

Resilience, Rights and Resources: Two years of recovery In coastal zone Aceh



Fisheries in the West Coast of Aceh – In search of a balance development

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Introduction

The economic and social development of Aceh has been to a greater extent dependent on the coastal and marine resources of the province. Fish and fisheries is no exception – as they continue to play an important role in the lives of Acehnese. Economically, in 2003, fisheries contributed to almost 3 percent of Aceh's GDP, while 16 percent of the coastal community depended on fisheries for livelihood and fish dietary consisted over 50 percent of their total animal protein intake (MMAF, 2006). It is highly likely, that the pre-tsunami heavy reliance on the coastal resources have led to over fishing and the practice of unsustainable fishing methods to harvest the declining resources (Pomeroy et al., 2006).

Hence, the current post tsunami fisheries rehabilitation efforts should not only focus on replacing the damaged or destroyed fishing equipments and facilities but in the longer term, must find a balance development between managing the coastal fisheries resources sustainably while ensuring the economic well-being of the fishing communities along the tsunami ravaged coast of Aceh.

The WorldFish Center conducted a series of appraisals through two of the WorldFish led projects², with the aim of assessing the status of existing and on-going post-tsunami fisheries rehabilitation efforts in the West Coast of Aceh. The West Coast was identified as the focal area owing to the severe destruction on its coastal resources caused by the tsunami. The goal was to identify if the development of the post tsunami fisheries sector meets the expectations of the people affected. Such development opportunities must be able to bring direct benefits to poor people, whose poverty and lack of power put them at a relative disadvantage when disaster strikes.

This bulletin presents some of the main findings of the appraisals conducted in twelve coastal fishing villages on the west coast of Aceh. The appraisals were structured using a combination of focus group discussions and key informant interviews. Other form of data collection included reconnaissance surveys and in-depth literature reviews on the condition of the fisheries resources before tsunami. The fieldwork was carried out between December 2005 and August 2006.

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²The projects are "Fisheries rehabilitation in tsunami-affected Indonesia: community needs assessment and resource status", funded by the ACIAR in collaboration with the Syiah Kuala University (UNSYIAH); and "Appraisal on Coastal and Marine Resources in West Coast Aceh", funded by the Ford Foundation, in collaboration with the World Agroforestry Centre (ICRAF).

Findings

1. Marine resources are depleting

A WorldFish coastal fisheries study in selected countries in South and Southeast Asia concluded an alarming decline in coastal fishery resources, with biomasses down to 5 to 30 percent of the levels prior to expansion of fishing in the 1970s (see Silvestre et al. 2003). Specifically in Indonesia (see figure 1), the study indicated that the excess effort in the Java Sea is estimated at 428 units of 25 gross ton trawlers, while in the Straits of Malacca, the density of demersal resources have reduced by 67 percent from 1987 to 1997. In 2001, the Research Center for Capture Marine Fishery of the Department of Marine Affairs and Fisheries of Indonesia carried out a stock assessment. It found the fisheries stock on the Indonesia side of the Indian Ocean was declining; in particular, large pelagic and shrimp in this area have been overexploited. The fisheries resources in Aceh is not an exception as post tsunami studies indicate that the marine resources in Aceh was and is being heavily exploited (see, for example, Wedjatmiko et al. 2005; Foster et al. 2006; LIPI 2006).

