Marine Policy 93 (2018) 262–270

Contents lists available at ScienceDirect

Marine Policy

journal homepage: www.elsevier.com/locate/marpol

Fiscal reforms for sustainable marine fisheries governance: Delivering the SDGs and ensuring no one is left behind

Essam Yassin Mohammed*, Dave Steinbach, Paul Steele

International Institute for Environment and Development (IIED), 80-86 Gy's Inn Road, WC1X 8NH London, UK

ARTICLE INFO

Keywords:
Fiscal reform
Marine fisheries
Sustainable development goals
Leave no one behind

ABSTRACT

Governments adopted Sustainable Development Goals (SDGs) aimed at ushering in a new era of sustainable development where 'no one is left behind.' They include a specific goal — SDG 14 — to conserve and sustainably use the oceans, seas and marine resources. While policymakers can use a number of legal, regulatory and economic tools to do so, there should be more focus on harnessing fiscal instruments such as taxes, subsidies and conditional transfers to provide the necessary incentives. Provided these approaches strike an appropriate balance between economic, social and ecological considerations, they could play an important role in making SDG 14 a reality. It must be noted that fiscal instruments or reforms do not operate in a vacuum. Their effective implementation requires adequate institutional frameworks to be in place. It is argued that (i) building or strengthening both technical and institutional capacity for fiscal administration; (ii) enhancing compliance through either (or a combination of) incentives and/or punitive measures; (iii) promoting transparency and accountability to win legitimacy and thereby cooperation from all stakeholders involved; and (iv) clearly defining use and access rights of marine and coastal resources either by recognising traditional or customary rights or through a participatory and equitable approach are very critical for an effective implementation of fiscal instruments their reforms.

1. Introduction

Marine and coastal resources provide millions of impoverished people across the world with livelihoods, and provide a range of critical 'ecosystem services', from food, biodiversity and culture to carbon storage and flood protection, recreation and amenity opportunities. Fish alone provide more than 3.1 billion people with about 20 per cent of daily animal protein intake (FAO, 2016). In some countries, this can be as high as 50–90 per cent (Bell, 2009). Despite their importance to large numbers of people around the world, the sustainable management of these resources has been overlooked by mainstream policymakers, with prevailing incentive structures, investment, and property or user rights prioritising short-term profits at the expense of long-term management of fishery resources. The consequences of continued over-exploitation of fisheries has the potential to be catastrophic. Unless threats to oceans and the services they provide are reversed, millions of livelihoods could be lost and numerous communities will have reduced access to a staple food that they rely on for their survival. These sustainability challenges are more important for policymakers than ever – as the universally agreed Sustainable Development Goals call on nations to conserve and sustainably use the oceans, seas and marine resources for sustainable development.

Policymakers have a number of regulatory, market-based, and economic incentive-based instruments at their disposal to address the threats and challenges that marine and coastal fisheries face. One of the most important but little discussed instruments that is available to policymakers is 'fiscal policy' – where governments use fiscal instruments such as taxes, fees, subsidies and fiscal allocations to deliver positive economic, social and ecological outcomes [19,29]. The use of these instruments for "domestic resource mobilisation" are receiving much greater attention following the recent Addis Ababa Financing for Development (FfD) conference outcome document states that "*for all countries, public policies and the mobilisation and effective use of domestic resources, underscored by the principle of national ownership, are central to our common pursuit of sustainable development, including achieving the sustainable development goals*".[1]

Though fiscal instruments are generally not necessarily designed to meet these three dimensions of sustainability there are a number of examples in which fiscal instruments have been introduced or reformed to deliver positive economic (e.g. collection of fishery tax revenue),

* Corresponding author.
E-mail address: eymohammed@iied.org (E.Y. Mohammed).
[1] Available online at: https://sustainabledevelopment.un.org/frameworks/addisababaactionagenda

http://dx.doi.org/10.1016/j.marpol.2017.05.017
Received 10 March 2017; Received in revised form 27 April 2017; Accepted 11 May 2017
Available online 25 May 2017
0308-597X/

social (e.g. through social safety net programmes) and environmental (e.g. changing natural resource use through ecological fiscal transfers, taxes and subsidies) outcomes. Revisiting the design and impact of fiscal instruments is particularly important to the governance of marine and coastal ecosystems. The SDGs recognises capacity enhancing subsidies as one of the main drivers of overfishing and calls for its elimination (SDG 14.6). While this may be regarded as politically less attractive approach by many policymakers, more dialogue is needed to explore ways through which these instruments can be 'reformed' (and not necessarily eliminated) to deliver positive social, ecological and economic outcomes. If well designed, in combination with other policy and regulatory instruments, fiscal policy can play an important role in sustainable management of fisheries ([3,23] p. 107). Importantly, alongside SDG 14 they can also help countries achieve the targets set out in other SDGs – for instance to eliminate poverty, reduce hunger, reduce inequality, minimise the adverse effects of climate change and build stronger and more inclusive institutions (SDGs 1, 2, 10, 13, 14 and 16).

Fiscal instruments do not operate in a vacuum, however. In order for fiscal instruments or their reform to be effective, they require coherent policies and strong and inclusive institutional and legal frameworks (Bostock, 2004 [3]). Evidently, governmental institutions are not always perfect, and can sometimes implement policies that are counter-productive and ultimately harmful to the condition of a marine ecosystems. In this article, it is argued that even though government institutions and their policies may not be perfect, some reforms can be introduced to enhance the effectiveness and efficiency of their fiscal policies that lead to more sustainable marine management and more equitable outcomes. Here caution is needed against a traditional deregulation of fiscal policy and governance over marine resources. Rather, stronger state revenue generation capacity, inclusive decision-making in the design of fiscal instruments and equitable distributional benefits for the poorest and most vulnerable can lead to improved economic, social and ecological outcomes in the fishery sector.

In the subsequent section, the paper focuses on three types of fiscal reforms – taxation, subsidies, and ecological fiscal instruments – as the principal fiscal instruments used for sustainable fishery management. In doing so, clear distinction will be made between positive and negative or harmful instruments. In Section 3, the manuscript outlines how fiscal reform in the fishery sector can be designed to deliver the core aim of the SDGs – to ensure no one is left behind in the development process. However, the study acknowledges that there are both institutional gaps to implementing fiscal reforms and challenges to ensuring no one is left behind. In Section 4, the paper discusses key institutional and legal frameworks that enable fiscal reforms with specific focus on ocean and fisheries governance at the national level. Finally, conclusions and policy steering recommendations are presented.

