

Social transfers to protect natural resources

How can social transfers discourage over-fishing and promote more sustainable practices?

This Brief provides EU staff with an overview of the modalities through which social transfers can be deployed to improve the sustainability of natural resource-based economic activities, thereby reconciling poverty reduction and resource conservation objective. The particular livelihood selected for this Brief is small-scale or artisanal fisheries, but the argument and analysis could equally be applied to other natural resource-based livelihoods, whether derived from the land (crop farming), from livestock (pastoralism) or from forests (hunting and foraging).

Core messages

- 1. Three distinct social transfer modalities have been used as a policy response to the dilemma of how to protect livelihoods and natural resources simultaneously.**
- 2. The first is conditional transfers, as incentive payments for natural resource management.** Such payments for environmental services have the virtue of being relatively inexpensive, being limited to few individuals or communities. Moreover, they often generate tangible economic and environmental returns.
- 3. The second is unconditional transfers, as compensation payments for income lost by adhering to the regulations.** As well as being relatively costly, such transfers do not generate economic returns; instead, people are paid to do nothing (e.g. to stop fishing). They may distort decision-making and produce unintended, opposite effects.
- 4. A third application of social transfers comes in the form of extending social security to informal workers,** who will be likely to have less incentive to maximise their immediate income by over-exploiting resources if they have access to social insurance that protects them against life-cycle contingencies and livelihood shocks.
- 5. A combination of carrots (social transfers) and sticks (regulations) is likely to be most effective,** with the balance depending on the local context and the nature of the resource being protected. A promising two-pronged approach consists in encouraging communities to co-manage compliance with restrictions through collective agreements and payments for ecosystem services, calculated in relation to lost income and securing a predictable source of income.



Introduction

The challenge facing any livelihood system that is derived primarily from natural resources is how to maximise the value extracted from these resources, not only now but also in the future, given that excessive exploitation of the resource base today could compromise its value tomorrow. For poor people focused on day-to-day survival, and for governments aiming for rapid poverty reduction and high annual economic growth rates, the incentive to extract the maximum utility possible from natural resources could deplete them to an unsustainable extent. This dilemma is exacerbated in contexts where property rights are not clearly specified, so that every private agent with access to a public or communal resource has incentives to maximise their individual utility from the resource.

In such circumstances, governments or other public agencies often introduce regulatory mechanisms, to correct for incompatible incentives and to strike a balance between these competing objectives. However, enforcing these regulations might be expensive and difficult, especially when the economic returns from evading them are high.

Examples of regulations on fishing

- No fishing in certain areas (no-take zones)
- No fishing at certain times of year (closed seasons)
- No fishing of certain species (fishing bans)
- Limited fishing of certain species (quotas or permits)
- Restrictions on the size of fish that can be caught
- Restrictions on the mesh size of fishing nets

The purpose of this brief is to explore whether social transfers can be effectively deployed as one mechanism to improve the sustainability of natural resource-based economic activities, thereby reconciling poverty reduction and resource conservation objectives.

Three distinct modalities are identified and discussed:

- **Incentive payments** for natural resource management,
- **Compensation payments** for lost income, and
- The extension of **social security** to fishers.

The particular livelihood selected for this brief is small-scale or artisanal fisheries, but the argument and analysis could equally be applied to other natural resource-based livelihoods, whether derived from the land (crop farming), from livestock (pastoralism) or from forests (hunting and foraging).¹

Problem analysis

Punitive attempts to protect natural resources through imposing regulations such as closed seasons, quotas or fishing bans on protected species often fail, because they impose wellbeing losses on fishers that generate incentives to ignore, evade or subvert the regulations. Governments in low-income countries typically lack the capacity to monitor and enforce compliance, and wellbeing losses generate incentives for rent-seeking behaviour, such as collusion between fishers and officials.