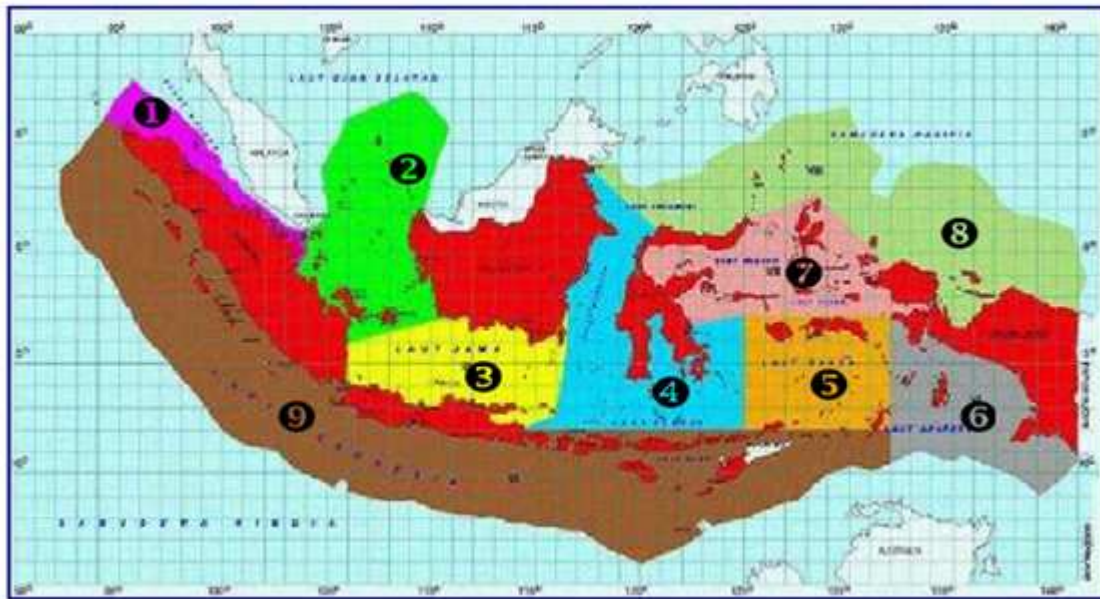
A recent survey by Wedjatmiko et al. 2005 (cited in Nurhakim et al. 2006) concluded that the major family species including *Leiognathidae*, *Carangidae*, *Mulidae* and *Pomadasyidae* have declined by values ranging from 89 to 70 percent since 1985. This finding is consistent with the appraisals conducted by the WorldFish in which the appraised fishing communities' claim that their volume of fish catch in the past was higher compared to the present catch and the size of their catch has decreased compared to five years ago.

2. Emphasis is on small boats for tsunami aid distribution

Before the tsunami, majority of the fishing communities on the west coast operated small scale boats, mostly un-motorized and out-board engine boats. They usually operate these boats within 3 nautical miles of the coastal areas hence indicating that the fishing effort and resource exploitation in the inshore waters were high. The December 2004 tsunami destroyed or damaged almost two thirds of all the boats (BRR, 2005) and naturally majority of these boats consist of the small boats. Despite the magnitude of the disaster and its impact on community livelihood, the tsunami rehabilitation is an opportunity for coastal managers to carefully plan and implement efforts which focuses on reducing fishing effort.

However, the current hastily planned rehabilitation programs are focused on replacing small motorized boats with less than five gross tons compared to other types of boats (Table 1). The types of boats that have significant percentage increase are *robin* and *labi-labi* which have inboard engines of 5 to 75 horsepower (Figure 2), suggesting the catching power of these newly replaced boats are now slightly higher than during the pre-tsunami. On the west coast of Aceh, there has been a noticeable increase post tsunami compared to pre tsunami in the number of *robins* distributed in the villages of Pulau Balai and Pulau Baguk of Pulau Banyak³.

³Pulau Banyak, an offshore island archipelago on the southern parts of Aceh, suffered massive infrastructural and environmental damage due to a strong earthquake (8.7 on Richter scale) which struck after the tsunami in March 2005



Overexploitation

- (1) Malacca straits -> all fish resources
- (2) South China sea -> Shrimp species
- (3) Java sea -> all fish resources
- (4) Makasar and Flores sea -> Demersal fish and shrimp
- (5) Banda sea -> small demersal fish & shrimp
- (6) Arafura Sea -> Large pelagic species, demersal species & shrimp
- (7) Seram and Tomini bay -> shrimp
- (8) Sulawesi and Pacific -> Large pelagic & shrimp
- (9) Indian Ocean -> large pelagic & shrimp

Figure 1. Resource status in Indonesian water

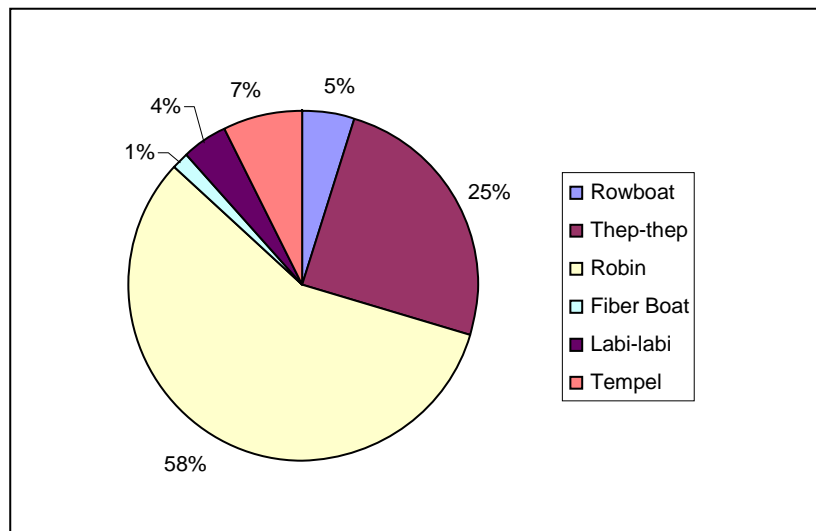


Figure 2. Percentage of the type of boats distributed

Table 1. Summary of boats and gears used in the west coast districts of Aceh province

