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Feeding the poor: Contribution of West African fisheries to employment and food security

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ABSTRACT

West African small-scale fisheries are analyzed to determine their contribution to the economy, food security (catches and employment) and poverty alleviation (income and choice of activity). Previous quantitative analysis revealed major discrepancies between official data (which essentially underreports artisanal and ignores subsistence fisheries catches) and re-estimated data obtained from various reports. This resulted in a doubling of the landed value of small-scale fisheries catches to 3.5 billion USD year^{-1} compared to officially reported numbers. Similarly, employment estimated officially at 1 million fishers was found here to be only 70% higher when subsistence fisheries are included. For the 22 West African countries considered in this study, we estimate that 6.7 million people directly depend on fishing activities for their food and/or livelihood. Furthermore, the present study shows an increasing reliance of West Africa's coastal population on fisheries for their food and income despite decreasing total income and increasing fishing costs, which in turn aggravated poverty. The notion that small-scale fisheries could contribute to poverty alleviation despite crises and shocks is thus highly contestable. Indeed, although the number of people depending on fisheries is still increasing, driven by their current (even though decreasing) profitability, the perception of small-scale fishing as an activity of last resort is probably justified, and more appropriate than viewing it as a source of sustainable livelihood.

1. Introduction

According to the FAO, all West African fishing grounds are fully or over-exploited (FAO, 2006). Declining stocks, and therefore catches, increase negative impacts on the coastal populations of West Africa. Malnutrition prevalence[1] in the region reaches over 30% of the population, which is often a result of poverty. In many instances the latter, and thus food security, can be related to declining fisheries caused in part by over-exploitation (Béné, 2003, 2004; Srinivasan et al., 2010). The depletion of marine resources has in turn severe effects on employment opportunities and standards of living of small-scale fishing households, with very limited alternative livelihood opportunities. Through unmonitored fishing agreements, illegal fishing, unsustainable discarding and unmonitored fishing effort (Srinivasan et al., 2010), "the true burden of catch losses falls upon the world's poorest, the subsistence and artisanal fishers who are losing access to an important source of cheap protein" (Millennium Ecosystem Assessment (MA), 2005). These conditions in turn accelerate environmental degradation (Hardin, 2007) as fishers' behavior adapts to declining catches by intensifying and expanding fishing effort. Béné (2003) reported that there was "almost a complete absence of references to fisheries case studies in the current literature on poverty" and how it relates to fisheries with its key fundamental dimensions, i.e., employment and thus food access.

West African small-scale fisheries are labor intensive, geographically scattered, mostly unlicensed and difficult to monitor, and thus the employment and the number of people dependent upon them are difficult to assess, which results in the under-estimation of costs and benefits of fisheries (Teh and Sumaila, 2013). This situation challenges the proper understanding of the implications of increasing effort (i.e., fishing costs) and over-exploitation on poverty. Although, many small-scale fishers are thought to earn less than 1 USD day^{-1} (Béné et al., 2010), it is

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[1] Percentages extracted from the World Bank database weighted by the population of each country.

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hoped this situation could change (Kawarazuka and Béné, 2010) and it is still thought that "small-scale fisheries can generate significant profits, prove resilient to shocks and crises, and make meaningful contributions to food security and poverty alleviation" (FAO, 2003), while 40 years ago, coastal fishing communities were sought to "*live within the margins of subsistence and human dignity*" (FAO, 1974). Many development projects prioritizing fishing effort expansion in West Africa since the 1950s often turned out to be unsuccessful (Kaczynski and Fluharty, 2002). Today, these projects focus mainly on "sustainable" development and increase in productivity, however, as they fail to emphasize the importance of proper monitoring and enforcement of basic regulations (e.g. Thiao, 2009), they also result in failure. Is the hypothesis that 'small-scale fisheries can prove resilient to shocks while making meaningful contributions to food security and poverty' under the current conditions in West Africa and did the poverty situation improve?

The literature generally diverges when presenting numbers reflecting the importance of West African fisheries for food security and their contribution to the economy. Official figures of fish consumption vary between 4.9 kg capita^{-1} year^{-1} in Liberia and 44.6 kg capita^{-1} year^{-1} in Gabon (Béné and Heck, 2005). Similarly, fish contribution to animal protein consumption can be as low as 23% in Liberia and as high as 63.2% in Ghana (Béné and Heck, 2005). While discrepancies exist, they fail to undermine the relatively important role that fish, particularly those caught by the small-scale sector, play in the West African diet across the region (Béné et al., 2007). Moreover, these estimates are often based on the apparent consumption, which is computed from reported catch as opposed to actual landings.[2] For example, household surveys show that fish consumption estimated from actual catches is between 30% (average for Gabon[3] and the Republic of Congo[4]) and 500% higher (Guinea Bissau[5] and Sao Tome and Principe[6]) than that based on official landing data.

