Distributional impacts of fisheries subsidies and their reform

Case studies of Senegal and Vietnam

Sarah Harper and U Rashid Sumaila

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About the authors

Sarah Harper, Fisheries Economics Research Unit, Institute for the Oceans and Fisheries, University of British Columbia; U Rashid Sumaila, Fisheries Economics Research Unit, Institute for the Oceans and Fisheries, University of British Columbia

Corresponding author email s.harper@oceans.ubc.ca

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International Institute for Environment and Development
80-86 Gray's Inn Road, London WC1X 8NH, UK
Tel: +44 (0)20 3463 7399
Fax: +44 (0)20 3514 9055
www.iied.org

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Ongoing international negotiations on capacity-enhancing fisheries subsidies may soon eliminate harmful subsidies. Although their negative ecosystem impacts are well known, their social dimensions are less understood. This paper investigates the distributional and equity dimensions of fisheries subsidies in two developing countries, Senegal and Vietnam, to understand how their provision or removal may affect different population groups. Using the limited data available, we paid specific attention to women and youth, who are especially vulnerable in these contexts. We recommend further study to understand the implications of reform on other vulnerable groups, such as indigenous peoples and ethnic minorities.

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Summary

Fisheries subsidies are globally estimated at US$35 billion a year, with about US$20 billion going to increase fishing capacity. Many recognise that these capacity-enhancing subsidies have contributed to the decline of fish stocks around the world, threatening the benefits that fisheries provide to the millions of men, women and children who rely on marine ecosystems. Increasing recognition of the need to eliminate harmful subsidies for the health of the oceans is pushing the international community towards agreement on their reform. As the World Trade Organization nears a decision on reforming subsidies that contribute to illegal, unreported and unregulated fishing, overfishing and overfished stocks, there are concerns about the lack of information on their social and equity dimensions and the effects of reform on vulnerable groups. To move the conversation forward and inform the transition away from harmful subsidies, there is an urgent need for insights into the human dimension of subsidies and their reform.

This paper provides such insights by investigating the distribution of fisheries subsidies in Vietnam and Senegal and identifying potential positive and negative impacts of their reform. For each country, we describe the subsidies and their distribution between small- and large-scale subsectors, identifying the actors involved. We explore the short- and long-term effects subsidy reform could have on different groups, finding that small-scale fishers, women and youth are particularly vulnerable in both countries.

Stock depletion is a serious concern that threatens the flow of potential benefits from fisheries. In both countries' exclusive economic zones, more than 50% of stocks were exploited, overexploited or collapsed in 2014. Fisheries subsidies have maintained or increased effort in waters where stocks are already overexploited. Vietnam directs 88% of its capacity-enhancing fisheries subsidies to expanding the large-scale sector in offshore waters, mainly by decreasing operating costs, to reduce pressure on overexploited inshore waters by shifting effort and increasing access to alternative fishing grounds. In Senegal, 60% of capacity-enhancing subsidies go to the small-scale sector, subsidising fuel and supporting artisanal fleets that already operate over capacity. Illegal fishing by foreign and domestic vessels and climate change-related shifts in species distribution further exacerbate the situation.

In the short term, the biggest impact of removing subsidies in Vietnam would be on the large-scale sector (fishing and processing jobs and income). But, paired with increased management and enforcement, it could allow for long-term rebuilding and increase fisheries-related benefits for men, women and youth. Although women may be displaced from post-harvest jobs in the short term, this could be absorbed by the expanding aquaculture sector.

In Senegal, the small-scale sector would be negatively affected in the short term but could benefit in the longer term. If the government continues to provide harmful subsidies, the supply of fish to women fish traders and processors will decline further, jeopardising their income with implications on family wellbeing. Although men would also be affected, their incomes are less correlated with expenditure on children's education, food and health. The decline in fishing opportunities from increasingly overexploited stocks has also been linked to illegal migration, often by young men, which will be exacerbated if capacity-enhancing subsidies continue. In Senegal, around 60% of the population is under 25.[1] So, if subsidy reform is going to alleviate – rather than further contribute to – this trend, especially in the short term, reform strategies must consider the issues faced by youth and the factors that drive migration.

Identifying at the outset the potential short-term adverse consequences of reforming subsidies is key to mitigating negative impacts for vulnerable groups and offers an opportunity for aligning subsidy reform with other international targets – such as the Sustainable Development Goals – that emphasise equity and other social objectives. Redirecting spending from harmful fisheries subsidies to programmes that empower and support women and youth will help governments develop strategies to reduce dependence on fisheries, add value to the catch and/or enhance management efforts to limit fishing mortality.

The long-term benefits of removing harmful subsidies include the potential for rebuilding fisheries and recovering stocks. Equitable access to these future stocks could bring social, economic and ecological benefits. Eliminating or reforming harmful fisheries subsidies is crucial not only to global ocean health but also to human health and wellbeing worldwide.

[1] www.indexmundi.com/senegal/demographics_profile.html

1 Introduction

Globally, there are around US$35 billion in subsidies to the fishing industry. Approximately US$20 billion of this is directed towards capacity-enhancing programmes and activities to increase revenue or reduce fishing costs. This leads to a marginal increase in profit, which in turn increases participation and fishing effort (Sumaila et al. 2010, 2016).

But these large government expenditures are jeopardising the oceans' ability to sustain coastal populations around the world, threatening food and livelihood security, particularly in the countries and communities that are most dependent on fisheries (Sumaila et al. 2012). Subsidies distort markets and encourage unsustainable fishing practices, making them a priority item at international trade negotiations and ensuring they feature prominently in discussions around sustainable development. Eliminating harmful fisheries subsidies is crucial to global ocean health; but it also has implications for global human health and wellbeing.

This paper aims to clarify the debate around social and equity implications of fisheries subsidy provision and reform, where food security and livelihood considerations could be used as a tool to avoid subsidy reform. Here, we explore the short- and long-term consequences of subsidy provision and reform, with specific attention to vulnerable populations, to advance the conversation on fishery subsidy reform.

Background

Sustainable Development Goal (SDG) 14 addresses unsustainable practices in the marine capture fisheries sector. Target 14.6 specifically will prohibit fisheries subsidies that lead to overcapacity and overfishing by 2020 (UNCTAD 2016). SDG14 and its associated recommendations for the elimination of harmful subsidies relate to and have implications for other SDGs such as reducing poverty (SGD1) and eliminating hunger (SDG2) (Singh et al. 2018). Aichi Biodiversity Target 6 also aims to ensure all fish, invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem-based approaches by 2020, to avoid overfishing, put recovery plans and measures in place for all depleted species and ensure that the impacts of fisheries are within safe ecological limits.

Ongoing negotiations at the World Trade Organization (WTO) over subsidies and the momentum created by Target 14.6 and Aichi Target 6 around capacity-enhancing subsidies may soon lead to the elimination of harmful fisheries subsidies around the world. Although policymakers are increasingly aware of the ecosystem benefits of removing fisheries subsidies (Sumaila et al. 2010; Cisneros-Montemayor et al. 2016a), the social implications are not as well recognised or understood. Of concern is that some population groups might be disproportionately affected – positively or negatively – by the provision (or removal) of such subsidies. For example, in response to overexploitation in open-access fisheries, some countries have adopted quota systems that have had positive impacts on stocks but negative social consequences. These changes have further marginalised small-scale fishers, women and youth, who have less access to fisheries resources and as a result their associated benefits (Cochrane 2000; Neis et al. 2013).

With the possibility of fisheries subsidy reform on the horizon, there is an urgent need to understand the distribution of subsidies. This will inform the implementation of policy reforms and help mitigate impacts that could lead to further social and economic inequalities within the fisheries sector and in fisheries-dependent communities.

Challenges to measuring impact

Globally, more than 260 million people work in marine capture fisheries (Teh and Sumaila 2013). This includes men and women who are employed directly or indirectly, formally or informally, paid or unpaid, along the fish value chain and in marine capture-related activities. Approximately half of those employed in fisheries value chains are women (World Bank 2012), although their contributions are not always recognised (Harper et al. 2013).

This complex and expansive network of sectoral actors makes it difficult to identify the impacts of subsidies on specific people or groups. The lack of transparency and available data around government expenditures in the fisheries sector also pose challenges. However limited the data, here we infer potential impact of subsidy reform on vulnerable groups by looking at subsidy distribution patterns to identify the likely winners and losers. Fisheries sector socioeconomic data are notoriously poor in many areas of the world, but substantial efforts by researchers at the University of British Columbia are addressing this deficiency by developing global datasets of fisheries economic indicators to help answer pressing policy issues such as fisheries subsidies (Sumaila et al. 2010; Schuhbauer et al. 2017). We can use these indicators in combination with data and studies that identify marginalised groups and vulnerable populations (Harper et al. 2013, 2017; Cisneros-Montemayor et al. 2016b; Golden et al. 2016) to determine how best to use (or not use) taxpayer money to support them.

The human dimension

Subsidies can exacerbate existing inequalities in the sector in terms of access to and control over fisheries resources and their benefits. For example, providing or reforming harmful subsidies that enhance effort and capacity to industrial fleets could disproportionately affect women, who often make up the majority of industrial processing labour, by reducing the supply of fish to these plants and therefore the demand for labour. So, although reform may decrease pressure on the marine environment by reducing fishing effort, it could also put a significant number of seafood processing plant workers – mostly women – out of work in the short term. But it could also boost these jobs in the medium and long term.

The social and economic consequences are not trivial, and the impact of reform could be compounded in countries that do not have a social security system in place to help workers who have become unemployed due to the closure of a seafood processing plant following reform or as a result of continuing harmful subsidies that extend the overexploitation of fisheries stocks.

