities for action, from the simple to the transformative. These opportunities range from activities that aim to recognise, identify, document and report, as well as to promote, respect, clarify, showcase,

build, create or facilitate. The opportunities include assigning and demanding responsibilities, piloting, implementing and enforcing existing and novel policies, and even rethinking existing growth paradigms. Combined, they aim to overcome the existing general policy blindness to equity and have an ambition to effectively support a sustainable and just ocean economy.

**Acknowledgements** The authors thank the paper’s technical reviewers, Meryl Williams, Mads Barbesgaard and Elisa Morgera, as well as its arbiter, Nicola Frost, who all provided helpful technical comments. The authors also thank the World Resources Institute for providing support as the Ocean Panel Secretariat.

While our colleagues were very generous with their time and input, this report reflects the views of the authors alone. The authors thank Alex Martin for copyediting and Jen Lockard for design.

## Appendix 1: Inequities Associated with Small-Scale Fisheries

### Inequity of Benefits

Inequalities in wealth shape the distribution of benefits from ocean resources for small-scale fishers at multiple scales. Many small-scale fishing households in Kenya and the Philippines, for instance, are enmeshed in structural inequality along value chains (Knudsen 2016; Wamukota 2009; Rosales et al. 2017). Coastal households specialised in fishing cannot compete with richer, more powerful fishers with better gear and the capacity to bribe local officials (Fabinyi 2012). Consequently, coastal households may depend on unequal trading relationships (Crona et al. 2016) and tend to sell the best-quality fish, consuming the lower-quality ones (Wamukota 2009; Hicks et al. 2019). Small-scale fishers often receive a relatively small proportion of the value of their catch (Rosales et al. 2017), especially when compared to prices associated with luxury consumption (Trinidad et al. 2014; Purcell et al. 2017). Meanwhile, small-scale fishers may be the most vulnerable to the loss or degradation of marine resources (Crona et al. 2015; Sadovy de Mitcheson et al. 2018).

### Invisible Gendered Inequities

Women’s contributions in fisheries are often overlooked, underestimated and/or undervalued, often resulting in women’s marginalisation in the management of marine resources. Coastal activities are usually highly gendered, both in where

and how women participate in value chains and how their contributions are valued and prioritised (Yodanis 2000; Williams 2008; De Silva 2011; Harper et al. 2013, 2017; Lentisco and Lee 2015; Fortnam et al. 2019). Women play an important role in both harvest and post-harvest activities with important implications for families, communities and economies. In the Pacific region, more than half of small-scale catches are taken by women. Coastal fisheries management policies that better represent their needs could lead to more secure livelihoods and more sustainable catches. Despite this, policies, data collection and stakeholder consultations remain gender-blind in many places. This further marginalises women's voices and interests, further devalues the benefits women's work provides and makes it hard to know how women are affected as the fisheries sector develops.

Gender blindness results from a focus on formal and paid fishing activities (traditionally male-dominated) in research, management and policies, disregarding informal and unpaid activities, usually dominated by women (Harper et al. 2013). Fisheries agencies are also commonly focused on the production segment of fish value chains, even though twice as many people may be employed in related activities, such as processing and marketing, which are often dominated by women (World Bank 2012). In Senegal, a study found that women represent 90% of the country's seafood processor workforce, valued at \$30.5 million (Belhabib et al. 2014). Such marginalisation has often happened despite increasing recognition that women play a critical role at every link in small-scale fisheries value chains (De Silva 2011; Lentisco and Lee 2015). Failing to account for the gender and other social differentiation in fisheries management can lead to policy interventions that undermine sustainable livelihoods (Bennett 2005; Daw et al. 2015).

### Inequity of Access

Gendered access barriers (ones that affect women and men differently) occur at several points along the fisheries value chain. Overall, women in fishing communities across the world face barriers to more profitable segments of supply chains, due to a variety of socioeconomic and cultural obstacles, as well as conflicting household roles (O'Neill and Crona 2017). These can include indirect barriers, such as gender norms in the Philippines that limit women's ability to fish far from home (Yater 1982). More direct barriers include lack of access to fishing gear, fishing grounds, fishing markets or financial capital, including credit, as well as lack of education or alternative livelihoods (Matsue et al.

2014). Gendered power relations are often context-specific. For instance, in Zambia, fishing gear is largely owned and controlled by men (Cole et al. 2018), whereas in Ghana and Brazil women can inherit fishing boats and gear and either use them themselves (Kleiber et al. 2017) or lease them to men for fishing (Walker 2001). In Norway, women are often not able to buy bigger boats or more profitable quotas because they are denied bank loans (Gerrard and Kleiber 2019), while in western Zambia, women have overcome lack of credit by participating in village savings and lending groups, which they use to buy and resell fish (Cole et al. 2015). Women may be excluded from markets, such as in Bangladesh, where only the poorest women sell fish at the market, or in Kenya, where women only have access to the less profitable parts of the catch and have limited trade connections (Matsue et al. 2014; Wamukota 2009). In Guadalajara, Mexico, in contrast, women dominate, often holding influential positions, having attained these through family networks, skills and cultural heritage (Pedroza 2019). Policies on matters such as spatial management can also have a disproportionate impact on women and other marginalised groups that may not have access to boats or motors that would allow them to reach other fishing zones (Eder 2005). For example, in Madagascar, when a no-take area was placed in the community gleaning areas, women were no longer able to fish or resorted to fishing illegally at night (Baker-Médard 2017).

### Decision-Making and Governance

Women also often face access barriers to governing institutions, resulting in fewer women's voices included in small-scale fisheries decision-making institutions. In Tanzania, female fish traders were excluded from formal fisheries management groups (Fröcklin et al. 2013). In Bangladesh, women were not included in decision-making because they were perceived as lacking the necessary knowledge and experience (Kleiber et al. 2017). In Senegal, women make up less than 5% of fisheries governing bodies (Harper et al. 2017). Customary rules may also exclude women, such as in some communities in the Solomon Islands, where women are not allowed to be under the same roof as men with whom they have previously had relationships (Faye Siota, pers. comm.), effectively barring many women from public meeting spaces. Again, gendered norms and power relations in relation to the ocean mirror or enhance general gender inequities, such as those surrounding access to education, health care, food and nutritional security.

## Appendix 2: Voluntary Environmental Programs

Name	Mission	Website
Aquaculture Stewardship Council (ASC)	To transform aquaculture towards environmental sustainability and social responsibility using efficient market mechanisms that create value across the chain	<a href="http://www.asc-aqua.org">www.asc-aqua.org</a>
Coalition of Legal Toothfish Operators (COLTO)	To promote sustainable toothfish fishing and fisheries; facilitate its members' working together and with outside groups, including through continued provision of high-quality scientific data to CCAMLR (Commission for the Conservation of Antarctic Marine Living Resources) and other bodies; and provide effective representation for its members.	<a href="https://www.colto.org">https://www.colto.org</a>
Global Aquaculture Alliance (GAP)	To promote responsible aquaculture practices through education, advocacy and demonstration	<a href="https://www.globalgap.org">https://www.globalgap.org</a>
Global Compact Ocean Action Platform	To determine how ocean industries can advance progress towards the Sustainable Development Goals (SDGs). The work of the platform builds upon the 10 principles of the UN Global Compact, which outline business responsibilities in the areas of human rights, labour, environment and anti-corruption	<a href="https://www.unglobalcompact.org/take-action/action-platforms/ocean">https://www.unglobalcompact.org/take-action/action-platforms/ocean</a>
Green Coastal Shipping Program	To find scalable solutions for efficient and environmentally friendly shipping. Its multiple pilots are crucial for the phasing in of zero- and low-emission solutions in shipping towards 2030.	<a href="https://www.dnvgl.com/maritime/green-shipping-programme/index.html">https://www.dnvgl.com/maritime/green-shipping-programme/index.html</a>
International Association of Oil and Gas Producers (IOGP)	To create alignment and facilitate continuous health, safety and environment (HSE) improvements across oil and gas exploration and production	<a href="https://www.iogp.org">https://www.iogp.org</a>
International Council on Mining and Metals (ICMM)	To promote a safe, fair and sustainable mining and metals industry	<a href="https://www.icmm.com">https://www.icmm.com</a>
IPIECA (International Petroleum Industry Environmental Conservation Association)	To provide a forum for encouraging continuous improvement in offshore oil and gas industry performance, for example improvements associated with the SDGs	<a href="http://www.ipieca.org">http://www.ipieca.org</a>
Marine Stewardship Council (MSC)	To use its ecolabel and fishery certification program to contribute to the health of the world's oceans by recognizing and rewarding sustainable fishing practices, influencing the choices people make when buying seafood and working with its partners to transform the seafood market to a sustainable basis	<a href="https://www.msc.org/se">https://www.msc.org/se</a>
Ocean Energy Europe	To promote the development of ocean energy, improved access to funding and enhanced business opportunities for its members	<a href="https://www.oceanenergy-europe.eu">https://www.oceanenergy-europe.eu</a>
Sustainable Shipping Initiative (SSI)	To facilitate oriented efforts such as the 'Ship Recycling Transparency Initiative', which brings together ship owners, banks and other key stake-holders to improve transparency in the global ship recycling value chain	<a href="https://www.ssi2040.org">https://www.ssi2040.org</a>
WindEurope	To promote wind power and coordinate international policy, communication, research and analysis	<a href="https://windeurope.org">https://windeurope.org</a>

Source: Blasiak et al. (2018a) and Pretlove and Blasiak (2018)

### About the Authors

#### Co-authors

**Henrik Österblom** is Professor and Science Director at the Stockholm Resilience Centre, Stockholm University.

**Colette C.C. Wabnitz** is a Senior Research Scientist at the Institute for the Oceans and Fisheries, University of British Columbia and Stockholm Resilience Centre, Stockholm University.