Major category	Type of Boat Identified	Characteristics		
		Engine Position	Size	Horse Power
Non motorized	Rowboat	No engine	< 5 GT	
Motorized outboard <5GT	Motor Tempel	Outboard engine	< 5 GT	11- 45 HP
	Bak	Inboard engine	< 5GT	16 - 23 HP
	Fiber Boat	Inboard engine	< 5GT	30 - 75 HP
	Labi-labi	Inboard engine	< 5GT	23 - 75 HP
	Pukat Langgar	Inboard engine	< 5GT	40 - 120 HP
Motorized inboard <5GT	Robin	Inboard engine	< 5GT	5 - 8 HP
	Thep-thep	Inboard engine	< 5GT	23 HP
	Boat Pancing	Inboard engine	< 5GT	16 HP
	Boat pukat	Inboard engine	< 5GT	120 HP
Motorized inboard 5-10GT	Banteng/Payang	Inboard engine	5 - 10 GT	30 - 75 HP
	Bagan			

3. Number of fishers is increasing in some areas

In some areas, there has been an increase in the number of fishers due to the higher concentration of aid distribution. In Pulau Balai of Pulau Banyak, the number of fishers has increased by 30 percent since tsunami (Figure 3) due to the availability of new boats and fishing gears. On the other hand, the appraisals indicate that the number of fishers remains lower than before tsunami in areas where there is no aid distribution or aid replacement is low.

Many farmers lost their main source of livelihood when their agriculture land⁴ and aquaculture ponds close to the coastal areas were washed away by the tsunami or in some cases became an intertidal zone. The appraisals indicate that those who were previously farmers are now turning to an active involvement in fishing for both subsistence and commercial purposes. In addition there are the sea fishers who have yet to receive aid in the form of fishing boats and gears, e.g.: *bagan* which will allow them to fish in the deep sea, leaving them with no option but to fish in areas close to the shore.