2. Classification of fiscal instruments for marine fisheries governance

In an ideal scenario, markets would optimise demand and supply by regulating cost of production and price. Production or resources extraction is economically viable so long as revenue (output) remains higher than production cost (input). In most circumstances, economic breakeven point (where input is equal to output, beyond which an activity becomes economically nonviable) is beyond ecologically sustainable yield. This means, the activity will create negative externalities (e.g. overfishing); a classic example of market failure. This warrants the need for government intervention to regulate markets and market actors using fiscal instruments.

Fiscal instruments are often used as 'indirect' control measures to influence the behaviours or decision making of natural resources users. Such instruments are used as either positive (incentives) or negative (punitive) measures.

Government policies and command-and-control approaches to fisheries management, whether at a sub-national or national level, are well recognised mechanisms that affect human behaviour. Fiscal policies provide incentives for particular types of conduct and, through government spending patterns, direct society's resources to promote specific objectives (Sutinen, 2010). They do this by giving a nudge to members of the society (e.g. fishermen) to change their resource use behaviours. The desired 'change' can be positive, where resource users are encouraged to abandon their destructive behaviours, or negative, where certain harmful subsidies are provided to make certain resource use artificially profitable.

Some of the commonly used fiscal instruments are taxation, subsidies, and ecological fiscal transfers (EFTs) – however, their application in marine and fisheries governance varies across regions. The subsequent sections discusses, how these instruments are used, provide some examples and suggest reform options to enhance their effectiveness.

2.1. Taxation

Taxation is often used as a control instrument to regulate input (fishing effort) and output (fish landings). In addition to generating revenue to national governments, whether tax is imposed on input or output, one of its primary goals is to limit extractive effort, beyond which it becomes financially nonviable to operate. It does this by imposing additional cost to operating costs.

While theoretically taxation can be employed as an optimal instrument to achieve sustainable marine and coastal resources management, in practice, the experience of taxation in the fisheries sector is mixed. On the one hand, taxation can provide valuable revenue to be re-invested in the fisheries sector for better marine management, while also regulating fishing input and output. For example in Morocco the total amount from fees and taxes for access to fishery resources in Moroccan waters totalled US$4.08 million in 2002–2003, which represents 2 per cent of the total catch value. The sector is also subject to a set of deductions at a marketing level. For the coastal fleet the total amount debited from gross sales represents around 17 per cent of their turnover [8].

On the other hand, taxation often prioritises short-term budgetary needs over sustainable resources management. In the Moroccan case, for example, the tax regime has led to under-declaring of catch levels and increased sales in informal markets – making the instrument less efficient in terms of resource management. This points to the fact that taxation is often not popular among fishers [1] and therefore politically costly for many national governments to pursue.

A more successful example is that Pacific license fees for tuna have increased fourfold to $230 million in 2012. See Box 1.

In developing countries, tax revenues as a percentage of GDP are generally significantly lower than in developed countries. This is mainly due to their limited capacity to collect taxes efficiently. Therefore, to enhance the effectiveness and efficiency of tax collection and their resultant desired outcomes, efforts must be made to enhance both technical and institutional capacities of tax collection (see Section 3.1).

Success stories related to boosting government revenue are marred by inequities in their distribution. Depending on the price elasticity of demand[2] of the specific fish product, costs of taxation can easily be shouldered by consumers. If consumers do not have any other option but to continue buying the product regardless of price hikes (price inelastic), then producers can transfer the cost to them. This means, producers (fishing companies) do not necessarily respond to tax and intended ecological outcome may not be attained. Therefore, a careful assessment of elasticities of fish and fish-related products is needed.

[2] Price elasticity of demand is a measure of the relationship between a change in the quantity demanded of a particular good and a change in its price.

Box 1
Increased tuna taxes in the Pacific.

Fishery taxes for the rich tuna fishery of the Pacific are governed by the 1982 Nauru Agreement among eight Pacific island countries. This agreement seeks to increase the bargaining power of license-issuing countries and regional control to stop illegal fishing by foreign fleets. Nauru Agreement members moved to a minimum fee for fishing per vessel day which was set at a minimum amount of USS$6000 effective in January 2014. Initial data suggest that overall fishing license fee revenue almost quadrupled, from about US$60 million in 2010 to US $230 million in 2012, with the biggest gains in Kiribati and Tuvalu. However the ratio of revenue to the value of the catch is still too low because tuna prices have been rising.
[11].

This is particularly important for fish products that do not have substitutes (where there is strong cultural/sentimental value associated with the fish) or are deemed necessity (in places where fish is the primary source of their animal intake). These are common characteristics of fish and fish products in many parts of the developing world, exacerbating inequities in natural resources governance.

2.2. Subsidies

Subsidies are direct or indirect financial contributions made by governments to promote a specific activity or policy and confer a 'benefit' on a domestic industry. They may be in the form of a direct payment, the provision of goods or services, a price support, or the foregoing of revenue otherwise due. Global fisheries subsidies are estimated at US$30–34 billion annually, with fishing equipment and fuel subsidies accounting for US$ 20–24 billion [24] of that sum. Fish stock depletion globally has been driven in part by high levels of fishing subsidies [25].

In many regions, subsidies are provided when costs exceed revenue, making many fishing activities artificially financially viable, that further stimulate effort and compound resource overexploitation problems. Examples of these capacity-enhancing subsidies include: subsidies to fuel, fishing vessel construction or repair, to vessel modernization or gear acquisition or improvement. A retreat from this approach would make a difference to the conservation and sustainable use of fish stocks [30].

Harmful subsidies provided by high income countries and their impacts on low income countries' fisheries is not negligible. More than US $20 billion is provided as capacity-enhancing subsidies [26]. Such subsidies have enabled many fishing fleets to exploit fisheries beyond the territorial waters of the EU. Although there are many other sources,[3] subsidies to the fisheries sector is mainly provided through the European Maritime and Fisheries Fund.

This calls for urgent need to reform the European Common Fisheries Policy so that it meets some fundamental principles of sustainable development. Subsidies that increase fishing capacity should be removed and funds reallocated to conservation, research and monitoring of the viability of fish stocks.

However, not all subsidies are harmful. There are some positive or good subsidies that can be used to promote sustainable management of marine fisheries. Good or positive subsidies are defined as "those that enhance the growth of fish stocks through conservation, and the monitoring of catch rates through control and surveillance measures to achieve a biological optimal use." [26]. Such good subsidies may include financing monitoring and assessment of fisheries resources, effective policing and enforcement, and research and development for sustainable fishing gears and post-harvest loss reduction.

