

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



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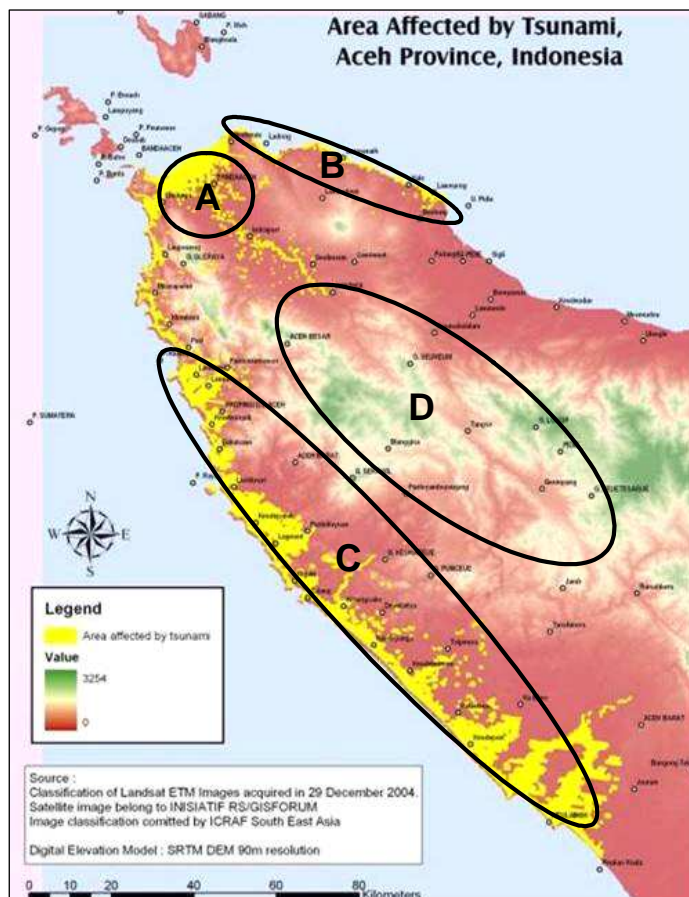
Livelihood and resilience in West Aceh

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Introduction

The earthquake and Tsunami of 26th December 2004 destroyed lives of many people, injured many more and devastated all five capitals - natural, infrastructure, human, financial and social. The Western Coast of Aceh in Indonesia was the first and worst hit among all tsunami-affected areas. Before the Tsunami the west coastal zone in West Aceh district was a regional hub for trade and development. Much of the economic activities took place along main road connecting Meulaboh to Banda Aceh. In villages many people depended on fisheries, rice and tree crops (coconut, cocoa, rubber and fruit trees).

Meulaboh, district capital of West Aceh, was well connected to neighbouring districts as well as to the provincial capitals Banda Aceh (Nanggroe Aceh Darussalam Province) and Medan (North Sumatra Province). The 245-km asphalt road along the western coast to Banda Aceh was completely washed away by the Tsunami while the road to Medan remained intact. Electricity and tap water supplies are relatively good in the district.



West Aceh District is rich in natural resources. Most rural communities depended on agriculture for their livelihoods, including paddy fields, other annual crops, fishery and livestock. Many people work as labors on private plantations. Official data of 2004 indicate paddy fields (27,103 ha) and tree plantations, mainly rubber, coconut and oil palm, (25,980 ha) are the two dominant land-use systems in the district. In coastal areas fishing is important. Coconut, both local variety and hybrids are important along the coast. Cacao is gaining popularity as it can be easily managed under mixed systems with other trees in home gardens and plantations.

Figure 1. Four production zones in Aceh:

- A. City – peri-urban food production: Banda Aceh
- B. Export-market-oriented fisheries & *tambaks*: North and east Coast
- C. Export-market oriented cash crops: rubber, coffee, coconut, nilam, oil palm, melon, paddy and fish: West Coast
- D. Remote, subsistence focused + forest products: Inland and distant islands - Simeuleu, Nias

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The population density in these four sub-districts is on about 393 persons / km². There are seven economic activities important for local livelihood in West Aceh: fisheries (both river and sea), paddy fields, tree crops, and annual crops, home gardens, labor and trading. Agricultural activities are the main source of income for rural communities in four sub-districts - Arongan Lambalek, Samatiga, Johan Pahlawan and Meurebo. There are three types of agricultural land - paddy field, home gardens or *tegalan* (dry land) and *kebun* (plantation). Paddy fields are normally 1.5 - 2 ha while some farmers have larger fields (3–5 ha). Many farmers also keep livestock, mainly chicken or ducks either for self consumption or sale in the local market. Some farmers raise buffalos, cattle and goats as an investment and saving. Buffaloes are also used in preparation of rice fields. These large animals are normally free grazing and often damage agriculture crops in the field.

Tree crop sector is the most dominant in terms of livelihood options in three of the four coastal sub-districts in West Aceh (Table 1). Rubber, coconut and oil palm are the major tree crops for smallholder farmers in the area; cocoa is also gaining importance (Table 2). Although oil palm plantations belonging to private companies and state exist in the south, very few farmers have planted oil palm plantations.