Challenges by fishers to fisheries policies and attempts to regulate fisheries in many countries – sometimes even violent protests² – reflect the divergent objectives of fishers and policy-makers.³ On the one hand, resistance by fishers could be interpreted as their failure to understand the sensitivity of ecosystems to over-exploitation, and their refusal to accept the necessity for conservation measures. On the other hand, policy-makers also stand accused of being insensitive to the economic and social consequences of the constraints that their regulations impose on the activities of fishers, whose livelihoods depend on unrestricted access to marine, coastal or inland fisheries. Conflicts often arise because affected fishers feel a sense of injustice that their livelihoods have been compromised by policy-makers, in ways that might seem arbitrary and unfair. But often the problem is exacerbated by the exclusion of fishers from the relevant decision-making processes, or at best nominal consultation.

For many communities, fishing is not just a livelihood or a means to earn a living, it is also a way of life, a culture that has been passed down several generations, and the locality is their ancestral home. Imposing constraints such as quotas or fishing bans, or even evicting fishers from ecologically stressed areas, does not only threaten the subsistence base of these communities, it also violates their traditional lifestyle and all the values it encapsulates. Balancing this set of considerations against the need to protect the fish stock and its ability to replenish sustainably is a challenge that must be based on political judgements and priorities, as much as on economic analyses or environmental impact assessments.

A more sustainable approach requires redressing the asymmetric incentives problem, by compensating fishers for the income that they will lose by adhering to environmental regulations, with the objective of protecting both livelihoods and natural resources. This requires well-defined property right regimes, and is difficult to monitor in the case of marine resources – more difficult, for instance, than monitoring whether plots of land are left fallow on farms – mainly because of the mobility of fish stocks.

Are social transfers a solution?

Social transfers have been used broadly in two ways, as a policy response to the dilemma of how to protect fish stocks and livelihoods simultaneously. The first is a kind of conditional transfer, as a payment for good environmental practices by fishers. The second is an unconditional transfer, a kind of unemployment insurance for fishers whose income is reduced by the introduction of fishing regulations. A third application of social transfers comes in the form of extending social security to fishers.

Glossary of key concepts

- **Fishing agreements (FAs):** Collective agreements with simple mechanisms for managing specific resources. FAs embody few rules between fishers and other stakeholders (which are usually other categories of fishers), are supported legally by a decree, and are administered by the government.⁴
- **Marine protected areas (MPAs):** Areas of coastal land and water where fish harvests are restricted.⁵ MPAs can include the establishment of no-fishing zones in biologically vulnerable areas.³
- **Payments for ecosystem services (PES):** Schemes in which natural resource users are paid to conserve natural resources or manage them more sustainably.⁵
- **Social transfers:** Non-contributory, publicly funded, direct, regular and predictable resource transfers (in cash or in kind) to poor or vulnerable individuals or households, aimed at reducing their deficits in food consumption, protecting them from shocks (including economic and climatic), and, in some cases, strengthening their productive capacity.⁶

Incentive payments

The first potential response is to introduce incentives to fishing communities not to over-exploit the local fish stock and to manage the resource base more sustainably, in the form of ‘payments for environmental services’ (PES). For example, communities might receive payments to reforest riparian areas (Case study 1), in order to protect the water resources where fish breed, or to protect sea turtle nests (Case study 2).

Sometimes incentive payments can be delivered to communities rather than to individual fishers, with the ambition of achieving broader developmental outcomes. These schemes are easier to administer and are less vulnerable to problems such as mis-targeting and perverse incentives. A case in point is a project in Mexico that protects a coastal whale habitat (Case study 3).

Incentive payments have the virtue of being relatively inexpensive, since only a limited number of individuals or communities typically receive these payments. Moreover, the payments are made to poor people for services they provide, so PES often generate tangible economic and environmental returns.

