# Collecting information and compilation of the existing payment mechanism through internet and literature searching as well as direct communication with the stakeholders involved

## I. Background

Information about payment mechanism (PM) from environmental servics of forest will be collected from international and national experienced in the field through literature review, internet searching and direct communication with stakeholders invoved. At this time about 100 informations have been collected. Most of the information of payment mechanism are related to (i) water services, (ii) carbon, (iii) biodiversity, (iv) ecotourism, and (v) geothermal payment mechanism.

## II. Overview of Payment Mechanism

## A. Practices Environmental Services in Indonesia

### A.1. Selected case studies of existing markets for biodiversity

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#### 1. Community based-medicine plantation conservation at Meru Betiri National Park

**Application Year:** 1993 – present
**Project Description:** Meru Betiri National Park is an important asset, especially for the local community**.**

Handayani (2002) stated that the total economic value of Meru Betiri National Park is about US$ 300 million and it tangible value (40% from the total value) contributes 31.67% yearly to the income of two sub-districts (Pesanggaran and Tempurejo). It is also well known as an important source of local medicinal plants. The research from Lembaga Alam Tropika Nusantara (LATIN) and Bogor Agricultural University (IPB) resulted that there are 331 species of medicinal plants in this area. Groups of local community intensively source these medicinal plants from the forest and sell in wholesale to increase their daily income. Combined with other problems such as illegal logging and land encroachment,this activity can give more negative pressure on the sustainability of the national park. In anticipating this issue, LATIN and IPB in collaboration with Balai Taman Nasional Meru Betiri are conducting a pilot project on critical land rehabilitation in the buffer zone of Meru Betiri National Park using medicinal plant agroforestry. In the beginning of the project, it was planned to cover 600-ha critical land involving 2400 households. The project was; facilitated intensively by Local Community Organizer from LATIN, KAIL (local NGO) and

management staff of Meru Betiri National Park. This pilot project will be scalled-up until all the critical land in the buffer zone area (about 4730 ha) rehabilitated.
**Location**: Buffer zone of Meru Betiri National Park.
**Buyer**: Management of National Park, Perum Perhutani (State owned enterprise on timber plantation)
**Seller**: Community
**Intermediaries**: At district level, Coordination Forum of Meru Betiri National Park Management (Forum Koordinasi Pengelolaan Kawasan Penyangga Taman Nasional Meru Betiri) based on SK Bupati Jember no. 34 tahun 1997. At sub-district level, Coordination Forum of Buffer Zone Community based on SK Camat no.3 tahun 1998, in each sub-district.
**Supporters**: Consortium of LATIN and IPB, KAIL (Local NGO)
**Mechanism**: Land use rights in buffer zone of national park are rewarded to the community. During the first four years, they grow recommended agricultural plants and fruit trees (and also medicinal plants, if they intend to). From the fourth to the eight-year, they do enrichment planting with high-value medicinal plant existed in the national park area. Starting from the eight-year and over, the community will grow shade resistance medicinal plant and be able to harvest fruits, bamboo, rattan and also the medicinal plants. The community gets continuous incentives from each growing stages as additional incomes. The medicinal plant agroforestry impacts on other positive activity such as home industry processing the medicinal plants into herbal medicine. These home industries are supported by the housewife organization on planting herbal medicine at home gardens (TOGA). Jember Local Government supports these activities through supplying seedlings and the equipment for herbal medicine processing. The Local Government Health Service assists them in analyzing the quality of the products and promoting the usefulness of herbal medicine to the paramedic. It is expected that the paramedics can include these herbal medicines into their prescriptions.

