

## Ecosystems and Humans in the Face of Climate Change

It has been recognized that climate change is the greatest challenge faced by humanity today. It already has far reaching consequence to natural ecosystems (IPCC, 2007, Berry, 2007) and human systems (IISD, 2006). However, proper management and sustainable use of natural resources can allow for both ecosystem and people to adapt to climate change.

Climate change impacts both ecosystem and human well-being. At the same time, ecosystem well-being affects human well-being. It also has a strong effect on the impacts of climate change. Human well-being also impacts ecosystem. On the other hand, the relationship may also be causal human activities are the cause of both ecosystem degradation and climate change. Similarly, climate change causes ecosystem degradation, and ecosystem degradation contributes to climate change. (Adopted from Schipper et.al., 2006)

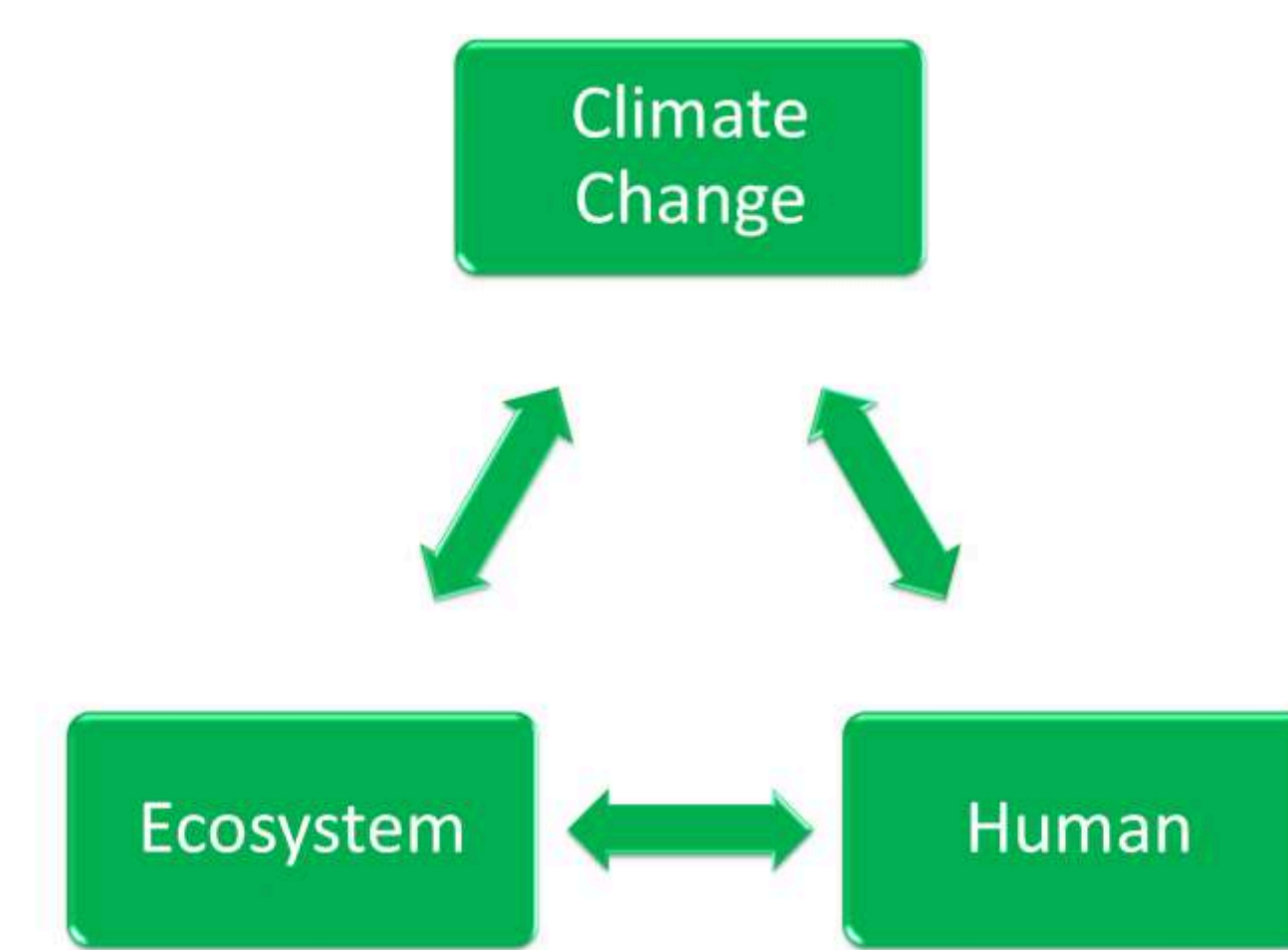


Figure 1. Climate Change-Ecosystem-Human Nexus

## The Experience of Albay, Philippines

The province of Albay, along with the rest of the Bicol region in the Philippines, is highly vulnerable to various climate risks such as tropical cyclones. Aggravated by other natural disasters such as minor volcanic eruptions, flash floods and mudslides, the lives of the people in Albay are at risk. The coastal areas must also be protected from sea level rise and storm surges. Communities living along the coastline and in the uplands must be prepared to meet the challenges to their environment, livelihood and homes. These could worsen as a result of climate change.

The Provincial Government of Albay (PGA) has recognized the need for appropriate policies and programs to be in place for environmental concerns, including climate change, and that these can be effectively addressed in a timely and sustainable manner.

Figure 2. Ecosystem management initiatives of the PGA and the potential benefits it may provide.