For example, when overexploitation of stocks off the coast of Canada led to a collapse of Atlantic cod in the 1990s, there was a 44% reduction in fishers (mainly men) and a 60% reduction in seafood-processing employment (mainly women). Closures displaced men and women in these sectors, but social assistance programmes helped to mitigate income losses and transition people into alternative livelihoods (Neis et al. 2013).

In contexts where social support programmes are limited, men and women have responded to fisheries-related livelihood insecurity with cross-border migration, seeking fishing and processing employment elsewhere and sending remittances home to their families. So, it is important that policymakers consider the short-, medium- and long-term cross-border impacts of subsidy inputs (and reform).

If we consider fisheries as a complex social–ecological system (Berkes 2015), we must view any subsidies from social and ecological standpoints. Much of the criticism of fisheries subsidies has been from an ecological point of view, measuring the ecological impacts of increased fishing effort, which may increase employment opportunities in fisheries (a positive social outcome) in the short term, but also leads to overexploitation (with negative ecological, economic and social outcomes) in the medium to long terms. As with any other coupled human-environment system, we must employ multiple lenses to fully understand the trade-offs associated with various policy scenarios and alternatives.

1.1 Objectives and approach

The aim of this paper is to understand the distributional and equity dimensions of fisheries subsidies in two developing countries, Senegal and Vietnam. Our investigation and analysis focus on:

- The distribution of subsidies, by type, fisheries subsector and value chain segment
- The short and long-term impacts of existing subsidy distribution on vulnerable people, specifically small-scale fishers, women and youth, and
- The intra- and intergenerational impacts of removing harmful fisheries subsidies for vulnerable groups.

Vulnerable people can include children, youth, people with disabilities, people with HIV, older people, indigenous peoples, refugees, internally displaced persons and migrants. We focus on small-scale fishers, women and youth aged 15–24; and while we acknowledge that this captures only a portion of those considered vulnerable, various studies have recognised

these groups as marginalised in many fisheries contexts (Williams 2002; Pauly 2006; Neis et al. 2013). They were also the only groups for which we could find enough country- and sector-specific data.

BOX: WHAT WE MEAN BY…

When we talk about **intra- and intergenerational equity**, we mean equity within the current generation and equity between generations. **Intergenerational equity** broadly includes the distribution of benefits between children, youth and future generations, whereas **intra-generational equity** focuses on the distribution of benefits among the existing generation of working age people, differentiated by gender, class, ethnicity and so on. We use these terms in our analysis as a way of assessing short versus long-term costs and benefits for current versus future generations.

Our case studies describe the social and economic context, fishing industry and actors in each country and explore the types of fisheries subsidies and their distribution between different groups of actors, with specific attention to small-scale fishers, women and youth.

Our analysis explores the distribution of fisheries subsidies and their impacts, and the potential impacts of subsidy reform, through a rigorous synthesis of existing but limited country-level data. We group fisheries subsidies into 13 categories and further delineate these by subsidy type based on perceived impact of subsidy on the fish stock/environment (see Table 1). It should be noted that these categories do not consider the socioeconomic dimensions of these subsidies. Market and storage infrastructure subsidies benefit the post-harvest subsector; all the other categories are directed mainly towards the fishing side of the fish value chain.

Table 1. Fisheries subsidy categories and types

SUBSIDY TYPE	CATEGORY
Beneficial	Fisheries management
	Fishery research and development
	Marine protected areas
Harmful	Boat construction and renovation
	Fisheries development projects
	Fishing port development
	Market and storage infrastructure
	Tax exemption
	Fishing access
	Fuel subsidies
Ambiguous	Fisher assistance
	Vessel buyback
	Rural fisher communities

Note: Table based on Sumaila et al. (2010)

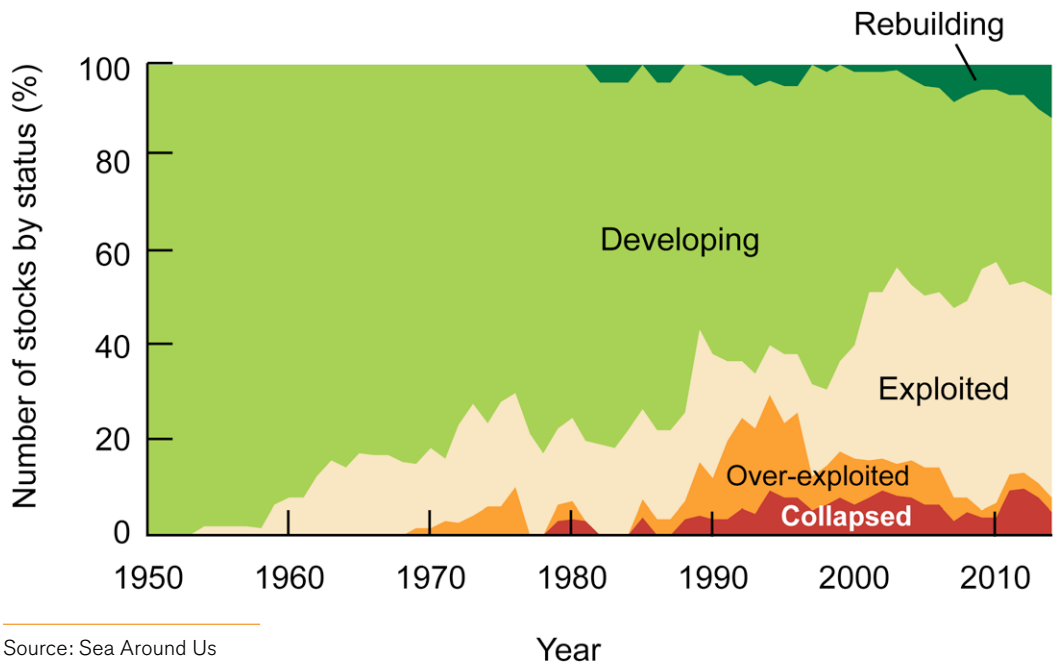
2

The case of Vietnam

Fisheries are an important source of food and income for millions of people living along Vietnam's coast and a major source of export earnings for the country (Pomeroy et al. 2009). Many people rely on the sector's social and economic contributions, so maintaining the flow of benefits from fisheries is important. Fisheries development has therefore been a major objective of the national government, which has rolled out numerous subsidy programmes in recent decades to expand the offshore sector. However, these programmes, which aim to increase profitability of the sector and improve livelihoods in the short term, may have negative long-term impacts on fish stocks and the flow and distribution of fisheries-related benefits.

In 2014, around 42.6% of fish stocks in Vietnamese waters were exploited, 3.3% were overexploited and 4.9% were collapsed (see Figure 1). However, these numbers do not differentiate between inshore and offshore stocks. The former are considered overexploited and biologically overfished; the latter may also be overfished, but there is an absence of robust and trustworthy data to assess the state of them (Pomeroy et al. 2009; Duy 2016). With Vietnam becoming a WTO member in 2007,[2] and as a major seafood exporter, those involved in trade negotiations and fisheries decision making must understand the implications of fisheries subsidy provision and reform in order to promote sustainable fisheries and balance

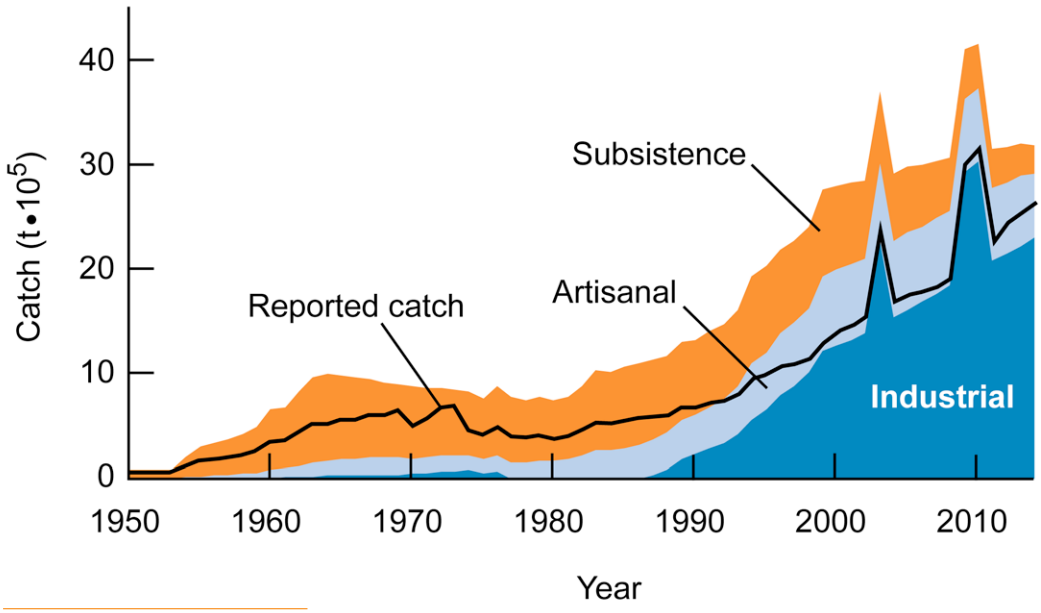
Figure 1. Stock status in Vietnamese waters, 1950–2014



Source: Sea Around Us

[2] www.wto.org/english/thewto_e/countries_e/vietnam_e.htm

Figure 2. Catches in Vietnamese waters by fisheries sector, 1950–2014



Source: Sea Around Us

social, economic and environmental objectives. But before analysing the distribution of these subsidies, we will first explore the social and economic context of the fisheries sector and fishing communities in Vietnam.

