



Persistent fishing amidst depletion, environmental and socio-economic vulnerability in Iloilo Province, the Philippines

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ABSTRACT

This article is concerned with the impact of environmental pressures on coastal livelihoods in the municipality of Ajuy, Iloilo Province, central Philippines. The empirical research focuses on three issues: artificial reefs submerged to increase fish stocks, the search for alternative livelihoods options after Typhoon Yolanda (international name Haiyan), and relocation schemes. While the majority of the surveyed households find it hard to make ends meet and persist in fishing they are reluctant to relocate. The results of this investigation highlight that working towards the twin-goals of reducing overfishing and higher standards of living requires a holistic multi-sectoral approach. Future livelihood projects in coastal areas should better address government – NGO coordination; not only in terms of financing and implementation, but also in terms of monitoring and controlling vulnerable marine resources in the longer term. The challenge for international NGOs is to find a compromise between short-term expectations regarding aid effectiveness in donor countries and long-term environmental and socio-economic problematiques in recipient countries.

1. Introduction

As a tropical archipelago with more than 7000 islands and vast marine resources, the Philippines has been heavily associated with fisheries and aquaculture. The Philippines also has a large population – more than 100 million and growing fast – a factor which has made it more difficult to implement sustainable fishing practices and build resilient coastal communities. In a study of 44 Philippine towns, Muallil et al. (2014) found that fisheries in the municipal waters of 30 towns 'are bound to collapse' and that municipal waters should be much better protected to reduce overfishing. Furthermore, climate change has started to trigger more pronounced weather extremes (typhoons, but also droughts), exacerbating food security threats in Asia and the Pacific (Cai et al., 2015; Chandra et al., 2017; FAO, 2016: 133; German Watch, 2017; Intergovernmental Panel on Climate Change, 2014; Noy, 2014; Redfern et al., 2012). This not only pertains to agriculture, but also to marine capture and aquaculture through direct impacts (lower reproductive successes of certain species) and indirect impacts (stronger waves obstructing sustainable fishing practices) (De Ramos, 2015). Aquaculture is likely to be impacted by ocean acidification (InfoFish, 2015).

This article is concerned with the impact of environmental pressures on coastal livelihoods in the municipality of Ajuy, Iloilo Province,

central Philippines; the combined impact of overfishing in the Visayan Sea, the aftermath of the devastating 2013 Typhoon Yolanda, and the 2015–2016 El Niño related drought. The British and Philippine Red Cross have been instrumental in providing relief goods and (re)building livelihoods after 2013, yet various issues remain unresolved. The empirical study reported here has been conducted in association with the Philippine Red Cross, Iloilo Province. There was a demand for a holistic inquiry into the fishing and livelihood situation in Ajuy Municipality which is located in the northern part of Iloilo Province. The research questions are as follows:

- Are the artificial reefs, submerged by the Red Cross in Ajuy Municipality in 2016 to increase fish stocks, likely to contribute to more sustainable fishing practices?
- What have been the effects of the rebuilding efforts after Typhoon Yolanda on non-marine employment opportunities?
- What has been the reaction of coastal households to the government's relocation schemes in order to provide safer housing further away from the coast?

Only investigating one issue or topic would have meant a disservice to the complex interrelated environmental and socioeconomic challenges in Ajuy Municipality.¹ This article also highlights the

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¹ For example, encouraging coastal households to reduce fishing cannot be successful without facilitating viable non-fishing alternatives in which households have reason to invest in.

contradictory messages households have received due to the many governmental and civil society stakeholders involved: on the one hand policy signals to reduce fishing; on the other hand signals to continue fishing, albeit in a sustainable manner.

While it was obviously too early to precisely measure the biological/ecological effects of artificial reefs, better insights were needed in terms of monitoring municipal waters, and opinions of respondents and key informants (See [Catedrilla et al., 2012](#) for a fisheries study in Southern Iloilo). The empirical inquiry is based on a survey among 111 fisher folk households – the supposed future beneficiaries of the artificial reefs – and 19 semi-structured interviews with key informants conducted in January 2017. The next section discusses three options coastal communities have to mitigate the problems of overfishing and environmental pressures: sustainable marine capture, alternative income generating activities and relocation to safer areas. This is followed by presenting the research methodology and empirical results. The article's concluding sections provide management implications and the overall conclusion.