## 2. Selected case studies of potential markets for biodiversity conservation Rewarding rubber tapers for the environmental services provided by agroforests in the Bungo district in Batang Hari catchment, Jambi

**Project Description**: As massive deforestation in Sumatra continuously occurs, the 'jungle rubber' agroforests that have developed since the 1920's are becoming increasingly important as a reservoir of forest diversity and other 'forest services' valued in natural forests. With rubber trees typically at or below 50% of the total tree basal area, the diversity of forest trees, epiphytes, birds, insects and mammals is probably 50-70% of that of a similar area or natural forest would harbor. The Bungo district in the Batang Hari watershed is located in Jambi as the third largest rubber-producing province in Indonesia. Around 97% of rubber production comes from smallholder farmers with less than 5-ha rubber gardens and receives on average 70% of their household income from it. Rubber agroforests are managed by smallholders and offer many economic advantages, such as low development costs and minimal risks, with generally competitive returns to labour. Share-tappers, often of Javanese descent, tend to be the poorest stratum of society, but still make a living. In the absence of specific incentives for the environmental

services provided by rubber agroforests, these systems may well be replaced by oil palm monocultures or any other more profitable land-use by whoever can obtain the credit or capital required for such conversion. In addition, both very low price of rubber of recent years increased the hardship of rubber smallholder-farmers.

**Location:** Bungo district, Batang Hari catchment, Jambi Province focusing on the lower montane and foothill zone neighbouring the Kerinci Seblat national park, with possible later extension to the Tigapuluh and Duabelas mountain ranges in Jambi.

**Potential Buyer:** in short term: potential international development organization – Fonds Francais pour l'Environnement Mondial, in long term: potential market-based for multiple products of old rubber agroforest buyers.

**Seller:** Community

**Intermediaries:** WARSI and Gita Buana (local NGOs)

**Supporters:** World Agroforestry Center (ICRAF) and Institut de Recherche pour le Développement (IRD)

**Potential Mechanism:** The next step will be to provide direct financial support to village communities that agree to protect a substantial area of old rubber agroforest through the funding from Fonds Francais pour l'Environnement Mondial (French counterpart to the GEF). This fund is expected to provide an immediate reward before all jungle rubber and the associated biodiversity disappears, it will allow time to develop more sustainable reward mechanisms. An eco-certified market-based form of rewards for the multiple products of jungle rubber agroforests (including timber of rubber and local trees, as well as latex) can provide incentives and has good long-term perspectives. Selling eco-labeled products at a higher than average price would increase the economic returns from the agroforests. In the short term, however, challenges have to be overcome to secure certification and access to interested markets. A number of obstacles to develop market mechanisms have been identified, such as the product quality and processing of the 'jungle rubber'. At the moment most of the produce goes to the least 'eco-sensitive' segment of the rubber market. Furthermore, identifying the right markets, developing linkages and forming the right institutional arrangements to handle certification will take time and will require resources. Under cooperative programs between Hasanuddin University and the Ford Foundation, activities on the promotion of local community involvement, the development of human resource and social infrastructures as well as development of documentation system and technical guidelines to develop well-organized community forestry on the proposed site are currently undertaken. Research results demonstrate that participation and empowerment of local communities as well as plant diversification and strong local institutions are able to promote and develop integrated conservation and economic activities. Based on the need of maintaining the biodiversity functions and increasing land productivity, a specific community forest management (known as HKM pola Sul-Sel) is designed to be implemented on the site, giving attention to the development of multipurpose trees focused on candlenut agroforestry.

## A.2. Selected case studies of water resources

### 3. Rewarding mechanism to the upland poor community of Barugae: providing and protecting watershed services.

**Project Description:** The goal of this project is to support and build the capacity of local communities, institutions, and government agencies in the Mamappang watershed of Barugae to implement reward mechanisms for the provided environmental service to promote sustainable natural resource management and poverty alleviation among poor upland communities under a reasonable, acceptable designed mechanism. To meet this goal, the proposed programme will cover the following objectives:

- In the first year they will identify the range of watershed services, sellers, buyers and transfer payment mechanisms possible, including new methods and approaches, and determine what preconditions are necessary and constraints to consider in implementing these services.
- In Year 2 and 3, strengthen the capacity of local institutions to implement transfer payments through appropriate institutional arrangements, agreements, and monitoring and enforcement mechanisms will be done.
- At the end, they will compile and disseminate best practices and lessons learned from these projects to raise awareness at all levels on how the transfer of payments in delivering environmental services can benefit upland communities.