2.1 Social and economic context of Vietnamese marine capture fisheries

In Vietnam, around eight million people depend on inshore fisheries as their primary source of household income; another 12 million rely on fisheries for a portion of their income or subsistence (World Bank 2005). Some 4.7 million people work in fisheries, including 1 million in capture fisheries, 2.5 million in aquaculture and 1.2 million in processing and fisheries-related work (Hien 2008). There are probably many more jobs that are not counted in these estimates, including informal, unpaid and temporary workers at various nodes along the Vietnamese fish value chain, which is estimated to employ 6–18 million workers directly and indirectly (Teh and Sumaila 2013).

We can roughly divide fisheries in Vietnam into large- and small-scale subsectors. Most fishing activity takes place in near-shore/inshore waters. The small-scale subsector includes both artisanal (market) and subsistence (non-market) components of near and inshore fishing and 88% of the capture fisheries labour force works in this subsector (Pomeroy et al. 2009).

But if we consider all subsectors, including discarded bycatch, 72% of catches by volume comes from the large-scale, industrial subsector (see Figure 2).

Labour is divided along gender lines in most Vietnamese fishing households, with men going out to sea to fish and women selling and processing fish (World Bank 2005). There is some evidence that women participate in marine capture fisheries – for example, fishing from boats in lagoons and collecting invertebrates on foot from the shore (World Bank 2005; Lentisco and Phuong Thao 2013) – but these activities are not well documented or accounted for. Women's participation in post-harvest activities is more widely recognised, with several sources indicating that women dominate seafood processing activities, at 80–85% of the workforce (World Bank 2005; Hien 2008; Matthews et al. 2012). Around 40,000 women are involved in marine capture fisheries and as many as 784,000 are involved in the post-harvest sector, including processing, distribution, retail and other activities (Hien 2008). These estimates translate into a female participation rate of 4% in fishing activities and 65% in post-harvest activities (Harper et al. 2017).

Although there is little information on the age profile of fishers and the contribution of fisheries to youth employment, we know that youth represent 13% of Vietnam's labour force, 76.4% of the youth labour force is employed informally and youth unemployment is much higher than it is in the overall population (Anh et al. 2015). This makes the age group particularly vulnerable to economic shocks and subsidy reforms.

Table 2. Small-scale fishers, women and youth employed in fishing and fish processing in Vietnam

POPULATION	FISHING (%)	PROCESSING (%)
Small-scale fisheries	88	Unknown
Women	4	80
Youth (aged 15–24)	3	13

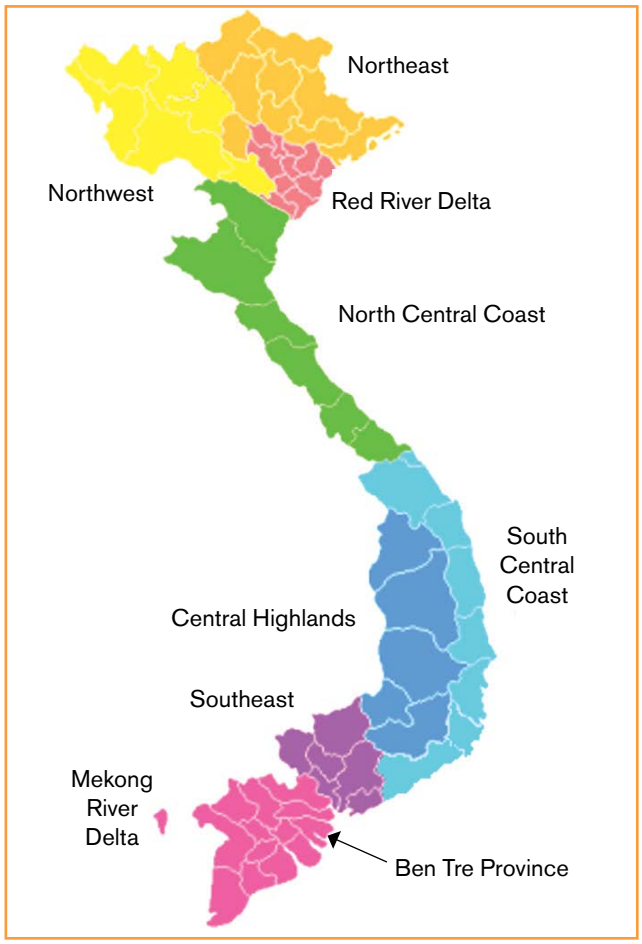
Source: Author's own

Vietnam is geographically divided into northern, central and southern macro-regions (Figure 3). The coastal provinces are in the Red River region in the north, the central coastal region and the Mekong River region in the south. There is considerable geographic variation in socioeconomic characteristics – such as population density, average income level, household poverty and livelihood strategies – but poverty is most intense in the Red River and Mekong River Delta regions.

Although the status of fisherfolk varies in each region, Vietnam's fishing communities are often typified by low income, low basic living standards and poor social services.[3] A survey of fishing households in Ben Tre province, for example, revealed that many had per capita incomes of less than US$1 a day, insufficient food and shelter, limited transportation and no access to clean water (Thi Nguyen and Flaaten 2011). Household income also varies considerably even within the same community, depending on the fishery targeted, the availability of assets, access to credit and alternative livelihood opportunities (Hue 2008).

In many parts of Vietnam, fishing is part of a **mixed livelihood strategy** that involves a variety of income-generating activities including fishing, aquaculture, agriculture and working in services. In certain parts of the country – particularly in impoverished communities – people often farm rice alongside fishing, especially freshwater fishing (Hue 2006). For example, fishing communes in three central provinces have shown increasing interest in peanut cultivation and raising livestock such as pigs, chicken and rabbits for income-generating purposes (Lentisco and Phuong Thao 2013). In Bai Huong village on Cham Island off the South Central Coast, the establishment of a marine protected area displaced fishers. Tourism and fish sauce making were potential alternative livelihoods, but without a steady supply of fish, the latter may not be viable in the long term. Also, despite programmes to develop these alternative livelihoods, many returned to fishing as their primary livelihood. As enforcement for the marine protected area was inadequate, exploitation continued in no-take areas (Brown 2011).

Figure 3. Map of Vietnam



Source: https://commons.wikimedia.org/wiki/Atlas_of_Vietnam

Many coastal regions flood in the rainy season and are therefore not suited to agriculture. In these low-lying areas and mangroves, aquaculture offers a viable alternative. But it must be done in a sustainable way. Clam farming, for example, is becoming increasingly popular in some provinces and is considered more sustainable than inshore fishing. A clam fishery (farming *Meretrix lyrata*) in Ben Tre Province, for example, has successfully improved livelihoods while promoting ecologically sustainable practices.[4]

[3] Households in rural areas with an average monthly income of less than VND 700,000 (US$32) are considered poor for the 2016–2020 period (OECD Development Centre 2017).
[4] http://ben-tre-clam-Viet Nam-stories.msc.org/

Migration to urban areas is another coping strategy for people in fishing communities with declining fish stocks and limited livelihood options. The younger generation in particular, seeing opportunities in the larger economy, are either unwilling or not encouraged to stay in fisheries and many are relocating to urban areas to find work (Lentisco and Phuong Thao 2013). Both men and women migrate for work, sending their earnings back to their villages (Hao 2012). The service sector is the largest growing sector in Vietnam and offers much more promising employment than fisheries, forestry and agriculture, where employment has been declining in recent decades (Anh et al. 2015). Migrating women mainly engage in unskilled labour as tailors, shoe traders, housekeepers and coffee harvesters while men continue to fish or work in construction and as mechanics. While migration may reduce the negative impact of declining fish stocks on youth and could act as a buffer to the impacts of subsidy reform, it has also been linked to other social concerns, such as an increase in the number of people with HIV, particularly when men relocate to find work (Hao 2012).

The uptake of alternative livelihoods is generally low among fisherfolk, who have limited **education, skills and training** (Thi Nguyen and Flaaten 2011). Rural areas tend to have higher illiteracy rates and lower education levels than urban areas. For example, in 2011, one Mekong Delta region fishing community had an illiteracy rate of 14% – compared to a national average of 2%. The majority of those surveyed had only completed primary school (Thi Nguyen and Flaaten 2011).

There are **gender disparities** in terms of access to education. In fishing communities, more boys are sent to school than girls (Hao 2012). Gender disparities in education and training impede women's access to employment in rural areas (Thinh 2009) and limit their ability to participate in fisheries training and management. Recent national statistics show that approximately 65% of working age people in rural Vietnam have no skills or training; this rises to more than 75% in the Mekong Delta region.

National youth unemployment,[5] estimated at 8%, is highest in the Mekong River Region, at 10% (General Statistics Office of Viet Nam 2018). While this estimate is relatively low, youth represent a substantial portion of informal employment. This is often considered vulnerable employment, defined by the International Labour Organization as having inadequate earnings, low productivity and difficult work conditions that undermine workers' fundamental rights (OECD Development Centre 2017).

Despite some economic pluralism and migration, 80% of households in Vietnam's coastal communities rely on fisheries for the majority of their household income (Pomeroy et al. 2009). In many cases, there are few feasible alternatives and people are forced to continue fishing overexploited stocks and using destructive fishing practices (Thi Nguyen and Flaaten 2011). This threatens the security of already precarious livelihoods as coastal resources continue to decline. Economic uncertainty and limited savings also make these rural coastal communities particularly vulnerable to natural shocks such as storms, extreme weather incidents and flooding, which will only increase with climate change (Rockefeller Foundation 2009).