Table 1. Local activities contributing to local economy in the 4 coastal sub-districts in West Aceh

Sub-district	Fishery	Paddy	Tree crops	Annual crops	Home garden	Labor	Trading
Arongan Lambalek	5	30	45	5	3	10	2
Samatiga	7	35	40	8	2	3	5
Johan Pahlawan	8	12	15	5	2	40	18
Meureubo	10	30	40	5	2	8	5

Source: group consultation at sub-district level.

Table 2. Tree crops in agriculture sector in West Aceh

Tree crop	Of plantation		Of agriculture	
	Area (%)	Production (%)	Area (%)	Production (%)
Rubber (<i>Hevea brasiliensis</i>)	62.5	68.6	19.7	13.09
Cacao (<i>Theobroma cacao</i>)	1.2	0.1	0.4	0.03
Coconut (<i>Cocos nucifera</i>)	11.9	4.0	3.8	0.77
Oil Palm	14.8	25.6	4.7	4.89



Figure 2. Tsunami damaged coconut in West Aceh



Figure 3. Rubber plantations on peat dome

While rubber is the predominant tree crop in West Aceh, almost all rubber is in the form of 'jungle' rubber. Plot size varies between 1 to 5 ha; and these are relatively old, un-managed with very low latex productivity. A typical rubber plot is dense, often with 1000 rubber trees per hectare; only naturally regenerating seedlings are used for planting, high yielding clones are virtually unknown.

After the Tsunami

The Tsunami badly affected the local economy and household income if most people living along the coast. Many houses were washed away; fishermen lost their boats; paddy fields were submerged in sea water, many trees close to the coast were uprooted by waves; and subsequent high soil salinity affected both annual and tree crops. All livelihood activities (fishery, agricultural crops, tree crops, trading and other off-farm job opportunities) along the coastal zone were severely affected.

Aid and recovery efforts began almost immediately after the Tsunami. Following the emergency relief operations (food, health and housing), livelihood recovery activities were conducted by many aid agencies. Fishing boats were repaired, fishing nets were distributed, seeds of rice and vegetables were planted, small livestock were distributed, and markets were re-established. Many NGOs and the UN supported the 'cash for work' program.

Presence of a large number of aid agencies and their staff also provided new employment and market opportunities. A significant shift in dependence for income from agriculture sector to labor and trade has occurred (Table 3). It appears 25% and 4% decrease in income from paddy and tree crops respectively in the post-Tsunami situation is compensated by an increase in labor (22.5%) and trade (8.8%) of equal amount. The demand for labor for the 'construction boom' in Tsunami affected regions, coupled with increased local trade has changed the local economy and opportunities for good. Laborers from outside, as far as Java, have converged in the area. In some places, even though rubber trees can still be tapped and price of rubber is attractive, farmers have gone into labor jobs in construction of buildings and roads as the labor wage is better than from tapping or other farming activities.

Table 3. Change in Livelihood activities (pre-post Tsunami)

Sub-district	Fishery	Paddy	Tree Crops	Annual crops	Home garden	Labor	Trading
Arongan Lambalek	5	-28	-35	-2	2	35	23
Johan Pahlawan	6	-11	-10	-2	0	20	-3
Samatiga	3	-33	5	-5	3	17	10
Meureubo	-5	-28	3	5	3	17	5
Average	2.3	-25	-9.3	-1	2	22.3	8.8



Figure 4. Coconut seedlings for planting after the Tsunami damage

Conclusions and recommendations

The Tsunami of 24th December 2004 caused massive destruction of not only the infrastructure and human lives in West Aceh, but the economic bases of the people living along the coast as well as those living inland. The major road to Banda Aceh was completely wiped off while the market channels were seriously damaged. This affected the tree crops, that had remained a lynchpin of local economy and local livelihood. The tree crops were, however not damaged much by the physical force of the Tsunami or earthquake. The major tree crops – rubber, cocoa, coconut and oil palm contribute significantly to the local economy. Coconut is abundant in the area, and consequently, does not provide large income to the farmers. Oil palm is limited to large scale plantations controlled by relatively rich farmers or the state close to oil palm processing factories. Cocoa is favored for planting under coconut or in home gardens. Rubber is the single most important tree crop in West Aceh (90% farmers' preference), mainly in the form of old smallholder rubber gardens, although estate plantations are also available in the northern sub-districts. The planting material is still from seedlings and new improved clonal material is not available. The potential to improve both rubber and cocoa is substantial. Good quality planting material and technical knowledge on planting, management, harvest and post-harvest processes are required.

Trees such as rubber, cocoa and coconut are important 'trees people want' and these have both economic and environment protection functions. These crops can significantly contribute to the economic resilience of farmers as well as the local economy. External support (from government and other aid agencies) need to focus more on the development of these tree crops. Experience of ICRAF and national partners on farmer institutions, local capacity building as well as on technical aspects of tree crop establishment, management and marketing can contribute in this direction.

KEY MESSAGE

- Tree crops in local livelihood – critical both before and after Tsunami
- Tree crops in the coastal zone can function both as economic shield and bio-shield
- Huge potential for improving tree crops sector - technical knowledge, input material
- Limited technical skills and resources at local level
- Need for shared learning, dialogue and capacity building



Figure 5. Coconut along coastal area



Figure 6. Cocoa seedlings ready for planting in the field.

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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