Case study 1: PES in Eritrea⁵

The Manzana project in Eritrea offers coastal communities small financial and in-kind benefits to plant mangrove trees. In return for their labour, project participants – mostly poor women – receive a free meal and 20 Nakfa (US\$1.33) every working day; the poorest households are also given sheep and goats. The project claims that up to 100 hectares of coastal land have been afforested through the scheme. Communities report that in addition to increasing the food available for their livestock, the newly planted mangroves have boosted numbers of fish and shellfish.

Case study 2: PES in Tanzania⁵

Several countries are experimenting with PES to protect threatened species and their coastal habitats. One scheme in Tanzania pays communities for finding the nests of endangered sea turtles, and then reporting them to project monitors. In some cases, payments vary depending on the nest’s hatching success. Studies suggest that the scheme significantly reduced poaching in the area – from 48.5 per cent in 2001 to 0.6 per cent in 2004 – while simultaneously increasing hatching rates.

Case study 3: Protecting whales in Mexico⁵

The Luis Echeverria community in Mexico is similarly protecting about 48,500 hectares of grey whale habitat, in exchange for annual payments of US\$25,000. The payments are used to support small-scale development projects, including business training and alternative income-generating activities. This scheme is praised for its attention to local needs and priorities, responding to local preferences for new livelihood options and securing a dedicated trust fund to cover expenses associated with designing and implementing the project.

Compensation payments

A second potential solution is to provide compensation for fishers whose livelihoods are compromised by restrictions on fishing in Marine Protected Areas (MPAs). In Kenya, for example, fishers were paid not to fish in a protected area (Case study 4). In Tanzania, fishers in a national park were supported to diversify their livelihoods away from fishing (Case study 5). This approach effectively shifts the costs of lost incomes from fishers themselves onto society at large, in the interests of the greater good – preserving fish stocks and protecting coastal and marine ecosystems – since funding these transfers will presumably come from general taxation revenues.

Case study 4: ‘No-take zone’ in Kenya⁵

In 2005, the Kuruwitu Conservation and Welfare Association in Kenya established a ‘no-take zone’ of two square kilometres in response to significant declines in fish catches. During the following six months, local fishermen were paid by an international non-governmental organisation to not fish in the area, leading to significant environmental gains. It’s reported that coral cover grew by 30 per cent; seagrass species saw a 12 per cent increase; and fish stock doubled. But the scheme is struggling to secure financial sustainability because ecotourism has not managed to fulfil expectations of raising adequate funds.

Case study 5: Shifting livelihoods in Tanzania⁵

In southern Tanzania, the Mnazi Bay Ruvuma Estuary Marine Park was established in 2000 to improve fishery health by altering local people’s behaviour. The park, which covers both coastal and intertidal zones, restricts the type of fishing gear allowed and bans all commercial mangrove cutting. Affected communities can swap, at no cost, their ‘illegal’ small mesh fishing nets for large mesh ones, and are given support for alternative income-generating projects, such as beekeeping. The Marine Parks and Reserves Authority in Tanzania claims that the park is helping significantly to reduce poverty in the region and promote eco-tourism investment.

One of the best-known examples of compensation payments for fishers to encourage them to observe a closed season is the *defeso* scheme in Brazil, which functions as a kind of unemployment insurance, by smoothing fishers’ incomes during the months when fishing of certain species is prohibited. Empirical evidence about the impacts of the *defeso* scheme is mixed and controversial. A recent critique argues that it creates perverse incentives and has attracted many new small-scale fishers into entering the industry, primarily to claim *defeso* payments.⁷ At the same time, since the closed season is not enforced the over-fishing of protected species might actually have increased rather than fallen (Case study 6).

Case study 6: *Defeso* in Brazil⁷

The *defeso* subsidy was created by federal law in 2003 for small-scale professional fishers who fish artisanally as individuals or families. The professional fisher has rights to an unemployment benefit (subsidy) equal to the official minimum wage (approximately US\$340 during the time of this study) during the months of the closed season, which is from November 15 to March 15. This law prohibits fishing for the listed species during the closed season, and violators are subject to fines and loss of their fishing licenses.