Similarly, the contribution of West African fisheries to the economy is often taken as the landed value without further consideration for the value added by the down sectors (processing, marketing, etc.). This introduces a downward bias when estimating the contribution of fisheries throughout the economy (Dyck and Sumaila, 2010; Zeller et al., 2007). Belhabib et al. (2014a) for example found that the contribution of Guinean small-scale fisheries to the GDP was 6 times higher than official estimates (Faro et al., 2005). This often results in the neglect of subsistence fisheries, which can be boat-based or conducted from shore (e.g. beach seining or shellfish collecting by women). These often yield substantial catches that are hardly ever included in official statistics.

Small-scale fisheries can contribute to food security through a) a direct contribution to fish consumption (e.g., subsistence fisheries catches), b) increased purchasing power (income and employment in the artisanal sector) and thus diversifying household diet by accessing important food staples. Note that both subsistence and artisanal fisheries employ women, the former as fishers or gleaners, and the latter in the processing of fish, with both generating food and income (Harper et al., 2013; Kawarazuka and Béné, 2010).

This paper explores the economic and food security implications of the expansion of artisanal and subsistence fisheries throughout the twenty-two countries of West Africa. A secondary objective is to examine whether small-scale fishers income over time has been below or above the poverty line in the countries studied.

2. Conceptual framework

2.1. Definition of poverty

According to UNDP (1997) Human Development Report, "poverty means that choices most basic to human development are denied – to lead a long, healthy, creative life and to enjoy a decent standard of living, freedom, dignity, self-respect and the respect of others". This definition highlights mostly the freedom of choice and some aspects of deprivation. Research has shown that poverty is a multi-dimensional phenomenon, which can be measured in terms of income and expenditure levels but can also be perceived in terms of individuals' social interactions and state of mental well-being (Oduro and Aryee, 2003).

Poverty implies restricted access to education attainments, health, safe nutrition and access to food and water resulting in a shorter life span (Sarr, 2008). It should be noted that poverty can be difficult to define in operational terms, one attempt at operationalizing it is through the concept of a 'poverty line', which can be absolute, i.e., independent of a society's standard of living, or relative to it. One economic definition of the poverty line is "*the critical level on the welfare scale at which access to basic needs become restricted*", which is dependent on individual/household income (Callan and Nolan, 1991; Hagenaars and van Praag, 1985). The World Bank defines a poverty rate as "*the percentage of the population living below the national poverty line*". Globally, the (absolute) poverty line is set at 1.25 USD$^{-1}{}_{2005}\cdot$day^{-1} (www.worldbank.org); under this limit, people, e.g. 40–50% of the West African population, is considered poor.

2.2. Definition of food security

According to Pinstrup-Andersen (2009), the definition of food security as the fact that "*enough food is available, whether at the global, national, community, or household level*" is restrictive to the supply side and doesn't capture the important aspects of access to food, nutritional value and food preferences as required by the FAO definition (Maxwell, 1996; Pinstrup-Andersen, 2009). Thus, food security was defined at the 1996 World Food Summit as "a condition when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (FAO, 2005). Food security in a household means that all its members are able to access food (Pinstrup-Andersen, 2009), whether directly (e.g. subsistence fisheries) or indirectly through revenue generation.

Ultimately, food security can be measured by a) the amount and quality of food intake relative to an absolute health standard such as those set internationally by the World Health Organization (WHO); b) physical access to food such as direct fish supply from small-scale fisheries; and c) economic access to food through e.g. income generated by fisheries and the related processes (processing, landing, repairs etc.) and thus employment (FAO, 2005). The

[2] Total catches include sectors that are missing from official landing data. Often these include a large part of small-scale artisanal and subsistence fisheries given their scattered and non-commercial nature, by-catch and recreational fisheries.

[3] Gabon: fish consumption rate was derived from the household survey by Wilkie et al. (2005) at 55 kg capita^{-1} year^{-1} and compared to an apparent consumption rate of 44.6 kg capita^{-1} year^{-1} (Béné and Heck, 2005).

[4] Republic of the Congo: the consumption rate estimated at 35 kg capita^{-1} year^{-1} was derived from household surveys (Anon., 2006; Backiny-Yetna and Zodon, 2009) and compared to an apparent consumption rate of 25.3 kg capita^{-1} year^{-1} (Béné and Heck, 2005).

[5] Guinea Bissau: A household survey estimated a consumption rate of 26 kg capita^{-1} year^{-1} (Dia and Bedingar, 2001) compared to an apparent consumption of 3 kg capita^{-1} year^{-1} (Sub-Regional Fisheries Commission, 2001).

[6] Sao Tome and Principe: A fish consumption rate (57.8 kg capita^{-1} year^{-1}) was obtained by averaging household survey fish consumption rates obtained for 2002 (53 kg capita^{-1} year^{-1}), 2008 (89.9 kg capita^{-1} year^{-1}) (Espírito Santo and Pacheco de Carvalho, 2010) and 2007 (30 kg capita^{-1} year^{-1}) (Scopa et al., 2007) and compared to the apparent consumption of 21.4 kg capita^{-1} year^{-1} (Béné and Heck, 2005).