**Dire Tladi** is a Professor of International Law at the Department of Public Law and the Institute for International and Comparative Law in Africa, University of Pretoria, as well as an extraordinary professor in the Public Law Department, University of Stellenbosch (South Africa).

### Contributing Authors

**Edward H. Allison** is an Honorary Fellow at WorldFish (Malaysia) and an Affiliate (Honorary) Professor in the School of Marine and Environmental Affairs, University of Washington.

**Sophie Arnaud-Haond** is a Research Scientist at Ifremer, in the UMR MARBEC (Marine Biodiversity, Exploitation and Conservation) at Montpellier University, CNRS, IRD (France).

**Jan Bebbington** is a Professor in the Department of Accounting, Birmingham Business School, University of Birmingham (UK).

**Nathan Bennett** is a Research Associate at the Institute for the Oceans and Fisheries, University of British Columbia,

and is the Chair for the People and the Oceans Specialist Group for the International Union for the Conservation of Nature.

**Robert Blasiak** is a Researcher at the Stockholm Resilience Centre, Stockholm University and a visiting researcher at the Graduate School of Agricultural and Life Sciences, University of Tokyo.

**Wiebren J. Boonstra** is an Associate Professor at the Stockholm Resilience Centre, Stockholm University.

**Afrina Choudhury** is a Research Fellow (Senior Gender Specialist) at WorldFish Bangladesh.

**Andrés M. Cisneros-Montemayor** is a Research Associate and Deputy Director of the Ocean Nexus Program at the Institute for the Oceans and Fisheries, University of British Columbia.

**Tim Daw** is a Researcher at the Stockholm Resilience Centre, Stockholm University.

**Michael Fabinyi** is an Associate Professor at the School of Communication, University of Technology Sydney.

**Nicole Franz** is a Fishery Planning Analyst with the Food and Agriculture Organization of the United Nations.

**Harriet Harden-Davies** is a Research Fellow at the Australian National Centre for Ocean Resources and Security (ANCORS), University of Wollongong.

**Danika Kleiber** is a Research Fellow at the ARC Centre of Excellence for Coral Reef Studies (Australia) and WorldFish (Malaysia).

**Priscila Lopes** is an Associate Professor in the Department of Ecology at the Universidade Federal do Rio Grande do Norte.

**Cynthia McDougall** is the gender research leader for WorldFish (Malaysia) and the CGIAR Research Program on Fish Agri-Food Systems (FISH).

**Budy P. Resosudarmo** is an Associate Professor at the Crawford School of Economics and Government, Australian National University.

**Samiya A. Selim** is an Associate Professor and the Director of the Center for Sustainable Development at the University of Liberal Arts Bangladesh.

Allison EH, Ratner BD, Åsgård B, Willmann R, Pomeroy R, Kurien J (2012) Rights-based fisheries governance: from fishing rights to human rights. *Fish Fish* 13(1):14–29

Almeida OT, Lorenzen K, McGrath D (2009) Fishing agreements in the lower amazon: for gain and restraint. *Fish Manag Ecol* 16(1):61–67

Althor G, Watson JE, Fuller RA (2016) Global mismatch between greenhouse gas emissions and the burden of climate change. *Sci Rep* 6:20281

Alvaredo F, Chancel L, Piketty T, Saez E, Zucman G (2018) World inequality report 2018. World Inequality Lab, Paris

Arnaud-Haond S, Arrieta JM, Duarte CM (2011) Marine biodiversity and gene patents. *Science* 331(6024):1521–1522

Arrieta JM, Arnaud-Haond S, Duarte CM (2010) What lies underneath: conserving the oceans' genetic resources. *Proc Natl Acad Sci* 107(43):18318–18324

Baker-Médard M (2017) Gendering marine conservation: the politics of marine protected areas and fisheries access. *Soc Nat Resour* 30(6):723–737

Ban NC, Frid A, Reid M, Edgar B, Shaw D, Siwallace P (2018) Incorporate indigenous perspectives for impactful research and effective management. *Nat Ecol Evolut* 2(11):1680–1683

Barbesgaard M (2018) Blue growth: savior or ocean grabbing? *J Peasant Stud* 45(1):130–149

Barclay K, Leduc B, Mangubhai S, Donato-Hunt C (2019) Pacific handbook for gender equity and social inclusion in coastal fisheries and aquaculture. Pacific Community, Nouméa

Bavinck M, Berkes F, Charles A, Dias ACE, Doubleday N, Nayak P, Sowman M (2017) The impact of coastal grabbing on community conservation: a global reconnaissance. *Marit Stud* 16(1):8

Bavinck M, Jentoft S, Scholtens J (2018) Fisheries as social struggle: a reinvigorated social science research agenda. *Mar Policy* 94:46–52

Baxter B (2004) A theory of ecological justice. Routledge, London

Behailu L, Choudhury A, Rajaratnam S, Locke C, McDougall C (2018) Gender norms and agricultural innovation: insights from six villages in Bangladesh. *J Sustain Develop* 11(4):270–287

Behailu L, Choudhury A, Rajaratnam S, Burg M, McDougall C (2019) Implications of agricultural innovations on gender norms: a case study from Bangladesh. Pennsylvania State University and Wageningen University (forthcoming)

Belhabib D, Koutob V, Sall A, Lam VW, Pauly D (2014) Fisheries catch misreporting and its implications: the case of Senegal. *Fish Res* 151:1–11

Belhabib D, Lam VW, Cheung WW (2016) Overview of West African fisheries under climate change: impacts, vulnerabilities and adaptive responses of the artisanal and industrial sectors. *Mar Policy* 71:15–28

Bell JD, Allain V, Gupta AS, Johnson JE, Hampton J, Hobday AJ, Lehodey P et al (2018) Climate change impacts, vulnerabilities and adaptations: western and central pacific ocean marine fisheries. Impacts of climate change on fisheries and aquaculture. In: Barange M, Bahri T, Beveridge MCM, Cochrane KL, Funge-Smith S, Poulain F (eds) Impacts of climate change on fisheries and aquaculture: synthesis of current knowledge, adaptation and mitigation options. FAO Fisheries and Aquaculture Technical Paper 627. FAO, Rome, pp 305–325

Bell JD, Sharp MK, Havice E, Batty M, Charlton KE, Russell J, Adams W, Azmi K et al (2019) Realising the food security benefits of canned fish for pacific island countries. *Mar Policy* 100:183–191

Béné C, Friend R (2011) Poverty in small-scale inland fisheries: old issues, new analysis. *Prog Dev Stud* 11(2):119–144

Bennett E (2005) Gender, fisheries and development. *Mar Policy* 29(5):451–459

Bennett NJ (2018) Navigating a just and inclusive path towards sustainable oceans. *Mar Policy* 97:139–146

## References

Abdullah AN, Myers B, Stacey N, Zander KK, Garnett ST (2017) The impact of the expansion of shrimp aquaculture on livelihoods in coastal Bangladesh. *Environ Dev Sustain* 19(5):2093–2114

Agardy T (2016) Tundi's take: equity in ocean management is about preserving ocean health and access. The skimmer on marine ecosystems and management, 31 May. <https://meam.openchannels.org/news/meam/tundi%E2%80%99s-take-equity-ocean-management-about-preserving-ocean-health-and-access>

Aguilera RV, Rupp DE, Williams CA, Ganapathi J (2007) Putting the S back in corporate social responsibility: a multilevel theory of social change in organizations. *Acad Manag Rev* 32(3):836–863