Analyses demonstrate that the *defeso* is unenforced and that considerable fishing effort takes place during the closed season. The number of fishers in Amazonas State has grown at a rapid velocity, increasing five-fold in seven years (2005–2012). This follows the prediction of the economic theory that the subsidy will generate entry into the fishery. It is truly a formula for disaster, as the increased entry into the fishery, coupled with lack of enforcement, will drastically reduce the size of the fish stock and availability in the future.

The *defeso* case highlights the risk that introducing financial incentives into livelihood systems could distort decision-making in unintended ways, potentially producing the opposite effect to the objective of the intervention. Compensation payments need to be monitored to ensure that agreed behavioural changes (e.g. refraining from fishing during the closed season) are actually undertaken. Moreover, because they are free and unconditional, claimants need to be verified to prevent abuse of the kind that has allegedly compromised the *defeso* scheme.

As well as being relatively costly, compensation payments do not generate economic returns; instead, people are paid to do nothing – namely, to stop fishing.

As with other forms of redistributive social transfers, PES incentives and compensation payments require a social consensus that fishers deserve to be compensated for their lost income and for safeguarding natural resources, otherwise the policy might not gain the necessary political support from middle-class taxpayers, and might be unpopular with other poor people in the same areas who rely on other livelihoods. This might therefore require an effective information, education and communications campaign. There are also administrative costs associated with both policy interventions, associated with monitoring and enforcing compliance. Incentive payments also need to be closely monitored to ensure that the agreed environmental actions (e.g. planting trees) are actually undertaken.

Social security

The *Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication* aim to support the progressive realization of the right to adequate food within the context of sustainable fisheries management, and to achieve the sustainable utilization, prudent and responsible management and conservation of fisheries resources.⁸ In this context, the Voluntary Guidelines argue that small-scale fishers should be incorporated into formal social security systems, from which they are typically excluded because they operate in the informal economy. The Voluntary Guidelines read as follows: "States should promote social security protection for workers in small-scale fisheries. They should take into account the characteristics of small-scale fisheries and apply security schemes to the entire value chain."⁸

Fishers are likely to have less incentive to maximise their immediate income by over-exploiting fish stocks if they have access to social insurance that guarantees to protect them against life-cycle contingencies (e.g. old age) and livelihood shocks (e.g. loss of fishing gear). Successful attempts have been made to incorporate fishers into social security systems in a few middle-income countries, notably India (Case study 7) and Brazil (Case study 8).

Case study 7: Social security for fishers in India⁹

In the state of Kerala in India, the Kerala Fishermen Welfare Corporation was established in the 1980s and later established a Welfare Fund known as Matsyaboard. Schemes include old age pensions, medical insurance, disability benefits, and assistance with wedding or funeral expenses. Contributions to the fund are made by the government, fishers, and wholesalers who buy and sell fish. A major problem faced by the Welfare Fund is arrears, caused mainly by the reluctance of seafood exporters to pay their contributions in full and on time.

These options might not yet be available in many low-income countries, because they are relatively expensive and because they require sophisticated social security systems and financial infrastructure to be in place, as well as effective regulatory mechanisms. However, social insurance exists in virtually every country, even if its coverage is currently limited to civil servants, and many low-income countries are actively exploring options for extending social insurance to informal workers. The experiences of Brazil and India offer useful lessons and models for other countries to learn from.



Case study 8: Social security for fishers in Brazil¹⁰

Brazil's social security system was established in the 1930s, but informal workers, including fishers, were excluded until the late 1980s, when they were given 'special category' status. This entitled them to claim unemployment insurance and, later, several other benefits including retirement pensions due to age or invalidity, and financial assistance for accidents, sickness, maternity or incarceration. To access these benefits, fishers need to register with the National Institute of Social Welfare and pay 2.1 per cent of their income as monthly contributions.