According to Sumaila et al. [24], the proportion of good subsidies to total subsidies varies from region to region. In a recent update of their assessment of global fisheries subsidies, they show that of the $35 billion provided in subsidies, nearly $20 billion were capacity-enhancing, while $11 billion were beneficial and $4 were ambiguous subsidies. According Sumaila et al. [26], the developed world provides most of the world's subsidies. Since most of the world's small-scale fishers are in the developing world, it can be concluded that small-scale fishers generally receive relatively less subsidies compared to large-scale fishers – which raises equity issue again.

It should be noted, however, that some "good" fishery subsidies provided in the developing world have made positive contributions to the overall wellbeing of fisher communities and poverty alleviation. Bangladesh provides a good learning example to demonstrate how subsidies can be successfully implemented (see Box 2).

Overall, there has been limited progress in moving away from harmful subsidies, towards beneficial subsidies such as incentives for monitoring and enforcement. Therefore, international frameworks that tackle the wide use of subsidies need to be strengthened. At national level, governments should have clear targets to curb harmful subsidies and eventually eliminate them. This is more timely now than ever, as the sustainable development goals (SDGs) call up on countries "by 2020, (to) prohibit certain forms of fisheries subsidies which contribute to overcapacity and over-fishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies.[4]".

2.3. Ecological fiscal transfers

While taxes and subsidies mainly target the behaviour of individuals or private agents, neither of these instruments target local administrators to provide incentives for the promotion of sustainable management of marine fisheries. This is particularly important in countries where natural resources management falls under the jurisdiction of sub-national administration levels such as provinces and districts and costs of marine management are borne by local administrations.

Ecological fiscal transfers (EFTs) have been proposed and introduced in a number of countries (e.g. Germany, Brazil, Switzerland and India) to compensate decentralized jurisdictions for the costs of providing ecological goods and services which generate spill over benefits beyond their boundaries [17]. This is done by incorporating an environmental performance indicator to fiscal transfers from central governments to local or sub-national levels of the administrative hierarchy.

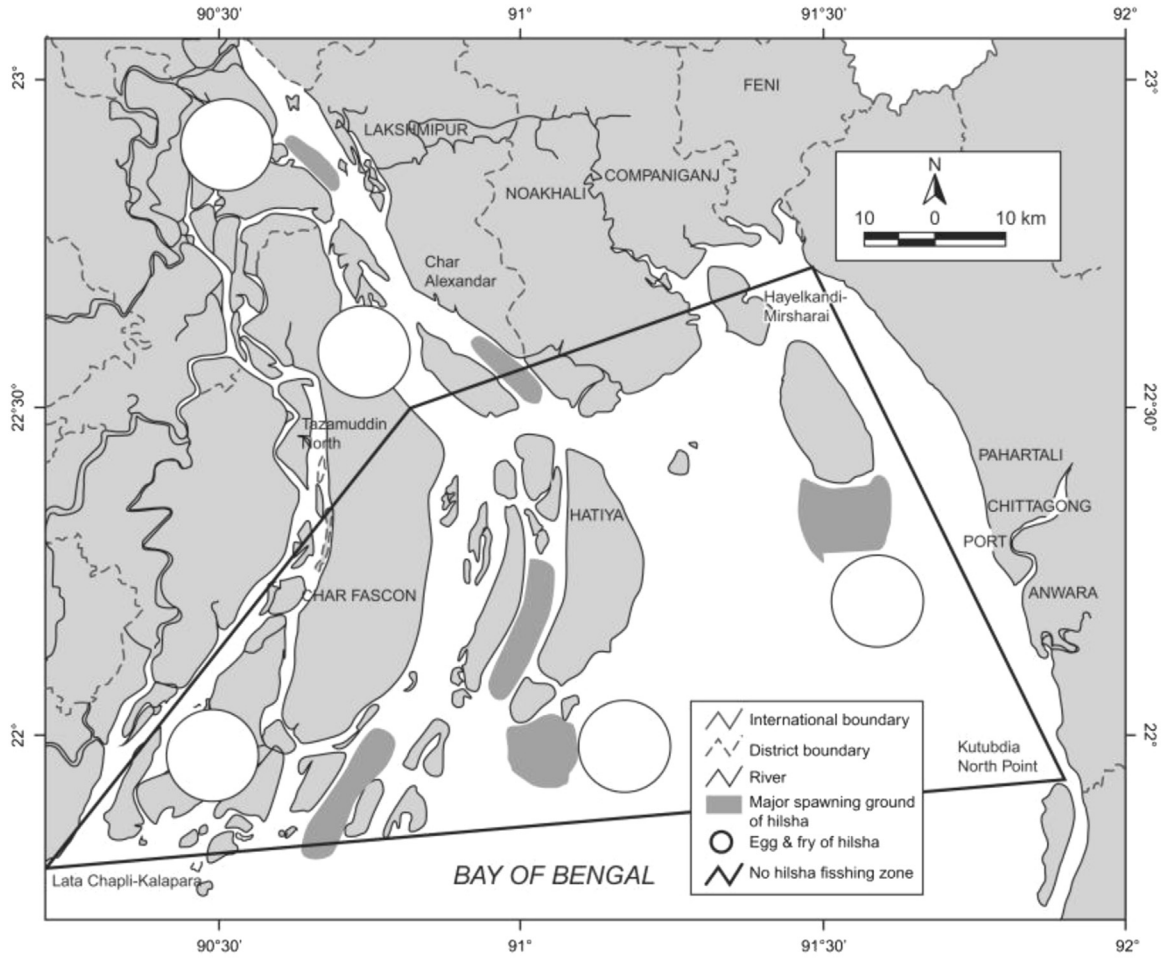
In marine and costal ecosystems management context, EFTs can be introduced in multiple ways. For example, imposition of no-take-zones or marine protected areas (MPAs) may impose loss in revenue to adjacent local governments which could be compensated by EFTs. However, one of the main reasons for limited use of EFTs in developing countries is the limited financial capacities of national governments. However, there are existing social safety net programmes such as

[3] Other sources of funds for the fisheries sector include: Second Financial Instrument, European Agricultural Guarantee Fund (EAGF), state aid, access fees and fuel tax schemes.

[4] Available online at: http://www.un.org/sustainabledevelopment/oceans/

Box 2
Subsidies to incentivise hilsa fishers in Bangladesh.