- Bennett NJ (2019) Marine social science for the peopled seas. *Coast Manag* 47(2):244–252
- Bennett NJ, Govan H, Satterfield T (2015) Ocean grabbing. *Mar Policy* 57:61–68
- Bennett NJ, Kaplan-Hallam M, Augustine G, Ban N, Belhabib D, Brueckner-Irwin I, Charles A et al (2018) Coastal and indigenous community access to marine resources and the ocean: a policy imperative for Canada. *Mar Policy* 87:186–193
- Bennett NJ, Blythe J, Cisneros-Montemayor AM, Singh GG, Sumaila UR (2019a) Just transformations to sustainability. *Sustainability* 11(14):3881
- Bennett NJ, Cisneros-Montemayor AM, Blythe J, Silver JJ, Singh G, Andrews N, Calò A et al (2019b) Towards a sustainable and equitable blue economy. *Nat Sustain* 2:991–993. <https://doi.org/10.1038/s41893-019-0404-1>
- Berg A, Ostry JD, Zettelmeyer J (2012) What makes growth sustained? *J Dev Econ* 98(2):149–166
- Berg A, Ostry JD, Tsangarides CG, Yakhshilikhov Y (2018) Redistribution, inequality, and growth: new evidence. *J Econ Growth* 23(3):259–305
- Biermann F, Kanie N, Kim RE (2017) Global governance by goal-setting: the novel approach of the un sustainable development goals. *Curr Opin Environ Sustain* 26–27:26–31
- Bierne N, Bonhomme F, Arnaud-Haond S (2016) Dedicated population genomics for the silent world: the specific questions of marine population genetics. *Curr Zool* 62(6):545–550
- Blasiak R, Pittman J, Yagi N, Sugino H (2016) Negotiating the use of biodiversity in marine areas beyond national jurisdiction. *Front Mar Sci* 3:224
- Blasiak R, Durussel C, Pittman J, Sénit CA, Petersson M, Yagi N (2017a) The role of NGOs in negotiating the use of biodiversity in marine areas beyond national jurisdiction. *Mar Policy* 81:1–8
- Blasiak R, Spijkers J, Tokunaga K, Pittman J, Yagi N, Österblom H (2017b) Climate change and marine fisheries: least developed countries top global index of vulnerability. *PLoS One* 12(6):e0179632
- Blasiak R, Bebbington J, Jouffray J-B (2018a) Voluntary environmental programs. Background brief to the Amersfoort Dialogue. The Keystone Dialogues. <http://keystonedialogues.earth/wp-content/uploads/2018/06/Brief2-Voluntary-Environmental-Programs.pdf>
- Blasiak R, Jouffray J-B, Wabnitz CCC, Sundström E, Österblom H (2018b) Corporate control and global governance of marine genetic resources. *Sci Adv* 4(6):eaar5237
- Blasiak R, Jouffray J-B, Wabnitz CCC, Österblom H (2019) Scientists should disclose origin in marine gene patents. *Trends Ecol Evol* 34(5):392–395
- Block BA, Jonsen ID, Jorgensen SJ, Winship AJ, Shaffer SA, Bograd SJ, Hazen EL et al (2011) Tracking apex marine predator movements in a dynamic ocean. *Nature* 475(7354):86
- Bogard JR, Thilsted SH, Marks GC, Wahab MA, Hossain MAR, Jakobsen J, Stangoulis J (2015) Nutrient composition of important fish species in Bangladesh and potential contribution to recommended nutrient intakes. *J Food Compos Anal* 42:120–133
- Boonstra WJ (2016) Conceptualizing power to study social-ecological interactions. *Ecol Soc* 21(1):21
- Boonstra WJ, Ottosen KM, Ferreira ASA, Richter A, Rogers LA, Pedersen MW, Kokkalis A et al (2015) What are the major global threats and impacts in marine environments? Investigating the contours of a shared perception among marine scientists from the bottom-up. *Mar Policy* 60:197–201
- Bourguignon F (2015) Revisiting the debate on inequality and economic development. *Revue d'économie politique* 125(5):633–663
- Brent Z, Barbesgaard M, Pedersen C (2018) The Blue Fix: unmasking the politics around the promise of blue growth. Transnational Institute, Amsterdam
- Brown-Weiss E (1990) In fairness to future generations. *Environ Sci Policy Sustain Dev* 32(3):6–31
- Brundtland GH (1987) Our common future: call for action. *Environ Conserv* 14(4):291–294
- Burke M, Hsiang SM, Miguel E (2015) Global non-linear effect of temperature on economic production. *Nature* 527(7577):235
- Calvin K, Bond-Lamberty B, Clarke L, Edmonds J, Eom J, Hartin C, Kim S et al (2017) The SSP4: a world of deepening inequality. *Glob Environ Chang* 42:284–296
- Campbell J, Barnett J (2010) Climate change and small island states: power, knowledge and the south pacific. Routledge, London
- Camposi A (2017) How does inequality affect economic growth? Caixa Bank Research, 17 Jan. <http://www.caixabankresearch.com/node/30188>
- Carr PJ, Williamson JL (1982) The Sullom Voe success story. *Proc Inst Mech Eng* 196(1):239–258
- Carvalho N, Edwards-Jones G, Isidro E (2011) Defining scale in fisheries: small versus large-scale fishing operations in the Azores. *Fish Res* 109(2–3):360–369
- Carver R (2019) Resource sovereignty, marine phosphate mining and the blue economy in Namibia. *J Polit Ecol* 26(1):381–402
- CBD (Convention on Biological Diversity) (2000) Conference of the parties, decision adopted by the conference of the parties to the convention on biological diversity at its fifth meeting. V/6. Ecosystem Approach.” May. Nairobi
- CBD (2004) Decision adopted by the conference of the parties to the convention on biological diversity at its seventh meeting VII/11. Ecosystem Approach. 9–20 and 27 Feb. Kuala Lumpur
- CBD (2008) Conference of the parties, decision on scientific criteria for ecologically or biologically significant areas, Decision IX/20. Annex I
- Cederman L-E, Weidmann NB, Gleditsch KS (2011) Horizontal inequalities and ethnonationalist civil war: a global comparison. *Am Polit Sci Rev* 105(3):478–495
- Cheung WWL, Lam VWY, Wabnitz CCC (2019) Future scenarios and projections for fisheries on the high seas under a changing climate. IIED Working Paper. International Institute for Environment and Development, London
- Childs JR, Hicks CC (2019) Securing the blue: political ecologies of the blue economy in Africa. *J Polit Ecol* 26(1):323–340
- Choudhury A, McDougall C (2019) Gendered ownership of aquaculture resources: insights from two villages in Bangladesh. CGIAR, Penang
- Choudhury A, McDougall C, Rajaratnam S, Park CMY (2017) Women’s empowerment in aquaculture: two case studies from Bangladesh. FAO, Rome; and WorldFish, Penang
- Cicin-Sain B (2015) “Goal 14—conserve and sustainably use oceans, seas and marine resources for sustainable development. <http://unchronicle.un.org/article/goal-14-conserve-and-sustainably-useoceans-seas-and-marine-resources-sustainable/>
- Cingano F (2014) Trends in income inequality and its impact on economic growth. OECD, Paris
- Cinner JE (2009) Poverty and the use of destructive fishing gear near east African marine protected areas. *Environ Conserv* 36(4):321–326
- Cinner JE, Daw T, McClanahan TR (2009) Socioeconomic factors that affect artisanal fishers’ readiness to exit a declining fishery. *Conserv Biol* 23(1):124–130
- Cinner JE, Basurto X, Fidelman P, Kuange J, Lahari R, Mukminin A (2012) Institutional designs of customary fisheries management arrangements in Indonesia, Papua New Guinea, and Mexico. *Mar Policy* 36(1):278–285
- Cinner JE, Adger WN, Allison EH, Barnes ML, Brown K, Cohen PJ, Gelcich S et al (2018) Building adaptive capacity to climate change in tropical coastal communities. *Nat Clim Chang* 8(2):117
- Ciptel D, Roberts JT, Khan MR (2015) Power in a warming world: the new global politics of climate change and the remaking of environmental inequality. MIT Press, Cambridge, MA

