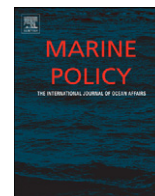




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Fishery livelihoods and (non-)compliance with fishery regulations—A case study in Ca Mau Province, Mekong Delta, Viet Nam

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ABSTRACT

Fishery in Ca Mau, Viet Nam's most southern province in the Mekong Delta, plays locally an important role for human nutrition and has great potentials for export earnings. The overexploitation of inshore fishing resources is a major problem in Viet Nam's coastal areas along the Mekong Delta. As a result, the Catch per Unit of Effort of small-scale fishing enterprises has decreased, undermining the sustainability of livelihoods of fishing families. The paper focuses on livelihoods' strategies and diversification in the context of overexploitation and exhaustion of near-shore resources in relation to fishery policies. The results show that overexploitation is unavoidable in near-shore waters because of the lack of enforcement of fishery regulations for offshore vessels and the limitation of alternative sources of income and opportunities for livelihood diversification for small-scale fishers. The present policies to prevent overexploitation need to be reconciled with livelihood sustainability and fishery management, resource conservation and socio-economic goals

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1. Introduction

Viet Nam has a great potential for fishing development. An estimated 90,000 motorized vessels are engaged in fishing, and 3 million people derive their livelihoods directly and indirectly from fishing [1]. As in most tropical countries, fisheries in Viet Nam are characterized by the use of different gears and an orientation to multiple species and are dominated by small-scale or artisanal fishermen [1–3]. Small-scale fishers are defined as those operating near shore using small fishing vessels with low motor capacity. Nearly 82% of Viet Nam's total catch is caught at a depth of less than 50 m [4]. Approximately 80% of the mechanized vessels are powered with engines of less than 45 hp (horse power) [5,6] and operated in the inshore and near-shore waters, which make up only 11% of the Exclusive Economic Zone (EEZ)¹. The number of fishing vessels and the total fleet engine power have increased steadily (12% per annum); however, the CPUE has decreased sharply, from 1.11 t/hp in 1985 to 0.34 t/hp in 2005 [7,8].

Ca Mau, the southernmost province of Viet Nam, has favorable natural conditions that hold great potential for a fishing economy. Ca Mau has a shoreline about 254 km in length, 240-km² tidal mud flat, 32 river mouths along the coast, and many islands where vessels can anchor [9]. In 2009, the total number of registered vessels in Ca Mau was 5641, among which were 1265 vessels for offshore fishing [10]. The CPUE has increased slightly and reached a peak of 0.5 t/hp in 2003 and declined again to 0.38 t/hp. In 2009, Ca Mau provided close to 146,000 t of fish from capture fisheries, which made up 44% of the total fish production of the province [10].

In Ca Mau, organizations such as the Coastal Wetlands Protection and Development Project (CWPDP) and the Swiss Red Cross carry out projects to stabilize fishers' livelihoods and to conserve the mangrove ecosystem [11] by moving fishing families to inland resettlement schemes outside of the FPZ. The poor and near-shore fishers, living with or without projects, face several constraints due to social and ecological vulnerabilities [12]. Over the years, the Vietnamese government has introduced several policies to make the fisheries more sustainable. However, these policies have not been successful in stabilizing the CPUE and promoting livelihood sustainability of small-scale fishers. Compliance with these fishery regulations is a major problem.

Oostenbrugge and Densen WLTv [13] argue that the sustainable management of tropical fisheries often fails because of a narrow sector approach that disregards the livelihoods of small-scale fishermen. According to Allison and Ellis [14], most studies

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¹ The exclusive economic zone (EEZ) of Viet Nam extends to 200 nm (nautical mile) from the coastline, and the area of the EEZ amounts to about 1 Mkm², including the Hoang Sa (Parcel) and Truong Sa (Spratly) Islands. The claimed EEZ limits are currently disputed by neighboring States.

on small-scale fisheries emphasize that both resource dependence and the open-access nature of small-scale fisheries lead to overexploitation, resource degradation, marginalization and poverty. The poor and small-scale fisheries are often accused of violating regulations and overexploiting near-shore resources. However, whether the poor violate the rules and why they do so is unknown. Therefore, this paper focuses on the livelihood strategies of fishers in the Ca Mau province in the Mekong Delta of Viet Nam and how these relate to policies and programs of the Vietnamese government and whether these programs are able to address the challenges these fishers have to face in securing the sustainability of their livelihoods. In the rest of this paper we will firstly develop a framework for the analysis of fishery livelihoods (Section 2), subsequently discuss the research sites and methods (Section 3). Next, we will present an analysis of fishers' livelihood dynamics in relation to fishery policies (Section 4) and discuss the reasons for non-compliance with fishery regulation (Section 5)