**Location**: Barugae, Maros. South Sulawesi
**Buyer**: Community group in Mamappang and Matajang
**Seller**: Community in Barugae
**Intermediaries**: Local NGO
**Potential Mechanism**:
**Institutional Arrangements**
People of Barugae involving in the community forestry programs and traditionally owning the land could be considered as the producers or sellers of watershed function whilst the people of Mamappang and Matajang taking advantage of the environmental service for either their daily needs or agricultural activities could be considered as the consumers or buyers. The involvement of local NGO as an intermediary of the environmental service is expected to be able to synchronize and maintain the needs of both producer and consumer groups in the designed rewarding transfer mechanism. Buyers will be morally, rationally motivated by the intermediary to pay water used for their daily needs and agricultural purposes to the sellers responsible in maintaining and increasing the availability and quality of water sources. District government is expected to support the function of the intermediary and give compensation to the sellers for the environmental service they provide. In the institutional arrangement, the intermediary is required to have capability in facilitating the needs of both sellers and buyers groups. In addition, skills in business management are required for the intermediary as this institution is being considered to be a joint business group. Some potential rewards for the environmental service from buyers are direct payment for daily needs and tax incentives for agricultural purposes. Tax incentives may also be provided by the

government of Maros District to the upland poor communities as they perform specific efforts related to the increase of land values.

**Agreements**

Conflicts might occur among the sellers particularly in claiming the status of some part of their land that have not been managed for along time and considered as cooperative ownership. Besides, governmental requirement to increase district earnings from the mining sector may result in land-use conflict with the sellers. However, the formulation of agreements involving all beneficiaries and actors in a special forum could avoid these conflicts.

**Monitoring and Enforcement**

To ensure that natural resources related to the watershed services are being sustainably managed and that payments are being made to upland communities, it is necessary to monitor the designed activities based on the benefits received by either sellers or buyers. In the side of sellers, rewarding for the environmental services they provide can compensate for the opportunities lost in changing land use to agriculture or mining. In the other side, water supply served for buyers has to be in suitable quantity and quality for daily needs and agricultural land production without any other additional cost than according to the established agreement. Moreover, thought that the intermediary is in harmony determined by sellers and buyers to perform joint business group, the enforcement mechanism should be addressed to the stability of the sellersintermediaries-buyers relation.

**Fairness and Equity**

Considering the involvement of all beneficiaries and actors in a special forum formulating institutional arrangements and necessary agreements, this project is believed to target the poor and work to develop a fair and equitable mechanism for the identification of services, providers, and beneficiaries.

## 4. Experience in Commercial Utilization of Water Resources Conservation Area (Case Study in Conservation Area , National Park Mount Ciremai)

By: Amir Hamzah

Review:

Commercial water use has been going on at the time since the status of the forest area of Mount Ciremai is production forest. Joint use of water is done by PT Indocement and PDAM Cierbon City.

a. PT Indocement

Cooperation between the PT Indocement and Perhutani office since 1993, with the location of Lake Remis , plot 2, RPH Pasawahan, BKPH Linggarjati KPH Kuningan. At this location all spring goes into the lakeRemis, then the PT Indocement create water storage tanks distributed by pipeline. The contents of the agreement are: 1. In the year 1993-1998, PT Indocement pay Rp.40/m3 based metered water used, paid every month; 2. In 2000 the payment of 100 million for the 9 months; 3. th 2001 - 2004 the payment of 320 million for one year; 4. In 2005 agreement began to be done by involving Kuningan Regency, with the compensation 40% for Perhutani and 60% for local government of Kuningan. The total compensation of 400 million.

b. PDAM Cirebon

Water that is used by the PDAM Cirebon comes from springs of Panilis. Intake of water is done by horizontal drilling system using a pipe. Debit available water 3000 l / sec, while the installed capacity is exploited by PDAM is 860 l / sec and the use of 700 l / sec. Cooperation agreements made between Local Government Cirebon and Kuningan regency began in 2004. The amount of the payment fee is Rp. 1.75 billion per year plus a tax of Rp. 420 million.
Problems:
1. The degradation of Mount Ciremai forest
2. The declining of water quantity and quality
3.The status of production forests Perhutani, change into protected forest and now is a National Park. Does the agreement need to be revised with the involvement of Ministry of Forestry?