2.2 Fisheries subsidies in Vietnam

In recent decades, Vietnam has focused its fisheries development efforts on expanding offshore fisheries. This strategy aims to reduce pressure on the already overexploited inshore marine environment while also aligning with social and economic objectives to boost employment and enhance the seafood export industry and as part of a geopolitical strategy to increase the presence of Vietnamese vessels in the South China Sea (Duy et al. 2015; Duy 2016). In 2010, Vietnam launched a fisheries subsidy scheme targeted towards its offshore fleet, which incentivised fishers to invest in large-scale offshore vessels with increased engine capacity (Duy et al. 2015). While this type of subsidy can increase income and profits in the short term, the longer-term consequences in an open-access system such as this are that stocks become increasingly depleted, reducing catch opportunities, income and profits (Sumaila et al. 2010).

With little recent data on fisheries subsidies readily available online or from local experts, we based our analysis on subsidy data from Sumaila et al. (2010) and Schuhbauer et al. (2017), the most comprehensive estimates available. In 2010, fisheries subsidies in Vietnam were around US$650 million (Sumaila et al. 2010).[6] Unpublished accounts indicate that the Vietnamese government plans to invest US$1.87 billion in the offshore fishing industry over 2018–2030;[7] 46% in 2018–2020 and the remainder between 2021 and 2030. Dividing this amount equally, it suggests approximately US$200–300 million a year for offshore vessel construction over the next few years. This is a similar estimate to that made by Sumaila et al. (2010) for the same category of subsidy.

[5] Youth unemployment refers to the share of the labour force aged 15–24 without work but available for and seeking employment.
[6] US$1 was equivalent to VND 18,890 in 2010. Source: www.oanda.com/currency/converter/
[7] https://tinyurl.com/y5twhag4

2.3 The distribution of subsidies

Vietnam channels 60% of its fisheries subsidies to capacity-enhancing activities, which are deemed ecologically 'harmful'. These include boat construction and renovation, fisheries development and port construction and development (Sumaila et al. 2010). Most are aimed at developing the offshore sector, with 78% supporting the large-scale fisheries subsector (Schuhbauer et al. 2017).

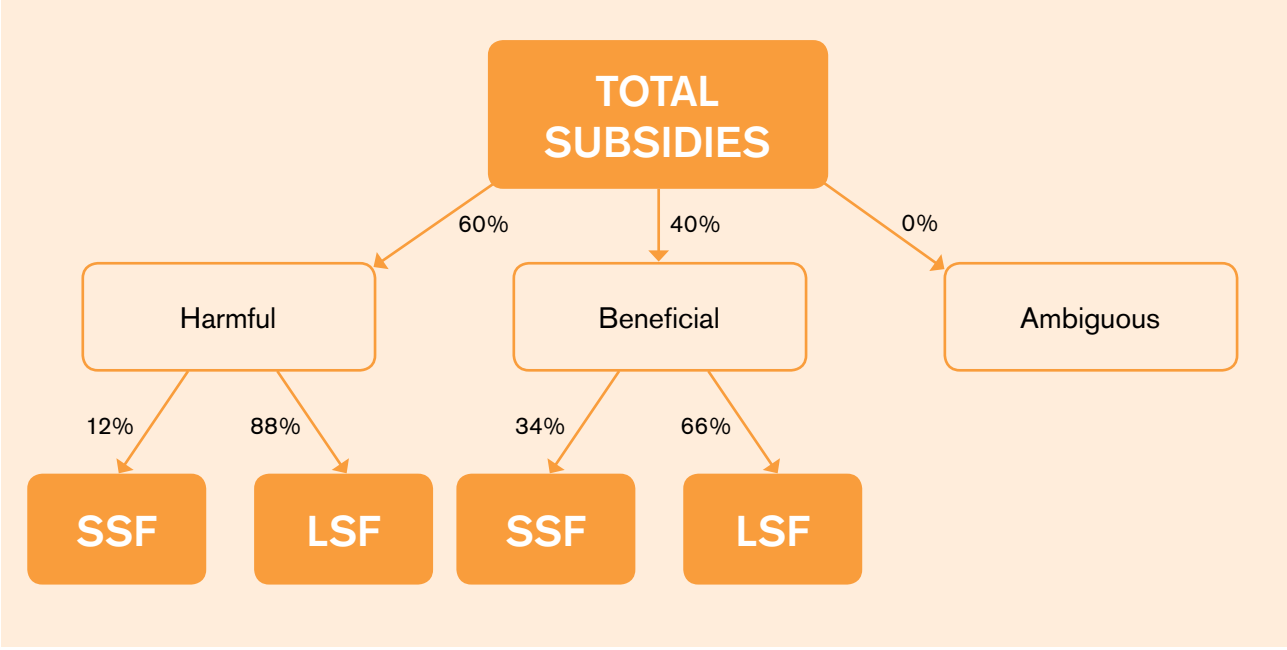
Subsidies deemed ecologically 'beneficial' represent approximately 40% of total government fisheries expenditure. Of these, 66% benefit the large-scale subsector and 34% the small-scale subsectors (Schuhbauer et al. 2017). These include subsidies for fisheries management, establishing and enforcing marine protected areas and research and development (Sumaila et al. 2010).

Figure 4 shows the percentage of total subsidies that goes to each category and the distribution of subsidies by small-scale fisheries (SSF) and large-scale fisheries (LSF) subsectors.

2.4 Impacts of subsidy distribution

Figure 4 shows that 60% of Vietnam's total fisheries subsidies are considered harmful to fish stocks. This means that, on balance, they undermine the resource base to the detriment of fishers, at least in the medium to long term. Of the total harmful subsidies, 88% go to LSF. So, for every US$1 that goes to SSF, more than US$7 go to their LSF counterparts. Only 34% of beneficial subsidies go to SSF. The implication is that the current distribution of subsidies strongly disfavours SSF. Most subsidies go to LSF and are mainly directed towards fishing operations, while the processing sector – where women and youth represent a high percentage of the workforce (Table 2) – does not receive any subsidies. This disfavour is particularly acute for small-scale fishers and other sector workers that are already marginalised – for example, through vulnerable employment – further limiting their ability to be competitive on the water and in the market (Schuhbauer and Sumaila 2016).

Figure 4. Distribution of fisheries subsidies in Vietnam



2.5 Potential impacts of subsidy reforms

With fisheries subsidies in Vietnam disproportionately favouring the industrial subsector, the most direct and immediate impact of reforming capacity-enhancing subsidies will probably be on the offshore fleet and its actors. There could be a short-term loss of jobs relative to the current state of fish stocks, particularly for men working in offshore fleets; fishers, owners and crew could also see a short-term loss of income, particularly boat owners who benefitted most from subsidy programmes (Duy et al. 2015). The decrease in product supply could also result in significant job losses in the post-harvest sector – particularly in processing and marketing – which would mainly impact women.

Despite these short-term losses, not doing anything would do more harm. When we consider the current state of fish stocks (Figure 1) and the potential for overexploiting more stocks, a business-as-usual scenario of continuing to provide subsidies that increase effort will increase overexploitation and reduce supply, with associated long-term job losses. There is some indication that stocks are already overexploited in offshore waters and that this is causing offshore vessels to fish in inshore waters and venture into neighbouring countries' waters to fish illegally (Duy 2016). It should be noted that subsidies aimed at reducing fishing costs to large-scale fleets were intended as an interim measure to shift effort from overexploited inshore to the less-exploited offshore waters. Although this may have been successful in the short term, if the subsidies continue – especially under the current limited levels of enforcement – they will lead to negative social and environmental outcomes in the long term (Duy et al. 2015; Duy 2016).

2.6 Possible strategies for reform

To benefit both inshore and offshore stocks, the government could reorient funds that reduce operating costs for offshore fleets towards management and enforcement. By restricting large-scale vessels from inshore waters and establishing no-catch zones in heavily depleted areas, this would help rebuild inshore stocks while reducing capacity and pressure offshore. It could also create new jobs by investing funds earmarked for fisheries subsidies in innovation and education, developing new industries, markets and skills.

The key is to decouple subsidies from fishing effort. Fisheries-related development that is not related to effort could help improve quality and traceability, allowing Vietnamese fishers to access higher-value markets. Tapping into these requires some upfront financial investment or incentives, which can be fiscally challenging and are therefore most effectively delivered through government programmes and schemes.