- Cisneros-Montemayor AM, Sumaila UR (2019) Busting myths that hinder an agreement to end harmful fisheries subsidies. *Mar Policy* 109:103699
- Cisneros-Montemayor AM, Pauly D, Weatherdon LV, Ota Y (2016) A global estimate of seafood consumption by coastal indigenous peoples. *PLoS One* 11(12):e0166681
- Cisneros-Montemayor AM, Moreno-Báez M, Voyer M, Allison EH, Cheung WW, Hessing-Lewis M, Oyinlola MA et al (2019) Social Equity and benefits as the nexus of a transformative blue economy: a sectoral review of implications. *Mar Policy* 109:103702
- Clapp J, Fuchs DA (2009) *Corporate power in global agrifood governance*. MIT Press, Cambridge, MA
- Cohen P, Allison EH, Andrew NL, Cinner JE, Evans LS, Fabinyi M, Garces LR et al (2019) Securing a just space for small-scale fisheries in the blue economy. *Front Mar Sci* 6:171
- Cole SM, Puskur R, Rajaratnam S, Zulu F (2015) Exploring the intricate relationship between poverty, gender inequality and rural masculinity: a case study from an aquatic agricultural system in Zambia. *Cult Soc Masculinit* 7(2):154
- Cole SM, McDougall C, Kaminski AM, Kefi AS, Chilala A, Chisule G (2018) Postharvest fish losses and unequal gender relations: drivers of the social-ecological trap in the Barotse Floodplain fishery, Zambia. *Ecol Soc* 23(2):18
- Commonwealth Secretariat (2018) *Commonwealth blue charter. Shared values, shared ocean. A commonwealth commitment to work together to protect and manage our ocean*. Commonwealth Secretariat, London
- Čović I, Šimunac A, Veža J, Slišković M, Jelić-Mrčelić G (2013) Methods of pollution removal after tanker 'Erika' accident. *Trans Marit Sci* 2(1):41–48
- Crona B, Bodin Ö (2010) Power asymmetries in small-scale fisheries: a barrier to governance transformability? *Ecol Soc* 15(4):32
- Crona BI, Van Holt T, Petersson M, Daw TM, Buchary E (2015) Using social-ecological syndromes to understand impacts of international seafood trade on small-scale fisheries. *Glob Environ Chang* 35:162–175
- Crona BI, Basurto X, Squires D, Gelcich S, Daw TM, Khan A, Havice E et al (2016) Towards a typology of interactions between small-scale fisheries and global seafood trade. *Mar Policy* 65:1–10
- Dabla-Norris E, Kochhar K, Suphaphiphat N, Ricka F, Tsounta E (2015) Causes and consequences of income inequality: a global perspective. IMF staff discussion note. SDN/15/13. International Monetary Fund, New York
- Dauvergne P, Lister J (2012) Big brand sustainability: governance prospects and environmental limits. *Glob Environ Chang* 22(1):36–45
- Daw TM, Coulthard S, Cheung WWL, Brown K, Abunge C, Galafassi D, Peterson GD et al (2015) Evaluating taboo trade-offs in ecosystems services and human well-being. *Proc Natl Acad Sci* 112(22):6949–6954
- De Schutter O (2012) Ocean-grabbing as serious a threat as land-grabbing. [http://www.srfood.org/images/stories/pdf/press\\_releases/20121030\\_fisheries\\_en.pdf](http://www.srfood.org/images/stories/pdf/press_releases/20121030_fisheries_en.pdf)
- De Silva DAM (2011) Faces of women in global fishery value chains: female involvement, impact and importance in the fisheries of developed and developing countries. NORAD/FAO Value Chain Project
- Diamond L (2008) The democracy rollback: the resurgence of the predatory state. *Foreign Affairs*, March–April. <https://www.foreignaffairs.com/articles/2008-03-02/democratic-rollback>
- Diffenbaugh NS, Burke M (2019) Global warming has increased global economic inequality. *Proc Natl Acad Sci* 116(20):9808–9813
- Dollar D, Svensson J (2001) What explains the success or failure of structural adjustment programmes? *Econ J* 110:894–917
- Doumbouya A, Camara OT, Mamie J, Intchama JF, Jarra A, Ceesay S, Guèye A et al (2017) Assessing the effectiveness of monitoring control and surveillance of illegal fishing: the case of West Africa. *Front Mar Sci* 4:50
- Duruigbo EA (2003) *Multinational corporations and international law: accountability and compliance issues in the petroleum industry*. Brill, Amsterdam
- Economist (2015) How inequality affects growth. June 15. <https://www.economist.com/the-economist-explains/2015/06/15/how-inequality-affects-growth>
- Eder JF (2005) Coastal resource management and social differences in Philippine fishing communities. *Hum Ecol* 33(2):147–169
- Ehlers P (2016) Blue growth and ocean governance: how to balance the use and the protection of the seas. *WMU J Marit Aff* 15(2):187–203
- EPA (U.S. Environmental Protection Agency) (2017) Learn about Environmental Justice. 5 Dec. <https://www.epa.gov/environmentaljustice/learn-about-environmental-justice>
- European Commission (2012) *Blue growth: opportunities for marine and maritime sustainable growth*. European Commission, Brussels
- European Commission (2017) *Report on the blue growth strategy: towards more sustainable growth and jobs in the blue economy*. European Commission, Brussels
- Fabinyi M (2012) *Fishing for fairness: poverty, morality and marine resource regulation in the Philippines*. ANU Press, Canberra
- FAO (Food and Agriculture Organization of the United Nations) (2003) *Fisheries management. 2. The ecosystem approach to fisheries. FAO Technical Guidelines for Responsible Fisheries No 4, Suppl 2*. FAO, Rome
- FAO (2015) *Voluntary guidelines for securing sustainable small-scale fisheries in the context of food security and poverty eradication*. FAO, Rome
- FAO (2018) *The state of world fisheries and aquaculture: meeting the sustainable development goals*. FAO, Rome
- Farnworth CR, Kantor P, Choudhury A, McGuire S, Sultana N (2015) Gender relations and improved technologies in small household ponds in Bangladesh: rolling out novel learning approaches. *Asian Fish Sci* 29S:161–178
- Felipe-Lucia MR, Martín-López B, Lavorel S, Berraquero-Díaz L, Escalera-Reyes J, Comín FA (2015) Ecosystem services flows: why stakeholders' power relationships matter. *PLoS One* 10(7):e0132232
- FERN (Fisheries Equity Research Network) (2019) Home page. Dec 3. <https://www.uow.edu.au/law-humanities-the-arts/research/ancors/our-research/fern/>
- FFA (Pacific Islands Forum Fisheries Agency) (2017) *Economic and development indicators and statistics: tuna fisheries of the western and central pacific ocean 2016*. Pacific Islands Forum Fisheries Agency, Honiara
- Finkbeiner EM, Bennett NJ, Frawley TH, Mason JG, Briscoe DK, Brooks CM, Ng CA et al (2017) Reconstructing overfishing: moving beyond malthus for effective and equitable solutions. *Fish Fish* 18(6):1180–1191
- Flannery W, Healy N, Luna M (2018) Exclusion and non-participation in marine spatial planning. *Mar Policy* 88:32–40
- Folke C, Österblom H, Jouffray J-B, Lambin E, Scheffer M, Adger NW, Crona B et al (2019) Transnational corporations and the challenge of biosphere stewardship. *Nat Ecol Evol* 3:1396–1403
- Fortnam M, Brown K, Chaigneau T, Crona B, Daw TM, Gonçalves D, Hicks C et al (2019) The gendered nature of ecosystem services. *Ecol Econ* 159:312–325
- Franck TM (1995) *Fairness in international law and institutions*. Oxford University Press, Oxford
- Fraser R, Spencer G (1998) The value of an ocean view: an example of hedonic property amenity valuation. *Aust Geogr Stud* 36(1):94–98
- Freestone D, Hey D (1996) Origins and development of the precautionary principle. In: Freestone D, Hey D (eds) *The precautionary principle and international law: the challenges of implementation*. Kluwer Law International, Alphen aan den Rijn

