

Maximum sustainable employment: Adding to the beacons of wild fisheries governance

Maarten Bavinck¹  | Joeri Scholtens¹ | Michael Fabinyi²

¹Department of Geography, Planning and International Development Studies, University of Amsterdam, Amsterdam, The Netherlands

²Climate, Society and Environment Research Centre, University of Technology Sydney, Sydney, New South Wales, Australia

Correspondence

Maarten Bavinck, Department of Geography, Planning and International Development Studies, University of Amsterdam, Nieuwe Prinsengracht 166, 1018WV Amsterdam, The Netherlands. Email: j.m.bavinck@uva.nl

Abstract

This paper proposes to establish Maximum Sustainable Employment (MSE) as a new guiding light, or beacon, for wild fisheries governance. This new social beacon complements the directives provided by the prevailing beacons: Maximum Sustainable Yield (MSY) and Maximum Economic Yield (MEY). The argument is that context matters: in countries where poverty levels are high and alternative employment is scarce, fisheries governors cannot limit themselves to a sectoral perspective. Instead, they must include the remunerative employment and 'decent work' that wild fisheries offer society in their strategic deliberations. This perspective is especially relevant for countries in the Global South, but it also has a bearing on the Global North. After discussing the history of scientific fisheries management and the relevance of employment in fisheries, the paper considers the arguments made against MSE. It concludes with a reflection on the balancing of the three beacons in line with prevailing circumstances.

KEYWORDS

capture fisheries, employment, fisheries management, global south, poverty

1 | INTRODUCTION

Two conceptual beacons, or guiding lights, stand out in contemporary fisheries management: Maximum Sustainable Yield (MSY) and Maximum Economic Yield (MEY). Both concepts have a respectable pedigree and assume prime positions in a broader set of possible management objectives. This paper contends that a third beacon is, however, required: Maximum Sustainable Employment (MSE¹). While employment has repeatedly been viewed as one of the 'social objectives' of fisheries management (Charles, 2023, p. 128; Salz, 1986; Symes & Phillipson, 2009), and Hilborn (2007) includes it under the heading of 'traditional management', we contend that the

issue is too important to be left in the wings. For many countries and regions where alternative employment is scarce, the maximisation of sustainable employment opportunities in fisheries continues to be an urgent management concern, equivalent to marine biological and economic objectives. Noteworthy is the fact that, contrary to MSY and MEY, which possess a sectoral focus, the MSE goal positions fisheries in a broader societal context. We define MSE as the maximum number of people that can gain sustainable employment in a fisheries value chain, giving preference to what is known as 'decent work', given margins imposed by biological and economic yields. We return to the definitions of employment, decent work and sustainability in Section 4.

¹In fisheries, the acronym MSE is also used to denote Management Strategy Evaluation (see Smith, 1994).

At the onset, it must be noted that we do not consider MSE in isolation from MSY and MEY, as one cannot expect fishery managers to steer on the basis of one beacon alone. Instead, fisheries management is inspired by a combination of ecological, economic and social objectives (Rindorf et al., 2017). As in navigation, beacons are particularly useful when the going is hard. Our argument is that a third beacon, focusing on the social dimensions of fisheries management via the availability of employment, provides the manager with an additional sense of direction. Figure 1 illustrates our conceptual approach.

The paper is divided into the following parts: Section 2 sketches the genesis of MSY and MEY. Section 3 gathers evidence on the employment predicaments of the Global South and the current role of fisheries therein. The next section defines the contours of MSE and traces links with small-scale fisheries, processing and trade. Section 5 then reviews the arguments that are brought forward against striving to maximise fisheries employment. Although our goal is not to operationalise MSE, Section 6 provides stepping stones for this purpose. The final section considers MSE in relation to MSY and MEY.

1	INTRODUCTION	619
2	THE HISTORY OF SCIENTIFIC FISHERIES MANAGEMENT, WITH A FOCUS ON MSY AND MEY	621
3	THE EMPLOYMENT IMPERATIVE	622
4	THE ARGUMENTS AGAINST MAXIMISING EMPLOYMENT	623
5	OPERATIONALISING MSE	625
6	BALANCING THE TRIAD MSY, MEY AND MSE	625
7	CONCLUSION	626
	ACKNOWLEDGEMENTS	626
	DATA AVAILABILITY STATEMENT	626
	REFERENCES	626

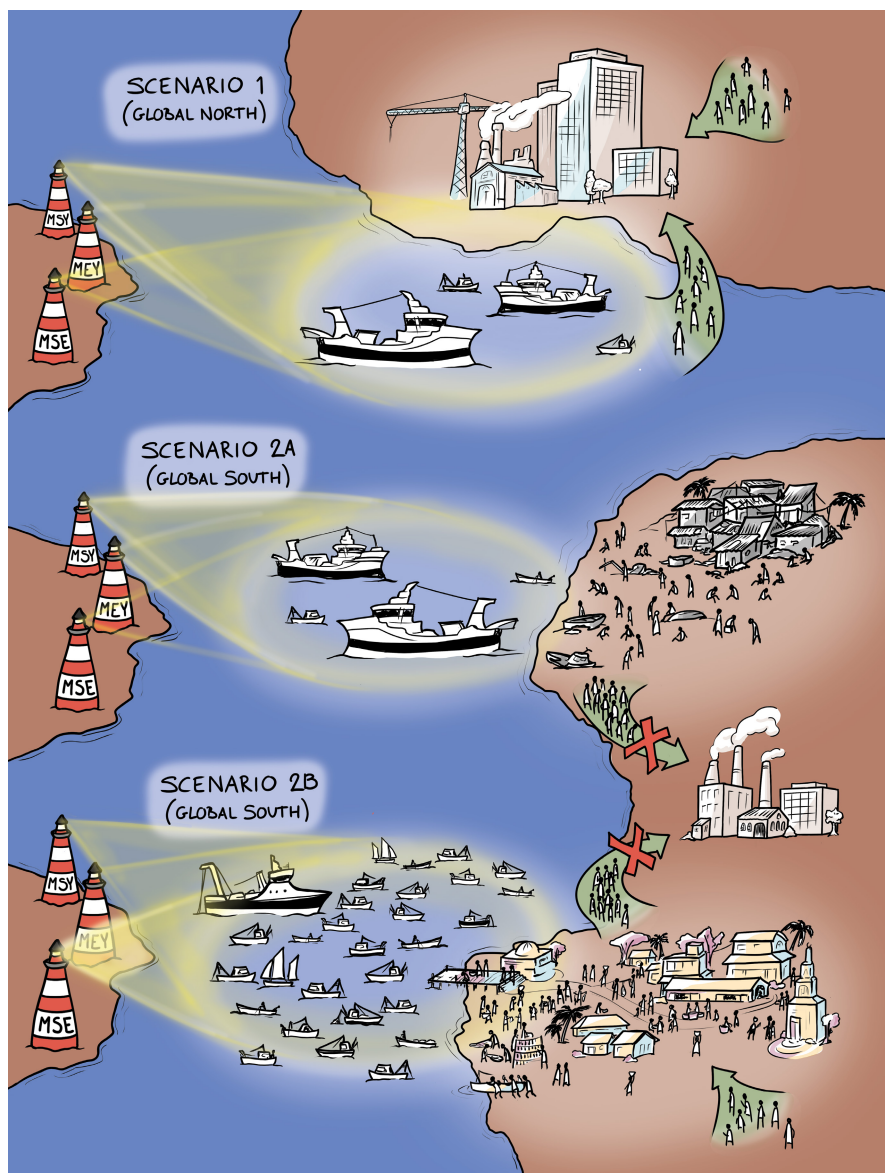


FIGURE 1 Graphic displaying three hypothetical scenarios with different roles played by the three beacons. Top (Scenario 1): Global North labour-intensive fishery, largely guided by MSY and MEY. This is facilitated by a relatively solid broader economy providing ample alternative employment opportunities, but decent work in fisheries is still important. Middle (Scenario 2a): A labour-intensive fishery in the Global South that is largely steered by the MSY and MEY beacons, leading to significant unemployment due to limited alternative opportunities in the broader economy. Bottom (Scenario 2b): a labour-intensive fishery in the Global South that is guided by the MSE beacon (in addition to the MSY and MEY beacons), providing for a vibrant fishing community that is optimised for providing employment (Illustration: Laura Eggens).