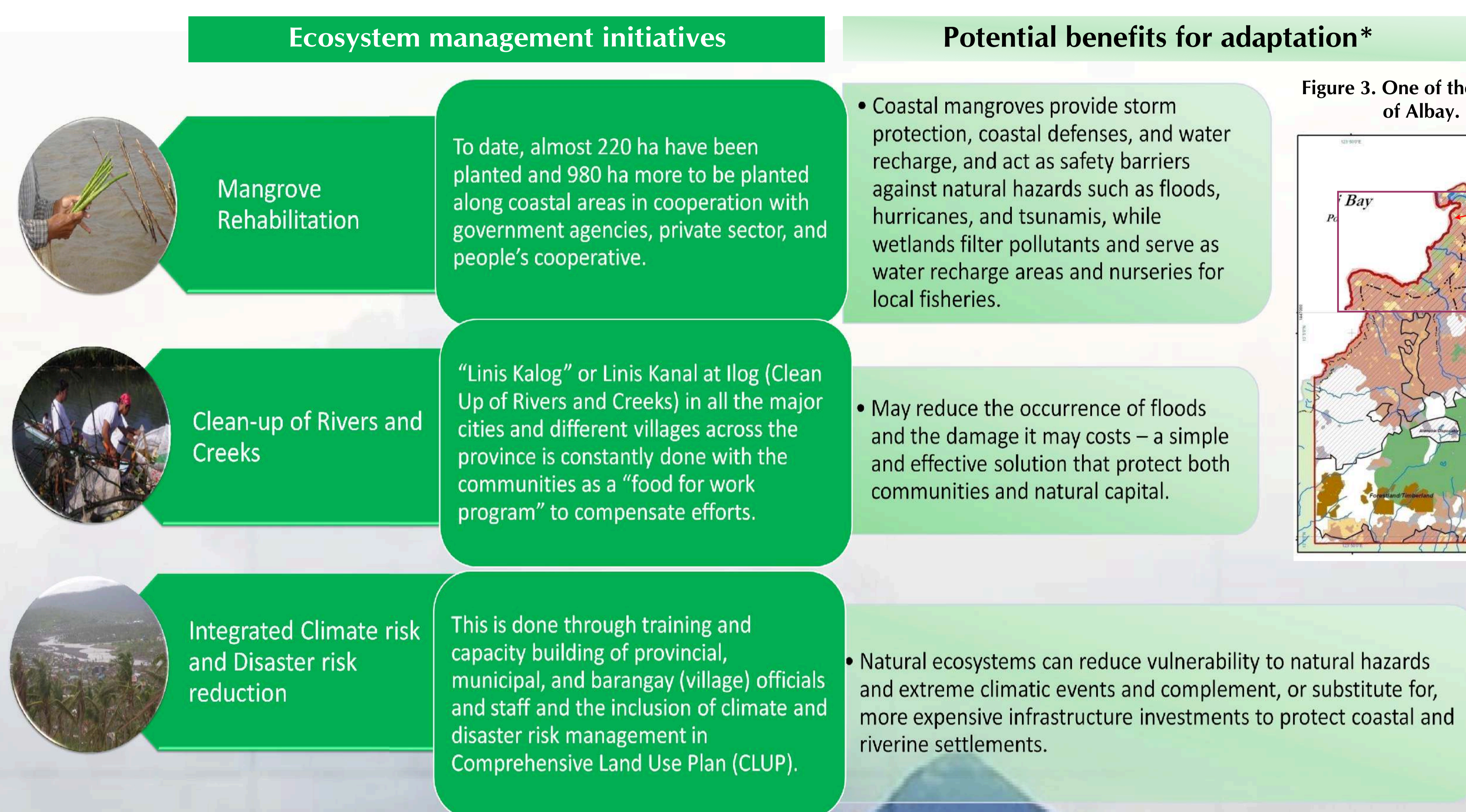
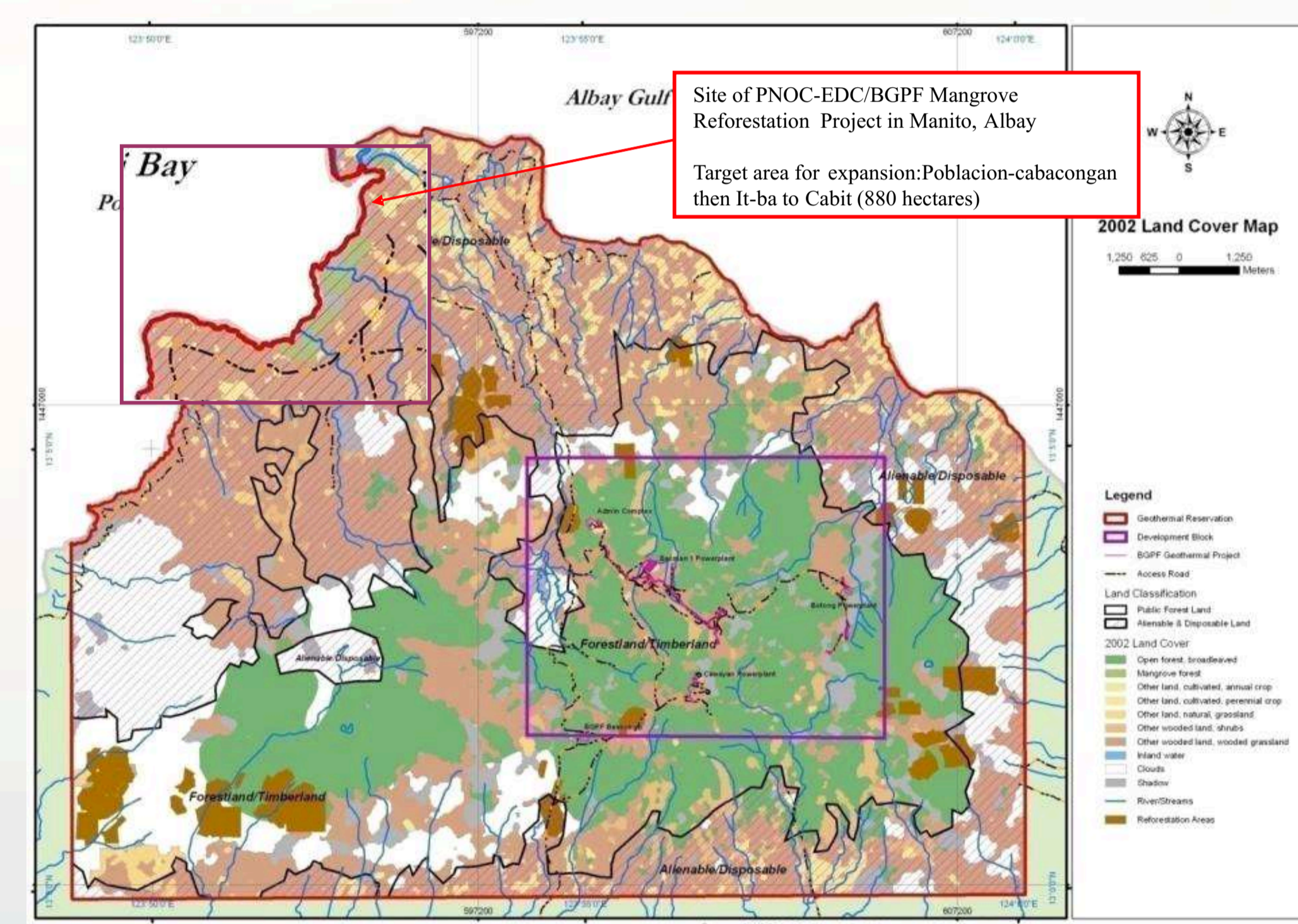


Figure 3. One of the mangrove rehabilitation sites in the Province of Albay.