2. Fishery livelihoods and compliance with fishery regulations

2.1. Sustainability of fishery livelihoods

Livelihood analysis seeks to examine factors that affect individuals or households income and survival. In the livelihood framework adapted from Carney [15], Ellis [16] and Scoones [17], the livelihoods comprise the links between three dimensions: the individual or household assets, the activities in which households can engage with a given asset profile, and the mediating processes (institutions, regulations etc.) that govern access to assets and to alternative activities [18]. Assets of fishers can be categorized as physical (boats, gears, and houses), natural (fish stock, fishing ground), human (labor, education, experiences), social (kinship, network, association) and financial (savings, credits). Differences in asset holding can determine the capability of families to cope with risk factors in the vulnerability context. Vulnerability has a dual aspect: external threats to livelihood security due to external risk factors such as a climate, markets or sudden disaster, and internal coping capability determined by assets, food stores, support from kin or community, or government safety net policies [14]. Factors determining vulnerability comprise not only climate stress but also other forms of environmental and social pressure, such as social vulnerability which is the exposure of groups or individuals to stress as a result of social change [12,19].

A livelihood is sustainable “when it can cope with and recover from stress and shocks and maintain or enhance its capacities and assets both now and in the future, while not undermining the natural resource base” [15,20]. The concept of sustainability includes ecological, social, economic and institutional components [21,22] which are all important to fishery [23], and thus looks broadly at ecological sustainability, while the livelihoods approach addresses socioeconomic and community sustainability [24].

According to many authors, small-scale fishers are “the poorest of the poor,” and near-shore fishing is their “occupation of the last resort” [cited in [14, 25–28]]; and the poor are often accused for overexploitation natural resources, because they have no other options. However, it has been argued that it is not so much the fishers' level of poverty that is a problem [28], but the fact that they are vulnerable. Their income is highly variable, and they are often dependent on a single source of income (fishing) and on market access to trade the fish they catch [29]. Small-scale fisheries in general are characterized by an extreme variability in CPUE [30]. This issue makes fishing an uncertain livelihood. It has been argued that fishers have developed a risk-averse attitude. Others have argued that risk is part and parcel of fishing and that fishers rather try to avoid losses such as by limiting the

time they spend at sea, and fishing near shore in order to reduce operational costs [31].

Similar to on-farm, non-farm, and off-farm diversification, in marine fishing, a distinction must be made between “within-fishing” (fishing with different gears, adapted to target species) and “outside-fishing” diversification, such as agriculture or the provision of specialized services and labor [32]. Diversification is a household strategy to cope with risks. Diversification, defined as the process in which people construct a diverse portfolio of activities and social support capacities in their struggle to survive and to improve their standard of living [33], is often fundamental to achieving sustainability in fisheries [24], and is potentially an important strategy for dampening the effects of catch variability.

Catch variability can be reduced by focusing on multiple species and by fishing with multiple gears [34]. Yet, the resulting catch variability remains high. Béné [29] showed that families specializing in fishing were more vulnerable and poorer compared to families that combined fishing and farming. Those fishers who specialized in one species, in turn, were more vulnerable than those fishers who targeted multiple species. However, the latter were the poorest [29]. Several sources present evidence of successful diversification in tropical countries [13,35]. Though diversification is a potential pathway out of poverty and vulnerability, it carries no guarantee of success [35]. The poor involve themselves more actively in diversification; however, the revenues from their alternative income sources usually remain low, unstable, and dispersed (*ibid.*).

2.2. Fishery policies and (non-) compliance

Many studies show that multiple factors push people to overfish, such as ineffective fishery management, a rapid change in fishing technologies, a high demand for fish in domestic and international markets, and an increasing population of poor people in coastal areas [4,7,36]. These findings tend to emphasize the technical aspects of fishing/fishery and planning strategies (e.g., changing technologies, the conservation of ecosystems, marine resources and species, decreasing CPUE, and fishery regulations and management) rather than the characteristics of fishers' livelihoods (e.g., assets, investments, risks, variability in income and savings, conflicts, and diversification). Fishery policies in general aim to regulate fishing to ensure the sustainable management of fishing resources, to limit over-fishing and ensure the sustainability of the livelihoods of fishers.

To protect near-shore fisheries and restore coastal marine resources the Vietnamese government encouraged offshore fishing in the mid-1990s, by supporting the construction of large vessels at subsidized interest rates (Decision 393/TTg of July 1997). However, this program was not very effective due to many reasons and a large number of offshore vessels has performed poorly and repayment rates on loans have been very low [see [7]].

In order to protect inshore and near shore small-scale fisheries Decree N123/2006/ND-CP assigned fishing grounds according to boat capacity and distance from the coastline as follows: boats with engines below 20 hp must operate 1–6 nm from the coast (coastal route); boats with capacity from 20 to 89 hp must operate inshore at 6–24 nm (inshore route); and boats with a capacity of more than 90 hp must operate more than 24 nm off shore (offshore route) (Decree N123/2006/ND-CP, Article 4).

Following, the ordinance on the Conservation and Management of Living Aquatic Resources promulgated in 1989 [37], the Fishery Law was approved in 2003 comprising 10 chapters and 62 articles of which many are relevant to small-scale fishery² [4,38]. The

² For example: article 6 bans specific fishing activities such as using destructive fishing gear. Under article 8, the Ministry periodically issues lists of prohibited species

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