2 | THE HISTORY OF SCIENTIFIC FISHERIES MANAGEMENT, WITH A FOCUS ON MSY AND MEY

Marine wild fisheries constitute an ancient livelihood practice with deep roots in almost all coastal societies in the world (Pauly, 2018). Such fisheries have presumably been governed, for better or for worse, well before states and sciences came to fruition, largely by the fishing population itself. Scholars note that stakeholders take various positions (Bailey & Jentoft, 1990; Charles, 2023; Cheung & Sumaila, 2008; Hilborn, 2007; Kooiman et al., 2005). Consumers might thus be mainly interested in food and nutrition security and food safety, while trading firms will be concerned most with volume, quality and price. Fishers prioritise the size, composition and value of catches but are clearly also interested in social justice. Conservation NGOs emphasise the intrinsic value of nature. Governments have their own preoccupations and will generally favour a mix of approaches, one of which is minimising management costs, even though financial gains may be offset by the sizeable subsidies allocated to the sector. Sometimes governmental management will be geared towards minimising the whinge, or whining, of stakeholders (Pope, 1983). Multiple scholars emphasise the political nature of fisheries management (Durrenberger, 1992; Hilborn, 2007) and the fact that it includes the making of 'hard choices' (Bailey & Jentoft, 1990; Kooiman & Jentoft, 2005) or trade-offs (Cheung & Sumaila, 2008). More specifically, Symes and Phillipson (2009) point out that, in the context of Europe, social policy has often received miserly attention. In Africa, however, a welfare-based approach is frequently applied (Nunan, 2014).

Scientists tend to approach fisheries from the perspective of their individual disciplines. Thus, as Degnbol et al. (2006) point out, scholars from different fields formulate different objectives, methods and 'technical fixes', which are not always appropriate to the problems at hand. Ecologists therefore seem to have a preference for Marine Protected Areas, economists for Individual Transferable Quotas, and sociologists for Community-Based Management. Degnbol and co-authors warn against tunnel vision and plead for an integrated approach, noting that 'fisheries science must be pragmatic and open to perspectives, assumptions, insights and methodologies of all disciplines as required in the specific case' (Degnbol et al., 2006, p. 541).

In his now re-edited book 'Sustainable Fishery Systems' (2023), Tony Charles points to a broad range of strategic objectives available for fisheries management (cf. Bailey & Jentoft, 1990; Johnson et al., 2018; Salz, 1986). However, the particular strategic objectives that may be relevant for any particular fishery depend crucially on social, economic and political context.

While the terms Global South and North are admittedly simplistic and remain subject to much conceptual debate (e.g., Wagner, 2017), in this paper we use them to refer broadly to lower and higher income countries, respectively. Echoing Kurien (2002), Kooiman et al. (2005) note that not only do governing processes vary strongly between the Global North and the Global South, societal conditions such as the

availability of sustainable and decent employment are also highly disparate. Thus, Cheung and Sumaila (2008), discussing the fisheries of the South China Sea, point out that in developing countries, 'where alternative livelihoods are lacking and the social benefit system is not well-developed' (2008, p. 194), social objectives are regularly considered more important than economic or ecological ones. Meanwhile, Hilborn (2007, p. 156) admits that the focus of his discussion is more on the 'developed world', and that, by default, there is another 'developing world' out there, which may boast a different pattern of objectives. This is the basis of the present paper, the purpose not being to reify or essentialise differences between geographical regions but to identify crucial variations that suggest the formulation of a new additional conceptual reference point to MSY and MEY. But let us first discuss the genesis of the latter concepts.

In tune with what is known as the 'industrialization of the ocean' (Smith, 2000), apprehensions about overfishing have come to pervade modern societies at least since the middle of the 19th century. Rice and Mace (2014) point out that the effort to determine 'optimum' fishing levels for fisheries probably started in the first half of the 20th century, leading—in the period between the 1930s and the 1950s—to concurrence on MSY as an 'operational biological reference point'. As Garcia et al. (2014) point out in the same volume, 'The central goal of fishery management has been to come as close as possible to Maximum Sustainable Yield (MSY) while avoiding overfishing' (2014, p. 19). This is not, however, to overlook the quarrels that affected MSY over time. Larkin (1977), for one, even tolled the bells for the concept, while Hilborn (2007) points out that in so-called developed countries, 'protectionist objectives are clearly winning out over the traditional MSY' (2007, p. 156). His reference here is to the ecosystem approach, which envelops, but has not nullified the MSY concept. The precautionary principle too, which emerged in the wake of resilience thinking, has added a new dimension to the application of MSY.

But economists too were not keeping quiet. It was H. Scott Gordon (1954) who, noting that 'The great bulk of the research that has been done on the primary production phase of the fishing industry has so far been in the field of biology' (1954, p. 124), embarked on the formulation of an economic theory of optimum utilisation of fishery resources. From this effort emerged the concept of MEY, now defined by FAO as: 'When relating total revenues from fishing to total fishing effort in a surplus production model, the value of the largest positive difference between total revenues and total costs of fishing (including the cost of labour and capital) with all inputs valued at their opportunity costs' (<http://www.fao.org/fishery/glossary/en> (accessed 30 December 2019)). The important thing to note here is that when fishing effort is going up, biologists (using MSY) and economists (using MEY) arrive at different conclusions regarding the best approach, with quarrels emanating between them (see, for example, Christensen, 2010; Hubbard, 2018; Sumaila & Hannesson, 2010; Sackel, 2018). In essence, the MSY approach focuses on estimating the maximum catches that are allowable in view of the long-term sustainability of stocks, whereas MEY highlights the point of optimal economic return, in other words, the point at which a fishery (taken

as a whole) yields the largest amount of profit or net economic benefit (the so-called rent).

MSY and MEY have presented policymakers with powerful concepts and toolkits with which to engage in fisheries governance. These toolkits are, moreover, not static: scholars continue to make elaborations with regard to particular species or fisheries (see, for example, Dichmont et al., 2010; Guillen et al., 2013). The analytical edifices that have thus emerged spread all over the world, infecting policymakers and scholarly communities dealing with fisheries. Sustainable and decent employment provide a meaningful conceptual supplement.

3 | THE EMPLOYMENT IMPERATIVE

In this paper, we take 'employment' as any kind of work that is available in wild fishery chains. 'Decent work'—that we return to below—is obviously the higher ambition of most people employed in fishery chains, but it is not always attainable. Similar to the use of the adjective in MSY and MEY, we refer to 'sustainable' employment as continuing over longer periods of time. In combination with MSY and MEY, it recognises the primacy of fish being available in the ecosystem.