The hilsa (Tenualosa ilisha) fishery is the largest single species fishery in Bangladesh; providing full time employment for about 450,000 'professional' fishermen and 2.5 million part time fisher folk. Hilsa is the most preferred fish among the poor, which means the management of fish stocks and the sustainability of livelihood opportunities are important factors to achieve poverty alleviation. However the exploitation rate of hilsa has increased sharply from 0.33 (under exploited) in 1990 to 0.66 (over-exploited) in 2002 (latest available data) – leading to fears that the fishery could collapse in the near future. This prompted the government to declare five sites in the lower Meghna Basin as hilsa sanctuaries, which prevent fishing during the reproductive season and allow fish stocks to regenerate. To compensate for lost earnings, the government has started providing "affected" fisher communities (more than 210,000 households) with 40 kg of rice per household and alternative income generating activities.



To this end, the Ministry of Finance created two new financial lines (6605 and 5390) for hilsa production and conservation in the national budget, and has started allocating money regularly through these new codes. In 2014–2015 the government allocated Tk 33.07 million to the Department of Fisheries (DoF) under 6605 for mobile courts (to enforce fishing restrictions), awareness raising, capacity building, and distribution of revenue for the hilsa alternative income generation activities (AIGA) programme. Overall, transfers to the DoF have increased from Tk 270.79 from the Revenue Budget and Tk 51.58 million from the Development budget in 1998-99 to Tk 1.6 bullion and Tk 170.00 million respectively in 2013-14.

Even though no impact evaluation of the scheme have been done, increased fish catch levels suggest that the compensation scheme has had positive impacts both on hilsa population and the livelihoods of thousands of fishers in the lower Meghna Basin.

conditional social transfers in many developing countries (e.g. Bangladesh, Brazil and India). Adding an ecological performance indicator to such existing programmes could be a cost-effective way of delivering both social and ecological objectives [31].

Beyond holding sub-national governments accountable for their ecological performances, the use of EFTs offers an incentive to take measures to restore fish stocks.

3. Policy and institutional framework considerations for fiscal reforms

The use of fiscal instruments or their reform does not happen in a vacuum. A fiscal reform process that aim to leave no one behind and deliver positive ecological outcomes will face barriers and challenges; it may be contested by vested groups interested in maintaining the status quo. Adequate institutional and legal frameworks therefore need to be

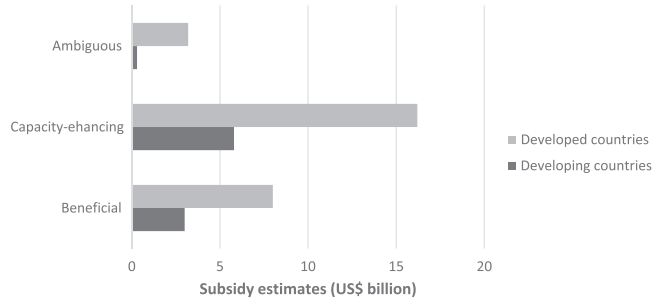


Fig. 1. Global fisheries subsidy estimates by categories for 2003. (Adapted from Sumaila, 2010).

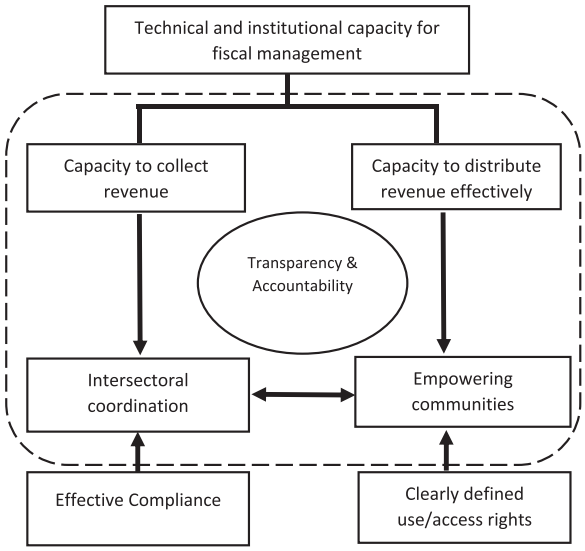


Fig. 2. Institutional framework consideration for fiscal reforms.

in place. In this section, some critical institutional frameworks that enable (or disable) fiscal reforms for ocean and fisheries governance are discussed. Such legal and institutional frameworks may be needed at different scales: international, regional, national and sub-national levels. This section mainly focuses on national and sub-national levels.

Marine and coastal ecosystems and fisheries are often (if not always) characterised by complex institutional and governance issues, engaging a mix of formal and informal institutions, public, private and civil society sector agents, and involving a range of linkages across sectors and areas of responsibility [12]. This section discusses key institutional frameworks that could be considered as pre-requisite for effective fiscal reforms that deliver improved marine and coastal governance. However, it must be noted that these are not prescriptive and it must be recognised that institutions and policy options should be tailored to fit a country's social, economic and political context.

3.1. Technical and institutional capacity for fiscal management

One of the most critical ingredients of effective implementation of fiscal reforms for ocean governance is the governments' technical and institutional capacity for fiscal administration. Most developing countries are characterised by weak fiscal frameworks and public financial management systems. For example, while OECD countries collect on average 34 per cent of their gross domestic product as tax, developing countries achieve only half this rate [21]. This is a clear manifestation that there is urgent need to enhance their fiscal administration capacities. Without adequate institutional capacity to effectively collect fiscal revenues, and equitably allocate fiscal transfers, the effectiveness of any fiscal instruments is going to be significantly undermined (Fig. 1).

Technical and institutional capacities for fiscal administration comprise: (i) the ability of the government to collect and administer revenue (from the fishery and non-fishery sector), and (ii) the ability to equitably and effectively disburse this revenue (see Fig. 2). Weak institutional capacity to collect and disburse revenue often means that the ability of the government to sustainably manage fishery resources will be equally weak. Building institutional capacity is a process that takes place over a long period of time. Fiscal reforms should therefore be devised in such a way that they fit within a given institutional capacity, but with adequate flexibility to evolve over time as more institutional capacity to collect and disburse revenue is developed. Table 1 identifies some fiscal reform objectives and institutional capacity building priorities.