**5. Aspects of the Economic Value of Environmental Services Water Resources And Their Contribution to the Local Government and Communities**

By: Dudung Darusman, Bahruni (Faculty of Forestry IPB)

**Review**:
Water is still considered free goods provided by nature, so are free to use without paying the price. The failure of price formation water resource-related characteristics of water resources. The method is used in the valuation of environmental services, such as a water resource conservation area in general: a. The methods on the basis of Willingness to Pay (WTP) as Contingency Valuation Method, Procurement Cost (an adaptation of the Travel Cost Method). b. Non WTP methods, such as Value Method in the Production Value of Time, Among others, derivatives. Several studies of water assessment are: 1.) TN Gn Gede Pangrango for community drinking water and agriculture USD. 4,341 billion / yr. 2). Water Conservation Forest Waterfall Cilember for public drinking water in two Villages about 93 million / yr. 3) Water Gunung Halimun for public drinking water Rp. 3,433 billion / yr, for agricultural Rp 1,593 billion / yr; The value Papandayan Water Park and Forest Protection Darajat for drinking water is Rp 1,263 billion / year, and water for agriculture Rp. 11, 111 billion / yr. Due to the market mechanism does not work result in lower prices and inefficient management (under / over utilized). In this case the institutional policies, and property right can be emphasized and the rules agreed upon, and benefeciaries / users pay principle can be applied, as a source of financing the management of water supply sources. It also ensures the public's rights to water resources for basic needs, respect for community rules and regulations.

**6**. **Water Resources Management in Support of Environmental Services Payment Initiation**

By: ESP / Environmental Services Program

**Review**:
Scope of activities are: 1. Watershed Management and Biodiversity Conservation with the aim of protecting water sources, 2. Environmental Services Delivery with the aim of improving access to clean water and sanitation, 3. Environmental

Services Finance with the aim of mobilizing capital, improving efficiency and funding for new connections.

**Focus and approach:**

1. Local income ( PSDA) in Water Catchment Area Gn Gede Pangrango
Activities performed: a. Site selection activities, b. Sustainable livelihood assessment, c. Farmer field school, d. Survey of water users directly and the development of water user forums, e. Participatory rehabilitation in inside and outside the forest area, f. Conservation awareness campaigns, g. Payment Mechanisms for environmental services.

2. Location and Type of Raw Water Sources of Cianjur PDAM

| Location | Value Payment (Rp/m3) | Paid to |
|---|---|---|
| Jakarta | 100 | PJT II |
| Bogor Regency | 10 | Local Government |
| Tangerang Regency | 21 | Local Government |

How to calculate:

$$\text{Price} = \frac{\text{Costs incurred}}{\text{The amount of goods produced}}$$

To whom payment is made:
Existing → PDAM pay tax for underground and surface water ; paid to local government. Maximum tax rate of 20%.

**7. The value of water resources in Lore Lindu National Park, Central Sulawesi, Indonesia**

**Description**: This study has investigated the economic contributions of waters arising from Lore Lindu National Park (LLNP). The results present a conservative, but reliable estimate of the value of these contributions in the Study Area through the monetization of: agricultural production, livestock inventories and other sources of protein, and household and industrial consumption of waters arising from LLNP. The study also estimates the total number of people who are dependent on water from LLNP for drinking, washing, bathing, and other day-to-day activities, as well as the total area of land irrigated by waters arising from the park. The study took place in November and December, 2001. Methods employed during the study included literature reviews, interviews with Government of Indonesia institutions and non-government organizations, and primary and secondary data analysis. Primary data were generated through the execution of the Agricultural Producer and Water User Survey that gathered information from 306 households in communities adjacent to LLNP. The study estimates that 304,607

