LESSONS LEARNED FROM THE GREEN COAST’S COASTAL ECOSYSTEMS RESTORATION PROJECT IN ACEH

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Iwan Tri Cahyo Wibisono

ACTORS AND ROLES IN ACEH-NIAS COASTAL REHABILITATION

- Government
- Donors
- Int’l & National NGOs
- Private enterprises
- CBOs
- Communities

124 International NGOs
430 National NGOs
(Reported by BRR, 2005)
Vegetation Rehabilitation in Aceh and Nias Coastal Ecosystems

- **Mangroves** (Bakau *Rhizophora mucronata*, *R. apiculata*, *R. stylosa*, Tengal *Ceriops tagal*, Tanjung *Bruguiera gymnorrhiza*, Pedada/Bogem *Sonneratia alba*, Api-api *Avicennia marina*, etc)

- **Beach trees** (Nyamplung *Callophyllum inophyllum*, Ketapang *Terminalia cattapa*, Kelapa *Cocos nucifera*, Cemara *Casuarina equisetifolia*, etc)

Estimation of area rehabilitation in Aceh & Nias (up to December 2006)

Coastal areas (ha) have been rehabilitated (left) & number of seedling planted (right)

Data dari berbagai sumber, diolah oleh WIIP
HOW MANY PLANTED SEEDLINGS ARE Survived

- No monitoring & evaluation
- Survival rate not certainly known
- Constraints not recorded well

What about GREEN COAST
**Green Coast for Nature and People after the Tsunami**

**Project Organogram**

- **Assessment Coordinator**
  - Assessment Team:
    - Silviculture/forester
    - Fishery sp/aquaculturist
    - Limnologist
    - Wetlands ecologist
    - Socio economist-gender
    - Biodiversity sp
    - Soil/agronomist
    - Coastal zone mgt sp

- **Small Grant Coordinator/WI-IP representative in Aceh**

- **Policy issues**

- **Local NGOs CBOs**

- **Community Participation in Coastal Rehabilitation**

**National Coordination Team** (WWF, WIIP, GEF SGP)

- **PRG** = Provincial reference group
  - BRR, Government
  - NGOs, Panglima Laot, Comm. Reps.
- **AC** = Advisory committee

**WI-IP Management in Bogor**

**WI-IP HQ/GC sc**

**Achievements in Indonesia by WIIP**

- Assessment study has been completed, launched and distributed (Indonesian & English version)
- 60 small grants have been distributed in all stretches (various types of livelihood projects created and about 1.5 millions seedlings have been planted)
- Awareness materials have been produced and distributed (posters, flyers, brochures, comics, newsletter etc)
- Mangrove guide books 3000 copies
- Interactive Multimedia Database has been developed (need input from other GC member countries)
- GC project’s synergizes with UNEP, FFI, Hatfield, Care projects (more to come with CI, GTZ, etc)

**Other partnership**

- UNEP: awareness, seedlings preparation, twinning programme, green database
- FFI : assistance on nursery & seedlings preparation + rehabilitation techniques
- GTZ : ditto (under negotiation)
- CI : ditto (under negotiation)
Small Grants Distribution in Aceh Funded by Green Coast

Distribution of Grants In Aceh’s Districts

<table>
<thead>
<tr>
<th>District</th>
<th>Million Rupiahs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banda Aceh</td>
<td>370</td>
</tr>
<tr>
<td>Aceh Barat</td>
<td>1780</td>
</tr>
<tr>
<td>Sabang</td>
<td>630</td>
</tr>
<tr>
<td>Aceh Besar</td>
<td>1480</td>
</tr>
<tr>
<td>Nagan Raya</td>
<td>480</td>
</tr>
<tr>
<td>Simeulue</td>
<td>460</td>
</tr>
<tr>
<td>Pidie</td>
<td>320</td>
</tr>
<tr>
<td>Bireun</td>
<td>160</td>
</tr>
<tr>
<td>Aceh Utara</td>
<td>320</td>
</tr>
</tbody>
</table>

1 USD = Rp 9000,-

Total Rp 8,434,650,000 (Dec 2007)

GC performances on coastal rehabilitation

- Total coastal area rehabilitated = 630 Ha
- Total seedlings’ planted: 1,004,000 (mangrove, survived 20 – 90%)
  + 187,650 beach trees (survived 6 – 95%)
GC-Rehabilitation Demo site in Kajhu-Aceh - 26 species planted

Launching 21 Nov 05

7 months after, June 06

17 months after, Apr 2007

13 months after, Dec 2006

Results of GC in Lham Ujong-Aceh: Livelihood + Rehabilitation

17 months after, Apr 2007
LIMITATIONS AND CONSTRAINTS IN THE FIELD

1. No blueprint for coastal rehabilitation (where and what to plant)
2. Rehabilitation only a secondary activity (current focus: Restoration)
3. Lack of rehabilitation preparation & skills (nursery & planting techniques)
4. Planting in unsuitable locations (substrates, pests)
5. Problems concerning land ownership status of planting site
6. Business as usual (Rehabilitation using a project approach)
7. Conflict of Interest (rehabilitation vs conversion)
8. Lack of replacement planting and seedling maintenance
9. Lack of monitoring and evaluation
10. Force majeure
No blueprint for coastal rehabilitation

Blue print should at least described:
- how many and where stakeholders working on coastal rehabilitation.
- spatial planning of the district
- information on land suitability,
- land conditions/level of damage,
- the plans of parties concerned with the land’s utilization,
- land ownership status, etc

As a result of no blueprint:
- implementer freely chooses sites,
- activity undirected and unorganised.
- different implementers planting on the same site.
- planting is done arbitrarily without finding out who the site belongs to nor what plans there may be for its development

Issues: Planting sites, transportation & nursery

pest invaded areas & sandy substrates
dry mud areas

Nursery ground is flooded
Seedlings protection

- Seedling costs: 30 – 80 Cent US
- Fences costs: 2.5–5.0 USD

Cheap, Strong, Material available at village, Environmental friendly

Wire fence - Rusted

Cheap, material easy to find, flexible

Fence swallowed by climbing plants, and seedling eventually dies

Seedling costs: 30 – 80 Cent US
Fences costs: 2.5–5.0 USD

No maintenance & waste of resources
Conflict of interest

Seedlings pulled up from aquaculture ponds as they had been planted without the owner's permission who lived outside Aceh.