Conclusion

As the high-profile cases of abalone and rhinoceros poaching in South Africa demonstrate, the returns to harvesting relatively scarce but highly valued natural resources are so attractive that social transfers are unlikely in such cases to offer an adequate incentive to control the over-exploitation of available stocks. Poachers have shown their willingness to risk imprisonment or even death, due to the lucrative nature of abalone and rhino horn. Compensatory social transfers will only succeed if their replacement rate is relatively high – in other words, if the payments offered are close enough to the income that fishers will lose by adhering to the regulations that must be followed to qualify for the transfers.

It follows that social transfers are unlikely to offer a complete solution to the dilemma of regulating natural resources such as fisheries, while at the same time protecting livelihoods that depend on their exploitation. ‘Win-win’ scenarios are possible, but only in situations where incentives can be properly aligned. Social transfers have a role to play, and sometimes they are sufficient on their own, but more often they need to be introduced in combination with regulations and controls that require monitoring and enforcement.

A combination of carrots (social transfers) and sticks (regulations) is likely to be most effective, with the balance depending on the local context and the nature of the resource being protected. One innovative approach is Payments for Ecosystem Services (PES), which transfers responsibility for monitoring compliance onto fishers and fishing communities themselves, in return for a payment. One proposal from Brazil encapsulates this two-pronged approach. Fishing communities would be encouraged to co-manage and monitor compliance with fishing restrictions through Fishing Agreements (FAs) and PES that would be calculated in relation to lost income, based on average local catch rates (Case study 9). Even if the regular value paid to fishers is less than the average income from fishing, it would be a secure and predictable source of income, while fishing is uncertain, unpredictable and also incurs costs to fishers.⁴

Case study 9: Carrots and sticks in Brazil⁴

Artisanal fisheries from Ilha Grande Bay use a high diversity of fishing spots but are concentrated in 40 spots, some located inside an area restricted by the Ecological Station of Tamoios (ESEC). A co-management process involving Fishing Agreements (FAs) and Payment for Environmental Services (PES) for Ilha Grande Bay is proposed, including payments to fishers for restricted fishing and for monitoring those islands located within the ESEC. Such new proposed PES can be adapted from the *defeso*, the quasi-PES scheme already operating in Brazil.

Suggestions for a policy mix (PES combined with FAs) involve processes with relatively low transaction costs, compared to the other forms of co-management found in Brazil (reserves): they are embedded within the community, with local rules that exist in the use of the marine space; they are flexible, through FAs, which are adaptable as conditions change; and they are realistic, providing rewards and local stimulus for poor artisanal fishers through PES.

Furthermore, the approach proposed includes both the carrot of PES and the assurance of ongoing biodiversity conservation through maintenance of the no-catch provisions over selected islands.





Endnotes

- ¹ This brief builds on a desk review commissioned by DEVCO Unit C1 (Rural Development, Food Security, Nutrition) and conducted by Stephen Devereux (Centre for Social Protection, Institute of Development Studies, Brighton, UK) and Christophe Béné (International Center for Tropical Agriculture, Cali, Colombia) in April-May 2015.
- ² One example is the introduction of a 'no-take' fishing policy in South Africa's Tsitsikamma National Park in 2007, when 70 armed fishers entered the Park in protest (Coulthard et al. 2011: 5).
- ³ Coulthard S, Johnson D, McGregor J A. (2011). 'Poverty, sustainability and human wellbeing: A social wellbeing approach to the global fisheries crisis.' *Global Environmental Change*. doi:10.1016/j.gloenvcha.2011.01.003.
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- ¹² FAO. (2015). 'Social protection to foster sustainable management of natural resources and reduce poverty in fisheries-dependent communities.' Report of the FAO Technical Workshop on 17-18 November 2015 in Rome. FAO Fisheries and Aquaculture Proceedings No. 51. Rome: Food and Agriculture Organization of the United Nations. <http://www.fao.org/3/a-i6880e.pdf>.

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