people from 67,160 households are dependent on water originating from LLNP. Water from the park irrigateS approximately 22,338 hectares of agricultural land that, on an annual basis, produces an estimated Rp. 59.4 billion in revenue from crops and plantations. These waters also service livestock inventories and support inland fishing and fisheries. On a yearly basis, the value of consumption of these protein sources is estimated at Rp. 16.4 billion. About 20% of households, and 35% of industries, in the study area pay for water provided by the stateowned water supply enterprise Perusahaan Daerah Air Minum (PDAM); the balance of consumers draw their water from other sources. As such, the value of water used by households and industries reflects the value of consumption, and not the revenue generated through the sale of water. In total, household water consumption in the study area was calculated to be 8.7 million cubic metres per year, with a value of Rp. 5.2 billion. Similarly, the study estimates that about 3.8 million cubic metres, worth Rp. 1.2 billion, are consumed annually by industries in the study area. In total, water from LLNP has an estimated current annual value of approximately Rp. 89.9 billion, or approximately US$9 million. The forested areas of Lore Lindu National Park also provide important ecological functions in the regulation of flow rates and sediment loads, and assist in maintaining important groundwater reserves for the City of Palu. Through the provision of these functions, important infrastructure and irrigation systems are protected, and water quality is maintained. LLNP's forests are an important part of the physical and economic character of Central Sulawesi, and will continue to play a significant role in future developments in the province. The relationship between forests, water, economy and human well-being, as set out in this report, need to be considered by planners an decision-makers, and that the needs of conserving Lore Lindu's forests be incorporated into all of Central Sulawesi's development plans.

## A.3. Selected case studies of research on carbon Sequestration

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### 8. Demonstration study on carbon fixing forest management in Indonesia

**Application Year**: 2001 - 2006
**Project Description**: The project intends to establish new techniques and methodologies related to the carbon fixing plantation forestry in order to promote and enhance foreign and domestic investment on the establishment of the tree plantation. Japan International Cooperation Agency (JICA) and Forestry Research and Development Agency – Indonesian Ministry of Forestry has signed the document of agreement to start this project, which located in West Java. Manuals for the establishment, management and evaluation methodologies of carbon fixing tree plantations will the output of the project. The main activities of the projects are to measure biomasses of forest plantations, to develop more effective technology for charcoal production and its applications to plantation and to estimate cost and revenue of carbon fixing plantations.

## 9. Promotion of Clean Development Management (CDM) in the framework of sustainable forest management with community involvement

**Application Year**: 2002
**Project Description:** APHI (Asosiasi Pengusaha Hutan Indonesia/The Association of Indonesian Forest Concession Holders) under the support from ITTO and Jambi local government conducted a pioneering work in which all stakeholders can learn how to develop a validated Clean Development Mechanism-Land Use, Land Use Change and Forestry (CDM-LULUCF) project as well as to address non-technical and technical issues of implementing CDM-LULUCF.). The project would deal with afforestation and restoration of plantation community outside forestland (transmigration land) in Rantau Rasau, Tanjung Jabung Timur of Jambi Province. Its specific objectives are:

- To determine practical and feasible design of the CDM projects. A series of activities namely assessing and prioritizing the potential of CDM projects in the selected locations and identifying key factors that affect the sustainability of the project was conducted.
- To develop a project proposal which aiming to promote Clean Development Mechanism in the framework of sustainable forest management.

As a progress of this objective, the pre project has produced an ITTO project document entitled "Forest landscape restoration and reforestation in Jambi Province of Sumatra using the Clean Development Mechanism (CDM) scheme".
**Outputs**: Many stakeholders in Jambi, including the government and local communities gained a better understanding on how to develop a practical and feasible design of the CDM projects through the discussion and consultation. The political support also came from provincial and regional government for CDM implementation with the local community participation. From the private sector sides, 12 forestry companies were interested in joining the project due to incentives that they will gain from environmental service generated by the CDM project. NGOs also showed their positive perception for their inclusion in LULUCF activities under CDM projects.

## 10. The role of carbon sequestration credits in influencing the economic performance of farm forestry systems

**Review:**
The Australian Centre has conducted some basic researches in Indonesia through the project 'The Role of Carbon Sequestration Credits in Influencing the Economic Performance of Farm Forestry Systems' funded by International Agricultural Research (ACIAR). The project contains a farm-level component and a policy analysis component. The focus in Indonesia is on smallholders and poverty alleviation. The main concern of this project was to analyze certain feasible conditions of carbon project proposals in establishing markets for greenhouse gas emissions. It determined the most appropriate farm forestry systems (and their management) for capturing carbon credit payments and meeting other land holder and community goals, including poverty alleviation; as well as determined the effect of mechanisms for translating international exchanges of carbon credits into incentives at the individual producer level. It

produced some interesting working papers that can be very useful as references in developing the carbon markets:

• **Economic performance of common agroforestry systems in Southern Sumatra: implications for carbon sequestration services by K. Ginoga, O. Cacho, Erwidodo, M. Lugina, and D. Djaenudin.**

They presented an analysis of the performance of four agroforestry systems: rubber agroforests, cinnamon multicropping, and oil palm monoculture and damar agroforests. Using a combination of modeling and data from various sources, it shows that all four agroforestry systems can be financially and economically attractive. However, it concluded that overall, the damar agroforests provide the highest environmental benefits, as it is the closest systems to a natural forest within the set studied.

• **Transaction and abatement costs of carbon-sink projects: an analysis based on Indonesian agroforestry systems by O. Cacho, G. Marshall and M. Milne.**

Concerns have been expressed that participation of land-use change and forestry (LUCF) projects in mitigation markets may be constrained by high costs. These transaction costs incur in measuring, certifying and selling the carbon-sequestration services generated by the LUCF projects.

• **Carbon monitoring costs and their effect on incentives to sequester carbon through forestry by O. Cacho, R. Wise and K. MacDicken.**

A paper that presents a simple methodology for evaluating the economic implications of carbon project characteristics and its monitoring cost was resulted by Cacho, Wise and MacDicken (2002). One of its conclusions was under the assumed fixed-monitoring costs (US$ 1500 per sampling plot) and a discount rate of 15%, a 500-hectare project of an Acacia mangium plantation is shown not to be profitable from a carbon-sequestration stand point, as a landholder would be better off not entering the carbon market and relying only on timber sales. The other important output is that in Land Use Change and Forestry (LUCF) projects consisting of a large number of landholders in a particular area may tend to have higher coefficient of variation than commercial plantations, because of geographical dispersion, the need to continue producing food crops and differences in the management ability of different landholders. This will tend to decrease the attractiveness of sequestration projects based on large numbers of smallholders. Variable monitoring costs may also be higher for smallholder projects if they are geographically dispersed. Two other factors that may disadvantage smallholder projects may be their tendency to be smaller (resulting in higher average costs) and higher discount rates (resulting in shorter cycles and hence less certified emission reductions (CER)

• **Growth and carbon sequestration potential of plantation forestry in Indonesia: Paraseriathes falcataria and Acacia mangium by Subarudi, D. Djaenudin, Erwidodo and O. Cacho.**

This paper explores the carbon-sequestration potential of two fast-growing species, Paraseriathes falcataria and Acacia mangium in monoculture plantations. It estimates their growth rates and performing economic analysis when carbon-credit payments are available. The effect of different carbon-accounting methods on the economic performance of plantation forests is analyzed. The result is that carbon-credit payments may increase the net present value of a plantation by 11% to 20% above the timber value only. The incentives, however are weaker in lower

quality land; which indicates that forest rehabilitation in critical land may require additional incentives for farmers to plant more trees.

• **A Bioeconomic Analysis of Soil Carbon Sequestration in Agroforests By Russell Wise and Osca Cacho.**

This paper attempts to address the issue of the lack of investigation into the impact of different

land use on soil carbon levels. In doing this, the paper presents an analysis of the economic consequences of accounting for soil carbon in climate mitigation policy. The analysis is based on the growth of a Gliricidia plantation under different pruning and harvesting management regimes and different initial soil carbon levels. The net effects on carbon storage of implementing agroforestry projects will impact upon soil carbon levels by preventing land clearing and by maintaining carbon already in soils. These issues are evaluated from the standpoint of individual landholders, and implications for management of agroforestry systems are discussed. It was concluded that the benefits from harvesting biomass exceed the benefits foregone if some of the biomass had been returned to the systems as mulch to increase or maintain soil carbon levels –at least in the short term. In longer term, however, productivity and profitability will not be sustained under such management practices. Therefore, in order to ensure that sustainability is achieved landholders would need to decrease their harvest and return some of the pruned biomass to the system. The trade offs involved between short-term profitability and long-term sustainability are clearly illustrated.