Poly bag not removed

SG fund to purchase goats
But goats eat planted seedlings

Lessons No1: where to start?

- **Correct**
  - direction of planting
  - Edge of planting

Wrong direction of planting:
- Goes from back to front

Starting line for planting:
- Too far

- Sandy soil
- Volcano
- Plants / seedlings
- Deep sand / beach
PROTECT the sites with Natural regeneration-

Threats: uncontrolled taking of wildlings, forest fire, and land conversion.

GC has been taking care with this issue

1 hectare contain 3,825 natural saplings

Lessons No 2: used biological Indicators

- Mangrove location: Mud-skippers
- Beach trees: Ipomea pes caprae

Avoid areas infected by barnacles

Lessons No 3: Sites & species selection
Improvement of awareness raising

Recommendation

- Proper site and species for rehabilitation
- Enhance community participation
- Capacity building (technical training)
- Establish integrated pilot project sites (livelihood-rehabilitation-policy)
- Data Updates on rehabilitation (sites & number & survival status)
- Improved coordination
- Establish Spatial planning and Green Belt
- Continues Maintenance and MonEv
- Avoid Mono species → Species Enrichment
- Prepare post Rehabilitation and Reconstruction's "Exit strategy"
WHAT & WHERE NEXT ??

GC II in Indonesia (April 07 – March 08):

• Rehabilitation + Livelihood 16 more sites
• Develop Best Practice
• Technical Assessment & input on reconstruction + awareness raising
• GC Network & Lessons learned
• Partnership dialogue with other stakeholders
• M & E

Rehabilitation on Ponds Areas, Lagoons, Peatlands, estuarines, etc
Establish more demo sites

PEATLANDS IN NAGAN RAYA AND ACEH BARAT (REGION II)

Salt intrusion & pyrite oxidation

Presidential Degree No 32/1990; Spatial Laws No 21/1992: regarding the management of protected areas: Peatland > 3 meter is protected

Peat dome (2 m) in Cot Rambo
The way to protect nature and at the same time provides livelihood.

Challenges in Introducing SILVO-FISHERY concept

Potential area of aquaculture ponds can adopt silvofishery concepts

<table>
<thead>
<tr>
<th>District</th>
<th>Pond area (ha) before tsunami</th>
<th>Damaged pond area/potential for planting (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banda Aceh</td>
<td>724</td>
<td>724</td>
</tr>
<tr>
<td>Aceh Selatan</td>
<td>25</td>
<td>10</td>
</tr>
<tr>
<td>Aceh Timur</td>
<td>7,822</td>
<td>2,347</td>
</tr>
<tr>
<td>Aceh Utara</td>
<td>10,520</td>
<td>4,208</td>
</tr>
<tr>
<td>Pidie</td>
<td>5,086</td>
<td>2,573</td>
</tr>
<tr>
<td>Aceh Barat</td>
<td>289</td>
<td>289</td>
</tr>
<tr>
<td>Aceh Besar</td>
<td>1,006</td>
<td>1,006</td>
</tr>
<tr>
<td>Kota Sabang</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>Langsa</td>
<td>2,122</td>
<td>424</td>
</tr>
<tr>
<td>Total</td>
<td>27,592</td>
<td>11,609</td>
</tr>
</tbody>
</table>

NB No data are available for Lhoksumawe, Aceh Jaya, Aceh Singkil, Aceh Tamiang, Aceh Bireun, Nagan Raya, Aceh Barat Daya, and Simeulue, which between them had had about 9,000 ha of ponds.
Lots more sites silvo-fishery can be implemented!

(Top) where mangrove could be planted. (Bottom left) Ponds has become a slough for buffalo to wallow. (Bottom right) Pond on Lhoong coast in danger of abrasion. Mangrove therefore needs to be planted along the shore in front.

Rehabilitation of Peatland areas & Lagoons

Location of lagoons in Aceh Besar and its water quality characteristics

Lagoon No. 1:
Salinity 6 ppt, Conductivity 38,398 µS/cm, pH 8.7, Temperature 29 °C, Dissolved Oxygen 5.8 ppm

Lagoon No. 2:
Salinity 0 ppt, Conductivity 0 µS/cm, pH 7.1, Temperature 29 °C, Dissolved Oxygen 7.6 ppm

Lagoon No. 3:
Salinity 1.5 ppt, Conductivity 2,250 µS/cm, pH 7.25, Temperature 29 °C, Dissolved Oxygen 7.6 ppm

Lagoon No. 4:
Salinity 6.5 ppt, Conductivity 11,000 µS/cm, pH 7.1, Temperature 29.1 °C, Dissolved Oxygen 7.0 ppm

Lagoon No. 5:
Salinity 5 ppt, Conductivity 2,400 µS/cm, pH 6.98, Temperature 29.6 °C, Dissolved Oxygen 5.3 ppm
THREATS in Teluk Belukar-Nias (ICZM required)

- Sand quarry
- Jetty construction
- Fish pond
- Crabs cage farm

Demo site at Pulot Lagoon-Aceh
Thank You