Strengthening institutional capacity to deliver fiscal reform will also contribute to efforts to meet targets under SDG 17 – strengthen the means of implementation and revitalise the global partnership for sustainable development. On the one hand part of this synergy may include strengthening domestic resource mobilisation efforts (SDG 17 target 1). It could also involve international support for capacity building (SDG 17.9 and 17.18) and enhanced global partnerships (SDG 17.16) to strengthen institutions – particularly in the least developed countries.

3.2. Compliance

Compliance refers to the behaviour of people to conform to rules that have been developed to influence action [32]. There are three main approaches to compliance. The rationalist approach assumes that actors weigh the costs and benefits of their actions and are induced into non-compliance by greater incentives than risks. Compliance responses to rationalist approaches have promoted deterrence through direct enforcement and punishment [18]. The normative approach holds that norms, morals, social pressure, culture, etc. also influence the compliance behaviour of different actors [9]. Normative compliance approaches advocate behaviour change, participatory management and informal sanctions. A third approach adopted by Hauck and Kroese

Table 1
Short- to medium-term institutional capacity building priorities.

Fiscal reform objectives	Technical and institutional capacity building priorities
Fiscal control	1. Build fiscal management capacity to effectively collect and manage revenue 2. Where necessary introduce fiscal decentralisation – local level revenue collection.
Effective allocation of revenues	1. Strengthen institutions that enable effective allocation of revenues across regions and a range of actors
Cost-effectiveness	1. Develop capacity to effectively target the right private individual actors, firms or administrative regions to achieve a desired behavioural change 2. Develop smart institutions to minimise transaction cost 3. Fiscal allocations reflect performance of fisheries management – e.g. fish stock recovery.
Equity and legitimacy	1. Assess natural resource users and how they may respond to different fiscal instruments (see section 4.6) 2. Develop code of fiscal transparency

(2006) [33] argues that compliance, particularly in developing countries, is often shaped by the perceived legitimacy of the legal institutional and financial power structures within which decisions are made. They argue that decision-making needs to be seen as legitimate in the eyes of the poor and vulnerable, and that the compliance discourse needs to move from the question 'how do we increase compliance with rules?' to 'how do we minimise harm through better policymaking?'.

Intersectoral coordination is key to ensuring compliance. For example, as is the case with the Bangladeshi scheme for hilsa fish management (see Box 1), the roles of the navy and coast guard in monitoring and policing effective enforcement of regulatory measures and revenue collection have been effective [15].

In order for a fiscal reform to be effective, policymakers need to weigh these options and determine how they can design legitimate policies with appropriate incentive structures that promote compliance. Punitive measures alone are not sufficient for effective compliance. An alternative way of ensuring effective compliance is through empowering local communities to monitor compliance and develop sense of ownership or stewardship. To do so, use and access rights of these resources must be clearly defined.

3.3. Regulatory regime for access and use rights

The lack of clear ownership or use and access rights over aquatic environments makes implementing, monitoring and enforcing fiscal instruments very challenging. Providing formal recognition of communities' customary rights is crucial to empowering coastal communities and local fishers to sustainably manage their resources. It's not simple — fishing rights, for instance, tend to be nested under coastal and marine resource use rights, which are sought by a large, and growing, number of users for a wide range of activities. Some have harvest rights to fish, while others look for use rights such as tourist permits and passive recreation. Some groups may require conservation rights — the right to conserve threatened species — and many will be given management rights with different degrees of exclusivity [14]. All this makes fishing and use or access rights a very complex issue; one that is further complicated by many governments' limited capacity to enforce property rights among artisanal fisheries [28].

In many cases, actors in the informal economy (e.g. subsistence fishers) do not have formal access rights but have customary rights or customary use of resources [20] which need to be acknowledged. Restrictions on use and access rights can lead to the exclusion of certain actors, which in addition to having negative economic, social and culture impacts in its own right can lead to ineffective policy design and implementation of regulatory regimes – for example through a lack of adequate stakeholder engagement, an inability to manage trade-offs between all actors, limited incentives for compliance, and a lack of voice in dispute resolution mechanisms. While ensuring small-scale fishers have equitable access to fishery resources should be an end in its own right, targeted efforts here could support better marine fiscal management. Such efforts would also be consistent with the objectives set out under SDG 14b and the FAO Guidelines on Small-Scale Fisheries.

Ill-defined use or access rights can have implications for benefit sharing as well. According to Barma et al. [2], governments often employ suboptimal policies for capturing rent (e.g. taxes and fees) and subsequently allocate those revenues in ways that disproportionately benefit elite private actors rather than public investments that enhance growth and collective social welfare. To mitigate this problem, it is often suggested that community rights, rather than individual rights, would be most appropriate for fisheries management [14] – particularly in areas where small-scale fisheries is the main means of livelihood. But to work, the community approach requires more than a simple list of *dos and don'ts* on resource management — it demands active participation in monitoring and enforcement (see Section 4.5).

3.4. Transparency and accountability

Transparency and accountability are core attributes of democratic decision-making [5]. Put simply, transparency allows for external scrutiny of decisions, processes and outcomes, while accountability ensures officials are answerable for decisions – particularly if these decisions are ineffective. Fiscal transparency helps ensure that governments' economic decisions are informed by a shared and accurate assessment of the current fiscal position, the costs and benefits of any policy changes, and the potential risks to the fiscal outlook. There is general consensus that transparency can help establish and maintain credibility in the collection and distribution of natural resource wealth [10]. It is also critical to delivering elements of SDG 16, which aims to promote effective and accountable institutions (target 16.6) and responsive, inclusive, participatory and representative decision-making (target 16.7).

Three elements to improve transparency and accountability in the context of marine fiscal reform include:

(i) **Decision-making processes of fiscal reform should be communicated effectively** with all the stakeholders involved. This is critical to the success of implementation of fiscal reforms (a) by enhancing legitimacy of the policy instrument, and (b) managing and minimising conflicts of interest.
(ii) **Decision-makers should develop a set of minimum code of fiscal transparency** and mandate a section of the government body (e.g. the Ministry of Finance or National Planning) to oversee fiscal revenue collection, allocation and spending.
(iii) A critical **appraisal of the performance of the fiscal instrument or reform** should be conducted at regular intervals and communicated effectively to concerned stakeholders.

3.5. Inclusive stakeholder engagement

Fiscal reforms should be based on an understanding of the respective interests of key stakeholders, their incentives to work for, or against, reform and the key factors that can be harnessed to promote

Box 3
: Managing trade-offs in marine fisheries governance.

When implementing fiscal reform for marine management, policymakers will be faced with difficult decisions in how they balance different objectives or outcomes, and how they manage the needs of different groups of stakeholders.