2. Three livelihood options to mitigate overfishing

According to the [UN \(2017\)](#), 200 million people in the world are directly or indirectly dependent on marine resources for their livelihoods. In order to ensure that coastal communities in developing countries do not fall back into poverty it is imperative that a reduced pressure on fish stocks goes hand in hand with providing alternative livelihood options. However, in peripheral rural coastal areas it is frequently challenging to bring about inclusive socio-economic change; to diversify from fisheries to other types of income generating activities ([Ferrol-Schulte et al., 2013](#)). This section discusses three livelihood options related to moving away from unsustainable fisheries practices ([Fig. 1](#)).

2.1. Sustainable marine capture

The first option for coastal communities, local government agencies and policymakers is to encourage sustainable marine capture through sustainable fishing practices and end overfishing. Already in 1995, [Pomeroy](#) concluded in this journal that effective management systems need to be in place to prevent further degradation and overexploitation, and that collaborative efforts among fisher folk and other stakeholders can diminish resource conflicts ([Pomeroy, 1995: 158](#)).

In several cases, this means the prohibition of large motorised vessels and large-scale equipment while allowing subsistence and small-

scale fisher folk to continue their trade. The advantage of these measures is that coastal communities are not required to stop fishing altogether, to learn new trades and to relocate to inland areas. Uprooting coastal communities might create social and economic instability since most fisher folk are greatly attached to their generations-long lifestyles and do not see a future elsewhere. Moreover, their skills set might be insufficient to adapt to a new non-marine environment. In more rigorous institutional arrangements, marine protected areas (MPAs) have been established to protect marine environments and restore fish stocks around the world ([Edgar et al., 2014](#)). The 1998 Fisheries Code legislation in the Philippines stipulated that 15% of coastal municipal waters (within 15 km of the coastline) should be protected within no-take MPAs and the Philippine Marine Sanctuary Strategy set a goal to protect 10% of the coral reef area in no-take MPAs by 2020 ([Weeks et al., 2010](#)). At present, there are also arrangements with temporary no-take areas, also known as closed seasons.

Another way to restore fish stocks is to encourage fish to reproduce easier and faster by submerging artificial reefs ([Baine, 2001](#)). These are defined as ‘any material purposefully placed in the marine environment to influence physical, biological, or socio-economic process related to living marine resources’ ([Sutton and Bushnell, 2007: 830](#)). At present, Japan is the world leader in artificial reefs and the use of these reefs also occurs widely in the Philippines. But [Sutton and Bushnell \(2007: 836\)](#) also write that there is debate over ‘whether improved catch occur as a result of increased production (more available fish) or through increased attraction and aggregation of pre-existing fish stocks’. It is in fact important to recognise that artificial reefs can lead to overfishing. This happens when coastal communities start fishing (illegally) around the reefs too early and do not give fish enough time and space for reproduction. The successful implementation of artificial reefs thus only works if proper systems of monitoring are agreed upon, and enforcement of rules and regulations is in place.

2.2. From marine capture to in-situ alternative employment

Since the recognition that ocean fish stocks reached alarmingly low levels, environmental specialists and development practitioners have encouraged coastal communities to diversify their livelihood bases; that is to shift from fisheries to other marine and non-marine resources. This is believed to meet dual goals: reduce the pressure on marine capture and increase income generating activities for households. However, while diversification should indeed generally be seen as a proactive livelihood strategy ([McLean, 2015](#)), three obstacles could stymie success. First, as stated in the introduction, coastal areas tend to be

Vulnerability context

Livelihood strategies

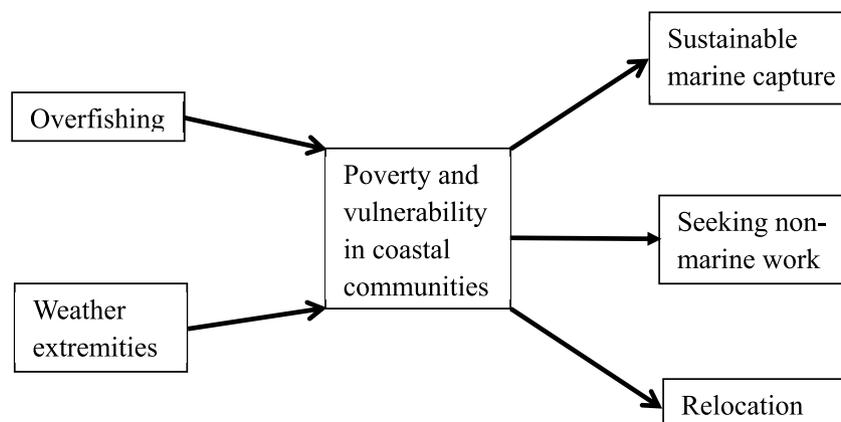


Fig. 1. Analytical underpinning.

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