BEYOND TSUNAMI WAVE:
West Aceh Forest and Livelihoods

World Agroforestry Centre
TRANSFORMING LIVES AND LANDSCAPES

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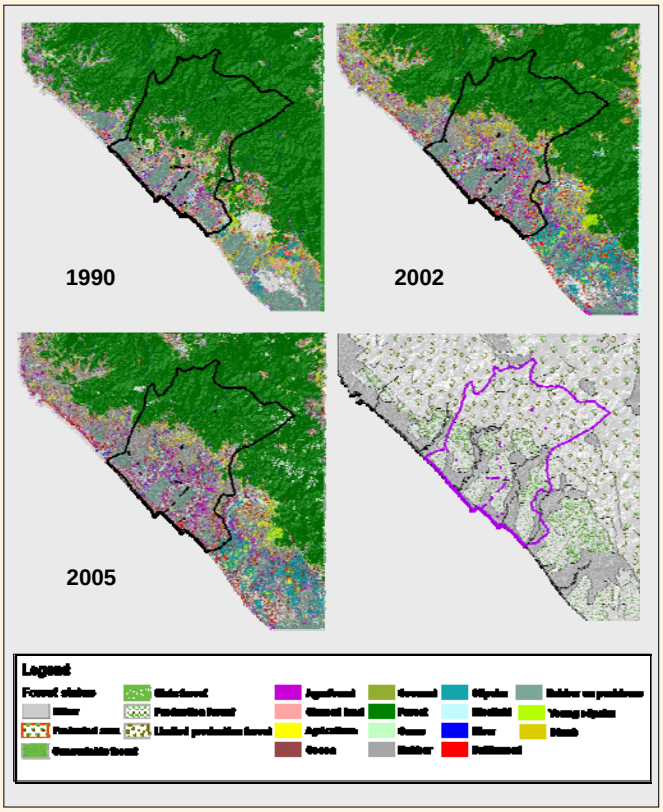
What happened after 2004 tsunami?

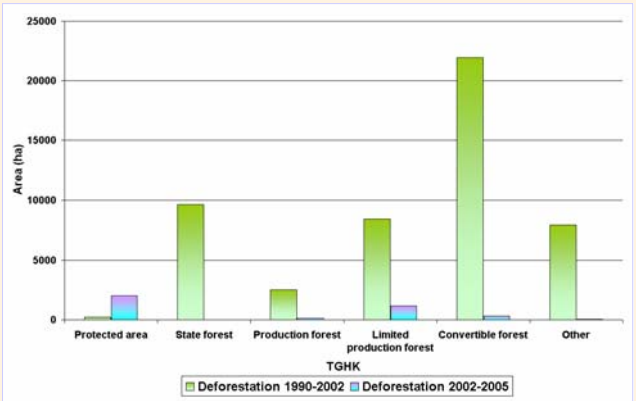
The coastal area of West Aceh was struck badly by the Indian Ocean tsunami in December 2004. In this area, flat coastal zones are mostly allocated for non-forest uses and further along to the hinterland, as topography becomes rougher, land use allocation becomes stricter. These areas are at present still largely covered by forest. However, as tsunami incident induces less gradual changes, the government needs to anticipate some potential directions of change in order to develop effective and efficient policies in maintaining environmental services while improving people's livelihoods. ICRAF try to help key decision makers by providing analysis on the following areas:

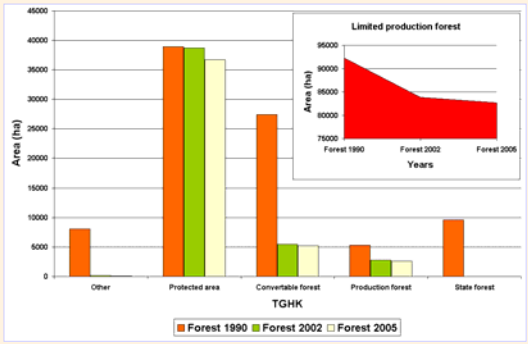
- long and short term patterns of land use/cover changes pre and post tsunami
- the relationships between poverty and land use/cover, health and education facilities with regards to road after tsunami



How is the landscape dynamics before and after tsunami ?

During the period of 1990 to 2002, more than 50,569 hectares of forest was cleared from about 181,793 hectares of total forest cover in 1990. This area spread from north to south of the district along the coast line up to about 20-45 km to the hinterland. In the second, shorter period of the study, 2002-2005, forest loss (3684.5 ha) was in the area deeper to the hinterland, in the fringe of big block of primary forest. By 2005, only about 500 ha is left under area of non-forest use zone or forest that can be converted to non-forest uses (Figure 3). This shows that the area starts to face some land pressure issues and it is contradictory to common perception so far that forest land is vastly available in the district area, and this problem will be even magnified with the 2004 tsunami incident.