Policymakers will often be faced with decisions on how they balance both socio-economic and ecological objectives or promote one at the expense of the other [6]. Trade-offs can occur at both macro and micro levels. Kiribati provides an example of balancing objectives at the macro level. In 2014 the President of Kiribati announced the closure of the Phoenix Islands Protected Area (PIPA) – the largest marine reserve in the Pacific Ocean – to commercial fishing operations in an effort to regenerate tuna stocks for future generations. This policy promotes conservation at the expense of short-term fishery revenue that could have been invested in national development programmes. However since this decision also impacts the livelihoods of communities and households at the local level, exemptions to these regulations have been given to small-scale or subsistence fishers (CI, 2014).

positive change. Therefore, when designing a fiscal reform scheme it is important that policymakers engage with all actors that will be affected by new fiscal regulation to solicit feedback and opinions that can improve the design of the scheme. Stakeholder engagement is particularly important for providing voice to individuals and groups that are marginalised in society – including the poor, women, minority ethnic groups, low-caste groups, etc. Ultimately this engagement can lead to more effective decision-making by, (i) improving legitimacy and stakeholder buy-in, (ii) reducing the likelihood of conflict or competition amongst actors, and (iii) reducing the likelihood of non-compliance with the scheme.

Marine spatial planning and participatory planning are approaches that policymakers can use to ensure that all relevant stakeholders are consulted and involved in the design of fiscal reforms. On participatory planning, Johannes (2002) documents the re-emergence of community involvement in the successful management of local marine resources in Vanuatu, Samoa, Cook Islands, Fiji, Tonga, Palau, Hawaii and Tuvalu.

For example in the Kiribati example in Box 3, low-income and subsistence fishers were exempt from the no-catch restrictions announced in PIPA. Likewise, in Mohammed et al. [16] example of the seasonal restrictions on the hilsa fishery in Bangladesh, management is combined with incentives and compensation packages to mitigate against unintended local economic impacts of the management regime for low-income and subsistence fishers. From a fiscal policy perspective, this can be achieved by taking into account the various price and income elasticities of different actors. Responses to fiscal instruments and their effectiveness depends on how individual actors respond to a given fiscal instrument – tax, subsidy or EFTs. Low income groups may respond to relatively smaller tax compared to high income groups. In such cases, progressive fiscal instruments could be considered with special provisions for lower income groups.

4. Using fiscal reforms to meet the SDGs and ensure no one is left behind

Fiscal reforms will not necessarily provide benefits to all actors. Policymakers will have to weigh the conflicting interests of different actors, and there is a chance that benefits may be distributed unevenly across and within actor groups, or that certain actors miss out from the benefits entirely. As discussed above, all fiscal instruments raise some serious distributional issues. However the fiscal 'reform' process also provides an opportunity for governments to design and implement approaches that put poverty, equity and sustainability at the core – or in other words, to meet the core aim of the SDGs to ensure those furthest behind do not lose out.

The idea of 'leave no one behind' (LNOB) has gained significant traction in the SDG process from government leaders, civil society and donor agencies. For instance, the SDGs were introduced by the representatives of 193 nations at the United Nations in September 2015 with the preface:

> "As we embark on this great collective journey, we pledge that no one will be left behind. … We wish to see the Goals and targets met for all nations and peoples and for all segments of society. And we will endeavour to reach the furthest behind first."

Despite its aspirational nature, the concept of LNOB remains poorly defined – lacking both measurable attributes and the elaboration of actions necessary to achieve LNOB in practice [7,13].

This section argues that fiscal reforms in the fishery sector can help governments achieve SDG 1 (zero poverty) and LNOB. The paper proposes the following working definition of LNOB: Ensuring that those most in need, excluded and vulnerable fully share in the benefits of sustainable development, recognising that this will require systemic change which tackles institutional bias and rigid local power structures (Mohammed, 2016). This definition of LNOB is supplemented by five principles which can be used to frame interventions or guide evaluations on whether LNOB is being achieved: quality of life, equity and fairness, delivering through partnership and collaboration, participatory and inclusive decision making and policy coherence. Below, each of these domains are discussed to outline how well-planned marine fiscal reforms can help achieve SDG 1 and ensure no one is left behind, while also achieving SDG 14 on sustainable marine management. Where relevant how the fiscal reforms in the fisheries sector can achieve synergies with other Goals is also outlined.

4.1. Quality of life

Development should aim to improve the quality of life for all, moving beyond simple poverty reduction to consider all aspects of wellbeing. Various frameworks have expanded the global discourse on poverty reduction from a tradition of income-based metrics to include (amongst others) a focus the multidimensional drivers (social, economic and health) of poverty [4], entitlements or assets (Moser, 1998) and capabilities [22].

If designed effectively and in parallel to appropriate regulatory policies, fiscal reform in the fishery sector can help improve the quality of life of the poor and marginalised – in terms of income, wellbeing, assets and capabilities – to ensure no one is left behind. For example, tax revenue from fishery exports or revenue from commercial fishing licensing fees can be invested in social infrastructure like schools and hospitals in coastal areas. Alternatively this revenue could be used to invest in improved fishery infrastructure like storage facilities that limit post-harvest losses, processing plants that create local jobs or skills training programmes – which would have positive impacts on local income and improve capabilities. Likewise, ecological fiscal transfers can be used to protect critical spawning grounds in exchange for food to smooth consumption gaps in the non-fishing season (see Box 2). Such interventions would help protect marine ecosystems (SDG 14, targets 2 and 3), reduce hunger (SDG 2) and secure access to culturally preferred livelihoods, diets and ways of living – assuming access and user rights are guaranteed (see Section 4.3).

4.2. Equity and fairness

Equity and fairness is at the core of LNOB. At a minimum, development should aim to benefit everyone equally. Though given the many social, economic or cultural barriers that drive inequality there is a compelling argument that the furthest behind should be reached first, and benefit disproportionately from the transition to sustainable development.