The numerical size of employment in wild fisheries has, in the past decades, declined dramatically in most countries of the Global North (FAO, 2022). Most of those who left fisheries in countries such as the Netherlands and Norway have made their way into other kinds of employment. The situation of wild fisheries in the Global South is, however, quite different. Thus, Teh and Sumaila (2013) note that 'fisheries employment is steadily increasing in most low-income and middle-income countries' (ibid., p. 78), a condition that is confirmed by other authors (FAO, 1999; Ye et al., 2013). FAO (2022) suggests, however, that the trend has recently been flattening. Whether this observation is correct is still uncertain. After all, maybe more even than stock sizes, employment figures in fisheries and their post-harvest sectors are imprecise (FAO, 2022). This is true partly because most employment is located in the so-called informal sector, but also because FAO depends on inputs from national authorities that do not always possess reliable statistical facilities.

Taking the relative invisibility of employment as a challenge, the Illuminating Hidden Harvest (IHH) project has possibly developed the most reliable employment estimate to date. IHH suggests that 67.5 million people were employed in the wild fisheries value chain in 2016, with another 52.9 million engaging in subsistence work (FAO, Duke University and Worldfish 2023). Of these numbers, 93.9% is supposed to be engaged in the so-called small-scale fishing sector. Although a precise definition of the latter sector proves difficult (Funge-Smith et al., 2023; Johnson, 2006), small-scale fisheries contrast with large-scale fisheries in terms of technological and operational scale and in aggregate labour intensity (Gibson & Sumaila, 2017). This implies that for harvesting, processing and trading a given stock of fish, on average, more people are required (Berkes & Kislalioglu, 1989).

The lion share of employment in wild fisheries (inland and marine) is found in Asia and Africa, which is also where the global poverty hotspots are situated (World Bank, 2020). Importantly, the scholarship now demonstrates that women play a significant role in the sector, particularly in the post-harvest segment of the value chain, and represent 39.1% of all those active in the fisheries sector (FAO, Duke University and Worldfish 2023). Seasonality is also a significant aspect of many fisheries, with participants often joining the sector on a part-time basis and many others partaking in fishing only for subsistence.

Early development theorists (e.g. Rostow, 1960) assumed that developing countries would follow a similar pattern of urbanisation and growth of industrial and/or service sectors as countries of the Global North. In their perspective, the efficiency of the primary sector was to improve, thereby resulting almost automatically in the movement of people into the cities and into new economic avenues. This was largely seen as a desirable process, favourable to the welfare of the population at large.

Contemporary fisheries in many parts of the Global South, however, have often not, or only partially, followed this trajectory. On the one hand, fishing populations are often still expanding through natural growth, with relatively few leaving the sector for other sources of employment. Secondly, fishing populations are burgeoning because of immigration from other societal fields (Bavinck, 2011, 2014; Downing et al., 2014; Eder, 2008). Two conditions commonly known as 'push' and 'pull' contribute to this state of affairs.

First, other than most other agricultural products, the demand for seafood, all over the world has been rising year after year (Delgado et al., 2003; FAO, 2022; Sumaila et al., 2007; Tai et al., 2017; Tveterås et al., 2012). Liberalisation has also resulted in the expansion of international trade, and fishers in developing countries therefore often service foreign markets too, which means that their economic returns have often improved significantly. Whereas many other cash crops experience extreme price volatility, aggregate fish prices generally demonstrate good returns, allowing fishers to maintain their livelihoods with smaller catches (Knudsen, 2016). Wild fisheries therefore constitute a relatively remunerative source of employment. As for those who have already found employment in fisheries, high fish prices mean that they undergo less incentive to leave the sector.

Another attraction of wild fisheries is that they belong to what Woodburn (1982) has called 'immediate-return systems', in which people obtain a direct and immediate return on their labour. Fisheries thus contrast with 'delayed return systems' such as agriculture that involve long-term investments, which bear fruit only after a longer time period. For those in need of immediate income or sustenance, wild fisheries are therefore often a good place to go, even if, at an aggregate level, catches per unit of effort may be dwindling.

In spite of this state of affairs, the quality of employment in fisheries is often described as inferior. Working conditions are frequently harsh and fishing is defined one of the most hazardous occupations in the world (Kumar, 2003; Willis et al., 2023). To explain their *relative* attractiveness, we therefore need to look at conditions

external to the fisheries. This category is made up of the collection of hardships that rural and urban populations in the Global South undergo on an incidental or more permanent basis. The role of poverty in pushing people into fisheries or, once they are in, continuing the process of overfishing, has been fiercely debated (Béné, 2001; Onyango & Jentoft, 2010), and is certainly a factor explaining immigration into the sector (see below).

Rostow (1960), as mentioned above, assumed that surplus labour that was released from the primary sector would find more gainful employment. This view has remained popular until today (Li, 2009, 2011). The reality, however, is that '[w]e are living in an era in which huge and diverse sectors of the global population struggle to find work, or to find any productive function and viable source of livelihood. [...] Huge numbers of people are, in fact, not [...] able to sustain themselves through productive work—or not in conditions other than deprivation and bare survival'. (Li, 2017, pp. 1250).

The continuing, widespread nature of poverty is borne out by international organisations such as ILO and the World Bank. Even prior to the advent of the COVID epidemic, the president of the World Bank concluded that:

"in many countries, especially resource-based economies, the benefits of [economic] growth weren't allowed to spread—growth helped increase average incomes, yet it did not increase median incomes or lift the poorest 40% of the population" (World Bank, 2019, p. 2).

ILO similarly points to burgeoning unemployment in the Global North and South and a trend towards casual and low-quality work: it argues that, in 2021, 473 million people were looking for employment; at the same time, 214 million people were living in extreme poverty. The COVID-pandemic and the Ukraine-Russian war are recognised as having exacerbated the conditions of many people in the Global South (ILO, 2023).

Under such circumstances, an increased movement of precarious, external workers towards wild fisheries may readily come about. As noted above, such an influx into the fisheries value chain is sometimes temporary (or seasonal) or may even limit itself to subsistence activities. The importance of such employment for the people concerned, however shaky or hazardous it may be, cannot, however, be denied. This condition implies that wild fisheries can only be partially viewed from a sectoral angle. Other societal conditions have major implications for the fisheries field that cannot be ignored.

Note that aside from those who reside in fisheries because of the unavailability of alternatives, there are also many who appreciate the employment offers in terms of job satisfaction (Bavinck et al., 2012), wellbeing (Coulthard et al., 2013), and welfare (Nunan, 2014). To capture the qualitative dimensions of employment, the ILO's Convention on Work in Fishing (2007) therefore includes the need for 'decent work'. The ILO defines the term as follows:

"Decent work sums up the aspirations of people in their working lives. It involves opportunities for work that is productive and delivers a fair income, security in the workplace and social protection for families, better prospects for personal development and social integration, freedom for people to express their concerns, organize and participate in the decisions that affect their lives and equality of opportunity and treatment for all women and men" (<https://www.ilo.org/global/topics/decent-work/lang-en/index.htm>, accessed 2 May 2021).

Following ILO's lead, scholars have begun to apply the decent work perspective on labour to fisheries both at a general (Garcia Lozano et al., 2022; Giron-Nava et al., 2021) and a regional level (Lout et al., 2022). Flagrant human right abuses have been documented in certain hotspot regions, such as Southeast Asia (Garcia Lozano et al., 2022). But improvements can frequently also be made in conditions regarding safety at sea, social security and remuneration. For example, Giron-Nava et al. (2021) indicate that the minimum living wages of fishing households in many key fisheries countries are likely to be well below the standards set by their country governments.