- Frid A, McGreer M, Haggarty DR, Beaumont J, Gregr EJ (2016) Rockfish size and age: the crossroads of spatial protection, central place fisheries and indigenous rights. *Glob Ecol Conserv* 8: 170–182
- Fröcklin S, de la Torre-Castro M, Lindström L, Jiddawi NS (2013) Fish traders as key actors in fisheries: gender and adaptive management. *Ambio* 42(8):951–962
- Gagern A, van den Bergh J (2013) A critical review of fishing agreements with tropical developing countries. *Mar Policy* 38: 375–386
- Galaz V, Crona B, Dauriach A, Jouffray J-B, Österblom H, Fichner J (2018) Tax havens and global environmental degradation. *Nat Ecol Evol* 2:1352–1357
- García Rodrigues J, Conides AJ, Rivero Rodríguez S, Raicevich S, Pita P, Kleinsner KM, Pita C et al (2017) Marine and coastal cultural ecosystem services: knowledge gaps and research priorities. *One Ecosyst* 2:e12290
- Gerrard S, Kleiber D (2019) Women fishers in Norway: few, but significant. *Marit Stud*. <https://doi.org/10.1007/s40152-019-00151-4>
- Gjerde KM (2006) High seas fisheries management under the convention on the law of the sea. In: *The law of the sea: progress and prospects*, p 302
- Global Compact (2019) The decade to deliver: a call to business action (2019). <https://ceowatermandate.org/resources/the-decade-to-deliver-a-call-to-business-action-2019/>. Accessed 18 Nov
- Golden CD, Allison EH, Cheung WW, Dey MM, Halpern BS, McCauley DJ, Smith M et al (2016) Fall in fish catch threatens human health. *Nature* 534(7607):317–320
- Golden JS, Virdin J, Nowacek DP, Halpin P, Benneer L, Patil PG (2017) Making sure the blue economy is green. *Nat Ecol Evol* 1(2):0017
- Griffin P (2017) The carbon majors database. CDP, London
- Hadjmichael M (2018) A call for a blue degrowth: unravelling the European Union's fisheries and maritime policies. *Mar Policy* 91:58–164
- Haider JL, Boonstra WJ, Peterson GD, Schlüter M (2018) Traps and sustainable development in rural areas: a review. *World Dev* 101:311–321
- Hallegatte S, Bangalore M, Bonzanigo L, Fay M, Kane T, Narloch U, Rozenberg J et al (2016) Shock waves: managing the impacts of climate change on poverty. World Bank Group, Washington, DC
- Halpern BS, Walbridge S, Selkoe KA, Kappel CV, Micheli F, D'agrosa C, Bruno JF et al (2008) A global map of human impact on marine ecosystems. *Science* 319(5865):948–952
- Halpern BS, Klein CJ, Brown CJ, Beger M, Grantham HS, Mangubhai S, Ruckelshaus M et al (2013) Achieving the triple bottom line in the face of inherent trade-offs among social equity, economic return, and conservation. *Proc Natl Acad Sci* 110(15):6229–6234
- Hamann M, Berry K, Chaigneau T, Curry T, Heilmayr R, Henriksson PJ, Hentati-Sundberg J et al (2018) Inequality and the Biosphere. *Annu Rev Environ Resour* 43:61–83
- Hanich Q, Campbell B, Bailey M, Molenaar E (2015) Research into fisheries equity and fairness: addressing conservation burden concerns in transboundary fisheries. *Mar Policy* 51:302–304
- Harden-Davies HR (2017) Research for regions: strengthening marine technology transfer for Pacific island countries and biodiversity beyond national jurisdiction. *Int J Mar Coast Law* 32(4): 797–822
- Harden-Davies H, Gjerde K (2019) Building scientific and technological capacity: a role for benefit-sharing in the conservation and sustainable use of marine biodiversity beyond national jurisdiction. *Ocean Yearbook* 33(1):377–400
- Harper S, Zeller D, Hauzer M, Pauly D, Sumaila UR (2013) Women and fisheries: contribution to food security and local economies. *Mar Policy* 39:56–63
- Harper S, Grubb C, Stiles M, Sumaila UR (2017) Contributions by women to fisheries economies: insights from five maritime countries. *Coast Manag* 45(2):91–106
- Harper S, Salomon AK, Newell D, Hilistis Waterfall P, Brown K, Harris LM, Sumaila UR (2018) Indigenous women respond to fisheries conflict and catalyze change in governance on Canada's Pacific coast. *Marit Stud* 17(2):189–198
- Hayworth JS, Clement TP, Valentine JF (2011) Deepwater horizon oil spill impacts on Alabama beaches. *Hydrol Earth Syst Sci* 15(12):3639–3649
- Hickel J, Kallis G (2019) Is green growth possible? *New Polit Econ* 1:1–18
- Hicks CC, Cohen PJ, Graham NA, Nash KL, Allison EH, D'Lima C, Mills DJ et al (2019) Harnessing global fisheries to tackle micronutrient deficiencies. *Nature* 574(7776):95–98
- Hoegh-Guldberg O (2015) Reviving the oceans economy: the case for action—2015. World Wide Fund for Nature, Gland
- ICJ (International Court of Justice) (2010) Case concerning pulp mills on the River Uruguay (*Argentina v. Uruguay*)
- IFC (International Finance Corporation) (2017) Investing in women: new evidence for the business case. <https://www.ifc.org/wps/wcm/connect/ac8fca18-6586-48cc-bfba-832b41d6af68/IFC+Invest+in+Women+October+2017.pdf?MOD=AJPERES&CVID=IYLVAcA>
- IGC (Intergovernmental Conference) (2018) Intergovernmental negotiations on an international legally binding instrument under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction: President Aid to Negotiations, 3 Dec 2018 (A/CONF.232/2019/1\*)
- ILC (International Law Commission) (2018) Draft guidelines on the protection of the atmosphere (A/73/10)
- IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services) (2019) Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the intergovernmental science-policy platform on biodiversity and ecosystem services. [https://www.ipbes.net/system/tdf/spm\\_global\\_unedited\\_advance.pdf?file=1&type=node&id=35245](https://www.ipbes.net/system/tdf/spm_global_unedited_advance.pdf?file=1&type=node&id=35245). Accessed 21 Nov
- IPCC (Intergovernmental Panel on Climate Change) (2019) Special report on the ocean and cryosphere in a changing climate. Geneva: IPCC.
- Islam SN, Winkel J (2017) Climate change and social inequality. DESA Working Paper no. 152. [https://www.un.org/esa/desa/papers/2017/wp152\\_2017.pdf](https://www.un.org/esa/desa/papers/2017/wp152_2017.pdf)
- ISSC (International Social Science Council), IDS (Institute of Development Studies), UNESCO (United Nations Educational, Scientific and Cultural Organization) (2016) World social science report 2016—challenging inequalities: pathways to a just world. UNESCO Publishing, Paris
- ITLOS (International Tribunal for the Law of the Sea) (2011) Responsibility and obligations of states sponsoring persons and entities with respect to activities in the area (request for advisory opinion submitted to the seabed disputes chamber). Case no 17
- Jackson JBC (2001) What was natural in the coastal oceans? *Proc Natl Acad Sci* 98(10):5411–5418
- Jackson T (2009) Prosperity without growth: economics for a finite planet. Routledge, London
- Jentoft S, Eide A (2011) Poverty mosaics: realities and prospects in small-scale fisheries. Springer, Amsterdam
- Jouffray JB, Crona B, Wassénus E, Bebbington J, Scholtens B (2019) Leverage points in the financial sector for seafood sustainability. *Sci Adv* 5(10):eaax3324
- Kabeer N (2012) Women's economic empowerment and inclusive growth: labour markets and enterprise development. SIG Working Paper 1. International Development Research Centre, Ottawa



- Kabeer N (2016) Gender equality, economic growth, and women's agency: the endless variety and monotonous similarity of patriarchal constraints. *Fem Econ* 22(1):295–321
- Kabeer N, Natali L (2013) Gender equality and economic growth: is there a win-win? IDS Working Papers, no 417, pp 1–58
- Kaczynski VM, Fluharty DL (2002) European policies in West Africa: who benefits from fisheries agreements? *Mar Policy* 26(2):75–93
- Kantor P, Morgan M, Choudhury A (2015) Amplifying outcomes through addressing inequality: the role of gender transformative approaches in agricultural research for development. *Gend Technol Develop* 19(3):292–319
- Kerr S, Colton J, Johnson K, Wright G (2015) Rights and ownership in sea country: implications of marine renewable energy for indigenous and local communities. *Mar Policy* 52:108–115
- Kerr S, Johnson K, Weir S (2017) Understanding community benefit payments from renewable energy development. *Energy Policy* 105:202–211
- Kittinger JN, Teh LC, Allison EH, Bennett NJ, Crowder LB, Finkbeiner EM, Hicks C et al (2017) Committing to socially responsible seafood. *Science* 356(6341):912–913
- Klain S, Beveridge R, Bennett N (2014) Ecologically sustainable but unjust? Negotiating equity and authority in common-pool marine resource management. *Ecol Soc* 19(4):52
- Kleiber D, Frangoudes K, Snyder H, Choudhury A, Cole S, Soejima K, Pita C et al (2017) Promoting gender equity and equality through the small-scale fisheries guidelines: experiences from multiple case studies. In: Jentoft S, Chuenpagdee R, Barragán-Paladines M, Franz N (eds) *The small-scale fisheries guidelines*, MARE Publication Series, vol 14. Springer, New York
- Klein C, McKinnon MC, Wright BT, Possingham HP, Halpern BS (2015) Social equity and the probability of success of biodiversity conservation. *Glob Environ Chang* 35:299–306
- Klinsky S, Roberts T, Huq S, Okereke C, Newell P, Dauvergne P, O'Brien K et al (2017) Why equity is fundamental in climate change policy research. *Glob Environ Chang* 44:170–173
- Knudsen M (2016) Poverty and beyond: small-scale fishing in overexploited marine environments. *Hum Ecol* 44(3):341–352
- Kostakis V, Bauwens M (2014) Transition proposals toward a commons-oriented economy and society. In: Kostakis V, Bauwens M (eds) *Network society and future scenarios for a collaborative economy*. M. Palgrave Macmillan, London, pp 59–69
- Kotz DM (2015) *The rise and fall of neoliberal capitalism*. Harvard University Press, Cambridge, MA
- Kruijssen F, Audet-Belanger G, Choudhury A, Crissman C, Dalsgaard JPT, Dawson C, Dickson M et al (2016) Value chain transformation: taking stock of WorldFish research on value chains and markets. CGIAR, Penang
- Laffoley D, Baxter JM, Amon DJ, Currie DE, Downs CA, Hall-Spencer JM, Harden-Davies H et al (2019) Eight urgent, fundamental and simultaneous steps needed to restore ocean health, and the consequences for humanity and the planet of inaction or delay. *Aquat Conserv Mar Freshwat Ecosyst* 30(1):194–208. <https://doi.org/10.1002/aqc.3182>
- Laird S, Wynberg R (2018) A fact-finding and scoping study on digital sequence information on genetic resources in the context of the convention on biological diversity and the Nagoya protocol. Secretariat of CBD, pp 2–79
- Le Billon P (2014) Natural resources and corruption in post-war transitions: matters of trust. *Third World Q* 35(5):770–786
- Le Manach F, Andriamahefazafy M, Harper S, Harris A, Hosch G, Lange GM, Zeller D et al (2012) Who gets what? Developing a more equitable framework for EU fishing agreements. *Mar Policy* 38:257–266
- Leach M, Mearns R (1998) *The lie of the land: challenging received wisdom on the African environment*. Currey, Oxford
- Leach M, Scoones I, Stirling A (2010) *Dynamic sustainabilities: technology, environment, social justice*. Earthscan, London
- Leach M, Reyers B, Bai X, Brondizio ES, Cook C, Díaz S, Espindola G et al (2018) Equity and sustainability in the anthropocene: a social-ecological systems perspective on their intertwined futures. *Glob Sustain* e13:1–13
- Lentisco, A., and R.U. Lee. 2015. A Review of women's access to fish in small-scale fisheries. *FAO Fisheries and Aquaculture Circular*. Rome: FAO.
- Li TM (2007) *The will to improve: governmentality, development, and the practice of politics*. Duke University Press, Durham, NC
- Lillebø AI, Pita C, Garcia Rodrigues J, Ramos S, Villasante S (2017) How can marine ecosystem services support the blue growth agenda? *Mar Policy* 81:132–142
- Llewellyn LE, English S, Barnwell S (2016) A roadmap to a sustainable Indian ocean blue economy. *J Indian Ocean Reg* 12(1):52–66
- Lloyd's (2014) *Global marine trends 2030*. Lloyd's Register Group, London
- Lopes PFM, Pennino MG, Freire F (2017) Climate change can reduce shrimp catches in equatorial Brazil. *Reg Environ Chang* 18(1):223–234
- Lowe C (2013) *Wild profusion: biodiversity conservation in an Indonesian archipelago*. Princeton University Press, Princeton, NJ
- Lubchenco J, Cerny-Chipman EB, Reimer J, Levin SA (2016) The right incentives enable ocean sustainability successes and provide hope for the future. *Proc Natl Acad Sci* 113(51):14507–14514
- Mather C, Fanning L (2019) Social licence and aquaculture: towards a research agenda. *Mar Policy* 99:275–282
- Matsue N, Daw T, Garrett L (2014) Women fish traders on the Kenyan coast: livelihoods, bargaining power, and participation in management. *Coast Manag* 42(6):531–554
- McCauley DJ, Jablonicky C, Allison EH, Golden CD, Joyce FH, Mayorga J, Kroodsma D (2018) Wealthy countries dominate industrial fishing. *Sci Adv* 4(8):eaau2161. <https://doi.org/10.1126/sciadv.aau2161>
- McDermott M, Mahanty S, Schreckenberg K (2013) Examining equity: a multidimensional framework for assessing equity in payments for ecosystem services. *Environ Sci Pol* 33:416–427
- McDougall C, Cole S, Rajaratnam S, Brown J, Choudhury A, Kato-Wallace J, Manlosa A et al (2015) Implementing a gender transformative research approach: early lessons. In: Douthwaite B, Apgar JM, Schwarz A, McDougall C, Attwood S, Senaratna SS, Clayton T (eds) *Research in development: learning from the CGIAR research program on aquatic agricultural systems*. CGIAR Research Program on Aquatic Agricultural Systems, Penang. Working Paper: AAS-2015-16
- McGee L (2013) Socially responsible corporations can include a provision in their articles of incorporation that accounts for environmental sustainability when making business decisions. *Policy Options Politiques*, Aug 4. <https://policyoptions.irpp.org/magazines/arctic-visions/how-to-encourage-corporate-social-responsibility/>
- Meikle A, Sugden J (2015) *Introducing technology justice: a new paradigm for the SDGs*. Technology Justice Policy Brief 1. Practical Action, Rugby
- Mendoza M, McDowell R, Maso MA, Htusan E (2016) Fishermen slaves: human trafficking and the seafood we eat. *Mango Media*