Though in no way a panacea, fiscal reforms can help deliverable equitable and fair outcomes in the fishery sector. Equitable access and benefit-sharing can be a core guiding principle behind the fiscal reform process – speaking directly to SDG 14b which aims to support small scale fishers as a key means of implementing SDG 14. This principle could include efforts to ensure equitable benefit-sharing of revenue generated from new tax regimes with small scale fishers, and that subsidies for fishing equipment and fuel are prioritised for small-scale fishers rather than commercial fishing vessels. It could also involve guaranteeing access to marine resources for poor and marginalised groups when allocating licenses or quotas (in line with reforms in the regulatory environment – see Section 4.3), in order for them to meet livelihood their needs. Promoting equity and fairness in fiscal reforms for the fishery sector can also support efforts to achieve SDG 10 on reduced inequality – in particular targets 1 (income growth for the bottom 40 per cent of the population), 2 (economic inclusion of all) and 4 (adopting fiscal policies to achieve greater equality) – and SDG 5.1 on achieving gender equality for the millions of women who work in marginalised positions within fishery value chains.

4.3. Partnership and collaboration

LNOB will only be achieved through cooperative working. In different contexts this might include cooperation between international, national, regional and local actors from government, development actors, civil society and the private sector. Partnership for fiscal reform in the fishery sector will need to be based on the principles of inclusive decision making and policy coherence (see 4.4 and 4.5 below). This may involve financial and technical support from international actors to initiate and carry out a fiscal reform process, through the provision of finance, the transfer of technology and training or learning exchanges – all of which would support SDG 17 on revitalising the global partnership for sustainable development. It will also involve collaboration across branches of government (e.g. ministries or departments of finance, planning, environment, fisheries and agriculture) to develop new fiscal policies and allocate revenue generated through the introduction of new fiscal instruments.

4.4. Participatory and inclusive decision making

To achieve LNOB, the most marginalised and excluded must have a voice in decision making. It is important here to differentiate between consultation and participation. In development planning, community views are often sought in the design process through local-level consultations. However there is often a lack of downward accountability when it comes to the final programme design, with local voices excluded from participating in decision making (needs source).

In line with the arguments made by Sumaila [27], for fiscal reforms in the fishery sector to be effective, they will have to engage with different actors across the fishery value chain – small scale and commercial fishers, those involved in processing, storage and selling, industry associations, civil society, government and the private sector – and involve them in decision making. Building on Section 3.2, it will be critical to include the voices of the poor, women, disabled and other socially marginalised groups. Ultimately, active participation in the marine fiscal reform decision making process will help improve the effectiveness of fiscal reforms by improving legitimacy and stakeholder buy-in, reducing the likelihood of conflict or competition amongst actors and reducing the likelihood of non-compliance with the scheme. In turn, this could help build momentum towards achieving SDGs on gender equality (SDG 5), reduced inequality (SDG 10) and strong institutions (SDG 16) while working directly to achieve SDG 14.

4.5. Policy coherence

Coherence between existing development, planning and financing processes is essential to achieve LNOB. Policy coherence can be conceived as either improving coordination with existing policies and instruments, or challenging existing inequitable policies and instruments to create a 'level playing field' for all.

In the context of marine fiscal reform that aims to leave no one behind, policy coherence involves a number of different elements. For instance, it involves ensuring that the aims and outcomes of reform are grounded in relevant international agreements that the country has signed up to – such as the SDGs, WTO trade regulations, the Addis Ababa Action Agenda on Financing for Development and the FAO Code of Conduct for Responsible Fisheries. It also involves ensuring that fiscal reforms and associated resource allocation correspond to national policies and priorities outlined in development plans on poverty reduction, social inclusion and environmental management, while also ensuring there is the institutional architecture and coordination mechanisms across government ministries and departments to achieve this alignment. As highlighted above, this may involve breaking down institutional silos or bottlenecks that inhibit coordination. Lastly policy coherence will also involve a coordinated approach to fiscal reform across different fishery jurisdictions – offshore, coastal, inland and aquaculture. This joined up approach will ensure decisions are taken at the landscape level, cover labour movement and private investment across different jurisdictions and ensure there are no gaps or negative externalities from fiscal reforms between one marine domain and another. The policy coherence principle of LNOB strongly supports SDG 16 on strong institutions and SDG 17 on global partnerships.

5. Conclusion

Despite the importance of fisheries resources to millions of people around the world, opportunities for sustainable marine management has been overlooked by mainstream policymakers due to misallocation of incentives and investments, compounded by ill-defined property rights, in which short-term profits come at the expense of long-term viability of marine resources.

One of the least explored areas of fisheries management is the role fiscal reforms can play in promoting better management of ocean resources. This paper has discussed three principal fiscal instruments to achieve this outcome: tax, subsidies and ecological fiscal transfers (EFTs). With the exception or capacity enhancing, harmful subsidies, the authors believe that taxes, 'good' subsidies and EFTs can be effective instruments to address both conservation and development challenges for many ocean-based economies across the globe. However, both in low-income and high-income resource producing countries alike, there is conflict in the use of fiscal instruments between meeting short-term budgetary needs and conservation objectives. While many fiscal instruments such as taxes have ecological objectives, their goal is mostly to fill fiscal gaps. It is argued that, both fiscal and conservation objectives can be aligned to maximise both socioeconomic and ecological outcomes.

However, it must be noted that fiscal instruments or reforms do not operate in a vacuum. Their effective implementation requires adequate institutional frameworks to be in place. It is argued that (i) building or strengthening both technical and institutional capacity for fiscal administration; (ii) enhancing compliance through either (or a combination of) incentives and/or punitive measures; (iii) promoting transparency and accountability to win legitimacy and thereby cooperation from all stakeholders involved; and (iv) clearly defining use and access rights of marine and coastal resources either by recognising traditional or customary rights or through a participatory and equitable approach are very critical for an effective implementation of fiscal instruments their reforms.

Finally it must be noted that the institutional frameworks and design features outlined in this chapter are *not* prescriptive and should be amenable to local contexts. It is also important to mention that our approach has solely focused on national and sub-national levels. Fiscal reforms can be equally important at the regional and international scales (e.g. in the context of the European Common Fisheries Policy). Such transboundary fiscal reforms will also occur within complex institutional and legal frameworks, which are beyond the scope of this chapter but which merit further investigation in the future.

Acknowledgements

The Authors acknowledge support received from the Ecosystem Services for Poverty Alleviation (ESPA) programme - a global interdisciplinary research programme funded by the United Kingdom's Department for International Development (DFID), the Natural Environment Research Council (NERC) and the Economic and Social Research Council (ESRC), as part of the UK's Living with Environmental Change partnership – Project NE/M007650/1 (Sharing the benefits of sustainable fisheries: from global to local legal approaches to marine ecosystem services for poverty alleviation).

References

[1] R.A. Androkovich, K.R. Stollery, Regulation of stochastic fisheries: a comparison of alternative methods in the Pacific halibut fisheries, Mar. Resour. Econ. 6 (1989) 109–122.