Whereas most of our arguments pertain to the Global South, MSE and particularly the argument about decent work, is also relevant to areas in the Global North. While we assume that many ex-fishers in the Global North who have moved on to new professions and life stations are quite happy (Johnsen & Vik, 2013; Winchenbach, 2022), the impacts of changing employment structures are also significant there. For example, many rural locations in the Global North also suffer from unemployment trends that make it more difficult to find alternative work after fisheries have been heavily regulated, closed or consolidated (e.g. Binkley, 2000). More generally, many fishing communities in the Global North have undergone diverse forms of psychosocial damage (Jentoft, 2000), including mental health impacts (King et al., 2021) and the loss of a distinct 'way of life' (Coulthard & Britton, 2015; Santos, 2015; Urquhart et al., 2014). And cases of human rights abuses have also been documented in the Global North (Stringer et al., 2016).

4 | THE ARGUMENTS AGAINST MAXIMISING EMPLOYMENT

The idea of aiming at maximising employment is, however, controversial. Opponents formulate two concerns: first, that more fishers would lead to more fishing effort and a condition known as Malthusian overfishing; and second, that the efficiency of a given fishery is undermined. Over time, these two concerns have generated powerful images that inspire policies to reduce rather than enhance fisheries livelihoods.

Malthusian overfishing is a narrative suggesting that 'overfishing is driven by too many fishers chasing too few fish and that fishing

effort grows proportionately to human population growth, requiring policy interventions that reduce fisher access, the number of fishers, or the human population' (Finkbeiner et al., 2017, p. 1). This narrative has a long pedigree and remains popular until today, aluding as it does to an assumed relationship between humans and environmental resources that, if left unchecked, results in a tragedy of the commons (Hardin, 1968). Belhabib et al. (2017, p. 1) for example, suggest for West Africa that: '[t]he artisanal total fishing effort increased by 10-fold between 1950 and 2010... which points to the occurrence of Malthusian overfishing, a form of fishing that *favours excess labour* instead of capital' (emphasis authors). However, as Finkbeiner et al. (2017) argue, there are at least four intervening factors, namely technology, consumer demand, inequality and governance, modifying the relationship between the number of fishers and aggregate fishing effort. While there are many cases of trade-offs between fishing effort and sustainability, attributing overfishing to Malthusian population-environment dynamics conceals these mediating drivers, and prematurely blames small-scale fishers who would be flocking the coastlines in developing countries in increasing numbers. The narrative continues to be remarkably appealing in both academic and policy realms, however, possibly because it leaves politically tougher questions of unequal access, unequal subsidies and the political economy of international value chains untouched (Fletcher et al., 2014).

Following the Malthusian line of thought, Ye and co-authors (2013) argue that, in order to restore overfished stocks in the world, 12–15 million people should leave the fisheries so as to realise capacity reductions; as a result, fish production and economic rent would eventually increase. There is little evidence, though, for an inherent relation between the number of fishers and fishing effort, given the diversity of fishing practices, technologies and levels of livelihood dependency'. Cochrane (2020), for example, demonstrates large differences in productivity (expressed as volume of fish caught per fisher per year) in different parts of the world, which range from 2.2 tonne per capita in Asia to 56.6 in Europe (Cochrane, 2020). Hence, for each tonne of fish caught, fisheries in Asia employ about 26 times more fishers compared to European fisheries, which obviously results from their sizeable small-scale sectors. The implicit argument, however, that appears to underlie Ye and co-authors' (2013) calculations is that such fisheries are unduly inefficient and therefore undesirable. A related argument is that people become 'trapped' in the fisheries, and that situation may have the tendency to perpetuate poverty (McClanahan et al., 2008; Pauly, 1990; Teh & Sumaila, 2007).

This brings us to the second concern, which relates to a possible trade-off between employment and economic efficiency. If a given stock of fish can be extracted with a given amount of capital and labour, adding more labour just for the sake of maximising employment would arguably imply an economic loss. What is more, such an approach may imply a form of romanticisation that argues to keep fishers unnecessarily in poverty, or worse, deny fisheries in developing countries the same development path as the fisheries sectors in developed countries have enjoyed in the past.

Grafton et al. (2012) present two key challenges in this regard. First, employment maximisation can result in higher fishing costs and lower profits, which can undermine the long-term economic viability of the harvesting sector. Secondly, it can reduce the willingness of fishers to cooperate to help ensure the long-term sustainability of fish stocks because higher fishing costs, lower profits and higher employment in a fishery make it more difficult for decision-makers to reduce harvest levels when required. Canadian subsidy schemes, for example, kept fishers in operation who would otherwise have left the fishery (Grafton et al., 2012; Schrank, 2005).

We question, however, whether inefficiencies are to be avoided at all costs. While we agree with Grafton et al. (2012, p. 306) that 'employment maximization may make little sense in a world where labour can be employed in alternative activities', we observe that many, if not most, people do not live in such a world (see Section 2, and Li, 2017). As Bromley (2008, pp. 18–19) points out: 'Much of the pressure on natural resources in artisanal fisheries...are the quite expected result of the complete absence of feasible livelihood prospects outside of fishing...'. Furthermore, the pathway from maximising overall economic revenue from the fishery towards broad-based economic growth assumes an effectively functioning mechanism of rent redistribution by a competent authority—an unrealistic assumption in many contexts with weak institutions (Béné et al., 2010). Our proposition is that the growth of the number of fishers in the Global South cannot be separated from the relative stagnation of surrounding rural economies (ILO, 2023), fishers' lack of appropriate skills and opportunities for other livelihoods (Hanh & Boonstra, 2019), the fact that average fish prices have been steadily increasing, allowing fishers to survive on lower average catches, and the reality of limited state capacity to effectively and equitably redistribute economic rent in many contexts. Allowing high levels of employment, possible even to the level of subsistence, may therefore be preferable not only to the fishers concerned but also to the societies of which they are part.

From a MSE perspective, there is no problem with propositions to limit or reduce total fishing effort so as to secure ecologically sustainable fisheries. It is important, however, not to equate reducing fishing effort with reducing fishing employment, since a given level of fishing effort can be accomplished by a few or many fishers, depending on, inter alia, technological conditions. In sum, having a hypothetical ten fishers, possibly on multiple smaller boats, involved in catching a tonne of fish while catching the same tonne would be possible by one fisher on a larger vessel, may indeed be inefficient when considering the fisheries sector in isolation. However, looking at the level of society as a whole, it may be quite rational, especially when dignified alternative income generating opportunities are not available for the remaining nine fishers, when authorities have no demonstrated capability of redistributing rent gains, and when the social fabric of fishing communities provides a range of other values beyond immediate fisher incomes.

The situation in Ghana's fishery is a case in point (cf. Bailey, 1988 for Indonesia). Ghana is a low middle-income country with high levels

of vulnerable employment (ILO, 2023; Sparreboom & Gomis, 2015). Given widespread concerns about overfishing, calls to significantly reduce fishing effort to protect Ghana's resources are increasingly voiced (Belhabib et al., 2017). At the same time, 'many poor and vulnerable Ghanaians depend on fisheries directly or indirectly for their livelihoods' (FAO, 2023). How does this look if MSE is used as a beacon? In Ghana, 75 trawlers and 10–12,000 artisanal canoes compete largely for the same small pelagic resources and both sectors are responsible for about 50% of total marine landings. For every 100 tonnes of fish landed, however, the industrial fishery provides 1.5 jobs while the artisanal sector provides 60 jobs (EJF and Hen Mpoano, 2019).

So in a scenario of reducing fishing effort, the question is which sector should be curbed. While from an MSY and MSE perspective, a relatively small formalised fleet may be preferred, if the MSE beacon were to provide guidance here, the preferred option would be to protect the more labour-intensive canoe fishery. Section 5 discusses the balancing of the three beacons in different country contexts. We first attempt to further operationalise the MSE concept.