3

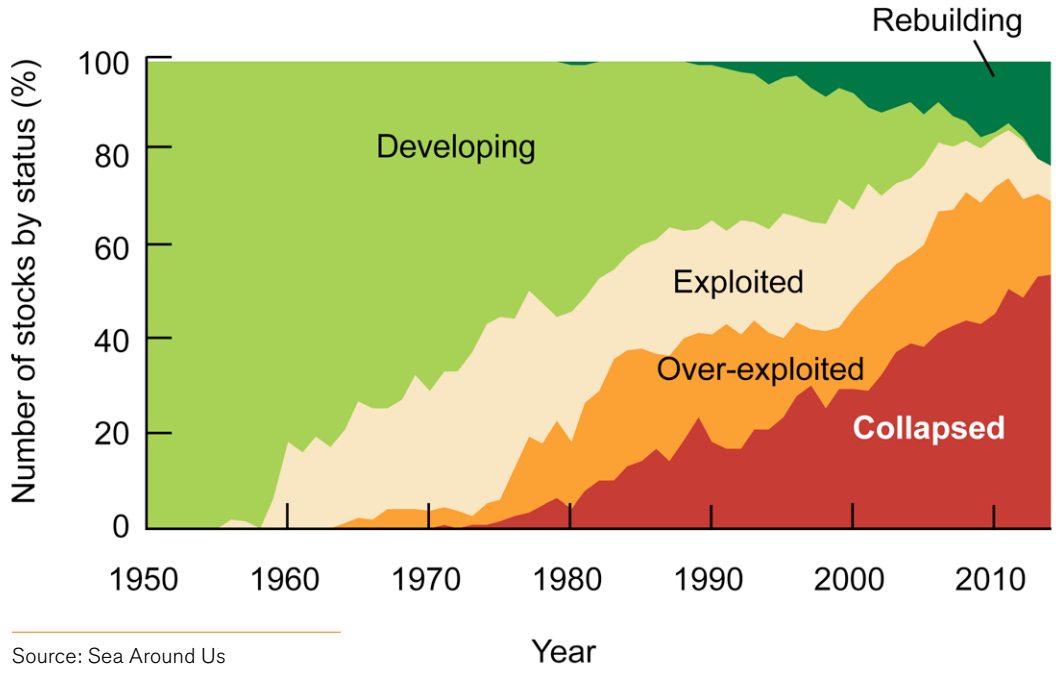
The case of Senegal

Senegal is highly dependent on fisheries for jobs, revenue and as an important food source (Belhabib et al. 2015; Selig et al. 2018). Some communities are completely dependent on fishing for income (Blédé et al. 2015). However, an increase in fishing effort and decrease in fish biomass off the Senegalese coast mean that the profitability of fisheries has decreased over time (Ba et al. 2017), jeopardising the benefits fisheries bring to communities.

The government introduced substantial capacity-enhancing inputs in the form of tax rebates and subsidies for fuel and vessel maintenance, upgrades or acquisition. It intended to maintain these benefits but, unfortunately, the subsidies led to overcapacity in the sector and the overexploitation of stocks. Added to this, subsidised vessels from other countries fishing on the high seas beyond Senegalese waters add pressure on migrating stocks, which are already overexploited within Senegal's exclusive economic zone (Sala et al. 2018).

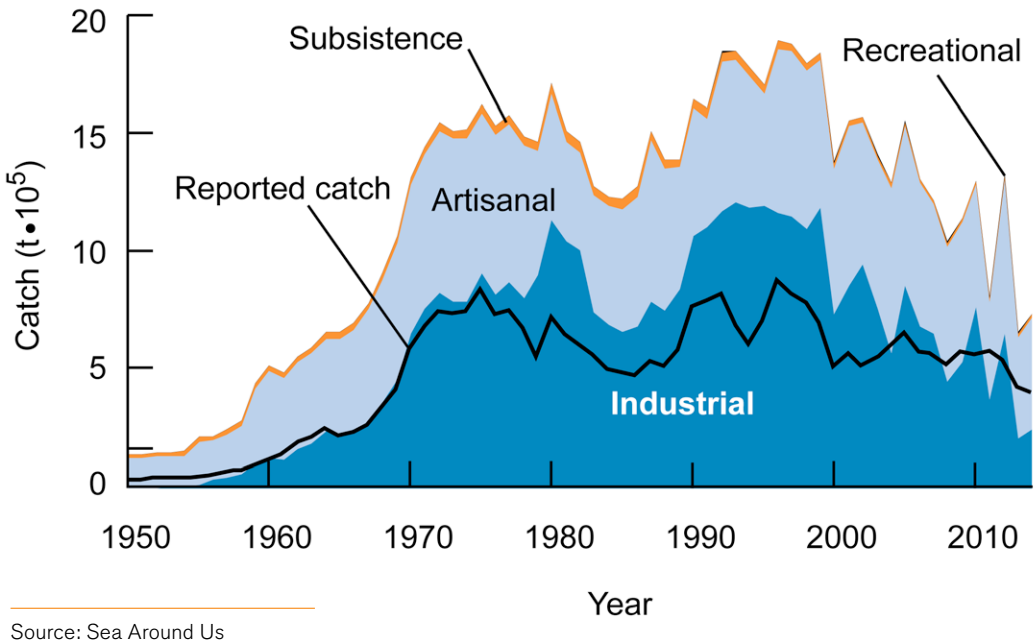
In 2014, around 7.5% of fish stocks in Senegalese waters were considered exploited, 15.8% overexploited and 54.4% collapsed (see Figure 5). Illegal fishing, poor infrastructure and weak monitoring and enforcement capabilities further exacerbate the challenges faced by the fisheries sector and those who rely on it for food and livelihood security (Belhabib et al. 2015; Blédé et al. 2015).

Figure 5. Stock status in Senegalese waters, 1950–2014



Source: Sea Around Us

Figure 6. Catches in Senegalese waters by fisheries sector, 1950–2014



Source: Sea Around Us

Given the country's high dependence on fisheries, subsidy programmes and their reform must include an assessment of the social impacts of proposed policy changes to mitigate adverse consequences on vulnerable populations such as women and youth.

3.1 Social and economic profile of Senegalese fisheries

Fisheries in Senegal are dominated by small-scale fleets, which catch approximately 520,000 tonnes a year.[8] Around 66% of these catches are from small-scale (mainly artisanal and subsistence) subsectors (see Figure 6). The landed value of fisheries catches is roughly US$3.2 billion (2010 real value, adjusted for inflation); approximately 70% of this is from small-scale subsectors.[9] Employment in the fisheries sector is also dominated by the small-scale sector, both in terms of harvest and post-harvest. An estimated 825,000 people rely on fisheries for some portion of their income, when all direct and indirect jobs are considered. Approximately 58,000 people work directly in small-scale fishing and 40,000 – mostly women – in small-scale processing and trade (Deme et al. 2012; Belhabib et al. 2015).

In Senegal, men dominate fishing activities, while women control much of the post-harvest side of the fish value chain (mainly artisanal smoking and drying): 98% of small-scale fishers are men, and some 90% of the country's 40,000 seafood processors are women (Soumare 2006; Deme et al. 2012). Women

Table 3. Small-scale fishers, women and youth working in fishing and fisheries processing in Senegal

POPULATION	FISHING (%)	PROCESSING (%)
Small-scale fishers	90	90
Women	2	90
Youth (aged 15–24)	Unknown	Unknown

Source: Author's own

[8] Sea Around Us catch reconstruction data include industrial, artisanal, subsistence and recreational catches, averaged over 2010–2015. See www.seaaroundus.org
[9] Calculated from Sea Around Us catch estimates combined with ex-vessel prices from the Fisheries Economics Research Unit price database.

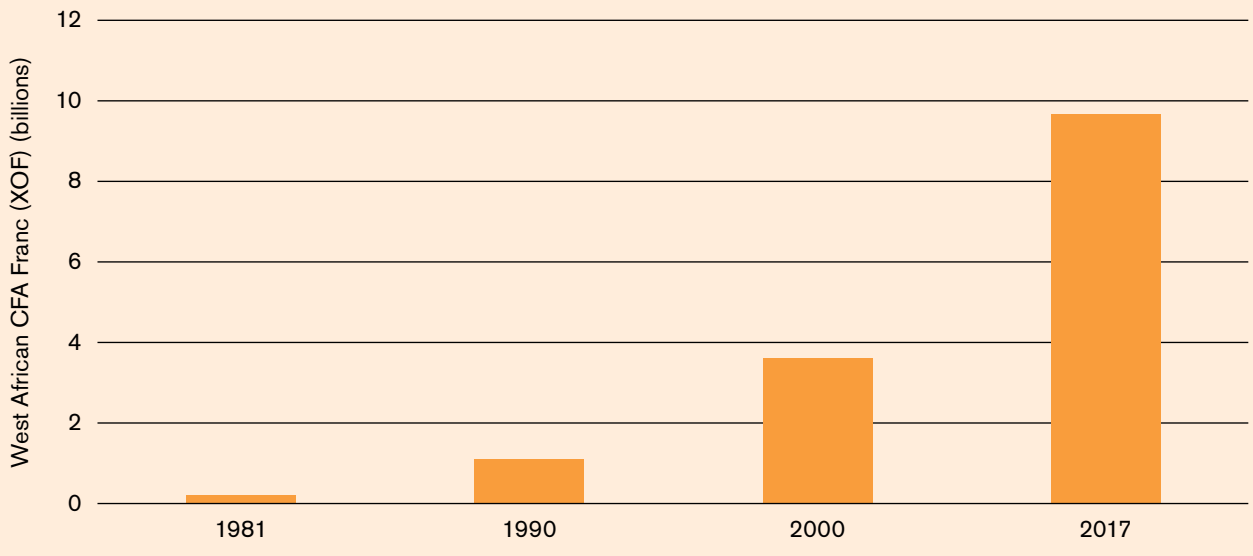
are also involved, but to a much lesser extent, in the production side, collecting invertebrates from shores for subsistence and/or artisanal purposes (Grandcolas 1997; Walter 2006). Around 1,350 women are involved in these shore-based fishing activities, contributing an estimated 10,000 tonnes annually to the total national catch (Belhabib et al. 2014), valued at US$30.5 million in 2015 (Harper et al. 2017). The shellfish harvest (done mainly by women) targets seven different high-value species in Senegal's mangrove estuaries, including: *Murex cornutus* (sea snail), *Cymbium senegalensis* (sea snail), *Pugilina morio* (whelk), *Senilia senilis* (blood cockle/clam), *Crassostrea gasar* (mangrove oyster), *Tagelus adansonii* (razor clam) and *Callinectes sapidus* (blue crab) (Carney 2017).