- Meyer Y (2017) Reflections on the UN working group on human rights and transnational corporation. *South Afr Yearb Int Law* 42: 200–219
- Mi Z, Liao H, Coffman DM, Wei YM (2019) Assessment of equity principles for international climate policy based on an integrated assessment model. *Nat Hazards* 95(1–2):309–323
- Michel JA (2016) Rethinking the oceans: towards the blue economy. Paragon, St. Paul, MN
- Michel J, Owens EH, Zengel S, Graham A, Nixon Z, Allard T, Holton W et al (2013) Extent and degree of shoreline oiling: deepwater Horizon oil spill, Gulf of Mexico, USA. *PLoS One* 8(6):e65087
- Mills D, Bénédic C, Ovie S, Tafida A, Sinaba F, Kodio A, Russell A et al (2011) Vulnerability in African small-scale fishing communities. *J Int Dev* 23(2):308–313
- Minas S (2018) Marine technology transfer under a BBNJ treaty: a case for transnational network cooperation. *AJIL Unb* 112:144–149
- Monacelli N (2018) Improving maritime transportation security in response to industry consolidation. *Homel Sec Aff* 14
- Moreto WD, Charlton RW, DeWitt SE, Burton CM (2019) The convergence of captured fish and people: examining the symbiotic nature of labor trafficking and illegal, unreported and unregulated fishing. *Deviant Behav* 0:1–17
- Morgan G (2009) Politics: what is the Shetland charitable trust? *Shetland Times*, 3 Apr. <https://www.shetlandtimes.co.uk/2009/04/03/politics-what-is-the-shetland-charitable-trust>
- Morgan M, Choudhury A, Braun M, Beare D, Benedict J, Kantor P (2015) Understanding the gender dimensions of adopting climate-smart smallholder aquaculture innovations. Working Paper AAS-2015-08. CGIAR, Penang
- Morgera E (2016) The need for an international legal concept of fair and equitable benefit-sharing. *Eur J Int Law* 27(2):353–383
- Morgera E, Ntona M (2018) Seize the moment: towards fairer capacity building and marine technology transfer. IIED Briefing, London
- Muchlinski PT (2007) Multinational enterprises and the law. Oxford University Press, New York
- Murase S (2015) Second report of the special rapporteur on the protection of the atmosphere. 67th session of the International Law Commission
- Murphy S, Burch D, Clapp J (2012) Cereal secrets: the world's largest grain traders and global agriculture. Oxfam, London
- Nallari R, Griffith B (2011) Gender and macroeconomic policy. World Bank, Washington, DC
- Nash R (2013) The oceans and their challenge to conserve marine biodiversity. In: Pechan P, de Vries G (eds) *Living with water: targeting quality in a dynamic world*. Springer, New York, pp 143–194
- Niner HJ, Ardron JA, Escobar EG, Gianni M, Jaeckel A, Jones DO, Levin LA et al (2018) Deep-sea mining with no net loss of biodiversity—an impossible aim. *Front Mar Sci* 5:53
- Nussbaum MC (2011) *Creating capabilities. the human development approach*. Harvard University Press, Cambridge, MA
- O'Neill ED, Crona B (2017) Assistance networks in seafood trade: a means to assess benefit distribution in small-scale fisheries. *Mar Policy* 78:196–205
- O'Neill BC, Kriegler E, Ebi KL, Kemp-Benedict E, Riahi K, Rothman DS, van Ruijven BJ et al (2017) The roads ahead: narratives for shared socioeconomic pathways describing world futures in the 21st century. *Glob Environ Chang* 42:169–180
- OECD (Organisation for Economic Co-operation and Development) (2016) *The ocean economy in 2030*. OECD, Paris
- Okereke C (2006) Global environmental sustainability: intragenerational equity and conceptions of justice in multilateral environmental regimes. *Geoforum* 37(5):725–738
- Oreskes N, Conway EM (2011) *Merchants of doubt: how a handful of scientists obscured the truth on issues from tobacco smoke to global warming*. Bloomsbury, New York
- Østby G (2008) Polarization, horizontal inequalities and violent civil conflict. *J Peace Res* 45(2):143–162
- Österblom H, Bodin Ö (2012) Global cooperation among diverse organizations reduces illegal fishing in the southern ocean. *Conserv Biol* 26:638–648
- Österblom H, Jouffray J-B, Folke C, Crona B, Merrie A, Troell M, Rockström J (2015) Transnational corporations as 'keystone actors' in marine ecosystems. *PLoS One* 10(5):e0127533
- Österblom H, Jouffray J-B, Folke C, Rockström J (2017) Emergence of a global science-business initiative for ocean stewardship. *Proc Natl Acad Sci* 114:9038–9043
- Ostrom E (1998) A behavioural approach to the rational choice theory of collective action: presidential address, American Political Science Association, 1997. *Am Polit Sci Rev* 92(1):1–22
- Oxfam (2019) 5 shocking facts about extreme global inequality and how to even it up. Oxfam, London
- Oyewande AA (2008) Corporate social responsibility of multinational corporations in developing countries: how far do their roles and responsibility stretch? PhD diss, National University of Singapore
- Page J (2007) Salmon farming in first nations' territories: a case of environmental injustice on Canada's west coast. *Local Environ* 12(6):613–626
- Pascual U, Phelps J, Garmendia E, Brown K, Corbera E, Martin A, Gomez-Baggethun E, Muradian R (2014) Social equity matters in payments for ecosystem services. *Bioscience* 64(11):1027–1036
- Pauly D, Belhabib D, Blomeyer R, Cheung WW, Cisneros-Montemayor AM, Copeland D, Harper S et al (2014) China's distant-water fisheries in the 21st century. *Fish Fish* 15(3):474–488
- Pedroza C (2019) Managing mercado del mar: a case of women's entrepreneurship in the fishing industry. *Marit Stud*:1–12
- Persson A, Rothstein B, Teorell J (2013) Why anticorruption reforms fail: systemic corruption as a collective action problem. *Governance* 26(3):449–471
- Piketty T (2014) *Capital in the twenty-first century*. Cambridge, MA, Belknap
- Pinsky M, Reygondeau G, Cadell R, Palacios-Abrantes J, Spijkers J, Cheung WWL (2018) Preparing ocean governance for species on the move. *Science* 360(6395):1189–1191
- Pohl C, Rist S, Zimmermann A, Fry P, Gurung GS, Schneider F, Speranza CI et al (2010) Researchers' roles in knowledge co-production: experience from sustainability research in Kenya, Switzerland, Bolivia and Nepal. *Sci Public Policy* 37: 267–281
- Popova E, Vousden D, Sauer WH, Mohammed EY, Allain V, Downey-Breedt N, Fletcher R et al (2019) Ecological connectivity between the areas beyond national jurisdiction and coastal waters: safeguarding interests of coastal communities in developing countries. *Mar Policy* 104:90–102
- Pretlove B, Blasiak R (2018) Mapping ocean governance and regulations. Working paper for consultation for UN Global Compact Action Platform for Sustainable Ocean Business. <https://www.unglobalcompact.org/docs/publications/Mapping-Ocean-Governance-and-Regulation.pdf>
- Promundo-AAS (Promundo-US and the CGIAR Research Program on Aquatic Agricultural Systems) (2016) *Promoting gender-transformative change with men and boys: a manual to spark critical reflection on harmful gender norms with men and boys in aquatic agricultural systems*. Promundo-US, Washington, DC; CGIAR, Penang

