



Perspective

Inland fisheries – Invisible but integral to the UN Sustainable Development Agenda for ending poverty by 2030



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ABSTRACT

The United Nations' (UN) 2030 Agenda for Sustainable Development defines the formidable challenge of integrating historically separate economic, social, and environmental goals into a unified 'plan of action for people, planet, and prosperity.' We highlight the substantial contribution inland fisheries can make towards preventing increased poverty and, in some cases, alleviating poverty (i.e. addressing Sustainable Development Goal [SDG] 1: No Poverty) as an opportunity to inform the next set of development agendas and their associated budgets and priorities. Overlooking the contribution of inland fisheries to poverty prevention and alleviation may undermine the capacity to successfully meet the development goals, especially in rural communities in Low-Income Food-Deficit countries. Inland fisheries are essential for food and economic security as the vast majority are small-scale operations or subsistence, predominantly used by poorer groups. Protecting inland fisheries from diverse threats from other water users and associated sectors requires robust, multi-sectoral, and multinational policies that can be brought about by global initiatives like the SDGs. Without such protection, their vital contribution towards sustainable livelihoods and poverty issues becomes uncertain. Further, integrating inland fisheries into sustainable development frameworks strengthens the likelihood of achieving the UN Agenda for Sustainable Development. In this perspective article, we posit that including inland fisheries in national policy statements and programs can prove beneficial to promoting economic and social growth for the poor, preventing further poverty, and achieving SDG 1 and other SDG targets, especially those related to food security.

1. Introduction

The United Nations' (UN) 2030 Agenda for Sustainable Development tackles the formidable challenge of integrating

historically separate economic, social, and environmental goals into a unified 'plan of action for people, planet, and prosperity' (UN, 2015). The effort to consider all factors necessary to achieve the Sustainable Development Goals (SDGs) is understandably a daunting task. We

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highlight the substantial contribution inland fisheries make to livelihoods and emphasize their potential for preventing increased levels of poverty (i.e., addressing SDG 1 [No Poverty]). Through this perspective article, not a traditional research article, we seek to add to the established work on the contribution of inland fisheries to other SDGs (e.g., SDG 2 [No Hunger]; see [Béné et al., 2016](#)) and the Millennium Development Goals before them (see [Heck et al., 2007](#)) and inform ongoing discussions to implement the SDGs and the associated next round of development agendas. Overlooking inland fisheries in sustainable development planning may pose a serious risk to the services they provide and diminishes capacity to make progress towards SDG 1, which is scheduled for review by the UN High-Level Political Forum in 2017.

'Inland fisheries' refers to the harvesting of aquatic organisms from inland waters, lakes, rivers, streams, canals, reservoirs, and other landlocked waters ([FAO, 2014](#)). While inland fisheries alone will not eradicate poverty, they can play an integral role in multi-dimensional efforts to alleviate poverty and prevent further poverty escalation. Inland fisheries are typically perceived and managed as a common pool resource, with ease of access and low barriers to entry facilitating their utilization by poor communities ([Béné et al., 2010](#); [Béné and Friend, 2009](#)). Individuals can relatively easily begin fishing because basic equipment needs (e.g., nets, hooks, traps) are generally inexpensive and do not require substantial skill to operate or maintain. Despite being 'low-tech,' and inexpensive, these approaches can be highly effective at catching large amounts of fish and are used extensively in inland fisheries around the globe ([Welcomme et al., 2010](#)). Ephemeral exploitation of inland aquatic resources can provide a 'safety net' in times of stress for transitional, vulnerable cohorts that fall into poverty (e.g., from economic displacement or market collapse; [Béné et al., 2007](#)). However, despite the perception of being a 'poverty trap' (see [Béné, 2003](#)), well-managed inland fisheries can also contribute to poverty alleviation and income growth ([Campos-Silva and Peres, 2016](#); [Eggert et al., 2015](#); [Smith et al., 2005](#)). This multifaceted contribution at different socioeconomic levels strengthens the impact of inland fisheries to society and compounds the need to protect them.

2. Drivers of poverty and unsustainable inland fisheries

Poverty is driven by a range of complex political, cultural, environmental, and economic factors (see [Hulme et al., 2001](#)), and these factors shape the links between poverty and inland fisheries ([Fig. 1](#)).