⁴including paddy fields, coconut plantation and nypa farm

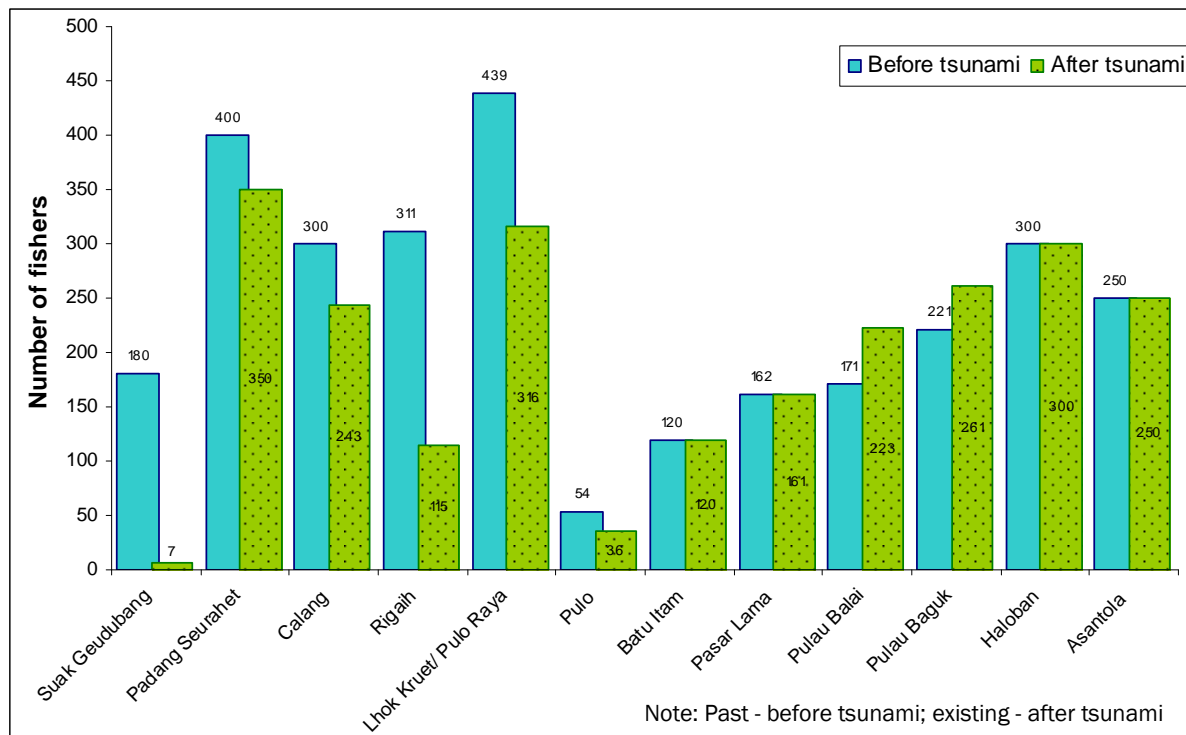


Figure 3. Number of fishers in selected villages of the west coast of Aceh Province, Indonesia before and after the tsunami

4. Inappropriate aid to local needs

A high proportion of the small coastal fishing boats are being replaced but according to the local community, many may not last because of poor design and the use of substandard materials (Figure 4). In some cases, communities received boat aids which they were not familiar on how it operates. Some boats were traded-in for suitable ones, while many were left lying near the coastal areas with their engines or generators removed for other uses (Figure 5).



Figure 4. Few of the *Bagan* boats were constructed using low quality wood, leaving them unsuitable for sea use. These boats are now left abandoned as seen in the case of Lhok Kruet of Aceh Jaya



Figure 5. Some boats inappropriate to local conditions are left abandoned as seen in the case of Lhok Kruet of Aceh Jaya

5. Security for poor fishers has been improved

One of the positive outcomes of the medium term fisheries rehabilitation efforts is the security for poor fishers has been improved post-tsunami. The sharing arrangement of catches is now different due to the change in ownership of the fishing assets including boats and engines. In the past, these assets were largely owned by outside capitalists and local elites. Now, the boats which were largely received through aid assistance are owned by the poor fishers themselves.

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Acknowledgement

Source for figure 1: Research Center for Capture Fishery, Department of Marine Affaire and Fishery, 2001.

Source for figure 2-3: Appraisals conducted in 8 villages through the WorldFish-ACIAR funded "Community needs and resources status assessment" project and 4 villages through the WorldFish-ICRAF funded "Appraisal on coastal and marine resources of West Coast Aceh" study, Feb-Aug 2006.

KEY MESSAGE

These studies conclude that the fishing effort, particularly in small scale fisheries, is increasing based on the increasing number of boats and number of fishers. The potential for the near shore coastal fisheries resources to be placed under increasing pressure is exacerbated by the entry of new participants to the fisheries, e.g.: farmers who lost their agricultural land, which is, in turn, facilitated by the availability of new boats and fishing gears.

One of the ways to ensure a positive balance between managing the coastal fisheries resources sustainably while ensuring the economic well-being of the fishing communities would involve controlling fishing effort, which in turn would require the provision of alternative livelihood for displaced fishers. There are indications for fisheries expansion such as the introduction of agro-aqua farms involving the concurrent cultivation of tree species and rearing of fish and prawns. This example involves the rearing of prawns and suitable salt tolerant fish species in canals along the coast, using low external input sustainable aquaculture techniques.

Detailed feasibility studies may need to be undertaken before providing new livelihood projects. There is high preference among community members to either intensify their existing livelihoods, or undertake supplemental livelihoods that are fisheries and/or natural resource-based. Therefore, corresponding training and/or capacity building measures must be instituted. The challenge is to build livelihood options which must be appropriate with the skills of the community members, and shall not endanger the sustainability of the fishery resources over the long-term.

World Agroforestry Centre (ICRAF) is one of 15 organizations under the CGIAR (Consultative Group on International Agricultural Research) umbrella. ICRAF aims to stimulate and conduct innovative research, development and capacity building to promote and support agroforestry for both human and environmental benefits. ICRAF has its headquarters in Kenya and six regional offices in the tropics and now cover 21 countries in Africa, Asia and Latin America.

The research bulletins are summary results of collaborative activities of ICRAF and partners in the "Recovery and Resilience of Livelihood and Natural Resources", mainly in West Aceh, after the Tsunami of 26th December 2004. These bulletins were prepared, first in Indonesian language, for a workshop in Meulaboh on 30 November 2006. The primary objective was to share relevant result findings and observations among government and non-government organisations and individuals involved in the post-tsunami recovery in West Aceh. The workshop and preceding research activities were supported by Ford Foundation Indonesia, EU Asia Pro-Eco Program and CGIAR.

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