## Mainstreaming Adaptation

Adaptation to climate change has risen on the agendas of researchers, practitioners, and decision-makers in a variety of fields (Mc Gray et.al., 2007). This emerging consensus is driving the recognition that adaptation to climate change must be considered as an integral element of development and poverty reduction efforts (Burton et. al., 2006) and, more particularly, will need to facilitate adaptation to the effects of climate change (Mc Gray et.al. 2007).

Using the environmental policy integration (EPI) literature, Persson and Klein (2008) which proposed the use of procedural, organisational, normative and reframing approaches in adaptation mainstreaming framework, we assessed how far climate change adaptation has been mainstreamed in the province of Albay (see table below). A summary of the province's interventions show that they cover all the mainstreaming approaches.

Table 1. Approaches to mainstreaming and summary of PGA's interventions.

Approach	Interventions
<b>Procedural</b> (involves the introduction of new or modification of existing decision-making procedures)	<ul style="list-style-type: none"> <li>Improvement of consultations with stakeholders</li> <li>Improvement of access and use of scientific information</li> <li>Projects and activities are made consistent with climate change adaptation and mitigation</li> </ul>
<b>Organizational</b> (involves changes in the structure and staffing of relevant organizations)	<ul style="list-style-type: none"> <li>Capacity building (staff training and awareness programs)</li> <li>Setting up of climate change office (CIRCA) and strengthening of APSEMO</li> <li>Appointment of a climate change officer</li> <li>Amendment of staff and office responsibilities to include climate change</li> <li>Enhanced coordination of new climate change office with the disaster risk reduction office</li> </ul>
<b>Normative</b> (involves high-level commitments to the issue to be integrated)	<ul style="list-style-type: none"> <li>High level commitments (by the Governor)</li> <li>Commitment of financial resources</li> <li>Creation and implementation of various legislative instruments</li> </ul>
<b>Reframing</b> (involves reframing of traditional sector activities to enhance appreciation of long-term outcome and conditions for successful mainstreaming)	<ul style="list-style-type: none"> <li>Re-focusing existing programs and highlighting climate change adaptation</li> <li>Disaster risk reduction integration in the Comprehensive Land Use Plan (CLUP) in the province</li> <li>Integrating climate change in the curriculum of primary, secondary and tertiary education in the province</li> </ul>

## Implications

The impacts of climate change on natural resources will have far-reaching social and economic consequences to communities who depend on it, particularly the natural resources dependent poor. Adaptation measures must go beyond single and practical solutions and address also the human and environmental issues. Thus addressing both simultaneously can be an effective way. Local government units, like the Province of Albay, can play a key role in mainstreaming climate change adaptation.

### Strategies for Mainstreaming Climate Change Adaptation in the Province of Albay:

- Making it a goal**  
Climate change adaptation has been proclaimed as a governing policy of the province.
- Ordaining policies**  
Various policies on climate change adaptation has been put in place.
- Building institutions**  
Albay Public Safety and Emergency Management Office (APSEMO) for disaster risk reduction and management  
Center for Initiatives and Research on Climate Adaptation (CIRCA) for climate research and education
- Executing programs and projects**  
The province launched the Albay in Action for Climate Change (A2C2) that encompasses all programs for climate adaptation.
- Nurturing partnerships and mobilize resources**  
Linkages and coordination with other sectors i.e. private, academe, non-government organizations and communities

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<sup>1</sup>World Agroforestry Centre (ICRAF) Philippines

<sup>2</sup> University of the Philippines Los Banos

**For more information, please contact:**  
Dr. Rodel Lasco, Philippine Programme Coordinator  
email: r.lasco@cgiar.org  
World Agroforestry Centre (ICRAF) Philippines  
2/F Khush Hall, IRRI, Los Banos, Laguna  
Tel No: +63-2 845-0563; 845-0569;  
845-0570 local 2675  
Fax: +63-49 536-2925