- Purcell SW, Crona BI, Lalavanua W, Eriksson H (2017) Distribution of economic returns in small-scale fisheries for international markets: a value-chain analysis. *Mar Policy* 86:9–16
- Ramesh N, Rising JA, Oremus KL (2019) The small world of global marine fisheries: the cross-boundary consequences of larval dispersal. *Science* 364(6446):1192–1196
- Ratner SR (2007) Business in book. In: Bodanksy D, Brunnée J, Hey E (eds) *The Oxford handbook of international environmental law*. Oxford University Press, Oxford
- Raworth K (2017a) Doughnut economics: seven ways to think like a 21st-century economist. Chelsea Green, London
- Raworth K (2017b) A doughnut for the Anthropocene: humanity's compass in the 21st century. *Lancet Planet Health* 1:e48–e49
- Resplandy L, Keeling RF, Eddebbar Y, Brooks MK, Wang R, Bopp L, Long MC et al (2018) Quantification of ocean heat uptake from changes in atmospheric O<sub>2</sub> and CO<sub>2</sub> composition. *Nature* 563(7729):105
- Reusch TBH, Dierking J, Andersson HC, Bonsdorff E, Carstensen J, Casini M, Czajkowski M et al (2018) The Baltic sea as a time machine for the future coastal ocean. *Sci Adv* 4(5):eaar8195
- Reuters (2019) Brazil blames devastating oil spill on Greek-flagged tanker. Nov 21. <https://www.theguardian.com/world/2019/nov/01/brazil-blames-oil-spill-greek-flagged-tanker-venezuelan-crude>
- Riahi K, van Vuuren DP, Kriegler E, Edmonds J, O'Neill BC, Fujimori S, Bauer N et al (2017) The shared socioeconomic pathways and their energy, land use, and greenhouse gas emissions implications: an overview. *Glob Environ Chang* 42:153–168
- Ribot JC, Peluso NL (2003) A theory of access. *Rural Sociol* 68(2):153–181
- Roberts C (2010) *The unnatural history of the sea*. Shearwater, London
- Rosales RM, Pomeroy R, Calabio IJ, Batong M, Cedo K, Escara N, Facunla V et al (2017) Value chain analysis and small-scale fisheries management. *Mar Policy* 83:11–21
- Rudolph DP, Hagget C, Aitken M (2014) Community benefits from offshore renewables: good practice review. Climate Xchange, Edinburgh
- Ruggie J (2008) Protect, respect and remedy: a framework for business and human rights, report of the special representative of the secretary-general on the issue of human rights and transnational corporations and other business enterprises (A/HRC/8/5)
- Sadovy de Mitcheson Y, Tam I, Muldoon G, Le Clue S, Botsford E, Shea S (2018) The trade in live reef food fish: going, going, gone, vol 1, Main Report. Parts 1, 2 and 3. ADM Capital Foundation and University of Hong Kong, Hong Kong Special Administrative Region, pp 1–288
- Sala E, Mayorga J, Costello C, Kroodsmas D, Palomares ML, Pauly D, Sumaila UR, Zeller D (2018) The economics of fishing the high seas. *Sci Adv* 4(6):eaat2504
- Salpin C, Onwuasoanya V, Bourrel M, Swadling A (2018) Marine scientific research in Pacific Small Island Developing States. *Mar Policy* 95:363–371
- Sandel M (1990) *Liberalism and the limits of justice*. Cambridge University Press, Cambridge
- Scheffer M, van Bavel B, van de Leemput IA, van Nes EH (2017) Inequality in nature and society. *Proc Natl Acad Sci* 114:13154–13157
- Schiller L, Bailey M, Jacquet J, Sala E (2018) High seas fisheries play a negligible role in addressing global food security. *Sci Adv* 4(8):eaat8351
- Schlosberg D (2009) *Defining environmental justice: theories, movements, and nature*. Oxford University Press, Oxford
- Schuhbauer A, Chuenpagdee R, Cheung WWL, Greer K, Sumaila UR (2017) How subsidies affect the economic viability of small-scale fisheries. *Mar Policy* 82:114–121
- Schwerdtner Máñez KS, Pauwelussen A (2016) Fish is women's business too: looking at marine resource use through a gender lens. In: Schwerdtner Máñez K, Poulsen B (eds) *Perspectives on oceans past*. Springer, Dordrecht, pp 193–211
- Scottish Government (2018) Scottish government good practice principles for community benefits from offshore renewable energy developments. Nov 30. <https://www.gov.scot/publications/consultation-scottish-government-good-practice-principles-community-benefits-offshore-renewable-energy-developments/>
- Segi S (2014) Protecting or pilfering? Neoliberal conservationist marine protected areas in the experience of coastal Granada, the Philippines. *Hum Ecol* 42(4):565–575
- Sen A (1992) *Inequality re-examined*. Oxford University Press, Oxford
- Silver JJ, Gray NJ, Campbell LM, Fairbanks LW, Gruby RL (2015) Blue economy and competing discourses in international oceans governance. *J Environ Dev* 24(2):135–160
- Sovacool BK, Linnér BO, Goodsite ME (2015) The political economy of climate adaptation. *Nat Clim Chang* 5(7):616
- Spijkers J, Singh G, Blasiak R, Morrison TH, Le Billon P, Österblom H (2019) Global patterns of fisheries conflict: forty years of data. *Glob Environ Chang* 57:101921
- SSE (2019) Sustainable development fund. Dec 3. <https://sse.com/communities>
- Stacey N, Gibson E, Loneragan NR, Warren C, Wiryawan B, Adhuri D, Fitriana R (2019) Enhancing coastal livelihoods in Indonesia: an evaluation of recent initiatives on gender, women and sustainable livelihoods in small-scale fisheries. *Marit Stud* 18:359–371. <https://doi.org/10.1007/s40152-019-00142-5>
- Stanton EA (2012) The tragedy of maldistribution: climate, sustainability, and equity. *Sustainability* 4(3):394–411
- Stonich SC (1998) Political ecology of tourism. *Ann Tour Res* 25(1):25–54
- Stonich SC, Bort JR, Ovares LL (1997) Globalization of shrimp mariculture: the impact on social justice and environmental quality in central America. *Soc Nat Resour* 10(2):161–179
- Stotsky J (2006) Gender budgeting. IMF Working Paper WP/06/232. International Monetary Fund, Washington, DC
- Sullom Voe terminal: 40 years on (2018) Press and Journal. 24 Nov. <https://www.pressandjournal.co.uk/fp/news/1616521/sullomvoe/>
- Sumaila UR, Walters C (2005) Intergenerational discounting: a new intuitive approach. *Ecol Econ* 52(2):135–142
- Sumaila UR, Lam V, Le Manach F, Swartz W, Pauly D (2016) Global fisheries subsidies: an updated estimate. *Mar Policy* 69:189–193
- Sumaila UR, Jacquet J, Witter A (2017) When bad gets worse: corruption and fisheries. In: Williams A, Le Billon P (eds) *Corruption, natural resources and development: from resource curse to political ecology*. Edward Elgar, Cheltenham, pp 93–105
- Sundström A (2012) Corruption and regulatory compliance: experimental findings from south African small-scale fisheries. *Mar Policy* 36(6):1255–1264
- TBTI (Too Big to Ignore) (2016) TBTI 'blue justice for small-scale fisheries' commitments. <http://tbtiglobal.net/blue-justice/>
- Teh LCL, Cadell R, Allison EH, Finkbeiner EM, Kittinger JN, Nakamura K, Ota Y (2019) The role of human rights in implementing socially responsible seafood. *PLoS One* 14(1):e0210241