These gendered roles in fisheries also extend to gendered responsibilities and patterns of household expenditure. In Senegalese fishing families, women are often responsible for many of the basic household expenses, such as food, healthcare, education, clothing and so on (Hall-Arber 2012). An increase in men's income from fisheries or elsewhere does not necessarily translate into financial relief at the household level, where women continue to pay for most of the shared expenses, with minimal help from their husbands (Hall-Arber 2012). This limits women's ability to save or reinvest in their business, which adds to their economic vulnerability.

3.2 Subsidies to Senegalese fisheries

Senegal has various fisheries subsidy programmes, which together represent around US$51.8 million in government expenditures and exemptions (Sumaila et al. 2010; Schuhbauer et al. 2017; Ndiaye 2018). Fisheries subsidy programmes in Senegal mainly support the operation and development of the artisanal fisheries sector, dominated by the sardinella fishery (Belhabib et al. 2013). Tax exemptions on fishing-related equipment amounted to US$1.1 million in 2010 (Sumaila et al. 2010). In 2017, the government provided some US$17 million in total fuel subsidies, which have increased dramatically in recent decades (Figure 7), partly to offset the increasing cost of fuel. Another US$12 million went to vessel upgrades and US$17 million to fisheries development projects in 2017 (Ndiaye 2018). Fisheries management, research and development and marine protected areas are less well funded, receiving only US$3.1 million between them in 2020, while government expenditure on market and storage infrastructure was only around US$580,000 (Sumaila et al. 2010). Although we could not identify more recent figures for these subsidy categories, the government recently announced a major fisheries infrastructure project, which it claims will increase revenue to fishers.[10] But it provides no details on the amount of money it will devote to this project.

Figure 7. Fuel subsidies to Senegal's artisanal fleet, 1981–2017



Source: Ndiaye (2018)

[10] https://english.rvo.nl/news/fishing-port-development-offers-better-prospects-senegalese-fishermen

3.3 The distribution of subsidies

In Senegal, 94% of fisheries subsidies go to capacity-enhancing activities – which are deemed ecologically 'harmful' – including boat construction and renovation, fisheries development projects, market storage and infrastructure, tax exemptions and fuel subsidies. Most of these are directed to the small-scale subsector, which receives 60% of total 'harmful' subsidies. The other 40% goes to the large-scale subsector (Schuhbauer et al. 2017).

Subsidies deemed ecologically 'beneficial' represent around 4% of total government subsidies to fisheries. Of these, 54% benefit the large-scale subsector and 46% the small-scale subsector (Schuhbauer et al. 2017). The latter include subsidies for fisheries management, research and development and marine protected areas (Sumaila et al. 2010).

Figure 8 shows the percentage of total fisheries subsidies to each category and the distribution of subsidies between small- and large-scale fisheries.

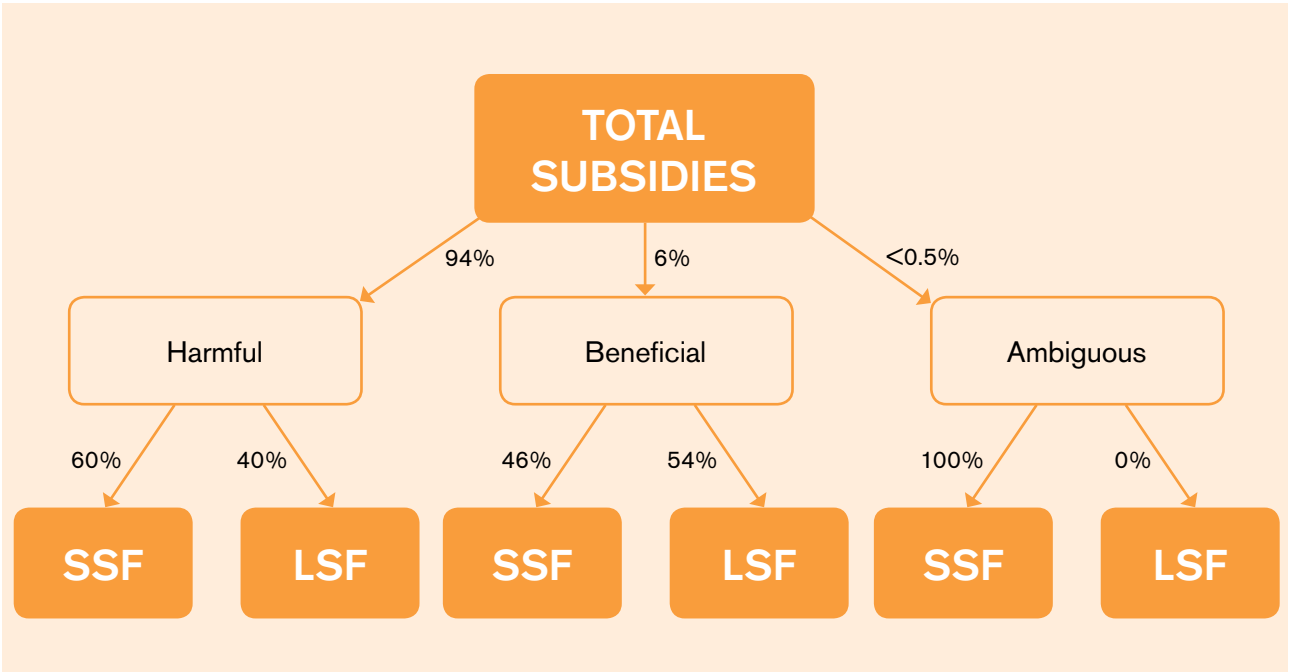
3.4 Impacts of subsidy distribution

Figure 8 shows that 94% of total fisheries subsidies in Senegal are considered harmful to fish stocks. This means that they undermine the resource base to the detriment of all those who depend on fisheries for food and income in the medium to long term. Of the total harmful subsidies, 60% go to SSF and 40% go to LSF, while the beneficial subsidies are divided more equally between SSF and LSF.

We have already discussed how most of the people employed in Senegal's fisheries are in the SSF sector, with men dominating fishing activities and women the processing side (Table 3). Although we did not find disaggregated data for youth in Senegal, at 60% of the population, they probably also make up a considerable portion of the fisheries labour force.

Our findings show that existing subsidies are almost entirely considered capacity-enhancing, which threatens the medium- and long-term benefits of fisheries to both men and women. The societal implications of decreased fish supply from continuing to promote overcapacity and overexploitation through capacity-enhancing subsidies are particularly pronounced for women and children. Furthermore, as subsidies are mainly directed

Figure 8. Distribution of fisheries subsidies in Senegal



towards fishing or creating incentives to expand export markets, women get little direct benefit from the inputs but bear the consequences for the resulting decline in fish supply.

Government financial support for port construction and infrastructure is considered a capacity-enhancing subsidy. Although these types of subsidy are more likely to benefit the processing sector, which is dominated by women, they represent only 1% of harmful subsidies. The women who participate directly in fishing, targeting molluscs through shoreline gleaning, do not benefit from fisheries subsidies either, as their fishing activities are done on foot using low-technology equipment.

Declining fish supplies – the result of overexploited stocks and the increase in foreign buyers – have disrupted traditional value chains and increased both competition and prices. This is particularly devastating for women fish traders, who have limited financial capital or access to credit.[11] In situations of economic crisis, women fish traders have, in some contexts, responded with the practice of transactional sex, or fish-for-sex, to gain access to an increasingly limited and costly fish supply (Béné and Merten 2008). While documented examples of this practice in Senegal are limited, there are many examples from across Africa and elsewhere in the world of women resorting to extreme measures to maintain an income and provide for their families (Béné and Merten 2008).

Continuing to provide subsidies may also further exacerbate illegal migration and associated political tensions. Economic struggles, fisheries collapse and subsidisation (or support for the acquisition and operation of fishing vessels) are linked to illegal migration and migrant smuggling in Africa.[12] This is likely to worsen as stocks decline. Climate change and other factors first pushed farmers from inland areas to the coast to work in the fishing industry (Atta-Mills et al. 2004; Pauly 2006). Then declining stocks and limited alternative income opportunities forced many West Africans, especially men and youth, to migrate to Europe in search of employment (Reuveny 2007; Belhabib et al. 2019). The gendered consequences of these migrations include an increased work burden for the women who remain, which affects their socioeconomic status and increases their economic vulnerability (Denton 2002). One study has also linked capacity-enhancing subsidies in Senegal to cross-border migration to other West African countries, contributing to the overexploitation of fish stocks in neighbouring countries and increasing conflict among fishers (Binet et al. 2012).

3.5 Potential impacts of subsidy reform

With these subsidies in place, certain fleets and associated artisanal fisheries will continue to experience declining profits as fish stocks fall. Removing these subsidies, on the other hand, could lead to stock recovery over time. In the short term, it would have a direct impact on small-scale sector fishers and vessel owners. Fuel subsidies represent a third of all fisheries subsidies in Senegal. Without them, most artisanal vessels would probably have negative profits. This would result in fewer employment opportunities and/or lower income for the vessels' crew and skippers and would have an adverse impact on the small-scale processors and marketers – mainly women – who receive the catch once it is landed, as their fish supply would decrease.

Removing subsidies would also lead to changes in domestic fish supply, potentially threatening food security. But subsidy-fuelled overcapacity is already compromising food security, threatening the health and nutritional status of existing and future generations, with particular impacts on children, youth and women, who are especially vulnerable to food insecurity. If harmful subsidies continue, this will not abate. Removing these subsidies, however, could be part of a broader strategy for securing food and nutritional resources into the future.

But while a decrease in the supply of fish for the local market has direct consequences for domestic food security, having fewer fish to process also has an indirect effect on food security, health and education, due to decreased incomes for women, who support their families through processing and marketing activities (Hall-Arber 2012).