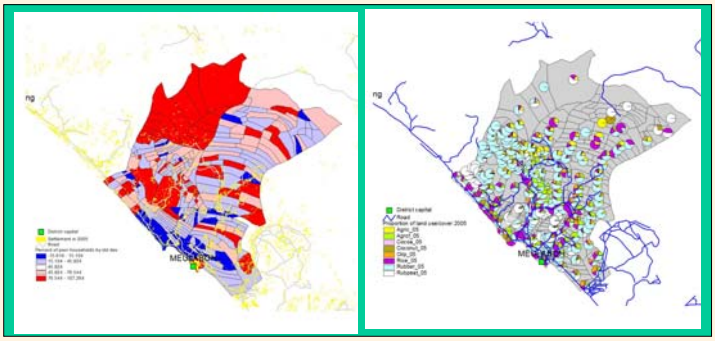




Poverty and land use/cover within the contexts of infrastructure

The table below presents the regression models of the two subsets of the district data at village level, with poverty rate (number of poor households over total households) as dependent variables, and land use/cover, access to education facilities, access to health facilities, topography, demography and tsunami effect as the independent variables. For villages with asphalted road (Table 1a), larger rice field per capita associates with higher poverty rate, while more diverse land use/cover relates with lower poverty rate. These imply that when access to market is good, planting commodity of higher economical values or maintaining multiple use of land in an agroforestry system-like are more beneficial.

In contrast to the villages with asphalted road, those without show less strong relationships between land uses and poverty rate. The only land use related variable which shows significant association is oil palm area per household. The larger the oil palm area per household, the higher the poverty rate.



Model	Village with aspalt road				Village without aspalt road			
	Coefficients		t	Sig.	Coefficients		t	Sig.
	B	Std. Error			B	Std. Error		
(Constant)	37.844	21.05	1.798	0.08	12.976	30.58	0.424	0.67
Forest (ha/household)	-1.005	1.551	-0.65	0.52	-0.79	1.429	-0.55	0.58
Ricefield (ha/household)	16.412	4.876	3.366	0	-1.687	1.573	-1.07	0.29
Rubber (ha/household)	-0.516	1.345	-0.38	0.7	-0.685	0.473	-1.45	0.15
Oilpalm (ha/household)	0.899	3.466	0.259	0.8	4.579	1.962	2.333	0.02
Agroforest (ha/household)	1.614	10.64	0.152	0.88	3.648	3.436	1.062	0.29
Diversity of land use/cover (Shannon-Waver index)	-15.962	7.029	-2.27	0.03	1.807	6.329	0.285	0.78
Distance to primary school (km)	1.928	0.89	2.168	0.03	-0.243	1.493	-0.16	0.87
Distance to junior high school (km)	0.669	0.577	1.159	0.25	0.11	0.673	0.164	0.87
Distance to senior high school (km)	-0.572	0.386	-1.48	0.14	0.957	0.252	3.802	0
Frequency of health services	0.668	3.738	0.179	0.86	-8.336	3.773	-2.21	0.03
Distance to district capital (zone)	1.903	5.472	0.348	0.73	7.163	6.799	1.054	0.3
Coastal area (0=non-coastal;1=coastal)	5.403	8.5	0.636	0.53	-17.253	9.153	-1.89	0.06
Topography (0=rough;1=flat)	-19.737	11.36	-1.74	0.09	0.242	8.408	0.029	0.98
Percent of farming households	0.253	0.101	2.507	0.01	0.232	0.193	1.202	0.23
Population density	1.24E-02	0.007	1.845	0.07	-1.33E-02	0.032	-0.41	0.68
Population	-4.88E-03	0.004	-1.15	0.25	-3.19E-02	0.017	-1.88	0.06
Tsunami hit (0=not affected;1=severe)	-4.257	7.544	-0.56	0.57	16.914	10.36	1.632	0.11

What is our recommendation?

West Aceh does not really have much flexibility in expanding land-based economic activities by the means of natural forest conversion. Instead, a careful, multistakeholder review based on some strong negotiation platform is necessary. In areas with good road access, improving agricultural technology, introducing some commodities with high economic value by converting low productive land uses, helping to set up pro-poor market mechanism, and maintaining some multifunctional and diverse landscape will be ways to decrease poverty rates. For areas without good road access, it is clear that infrastructure development, health service and education facility provision should be prioritized.

For more information
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