[2] N.H. Barma, K. Kaiser, T.M. Le, L. Vinuela, Rents to Riches? The Political Economy of Natural Resource Led Development, International Bank for Reconstruction and Development, Washington DC, 2012.

[3] T. Bostock, S. Cunningham, E. Bennett, Political economy of fishery fiscal reforms, Fish. Fisc. Reforms Poverty Reduct. (2004), 〈http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/3115.pdf〉.

[4] F. Bourguignon, S.R. Chakravarty, The measurement of multidimensional poverty, J. Econ. Inequal. 1 (1) (2003) 25–49.

[5] M.A. Bovens, Public Accountability, The Oxford handbook of public management. Oxford Handbooks Online, 2007.

[6] W.W. Cheung, U.R. Sumaila, Trade-offs between conservation and socio-economic objectives in managing a tropical marine ecosystem, Ecol. Econ. 66 (1) (2008) 193–210.

[7] C. Dunning, M. Elgin-Cossart, Can the SDGs really 'leave no one behind'? Cent. Glob. Dev. (2015), 〈http://www.cgdev.org/blog/can-sdgs-really-leave-no-one-behind〉.

[8] H.E. Filali, H.E. Ayoubi, Marine fishery sector in Morocco and tax reform for growth promotion and sustainable management, in: S. Cunningham, T. Bostock, (eds.) Workshop and exchange of views on fiscal reforms for fisheries to promote growth, poverty eradication and sustainable management. FAO, Rome, 2004.

[9] A. Hatcher, S. Jaffry, O. Thébaud, E. Bennett, Normative and social influences affecting compliance with fishery regulations, Land Econ. (2000) 448–461.

[10] IMF, The Role of Fiscal Institutions in Managing the Oil Revenue Boom. IMF Fiscal Affairs Department. Washington D.C, 2007.

[11] IMF, Asia and Pacific Small States Monitor, Quarterly Bulletin, Special Topic—Leveraging Marine Fishery Resources: Implications for Fiscal Policy, 〈http://www.imf.org/external/np/apd/ssm/2014/0414.pdf〉, 2014.

[12] M. Islam, E.Y. Mohammed, L. Ali, Economic incentives for sustainable hilsa fish management in Bangladesh: An analysis of the legal and institutional framework. IIED Working Paper. IIED, London, 2014.

[13] C. Melamed, Putting Inequality in the Post-2015 Picture, Overseas Development Institute, London, UK, 2012.

[14] E.Y. Mohammed, Payments for coastal and marine ecosystem services: Prospects and principles. IIED briefing papers. IIED, London, 2012.

[15] E.Y. Mohammed, Md Wahab, Direct Economic Incentives for Sustainable Fisheries Management: The Case of Hilsa Fish Conservation in Bangladesh. Shaping Sustainable Markets, IIED, 2013.

[16] E. Mohammed, A. Chowdhury, Md. Ali, Mitigation unintended local economic impacts of the compensation scheme for hilsa management. IIED Briefing Paper, 2015.

[17] S. Mumban, I. Ring, T. Lenk, Ecological fiscal transfers at the provincial level in Indonesia. UFZ Discussion Papers. Leipzig, Germany, 2012.

[18] J.R. Nielsen, An analytical framework for studying: compliance and legitimacy in fisheries management, Mar. Policy 27 (5) (2003) 425–432.

[19] OECD, Environmental Fiscal Reform for Poverty Reduction, 〈http://www.oecd.org/greengrowth/green-development/34996292.pdf〉, 2005.

[20] E. Ostrom, Governing the Commons: The Evolution of Institutions for Collective Action, Cambridge university press, 1990.

[21] G.D. Paepe, B. Dickinson, Tax Revenues as a Motor for Sustainable Development. Development Co-operation Directorate and Centre for Tax Policy and Administration, OECD, Paris, France, 2014.

[22] A. Sen, Commodities and Capabilities, Oxford University Press, 1999.

[23] D. Slunge, L. Sterner, Environmental fiscal reform in East and Southern Africa and its effects on income distribution, in: L. Castelluci, A. Markandya (Eds.), Environmental Taxes and Fiscal Reform. Central Issues in Contemporary Economic Theory and Policy. Palgrave Macmillan, London, UK, 2012.

[24] U.R. Sumaila, A.S. Khan, A.J. Dyck, R.A. Watson, G.R. Munro, P.H. Tyedmers, et al., A bottom-up re-estimation of global fisheries subsidies, J. Bioecon. 12 (2010) 201–225.

[25] U.R. Sumaila, A. Dyck, A. Baske, Subsidies to tuna fisheries in the Western Pacific Ocean, Mar. Policy 43 (2014) 288–294.

[26] U.U. Sumaila, V. Lam, F. Le Manach, W. Swartz, D. Pauly, Global fisheries subsidies. European Union. Available at 〈http://www.europarl.europa.eu/RegData/etudes/note/join/2013/513978/IPOL-PECH_NT(2013)513978_EN.pdf〉 (Accessed 02.08. 15), 2013.

[27] U. Rashid Sumaila, Trade Policy Options for Sustainable Oceans and Fisheries. E15 Expert Group on Oceans, Fisheries and the Trade System – Policy Options Paper. E15Initiative, International Centre for Trade and Sustainable Development (ICTSD) and World Economic Forum, Geneva, 2016.

[28] K.K. Viswanathan, Community perspectives: Exclusivity of rights, in: R. Shotton, (ed.), Use of property rights in fisheries management. FAO Fisheries Technical Paper 404/1. FAO, Rome, 1999.

[29] World Bank, Environmental Fiscal Reforms, What should be done and how to achieve it 〈http://siteresources.worldbank.org/INTRANETENVIRONMENT/Publications/20712869/EnvFiscalReform.pdf〉, 2005.

[30] E. Anyanova, Rescuing the inexhaustible: the issue of fisheries subsidies in the international trade policy, J. Int. Commer. Law Technol. 3 (3) (2008) 147–156.

[31] I. Porras, P. Steele, E.Y. Mohammed, Upscaling Solutions, The Role of Conditional Transfers for Poverty Reduction and Ecosystem Management, IIED, London, 2016.

[32] M. Hauck, M. Kroese, Fisheries compliance in South Africa: a decade of challenges and reform 1994–2004, Mar. Policy 30 (1) (2006) 74–83, http://dx.doi.org/10.1016/j.marpol.2005.06.007.