Whether these impacts are a short-term result of removing subsidies or become a medium- to long-term consequence of continued government support for capacity-enhancing activities will depend on political motivation, which often takes a short-term view. Fisheries governance in Senegal has been criticised for favouring policies that claim economic benefit but fail to meet food security and sustainability objectives (Belhabib et al. 2017). However, decision makers must look beyond the political term to create alignment among the various social, economic and ecological objectives outlined in the SDGs, if Senegal and other nations are to make meaningful progress towards these goals.

[11] https://tinyurl.com/yxfm3dyr
[12] www.infomigrants.net/en/post/9622/mareyeurs-senegal-s-fisheries-crisis-drives-migration

4

Synthesis and analysis of case studies

The distribution of fisheries subsidies differs substantially between our two case study countries. In Vietnam, they are predominantly directed towards the large-scale sector, while in Senegal they are almost equally divided between the small and large-scale subsectors.

In Vietnam, subsidy programmes have been largely directed towards expanding the offshore fleet to shift effort from the overexploited inshore waters to less exploited offshore areas. But enforcement capacity is limited and this strategy has not succeeded. In fact, it may have increased effort in inshore waters.

In Senegal, fisheries provide crucial employment and are a key source of domestically produced protein in this food-insecure nation with limited income-generating opportunities. So, the drive to subsidise artisanal fleets is partially a strategy to improve food security and alleviate poverty, though it is also driven by short-term economic gain. While subsidies may lead to some short-term gains in terms of domestic food supply and income generation, they also add to overcapacity of the small-scale fleet, putting further pressure on fish stocks that are already threatened by climate change and illegal fishing (Lam et al. 2012; Pauly et al. 2014; Belhabib et al. 2017, 2019).

Removing harmful subsidies in both countries could lead to short-term job losses and decreased revenue. This would have social consequences, which their governments would need to mitigate. In Vietnam, the impact would be greater on the large-scale sector, which employs far fewer fishers than the small-scale sector; but it would also impact post-harvest employment. In Senegal, the short-term impacts would be greater in the small-scale sector. However, keeping capacity-enhancing subsidies would jeopardise job security in this sector even more. It would also have consequences for neighbouring countries in terms of increased fishing effort and overcapacity, as subsidised fleets increasingly fish in these waters, as seen in both Senegal and Vietnam.

The implications of current subsidy distribution and the potential impacts of reform could be especially acute for groups that are already marginalised in the fisheries sector and beyond.

4.1 Fisheries and vulnerable groups

Both our case study countries bring forward gender and intergenerational equity considerations related to fisheries subsidy provision and reform. We have already discussed how, in both countries, men and women perform different roles and occupy different spaces within fishing families, communities and businesses. This gender differentiation is reflected in the division of labour at all levels, from the family home all the way up to industrial fishing and processing. As a result, government expenditures and policy reforms targeted towards specific activities and segments of the fish value chain may well have gendered impacts. It is important to identify these at the outset to mitigate unintended consequences – for example, on poverty and food security – by exacerbating gender inequalities that already exist in the fisheries sector (FAO 2017).

Although age-disaggregated data on fisheries employment were not readily available, we know that youth make up substantial portions of both countries' populations and, like women, they are disproportionately represented in the informal sector, including fisheries, where employment is vulnerable.

4.1.1 Implications of existing subsidy distribution on women and youth

In Senegal, women fish processors and traders' livelihoods are particularly sensitive to the supply of fish, which is threatened by capacity-enhancing subsidies that encourage the overexploitation of stocks. Declining fish supplies and competition from foreign buyers have already driven up fish prices, which has harmed the livelihoods of women who derive their income from fish processing and trade.

In Vietnam, men are the biggest direct beneficiaries of existing subsidies, as they are the ones who fish, own boats and have fishing businesses and companies. Women benefit directly from employment in processing when there is a steady supply of fish. There is an assumption that women will also benefit indirectly through household income from their husbands or other male family members who are employed in the fisheries sector. But this assumes that households in Vietnam pool their incomes and that an increase in income by any single family member benefits the entire family. We know, however, that in many contexts, household income is not pooled, and that changes in an individual's income can influence bargaining power and specific expenditure categories, depending on whose income increases/decreases (Agarwal 1997).

Efforts to develop Vietnam's offshore fishing industry to alleviate pressure on already overexploited inshore fisheries have led to further exploitation of these habitats while also increasing fishing by Vietnamese vessels in neighbouring waters (Duy 2016). While subsidies for boat modification and enhancement and fuel cost reduction may maintain fishing and processing jobs in the short term, they pose a threat to employment in the sector in the medium to long term, if fish stocks continue to decline. Unless subsidies can keep pace with economic loses from declining resources, the deficit this causes in terms of family livelihoods may require women to further increase their work burden through extra income-generating activities.

4.1.2 Potential impact of subsidy reform on women and youth

Removing capacity-enhancing subsidies would create potential for stock recovery, which would have a positive impact on equity. In the short term, removing subsidies could decrease the supply of fish and associated processing employment, which would mainly affect women in both countries. However, it could also break women's cycle of dependence on fisheries-related income, with benefits for children, as women's income in Senegalese fishing families often pays for healthcare, household food and education. To mitigate short-term negative impacts, governments should ensure that when they remove subsidies, they also roll out programmes for income diversification and support for vocational training and education. They should target these especially at women but also offer them to men, with specific opportunities for youth.

In the medium to long term, if stocks recover, fisheries-related job opportunities could increase. For this to be a realistic future scenario, governments would need a comprehensive recovery strategy that includes reducing illegal unreported and unregulated fishing activity and illicit trade in fishery resources (Sumaila 2018), re-evaluating fishing agreements with foreign countries (Kaczynski and Fluharty 2002; Alder and Sumaila 2004) and adapting to climate change (Miller et al. 2018).

4.2 Promoting equity instead of exemptions

Mitigating the social impacts of subsidy reforms should include requirements to promote social equality, gender equality and the empowerment of women, with funds redirected or earmarked for social programmes and targeted support for groups such as small-scale fishers, women and youth. This approach could be more effective in targeting benefits towards vulnerable groups than giving special and differential treatment to entire countries, which could further disadvantage the most marginalised by contributing to further decline of fish stocks. Although examples of programmes aimed at levelling the playing field in terms of distributing benefits are rare in the fisheries sector, one government initiative in France provides support to women who contribute to family fishing businesses under collaborative spouse status, where previously only men were eligible for support (Frangoudes and Keromnes 2008).

However, this type of government expenditure is often considered an 'ambiguous' subsidy in terms of reducing fishing effort and associated impact on fish stocks. Directing the support specifically towards women would probably have a much greater social impact, as shown in programmes like Brazil's Bolsa Família, a social welfare programme that gives money preferentially to female household heads to improve health and education outcomes in children.

From a social equity standpoint, we can consider funds and programmes to be 'transformative' if they specifically target and empower vulnerable groups (Holmes and Jones 2011). However, given the limited social protection coverage in Vietnam and Senegal, it might be more realistic to mitigate the impacts of subsidy reform on vulnerable groups through programmes to develop alternative livelihoods for women and youth. We explore this strategy in the next section.

4.3 Mitigation through reorientation

It is possible to mitigate the short-term impacts of removing capacity-enhancing subsidies in Senegal and Vietnam – in terms of income, jobs and food supply – through compensatory and complementary measures to help vulnerable populations during the transition (Merayo et al. 2019). These measures include economic compensation alongside skills development and training for alternative income-generating activities.

With multiple stressors and pressures on already declining fish stocks, relying on fisheries as a primary source of food and livelihood is not sustainable and communities that depend on natural resources such as fisheries for their food and livelihoods are highly vulnerable to climate change impacts (Thomas et al. 2018; Sumaila et al. 2019). Reforming harmful subsidies should be part of a wider mitigation strategy to build adaptive capacity against the impacts of climate change by reducing dependency on fisheries resources. Doing so could divert as much as US$390 million in Vietnam and US$48 million in Senegal away from the fisheries industry, which is especially vulnerable to climate change-induced impacts. This could transition the economy and its people towards less vulnerable livelihoods and food sources.

The long-term benefits may include increasing food supplies (if stocks recover) and reducing dependence on fisheries by developing alternative livelihoods. In Senegal, the acute threat of food insecurity means that, alongside subsidy reform, the government will also need to reform to other policies to prioritise local food production for domestic markets and promote the local retention of more fisheries revenue. This will not necessarily mean completely divesting from export markets, but rather finding creative ways to add value to fish through domestic processing and using traditional value chains where women dominate processing and marketing. For example, reorienting subsidies to improve working spaces for fish processors would reduce post-harvest loss and maintain food quality and health standards. Improving working conditions for the women fish processors would also cascade into an overall boost in the local economy, providing intergenerational benefits in terms of improving women's ability to provide better food, nutrition and education for their families – key indicators of socioeconomic status and social mobility.

4.3.1 Improving product quality and traceability to access higher-value markets

The Vietnamese government could redirect its spending on capacity-enhancing subsidies towards programmes that support resource protection, food safety, traceability and improved marketing. By creating more value in the seafood industry and improving standards, such programmes would supply better, more marketable, high-value products while also improving working conditions in this sector of the fish value chain, especially for women and youth. Cooperatives and fisheries organisations in Vietnam – for example, at the Ben Tre Clam Fishery – have successfully established sustainability certification such as Marine Stewardship Council, offering an important model for increasing the value of a fishery without necessarily increasing the volume of catch.