5 | OPERATIONALISING MSE

We submit that maximum sustainable employment (and its apex, 'decent work') is a holistic concept (Garcia Lozano et al., 2022) as well as a pivotal concern that contributes in various ways to the resolution of other social wants such as income, food security, justice, equity and human rights. It provides and distributes access to multiple benefits of the fisheries (Arthur, 2020) and is, in our opinion, the most suitable indicator for performance in the social field. Underscoring its relevance for human wellbeing, one of the Sustainable Development Goals (SDG8) therefore pleads for 'full and productive employment and decent work for all'.

The lack of precise employment figures in fisheries, a condition that applies more to countries of the Global South than the Global North, is a complicating factor. In data-poor environments, such as those pertaining to many developing countries, other approaches to estimating employment in fisheries may therefore need to be examined (Pilling et al., 2008). These may include the use of expert judgement, participatory mapping, satellite imagery, local and traditional knowledge, labour force surveys and modelling approaches (FAO, Duke University and WorldFish, 2023, p. 225). Importantly, such approaches should also aim to map along the value chain, which would increase the visibility of the contributions small-scale fisheries make to the employment of less well-recognised groups, such as women (*ibid.*).

When the broader concept of decent work is used, there are a range of economic indicators that could be used beyond the simple metric of 'numbers of jobs' (Bennett et al., 2021). Ongoing research efforts improve and broaden the range of social indicators to incorporate more tangible measures relating to the quality of work or to well-being more generally (Hornborg et al., 2019; Ramenzoni & Yoskowitz, 2017). Available data sources should therefore be taken

in their entirety, whereby the strengths and weaknesses of data sets should be noted and, where possible, addressed (e.g. Harper et al., 2020; Teh & Sumaila, 2007).

At the level of principle MSE calls for:

1. Defining context: Like MSY and MEY, MSE does not always require similar priority. In regions with low rates of unemployment and sufficient alternative opportunities, low-labour intensity in fisheries may be acceptable. But even then, wild fisheries may provide preferable opportunities for decent work as well as other benefits. It is in countries on the opposite side of the spectrum—the regions known as the Global South—that MSE is most imperative.
2. Reducing data uncertainties and getting the employment trends right: This calls for a thorough assessment of the regions where alternative employment for fishworkers (men/women) is likely to remain scarce and where employment in fisheries per tonne of fish harvested deserves to be optimised on a short-, medium- or longer-term basis. An effort of this kind may also include calculating the 'space' still available in fisheries for precarious labour from outside the fisheries sector;
3. Identifying the potential for enhancing employment in wild fisheries: The technological subsidiarity principle (Bavinck & Jentoft, 2008; Mathew, 2005), which prescribes that all stocks that can be fished by small-scale fishing populations should be fished by them, is a pragmatic starting point. This leaves only the fisheries that are somehow 'out of reach' of small-scale fishers to the more labour-extensive industrial fleets to harvest.
4. Safeguarding the quality of employment by eliminating exploitative work relationships and moving up to universal standards of 'decent work' (ILO, 2007);
5. Embedding sustainable employment in broader perspectives of welfare (Béné et al., 2010; Nunan, 2014), well-being (Weeratunge et al., 2014), equity (Cochrane, 2020), human rights (Allison et al., 2012) and blue justice (Jentoft et al., 2022), thereby realising wider safety nets as well as development opportunities for the world's fishing population; and
6. Seeking to work in conjunction with other sectors to address the drivers of vulnerability that lie beyond the fisheries sector, such as health, land tenure and access to social services (Allison et al., 2012; Béné, 2001; Béné & Friend, 2011; Mills et al., 2011).

6 | BALANCING THE TRIAD MSY, MEY AND MSE

In the above, we have posited MSY, MEY and MSE as 'conceptual beacons' for the purpose of focusing on the management of marine wild fisheries. Each of these beacons, while simple in appearance, is built on a wealth of arguments and calculations. After all, they represent three primary dimensions in fisheries relating to the biological/ecological, the economic and the social. None of the three beacons is, however, by itself sufficient to govern

the complexities of the marine wild fisheries: all three must be taken into consideration in a balance that is appropriate to local contexts (see also Hare, 2020 and Ratner & Allison, 2012). It is in this sense that Cochrane (2020) speaks of 'reconciled fisheries'—a fisheries in which the three beacons have been given a place, in line with the Sustainable Development Goals. The fundamental differences that exist between developed and developing countries—or the so-called tropical majority world (Kurien, 2002; Spalding et al., 2023)—but also their similarities, require serious consideration.

The MSE beacon seems to have a special quality, however, that distinguishes it from the other two: its explicit embedding in a broader societal setting than fisheries alone. When proponents of maximising sustainable yield or economic rent in the fisheries propose the reduction of fishing effort or capacity, they acknowledge that such measures are frequently reflected in employment (cf. Ye et al., 2013). Redundant fishers are then expected to look for alternatives. But what if alternative employment is not available or preferred by those with jobs in the fishery (Johnson et al., 2018)? Such questions point to the larger societal environment in which fisheries are embedded. In line with other scholars (Béné et al., 2010), we argue that many countries and regions in the Global South do not currently provide such conditions and that MSE is consequently of greater relevance there.

7 | CONCLUSION

This article has proposed the establishment of a third conceptual beacon, namely MSE, for the governance of wild fisheries. This guiding light is considered to provide essential balance in a field dominated by MSY and MEY thinking. While the latter two beacons provide attention to critical concerns in the fisheries field, namely the widespread incidence of overfishing and the prevalence of inefficient fishing practice, the social concerns of fisheries are often overlooked. Such social concerns, however, play an important role, particularly but not only in the Global South. MSE also provides focus to the social concerns of a scholarship searching for the most relevant entry point. Decent work is argued to be the most appropriate indicator for the social realm. Future scholarly efforts should continue to operationalise and monitor the implementation of this beacon in different geographical and societal contexts.

ACKNOWLEDGEMENTS

The authors are grateful for comments on earlier versions of this text to Svein Jentoft, Achim Schlüter and Rashid Sumaila as well as for the detailed suggestions of two anonymous reviewers. The authors have not obtained financial or material support in the context of this manuscript.

DATA AVAILABILITY STATEMENT

In preparing this manuscript, the authors have not made use of shared data.