Fig. 1. Characteristics of affluence and poverty (outer ring) can lead to unsustainable choices (inner ring). When coupled with access to resources, affluence can lead to over-consumption and poverty can lead to short-term decisions that result in unsustainable practices for inland fisheries.

Sustainability of inland fisheries is challenged by heavy exploitation driven by demand for fishery products from both poor and affluent populations ([Allan et al., 2005](#)), as well as external water resource users ([Welcomme et al., 2010](#)). The poor face inadequate education and health facilities, vulnerability to economic shocks, and ineffective governance structures, problems exacerbated by limited technical capacity and access ([Lélé, 1991](#)). This scenario often leads to short-term, unsustainable decision making. The affluent, with greater access to finance and advanced technologies, can drive demand for products that contribute to the over-consumption and degradation of inland fisheries. Furthermore, the affluent are often geographically or socio-economically removed from the place of exploitation and less aware of or vested in the health of the resource ([Parikh, 1996](#)).

In both cases, the costs of unsustainable fisheries harvest are borne primarily by poorer, more vulnerable populations that rely on inland fisheries for their livelihoods and nutrition ([Béné, 2006](#); [Béné et al., 2010](#); [Smith et al., 2005](#); [Youn et al., 2014](#)). These impacts reduce resilience of the poor and exacerbate poverty. Rural poor communities are hit hardest because of limited access to alternative natural resources, employment opportunities, and basic infrastructure (e.g., electricity, sanitation, health clinics; [Cowx et al., 2004](#)).

3. Inland fisheries' role in addressing vulnerability to poverty

We highlight the growing evidence that inland fisheries have disproportionate importance for impoverished countries ([Fig. 2](#)). The paucity of data presents a major challenge to evidencing the role of inland fisheries; not because inland fisheries do not contribute, but rather, because their contributions are not easily quantifiable ([Lorenzen et al., 2016](#)). Inland fisheries resources are often taken for granted (e.g., as an assumed immediate food source following a disaster; see [Westlund et al., 2007](#)). The highly dispersed nature of these fisheries means assessment is not common in poor regions and the status of the resources is often unknown. Where data do exist (e.g., Lake Victoria: [Mkumbo and Marshall, 2015](#); Mekong River: [Nam et al., 2015](#)), we observe clear contribution from inland fisheries to SDG 1 relevant targets like resilient livelihoods, gender, governance, and addressing global poverty (see [Table 1](#)). For example, women typically occupy half (sometimes much more) of the workforce associated with all fish harvest and post-harvest subsectors ([de Graaf and Garibaldi, 2014](#); [World Bank, 2012](#); [Fig. 2-Africa inset](#)). Ignoring or overlooking the role of inland fisheries in development agendas misses an important mechanism for achieving progress towards SDG 1 ([Cooke et al., 2016](#)).

A majority of people who live on less than US\$2 per day reside in Low-Income Food-Deficit (LIFD) countries; this group is targeted by SDG 1 for poverty reduction efforts. Many of these countries are located in Sub-Saharan Africa and Southern Asia where inland fisheries play essential roles in food and economic security because reliance on them is greater among poorer groups ([Kapetsky, 2003](#)). The percentage of the population engaged in inland fisheries and their per capita fish catch tend to be higher in countries with a per capita income below the US\$2 per day poverty threshold ([Fig. 2-Map](#)). In Asian countries, fish make up a larger proportion of household expenditures in low income households (e.g., [Dey et al., 2005](#); [Fig. 2-Asia inset](#)). In more developed countries, a transition from food-based (subsistence) fisheries towards recreational fisheries has altered the contribution of inland fisheries to rural economies and livelihood opportunities ([Arlinghaus et al., 2016](#)). A similar transition in the developing world can bolster progress on SDG targets (it is already occurring across large parts of South America: see [Freire et al., 2012](#) and southern Africa: see [Potts et al., 2009](#)). Overlooking the role and contribution of inland fisheries to reducing poverty (both prevention of further poverty escalation and promotion of economic and social growth) may make reaching that goal even more challenging, particularly in LIFD countries.

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