As well as offering a way to increase the value of seafood products, certification schemes can also increase local participation in species management and offer higher incomes to workers in harvest and processing. For example, women's engagement in the Ben Tre Clam fishery has been significant both in terms of production and decision making, creating pathways for empowering women in fisheries and improving livelihood opportunities in resource-dependent communities.

Although they are predominantly assessed on ecological grounds, seafood sustainability certification schemes are starting to include social and equity parameters in their assessment frameworks. Thus far, these social and equity indicators have been tested mainly in the certification of aquaculture products, but consumer pressure for more socially responsible practices will probably create momentum for expanding it to include capture fisheries.

4.3.2 Funding inclusive management for improved environmental and equity outcomes

Management approaches that lead towards improved fishery outcomes benefit both men and women by providing more stable fishing and fisheries-related employment. They also improve opportunities for youth and future generations, contributing to intergenerational equity (Sumaila and Walters 2005). Management models that encourage gender diversity in stakeholder engagement and participation[13] could also have a positive influence in promoting equality by increasing women's inclusion in fisheries leadership and decision making. Research into fisheries management group composition has linked greater gender diversity to improved sustainability and conservation outcomes, taking advantage of complementary skill sets and representing a broader spectrum of perspectives and interests (Westermann et al. 2005; Alonso-Población and Siar 2018).

But co-management models do not automatically imply gender-balanced representation. There must be deliberate efforts to empower women and call for gender transformative approaches that challenge existing social and cultural beliefs about gender roles and responsibilities.[14]

4.4 Bringing equity considerations to the forefront of the debate

International discourse on subsidy reform has focused on capacity-enhancing subsidies because of their adverse impacts on fish stocks. But the conversation now needs to expand to include social and equity dimensions of all subsidies – even those perceived as beneficial (Merayo et al. 2019).

International conservation and sustainability initiatives have increased the focus on establishing marine protected areas, with leaders in global ocean governance and international fisheries policy suggesting that these areas act as 'fish banks' (Sumaila et al. 2015; Sala et al. 2016). It is commendable that governments around the world have successfully established large marine protected areas. These cover extensive areas of the oceans, protect sensitive habitats and provide extraction-free areas of the ocean and coastal zone for fish to reproduce and re-populate depleted stocks. From an environmental sustainability perspective, we should consider funding the establishment and operation of such areas as beneficial. But there is a caveat from a socioeconomic perspective, as these spaces can limit the activities of vulnerable groups. Left unaddressed, this will exacerbate their food and livelihood concerns, at least in the short term. The gendered impacts of marine protected area placement and establishment have not been adequately studied. But the handful of case studies in various contexts around the world show that, to align the social and equity dimensions of these subsidies with known environmental benefits, governments and practitioners must explicitly consider the human dimension of marine protected areas (Walker and Robinson 2009; Charles and Wilson 2009; Christie et al. 2017; Kleiber et al. 2018).

Although this assessment has revealed many important distributional aspects of fisheries subsidies, there is an urgent need for more information to develop a concrete, country-specific transition strategy. This will require a systematic and rigorous investigation into the potential trade-offs and impacts associated with various reform scenarios at various levels and for vulnerable groups (including women, youth and indigenous peoples). We need to develop a more nuanced understanding of gender relations to capture how fisheries subsidies influence gender relations at the household and community level and how these could shift through the removal of subsidies.

Many of the countries involved in the WTO fisheries subsidies negotiations supported the 1995 Beijing Platform for Action, which includes language around the adverse impacts of trade policies on women. It also urges governments to evaluate and monitor trade and other policies to prevent negative impacts from arising. If governments use gender impact analysis when developing economic and social policies, they can monitor the impacts of their policies and restructure them where impact is harmful (Staveren 2007).

To measure the impacts of existing subsidies and the potential impacts of subsidy reform, government departments must collect and analyse more country-specific data to assess impacts on youth and evaluate opportunities and options for them. Intergenerational equity is crucial to the broader discourse around subsidies and sustainability, particularly in countries like Senegal with large youth populations, whose futures could be severely constrained by the actions we take today to reduce the resource base.

[13] https://tinyurl.com/y4p89y5t
[14] https://tinyurl.com/y2eapght

4.5 Advancing multiple Sustainable Development Goals

As well as making progress on goals and targets related to fisheries and oceans (SGD14 and Target 14.6), subsidy reform could make meaningful contributions towards achieving several other SDGs. Reorienting funds from harmful subsidies to monitoring and enforcement, climate change adaptation and reducing dependence on fisheries resources can help governments meet targets on gender equity, empowering women, reducing poverty, alleviating hunger and increasing access to education and health.

Simultaneously achieving all these goals is unlikely, as there will be trade-offs between various goals and targets (Singh et al. 2018). But it will be possible to align these goals through carefully developed policies and programmes. In terms of subsidy reform, this requires identifying at the outset social, economic and ecological trade-offs to inform strategies going forward. Expanding this view to include intra- and intergenerational impacts and implementing carefully designed reform strategies to transition away from effort-enhancing subsidies will benefit fish stocks and the people that depend on them, including the most vulnerable groups.

4.6 Recommendations

In **Vietnam**, the greatest social, economic and environmental impact would come from reorienting existing subsidies to improve fisheries management – with a focus on including both men and women in decision making – and enforcement of fishing areas. Directing funds away from fishing activities towards improving food hygiene and traceability would allow access to higher-value markets, bringing benefits to the many women who work in the post-harvest sector. Reform strategies must include equity considerations from the outset to ensure they contribute towards improving outcomes for women and youth, who are disproportionately represented in vulnerable employment and are often subjected to exploitative working conditions in the fisheries sector. Governments could also redirect funds from harmful subsidies to support gender diversity and inclusion in fisheries management and decision making, aligning with multiple SDGs.

Given the socioeconomic and food security challenges in **Senegal**, we recommend that removing harmful subsidies be closely paired with policies and programmes that diversify livelihoods, promote business innovation and compensate the most vulnerable groups. If done in this way, subsidy reform could reduce dependence on a precarious resource base that is under threat of illegal fishing, climate change and other pressures that add to the vulnerability of fisheries-related food and livelihood security. This approach could also be part of a multifaceted strategy to reduce forced migration and its associated intergenerational and gendered impacts, which are particularly acute for rural women and youth.

5

Conclusion

Designing effective interventions to tackle pressing issues of poverty and food insecurity requires a long-term view. This must include developing capacity and reducing dependence on resources such as fisheries, where threats from climate change and illegal fishing are compounded by the negative impacts of capacity-enhancing subsidies. Mitigating the short-term social and economic consequences of subsidy reform will require ingenuity and innovation. Governments can stimulate this by redirecting funds away from harmful fisheries subsidies and towards programmes that support the most vulnerable people in society, including women and youth.

Society has much to gain from subsidy reform. As we highlight in this paper, the current trajectory of fisheries subsidies provisioning in Vietnam and Senegal is on course to cause further decline of a public resource, which would considerably harm the citizens of both countries. By carefully designing reform strategies that move away from using public funds to jeopardise the food and livelihoods of the most vulnerable in society towards developing more sustainable strategies that balance social, economic, and ecological outcomes, policymakers can much better maintain the benefits of fisheries resources over the long term.

Mitigating short-term job and income losses and the decreased food supply associated with fisheries subsidy reform requires data that are reliable, recent and disaggregated by age, sex, and income level. Our analysis could have gone into greater depth had more detailed and up-to-date data been available. The subsidy data – especially for Vietnam – were particularly limited, so we recommend updating both this analysis and our recommendations when newer data become available.

We also acknowledge our focus was limited to women and youth as vulnerable groups, when other groups – such as indigenous peoples and ethnic minorities – may also be disproportionately affected by subsidy provision or reform. The next step in this work should be to expand on what we present here to include a broader spectrum of vulnerable populations, thus providing a more comprehensive account of the social and equity dimensions of subsidies.

We have connected insights on subsidy distribution and reform to the broader discourse on sustainable development, and specifically to the SDGs. But we recommend that future work should engage with international policy efforts focused on equity and justice for specific groups – such as the United Nations Declaration on the Rights of Indigenous Peoples – to align reform strategies with other major policy instruments related to equity.

There is plenty of scope to expand this work, given the limited attention that human dimensions of fisheries subsidies have received thus far. With an agreement on comprehensive and effective disciplines to prohibit fisheries subsidies that contribute to overcapacity and overfishing looming, there is an urgent need to mainstream these equity and justice considerations into the subsidy reform discourse to provide effective and equitable reform strategies going forward.

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Abbreviations and acronyms

HIV	human immunodeficiency viruses
LSF	large-scale fisheries
SDG	Sustainable Development Goal
SSF	small-scale fisheries
WTO	World Trade Organization

Related reading

Merayo, E, Porras, I, Harper, S, Steele, P and Mohammed, E (2019) Distributive justice and subsidy reform in fisheries: a conceptual note. IIED Working Paper. London.

Ongoing international negotiations on capacity-enhancing fisheries subsidies may soon eliminate harmful subsidies. Although their negative ecosystem impacts are well known, their social dimensions are less understood. This paper investigates the distributional and equity dimensions of fisheries subsidies in two developing countries, Senegal and Vietnam, to understand how their provision or removal may affect different population groups. Using the limited data available, we paid specific attention to women and youth, who are especially vulnerable in these contexts. We recommend further study to understand the implications of reform on other vulnerable groups, such as indigenous peoples and ethnic minorities.

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International Institute for Environment and Development
80-86 Gray's Inn Road, London WC1X 8NH, UK
Tel: +44 (0)20 3463 7399
Fax: +44 (0)20 3514 9055
www.iied.org

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