ORCID

Maarten Bavinck  <https://orcid.org/0000-0001-9398-9310>

REFERENCES

- Allison, E. H., Ratner, B. D., Åsgård, B., Willmann, R., Pomeroy, R., & Kurien, J. (2012). Rights-based fisheries governance: From fishing rights to human rights. *Fish and Fisheries*, 13, 14–29. <https://doi.org/10.1111/j.1467-2979.2011.00405.x>
- Arthur, R. I. (2020). Small-scale fisheries management and the problem of open access. *Marine Policy*, 115, 103867.
- Bailey, C. (1988). The political economy of marine fisheries development in Indonesia. *Indonesia*, 46, 25–38.
- Bailey, C., & Jentoft, S. (1990). Hard choices in fisheries management. *Marine Policy*, 14(4), 333–344.
- Bavinck, M. (2011). Wealth, poverty, and immigration – The role of institutions in the fisheries of Tamil Nadu, India. In S. Jentoft & A. Eide (Eds.), *Poverty mosaics: Realities and prospects in small-scale fisheries*, 173/191. Springer.
- Bavinck, M. (2014). Investigating poverty through the lens of riches—Immigration and segregation in Indian capture fisheries. *Development Policy Review*, 32(1), 33–52.
- Bavinck, M., & Jentoft, S. (2008). Moving forward on the subsidiarity principle in fisheries—The future imagined. *Samudra*, 51, 41–43.
- Bavinck, M., Pollnac, R., & Monnereau, I. (2012). Introduction to the special issue on job satisfaction in fisheries in the global south. *Social Indicators Research*, 109, 1–10. <https://doi.org/10.1007/s11205-012-0051-7>
- Belhabib, D., Greer, K., & Pauly, D. (2017). Trends in industrial and artisanal catch per effort in West African fisheries. *Conservation Letters*, 11, 1–10. <https://doi.org/10.1111/conl.12360>
- Béné, C. (2001). When fishery rhymes with poverty: A first step beyond the old paradigm on poverty in small-scale fisheries. *World Development*, 31(6), 949–975.
- Béné, C., & Friend, R. M. (2011). Poverty in small-scale fisheries: Old issue, new analysis. *Progress in Development Studies*, 11(2), 119–144.
- Béné, C., Hersoug, B., & Allison, E. (2010). Not by rent alone: Analysing the pro-poor functions of small-scale fisheries in developing countries. *Development Policy Review*, 28, 325–358. <https://doi.org/10.1111/j.1467-7679.2010.00486.x>
- Bennett, N. J., Schuhbauer, A., Skerritt, D., & Ebrahim, N. (2021). Socio-economic monitoring and evaluation in fisheries. *Fisheries Research*, 239, 105934.
- Berkes, F., & Kislalioglu, M. (1989). A comparative study of yield, investment and energy use in small-scale fisheries: Some considerations for resource planning. *Fisheries Research*, 7(3), 207–224.
- Binkley, M. (2000). Getting by in tough times: Coping with the fisheries crisis. In *Women's studies international forum* (Vol. 23, No. 3, pp. 323–332). Pergamon.
- Bromley, D. W. (2008). The crisis in ocean governance: Conceptual confusion, spurious economics, political indifference. *Maritime Studies (MAST)*, 6(2), 7–22.
- Charles, A. (2023 [2001]). *Sustainable fishery systems* (2nd ed.). John Wiley and Sons Ltd.
- Cheung, W., & Sumaila, U. R. (2008). Trade-off between conservation and socio-economic objectives in managing a tropical marine ecosystem. *Ecological Economics*, 66(1), 193–210.
- Christensen, V. (2010). MEY= MSY. *Fish and Fisheries*, 11, 105–110. <https://doi.org/10.1111/j.1467-2979.2009.00341.x>
- Cochrane, K. L. (2020). Reconciling sustainability, economic efficiency and equity in marine fisheries: Has there been progress in the last 20 years? *Fish & Fisheries*, 22, 298–323. <https://doi.org/10.1111/faf.12521>
- Coulthard, S., & Britton, E. (2015). Waving or drowning: An exploration of adaptive strategies amongst fishing households and implications for wellbeing outcomes. *Sociologia Ruralis*, 55(3), 275–290.

- Coulthard, S., Johnson, D., & McGregor, A. (2013). Poverty, sustainability and human wellbeing: A social wellbeing approach to the global fisheries crisis. *Global Environmental Change*, 21(2), 453–463.
- Degnol, P., Gislason, H., Hanna, S., Jentoft, S., Raakjaer Nielsen, J., Sverdrup-Jensen, S., & Wilson, D. C. (2006). Painting the floor with a hammer—Technical fixes in fisheries management. *Marine Policy*, 30(5), 534–543.
- Delgado, C. L., Wada, N., Rosegrant, M. W., Meijer, S., & Ahmed, M. (2003). *Fish to 2020: Supply and demand in changing global markets*. IFPRI/WorldFish Center.
- Dichmont, C. M., Pascoe, S., Punt, A. E., & Deng, R. (2010). On implementing maximum sustainable yield in commercial fisheries. *PNAS*, 107(1), 16–21.
- Downing, A. S., Van Nes, E., Balirwa, J., Beuving, J., Bwathondi, P., Chapman, L. J., Cornelissen, I. J. M., Cowx, I. G., Goudswaard, K., Hecky, R. E., Janse, J. H., Janssen, A., Kaufman, L., Kische-Machumu, M. A., Kolding, J., Ligtvoet, W., Mbabazi, D., Medard, M., Mkumbo, O. C., ... Mooij, W. M. (2014). Coupled human and natural system dynamics as key to the sustainability of Lake Victoria's ecosystem services. *Ecology and Society*, 19(4), 31. <https://doi.org/10.5751/ES-06965-190431>
- Durrenberger, E. P. (1992). *It's all politics: South Alabama's seafood industry*. University of Illinois Press.
- Eder, J. F. (2008). *Migrants to the coasts: Livelihood, resource management, and global change in The Philippines*. Wadsworth Cengage Learning.
- Environmental Justice Foundation (EJF), & Mpoano, H. (2019). Stolen at sea. How illegal 'saiko' fishing is fuelling the collapse of Ghana's fisheries. https://ejfoundation.org/resources/downloads/Stolen-at-sea_06_2019.pdf
- FAO. (1999). *Numbers of fishers 1970–1996*. FAO Fisheries Circular No. 929, Revision 1. Food and Agriculture Organization.
- FAO. (2022). *The state of world fisheries and aquaculture 2022. Towards blue transformation*. Food and Agriculture Organization.
- FAO. (2023). *Fishery and Aquaculture Country Profiles*. Ghana, 2016. Country Profile Fact Sheets. Fisheries and Aquaculture Division [online]. Rome. Updated May 4, 2016 [Cited Wednesday, October 25th 2023].
- FAO, Duke University & WorldFish. (2023). *Illuminating hidden harvests—The contributions of small-scale fisheries to sustainable development*. Food and Agriculture Organization.
- Finkbeiner, E. M., Bennett, N. J., Frawley, T. H., Mason, J. G., Briscoe, D. K., Brooks, C. M., Ng, C. A., Ourens, R., Seto, K., Switzer Swanson, S., Urteaga, J., & Crowder, L. B. (2017). Reconstructing overfishing: Moving beyond Malthus for effective and equitable solutions. *Fish and Fisheries*, 2017(18), 1180–1191. <https://doi.org/10.1111/faf.12245>
- Fletcher, R., Breitling, J., & Puleo, V. (2014). Barbarian hordes: The overpopulation scapegoat in international development discourse. *Third World Quarterly*, 35(7), 1195–1215. <https://doi.org/10.1080/01436597.2014.926110>
- Funge-Smith, S., Basurto, X., Gutierrez, N. L., & Snyder, H. (2023). The challenge of defining small-scale fisheries: determining scale of operation by identifying general fisheries characteristics. In FAO, Duke University & WorldFish. 2023. *Illuminating Hidden Harvests: the contributions of small-scale fisheries to sustainable development*. FAO; Duke University; WorldFish.
- García Lozano, A. J., Decker Sparks, J. L., Durgana, D. P., Farthing, C. M., Fitzpatrick, J., Krough-Poulsen, B., McDonald, G., McDonald, S., Ota, Y., Sarto, N., Cisneros-Montemayor, A. M., Lout, G., Finkbeiner, E., & Kittinger, J. N. (2022). Decent work in fisheries: Current trends and key considerations for future research and policy. *Marine Policy*, 136, Article 104922. <https://doi.org/10.1016/j.marpol.2021.104922>
- García, S. M., Rice, J., & Charles, A. (2014). *Governance of marine fisheries and biodiversity conservation: Interaction and coevolution*. John Wiley & Sons Ltd.
- Gibson, D., & Sumaila, U. R. (2017). Determining the degree of 'small-scale-ness' using fisheries in British Columbia as an example. *Marine Policy*, 86, 121–126.
- Giron-Nava, A., Lam, V. W. Y., Aburto-Oropeza, O., Cheung, W. W., Halpern, B. S., Sumaila, U. R., & Cisneros-Montemayor, A. M. (2021). Sustainable fisheries are essential but not enough to ensure well-being for the world's fishers. *Fish and Fisheries*, 22, 812–821. <https://doi.org/10.1111/faf.12552>
- Gordon, H. S. (1954). The economic theory of a common property resource: The fishery. *Journal of Political Economy*, 62(124), 124–142.
- Grafton, Q. R., Kompas, T., Che, T. N., Chu, L., & Hilborn, R. (2012). BMEY as a fisheries management target. *Fish and Fisheries*, 13(3), 303–312.
- Guillen, J., Macher, C., Merzereaud, M., Bertignac, M., Fifas, S., & Olivier, O. (2013). Estimating MSY and MEY in multi-species and multi-fleet fisheries, consequences and limits: An application to the Bay of Biscay mixed fishery. *Marine Policy*, 40, 64–74.
- Hanh, T. T. H., & Boonstra, W. J. (2019). What prevents small-scale fishing and aquaculture households from engaging in alternative livelihoods? A case study in the tam Giang lagoon, Viet Nam. *Ocean & Coastal Management*, 182, 104943.
- Hardin, G. (1968). The tragedy of the commons. *Science*, 162, 1243–1247.
- Hare, J. A. (2020). Ten lessons from the frontlines of science in support of fisheries management. *ICES Journal of Marine Science*, 77, 870–877.
- Harper, S., Adshade, M., Lam, V. W., Pauly, D., & Sumaila, U. R. (2020). Valuing invisible catches: Estimating the global contribution by women to small-scale marine capture fisheries production. *PLoS ONE*, 15(3), e0228912.
- Hilborn, R. (2007). Defining success in fisheries and conflicts in objectives. *Marine Policy*, 31(2), 153–158.
- Hornborg, S., van Putten, I., Novaglio, C., Fulton, E. A., Blanchard, J. L., Plagányi, É., Bulman, C., & Sainsbury, K. (2019). Ecosystem-based fisheries management requires broader performance indicators for the human dimension. *Marine Policy*, 108, 103639.
- Hubbard, J. (2018). Fisheries biology and the dismal science: Economists and the rational exploitation of fisheries for social progress. In G. Winder (Ed.), *Fisheries, quota management and quota transfer*. MARE publication series (Vol. 15). Springer. https://doi.org/10.1007/978-3-319-59169-8_2
- ILO. (2007). *Work in fishing convention*, No. 188. International Labour Organization.
- ILO. (2023). *World employment and social outlook trends 2023*. International Labour Organization.
- Jentoft, S. (2000). The community: A missing link of fisheries management. *Marine Policy*, 24(1), 53–60.
- Jentoft, S., Chuenpagdee, R., Said, A. B., & Isaacs, M. (Eds.). (2022). *Blue justice: Small-scale fisheries in a sustainable ocean economy*, MARE publication series 26. Springer.
- Johnsen, J. P., & Vik, J. (2013). Pushed or pulled? Understanding fishery exit in a welfare society context. *Maritime Studies*, 12, 4. <https://doi.org/10.1186/2212-9790-12-4>
- Johnson, D. S. (2006). Category, narrative and value in the governance of small-scale fisheries. *Marine Policy*, 30, 747–756.
- Johnson, D. S., Acott, T., Stacey, N., & Urquhart, J. (Eds.). (2018). *Social wellbeing and the values of small-scale fisheries*, MARE publication series 17. Springer.
- King, T. J., Turner, R., Versace, V., Abernethy, K., Kilpatrick, S., & Brumby, S. (2021). Mental health in the commercial fishing industry: Modern uncertainties and traditional risks. *Fish and Fisheries*, 22(5), 1136–1149.
- Knudsen, M. (2016). Poverty and beyond: Small-scale fishing in overexploited marine environments. *Human Ecology*, 44, 341–352. <https://doi.org/10.1007/s10745-016-9824-y>
- Kooiman, J., & Jentoft, S. (2005). Hard choices and values. In J. Kooiman, S. Jentoft, M. Bavinck, & R. Pullin (Eds.), *Fish for life: Interactive governance for fisheries* (pp. 285–299). Amsterdam University Press.