- Thorburn CC (2000) Changing customary marine resource management practice and institutions: the case of Sasi Lola in the Kei Islands, Indonesia. *World Dev* 28(8):1461–1479
- Tickler D, Meeuwig JJ, Palomares M-L, Pauly D, Zeller D (2018) Far from home: distance patterns of global fishing fleets. *Sci Adv* 4(8):eaar3279
- Tladi D (2007) Sustainable development in international law: an analysis of key enviro-economic instruments. Pretoria University Law Press, Pretoria
- Tladi D (2014) State practice and the making and (re)making of international law: the case of the legal rules relating to biodiversity in areas beyond national jurisdiction. *State Int Law J* 1:97–116
- Tladi D (2015) The common heritage of mankind and the proposed treaty on biodiversity in areas beyond national jurisdiction: the choice between pragmatism and sustainability. *Yearb Int Environ Law* 25:113–132
- TNI (Transnational Institute) (2016) Human rights versus property rights: implementation and interpretation of the SSF guidelines. [https://www.tni.org/files/article-downloads/human\\_rights\\_versus\\_property\\_rights\\_implementation\\_of\\_the\\_ssf\\_guidelines\\_en.pdf](https://www.tni.org/files/article-downloads/human_rights_versus_property_rights_implementation_of_the_ssf_guidelines_en.pdf)
- Treves A, Artelle KA, Darimont CT, Lynn WS, Paquet P, Santiago-Ávila FJ, Shaw R, Wood MC (2018) Intergenerational equity can help to prevent climate change and extinction. *Nat Ecol Evol* 2(2):204
- Trinidad AC, Albert J, Palma J, Matillano M, Boso D, Gaudiano JP, Manul J (2014) Fisheries value retention in the coral triangle for highly traded commodities. In: *Economics of fisheries and aquaculture in the coral triangle*. Asian Development Bank, Manila, pp 107–140
- Tyler TR (2015) Social justice. In: Mikulincer M, Shaver PR, Dovidio JF, Simpson JA (eds) *APA handbook of personality and social psychology*, vol. 2: group processes. American Psychological Association, Washington, DC, pp 95–122
- UN (United Nations) (2014) Blue economy concept paper. Presented at the blue economy summit. Abu Dhabi. <https://sustainabledevelopment.un.org/content/documents/2978BEconcept.pdf>
- UN (2015) Inequality and the 2030 Agenda for sustainable development: development issues, no 4. UN, New York
- UN Global Compact (n.d.) The power of principles: the ten principles of the UN global compact. <https://www.unglobalcompact.org/what-is-gc/mission/principles>
- UNCLOS (1982) United Nations convention on the law of the sea. United Nations, New York
- UNCTAD (United Nations Conference on Trade and Development) (2014) The oceans economy: opportunities and challenges for small island states. UNCTAD, Geneva
- UNEP (2011) Towards a green economy: pathways to sustainable development and poverty eradication. United Nations Environment Programme, New York
- UNESCO (United Nations Educational, Scientific and Cultural Organization) (2017) Global ocean science report: the current status of ocean science around the world. UNESCO, Paris
- UNGA (2017) International legally binding instrument under the united nations convention on the law of the sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction. 72nd sess. Resolution 72/249. 24 Dec
- UNGA (2018) United Nations general assembly resolution: oceans and the law of the sea (A/RES/73/124)
- UNGA (United Nations General Assembly) (1995) United Nations conference on straddling fish stocks and highly migratory fish stocks. 6th sess. New York. [https://www.un.org/ga/search/view\\_doc.asp?symbol=A/CONF.164/37&Lang=E](https://www.un.org/ga/search/view_doc.asp?symbol=A/CONF.164/37&Lang=E)
- USAID (U.S. Agency for International Development) (2019) Assessing fisheries in a new era: extended guidance for rapid appraisals of fisheries management systems. USAID Oceans and Fisheries Partnership. [https://www.seafdec-oceanspartnership.org/wp-content/uploads/USAID-Oceans\\_Assessing-Fisheries\\_RAFMS-Guide\\_April-2019\\_print.pdf](https://www.seafdec-oceanspartnership.org/wp-content/uploads/USAID-Oceans_Assessing-Fisheries_RAFMS-Guide_April-2019_print.pdf)
- van Wyk J-A (2015) Defining the blue economy as a south African strategic priority: toward a sustainable 10th province? *J Ind Ocean Res* 11(2):153–169
- Voigt-Hansen G (2019) Current ‘light’ and ‘heavy’ options for benefit-sharing in the context of the united nations convention for the law of the sea. In: Freestone D (ed) *Conserving biodiversity in areas beyond national jurisdiction*. Brill, Washington, DC, pp 683–705
- Voyer M, van Leeuwen J (2019) Social license to operate in the blue economy. *Res Policy* 62:102–113
- Voyer M, Quirk G, McIlgorm A, Azmi K (2018) Shades of blue: what do competing interpretations of the blue economy mean for oceans governance? *J Environ Policy Plan* 20:595–616
- Walker BLE (2001) Sisterhood and seine-nets: engendering development and conservation in Ghana’s marine fishery. *Profess Geograp* 53(2):160–177
- Wamukota A (2009) The structure of marine fish marketing in Kenya: the case of Malindi and Kilifi districts. *West Ind Ocean J Mar Sci* 8(2):215–224
- Wenzel N (2008) Human rights, treaties, extraterritorial application and effects. *Max Planck Encyclopedia of Public International Law* (online). Max Planck Institute, Munich
- Westlund L, Charles A, Garcia SM, Sanders J (2017) Marine protected areas: interactions with fishery livelihoods and food security. *FAO Fisheries and Aquaculture Technical Paper* 603. Food and Agriculture Organization of the United Nations, Rome
- White C, Halpern BS, Kappel CV (2012) Ecosystem service tradeoff analysis reveals the value of marine spatial planning for multiple ocean uses. *Proc Natl Acad Sci* 109(12):4696–4701
- Whitehead JC, Dumas CF, Herstine J, Hill J, Buerger B (2008) Valuing beach access and width with revealed and stated preference data. *Mar Resour Econ* 23:119–135
- Wilkinson R, Pickett K (2009) *The spirit level: why greater equality makes societies stronger*. Bloomsbury, New York
- Wilkinson MD, Dumontier M, Aalbersberg IJ, Appleton G, Axton M, Baak A, Blomberg N et al (2016) The FAIR guiding principles for scientific data management and stewardship. *Scient Data* 3:160018. <https://doi.org/10.1038/sdata.2016.18>
- Williams MJ (2008) Why look at fisheries through a gender lens? *Development* 51(2):180–185
- Williams A, Le Billon P (2017) *Corruption, natural resources and development: from resource curse to political ecology*. Edward Elgar, Cheltenham
- Williams MJ, Porter M, Choo PS, Kusakabe K, Vuki V, Gopal N, Bondad-Reantaso M (2012) Gender in aquaculture and fisheries: moving the agenda forward. *Asian Fish Sci* 25S:1–13
- Wolff NH, Donner SD, Cao L, Iglesias-Prieto R, Sale PF, Mumby PJ (2015) Global Inequities between polluters and the polluted: climate change impacts on coral reefs. *Glob Chang Biol* 21(11):3982–3994
- Wong F, Vos A, Pyburn R, Newton J (2019) *Implementing gender transformative approaches in agriculture*. CGIAR, Amsterdam
- World Bank (2008) *Small-scale capture fisheries: a global overview with emphasis on developing countries*. PROFISH series. World Bank, Washington, DC
- World Bank (2012) *Hidden harvest: the global contribution of capture fisheries*. World Bank, Washington, DC

- World Bank and United Nations (2017) The potential of the blue economy: increasing long-term benefits of the sustainable use of marine resources for small island developing states and coastal least developed countries. World Bank, Washington, DC
- WRI, with United Nations Development Programme, United Nations Environment Programme and WorldBank (2005) World resources 2005: the wealth of the poor: managing ecosystem to fight poverty. World Bank, Washington, DC
- WWF (2018) Principles for a sustainable blue economy. WWF, Gland
- Wynberg R, Hauck M (2014) People, power, and the coast: a conceptual framework for understanding and implementing benefit sharing. *Ecol Soc* 19(1):27
- Wynberg R, Laird SA (2018) Fast science and sluggish policy: the herculean task of regulating biodiscovery. *Trends Biotechnol* 36(1):1–3
- Yadav S, Abdulla A, Bertz N, Mawyer A (2019) King tuna: Indian Ocean trade, offshore fishing, and coral reef resilience in the Maldives Archipelago. *ICES J Mar Sci*, Oct 9. <https://doi.org/10.1093/icesjms/fsz170>
- Yamazaki S, Resosudarmo B, Girsang W, Hoshino E (2018) Productivity, social capital and perceived environmental threats in small-island fisheries: insights from Indonesia. *Ecol Econ* 152:62–75
- Yater LR (1982) The fisherman's family: economic roles of women and children. ICLARM, Manila
- Yodanis CL (2000) Constructing gender and occupational segregation: a study of women and work in fishing communities. *Qual Sociol* 23(3):267–290
- Zafra-Calvo N, Pascual U, Brockington D, Coolsaet B, Cortes-Vazquez JA, Gross-Camp N, Palomo I, Burgess ND (2017) Towards an indicator system to assess equitable management in protected areas. *Biol Conserv* 211:134–141
- Zalik A (2009) Zones of exclusion: offshore extraction, the contestation of space and physical displacement in the Nigerian Delta and the Mexican Gulf. *Antipode* 41(3):557–582
- Zeller D, Pauly D (2019) Back to the future for fisheries, where will we choose to go? *Glob Sustain* 2(e11):1–8. <https://doi.org/10.1017/sus.2019.8>

**Open Access** This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