- Kooiman, J. M., Bavinck, S. J., & Pullin, R. (Eds.). (2005). *Fish for life: Interactive governance for fisheries*. Amsterdam University Press.
- Kumar, K. G. (Ed.). (2003). *Dangerous calling: The life-and-death matter of safety at sea*. ICSF.
- Kurien, J. (2002). People and the sea: A 'tropical majority' world perspective. *Maritime Studies (MAST)*, 1(1), 9–26.
- Larkin, P. A. (1977). An epitaph for the concept of maximum sustainable yield. *Transactions of American Fisheries Society*, 106, 1–11.
- Li, T. M. (2009). To make live or let die? Rural dispossession and the protection of surplus populations. *Antipode*, 41(s1), 63–93.
- Li, T. M. (2011). Centering labor in the land grab debate. *Journal of Peasant Studies*, 38(2), 281–298.
- Li, T. M. (2017). After development: Surplus population and the politics of entitlement. *Development and Change*, 48(6), 1247–1261.
- Lout, G., Fitzpatrick, J., Garcia Lozano, A. J., & Finkbeiner, E. (2022). Decent work in a seascape of livelihoods: Regional evaluation of the shrimp and groundfish fishery of the Guianas-Brazil shelf. *Marine Policy*, 144, 105231. <https://doi.org/10.1016/j.marpol.2022.105231>
- Mathew, S. (2005). *Fisheries and their contribution to sustainable development*. Contribution to Discussion Panel A, 6th Meeting of the United Nations Open-Ended Informal Consultative Process on Oceans and the Law of the Sea, 6–10 June 2005.
- McClanahan, T. R., Hicks, C. C., & Darling, E. S. (2008). Malthusian overfishing and efforts to overcome it on Kenyan coral reefs. *Ecological Applications*, 18(6), 1516–1529.
- Mills, D., Béné, C., Ovie, S., Tafida, A., Sinaba, F., Kodio, A., Russell, A., Andrew, N., Morand, P., & Lemoalle, J. (2011). Vulnerability in African small-scale fishing communities. *Journal of International Development*, 23(2), 308–313.
- Nunan, F. (2014). Wealth and welfare? Can fisheries management succeed in achieving multiple objectives? A case study of Lake Victoria, East Africa. *Fish and Fisheries*, 15, 134–150. <https://doi.org/10.1111/faf.12012>
- Onyango, P., & Jentoft, S. (2010). Assessing poverty in small-scale fisheries in Lake Victoria, Tanzania. *Fish and Fisheries*, 11(3), 250–263. <https://doi.org/10.1111/j.1467-2979.2010.00378.x>
- Pauly, D. (1990). On malthusian overfishing. *Naga, The ICLARM Quarterly*, 13(1), 3–4.
- Pauly, D. (2018). A vision for marine fisheries in a global blue economy. *Marine Policy*, 87, 371–374.
- Pilling, G. M., Apostolaki, P., Failler, P., Floros, C., Large, P. A., Morales-Nin, B., Reglero, P., Stergiou, K. I., & Tsikliras, A. C. (2008). Assessment and Management of Data-Poor Fisheries. In A. Payne, J. Cotter, & T. Potter (Eds.), *Advances in fisheries science – 50 years on from Beverton and Holt*. Wiley Online. <https://doi.org/10.1002/9781444302653.ch12>
- Pope, J. (1983). Fisheries resource management in theory and practice. In J. L. Taylor & G. G. Baird (Eds.), *New Zealand finfish fisheries—The resources and their management*. New Zealand Trade Publications Ltd.
- Ramenzoni, V. C., & Yoskowitz, D. (2017). Systematic review of recent social indicator efforts in US coastal and ocean ecosystems (2000–2016). *Environment and Society*, 8(1), 9–39.
- Ratner, B. D., & Allison, E. H. (2012). Wealth, rights, and resilience: An agenda for governance reform in small-scale fisheries. *Development Policy Review*, 30(4), 371–398.
- Rice, J., & Mace, P. M. (2014). Bio-ecological dimensions of fisheries management, biodiversity and governance. In S. M. Garcia, J. Rice, & A. Charles (Eds.), *Governance of marine fisheries and biodiversity conservation: Interaction and coevolution* (pp. 55–67). John Wiley & Sons Ltd.
- Rindorf, A., Mumford, J., Baranowski, P., Worsøe, L., Clausen, D., Garcia, D., Hintzen, N. T., Kempf, A., Leach, A., Levontin, P., Mace, P. M., Mackinson, S., Maravelias, C. D., Prellezo, R., Quetglas, A., Tserpes, G., Voss, R., & Reid, D. (2017). Moving beyond the MSY concept to reflect multidimensional fisheries management objectives. *Marine Policy*, 85, 33–41. <https://doi.org/10.1016/j.marpol.2017.08.012>
- Rostow, W. W. (1960). *The stages of economic growth: A non-communist manifesto*. Cambridge University Press.
- Sackel, J. (2018). "Rational Fishing"? The Concept of Maximum Sustainable Yield between the Poles of Economy and Ecology "Rationale Fischerei"? Das Konzept des Maximum Sustainable Yield im Spannungsfeld von Ökonomie und Ökologie. *Vierteljahresschrift für Sozial und Wirtschaftsgeschichte*, 105, 183–200. <https://doi.org/10.25162/vswg-2018-0005>
- Salz, P. (1986). *Policy instruments for development of fisheries*, Publ.Nr. 574. Agricultural Economic Research Institute.
- Santos, A. N. (2015). Fisheries as a way of life: Gendered livelihoods, identities and perspectives of artisanal fisheries in eastern Brazil. *Marine Policy*, 72, 279–288. <https://doi.org/10.1016/j.marpol.2015.09.007>
- Schrank, W. E. (2005). The Newfoundland fishery: Ten years after the moratorium. *Marine Policy*, 29(5), 407–420. <https://doi.org/10.1016/j.marpol.2004.06.005>
- Smith, A. D. M. (1994). Management strategy evaluation: The light on the hill. Population dynamics for fisheries management. *Population Dynamics for Fisheries Management*, 1994, 249–253.
- Smith, H. D. (2000). The industrialization of the world ocean. *Marine Policy*, 43, 11–28.
- Spalding, A. K., Grorud-Colvert, K., Allison, E. H., Amon, D. J., Collin, R., de Vos, A., Friedlander, A. M., Johnson, S. M., Mayorga, J., Paris, C. B., Scott, C., Suman, D. O., Cisneros-Montemayor, A. M., Estradivari, Giron-Nava, A., Gurney, G. G., Harris, J. M., Hicks, C., Mangubhai, S., ... Thurber, R. V. (2023). Engaging the tropical majority to make ocean governance and science more equitable and effective. *Npj Ocean Sustainability*, 2, 8. <https://doi.org/10.1038/s44183-023-00015-9>
- Sparreboom, T., & Gomis, R. (2015). *Structural change, employment and education in Ghana, employment working paper 193*. International Labour Organization.
- Stringer, C., Whittaker, D. H., & Simmons, G. (2016). New Zealand's turbulent waters: The use of forced labour in the fishing industry. *Global Networks*, 16(1), 3–24.
- Sumaila, R., Marsden, A. D., Watson, R., & Pauly, D. (2007). A global excess price database: Construction and applications. *Journal of Bioeconomics*, 9, 39–51.
- Sumaila, U. R., & Hannesson, R. (2010). Maximum economic yield in crisis? *Fish and Fisheries*, 11(4), 461–465.
- Symes, D., & Phillipson, J. (2009). Whatever became of social policy in fisheries? *Fisheries Research*, 95, 1–5.
- Tai, G., Travis, C., Cashion, T., Lam, V., Swartz, W., & Sumaila, R. U. (2017). Ex-vessel fish price database: Disaggregating prices for low-priced species from reduction fisheries. *Frontiers in Marine Science*, 4, 1–10. <https://doi.org/10.3389/fmars.2017.00363>
- Teh, L., & Sumaila, U. R. (2007). Malthusian overfishing in Pulau Banggi? *Marine Policy*, 31(4), 451–457.
- Teh, L. C. L., & Sumaila, U. R. (2013). Contribution of marine fisheries to worldwide employment. *Fish and Fisheries*, 14, 77–88. <https://doi.org/10.1111/j.1467-2979.2011.00450.x>
- Tveterås, S., Asche, F., Bellemare, M. F., Smith, M. D., Guttormsen, A. G., Lem, A., Lien, K., & Vannuccini, S. (2012). Fish is food—The FAO's fish price index. *PLoS ONE*, 7(5), e36731. <https://doi.org/10.1371/journal.pone.0036731>
- Urquhart, J., Acott, T. G., Symes, D., & Zhao, M. (Eds.). (2014). *Social issues in sustainable fisheries management*. Springer.
- Wagner, P. (2017). *The moral mappings of south and north*. Edinburgh University Press.
- Weeratunge, N., Béné, C., Siriwardane, R., Charles, A., Johnson, D., Allison, E. H., Nayak, P. K., & Badjeck, M.-C. (2014). Small-scale fisheries through the wellbeing lens. *Fish and Fisheries*, 15, 255–279. <https://doi.org/10.1111/faf.12016>

- Willis, S., Bygvraa, D. A., Hoque, M. S., Klein, E. S., Kucukyildiz, C., Westwood-Booth, J., & Holliday, E. (2023). The human cost of global fishing. *Marine Policy*, 148, 105440. <https://doi.org/10.1016/j.marpol.2022.105440>
- Winchenbach, A. (2022). *Diversifying with dignity: An explorative study of work transitions from fishing to tourism in Cornwall, UK* (Unpublished PhD dissertation). University of Surrey.
- Woodburn, J. (1982). Egalitarian societies. *Man*, 17, 431–451.
- World Bank. (2019). *The World Bank annual report 2019: Ending poverty, investing in opportunity* (English). World Bank Group. <http://documents.worldbank.org/curated/en/156691570147766895/The-World-Bank-Annual-Report-2019-Ending-Poverty-Investing-in-Opportunity>
- World Bank. (2020). *Poverty and shared prosperity 2020: Reversals of fortune*. World Bank. <https://doi.org/10.1596/978-1-4648-1602-4>
- Ye, Y., Cochrane, K., Bianchi, G., Willmann, R., Majkowski, J., Tandstad, M., & Carocci, F. (2013). Rebuilding global fisheries: The World Summit Goal, costs and benefits. *Fish and Fisheries*, 14, 174–185. <https://doi.org/10.1111/j.1467-2979.2012.00460.x>

How to cite this article: Bavinck, M., Scholtens, J., & Fabinyi, M. (2024). Maximum sustainable employment: Adding to the beacons of wild fisheries governance. *Fish and Fisheries*, 25, 619–629. <https://doi.org/10.1111/faf.12829>