• **A Description of the Citanduy Watershed, West Java and Preliminary Analysis of Carbon Sequestration Potential in Smallholders By Hariyatno Dwiprabowo and Yuliana C. Wulan.** The Citanduy watershed –one of 22 critical watersheds in Indonesia – is located on the southeast of West Java. Background information of the watershed with particular emphasis on the biophysical environment and socio-economic characteristics are presented. The paper also provides the information to design a study on the carbon sequestration potential for the watershed through land-use change and forestry projects. A field survey was conducted on agroforests in two sub districts of Upper Citanduy (Cisayong and Sadananya). It was resulted on aboveground carbon stocks. The means for the two sites were 22.8 t C/ha for Cisayong and 49.7 t C/ha for Sadananya. In summary, carbon sequestration can be viewed as an additional benefit that forests and agroforests can generate along with other benefits in the watershed. Therefore, a carbon-credit scheme would be best implemented in synchronization with existing programs.

### 11. Land-use change and terrestrial carbon stocks: capacity building, impacts assessment, and policy support in South and Southeast Asia

**Application Year**: 1999 - 2000

**Project Description:** Through this project, IC-SEA under the support of The Kobe-based Asia Pacific Network for Global Change Research (APN) aimed to provide technical and policy liaison support to the nations of South and Southeast Asia. It would increase the readiness to participate in the Kyoto Protocol using the best available research-based knowledge. The project involves training

workshops, a series of commissioned studies, and a science-policy workshop. The detailed objectives are:

**To build the capacity of South and Southeast Asian scientists to assess the impacts of land-use change on terrestrial carbon stocks, including above- and below-ground biomass;**

**To facilitate the synthesis of commissioned reviews on the issues related to the impacts of land-use change and the underlying driving forces on terrestrial carbon Stocks; and**

**To bridge the gaps between the scientific and policy communities for more meaningful dialog prior to their participation in the Kyoto Protocol.**

**Outputs**: It is crucial that host countries should provide institutional arrangement on how such project may be implemented. In term of network, there are electronic network available at IC-SEA as it will virtually play important role in the near future to continuously warm up its 'members'. Additionally, the Impacts Centre would take the lead in facilitating the dialogue in the region especially the policy dialogue.

At last, the project resulted in some recommendations:

**Overarching recommendations:**

- Develop National CDM Guidelines (model contract)
- Promote capacity building (develop/learn from first projects)
- Establish Impact Assessment Committee (including environmental, socio-economic and sustainable development)

**Specific recommendations:**

- National strategic study on CDM in forestry
- Promote transparency by involving local community and NGOs in all stages especially in the development of assessment tools
- Promote public awareness
- Facilitate the formation of the scientific task force to ensure baselines, CERs, etc.
- Facilitate the formation of multi-stakeholder technical, business, and policy task forces / working groups
- Start the exercise to test the guidelines and criteria for approval by considering:
- Harmonization and coordination between national and local government
- Risk management standards
- Ensure local community share the benefits
- Make whole certification, verification process simple, yet accurate
- Incorporate sustainable development criteria developed by assessment tool (international standards, probably address only carbon)
- International/regional collaborations on CDM project "learning" (e.g at ASEAN)

## A.4. Selected case studies of existing market for carbon Sequestration

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### 12. Climate change, forest and peatland in Indonesia (CCFPI)

**Application Year**: 2002 – 2005
**Project Description:** The project is designed to promote the sustainable management of peatland in Indonesia in order to increase its forest functions as carbon sequester and storage, and also to improve the local community welfare. The project is an action research program that also attempts to increase the awareness of community and decision makers of the link between climate change and peatland conditions. At the end, it will recommend the revision of Indonesian National Strategic on Wetland to ensure the inclusion of peatland in climate change issues of wetlands. There are some activities that related to this project:

- Conducting some pilot projects on community-based peatland management in specific sites in Sumatra and Kalimantan, restoration of drained peatland in Kalimantan site and granting some small funding for other activities that are not covered under the pilot project initiatives.
- Strategic research and data gathering on peatland, carbon and climate change such as: carbon storage measurement, analysis on the distribution and the status of peatland in Indonesia, canal blocking technique for reforestation of drained peatland, etc.
- Information sharing and dissemination.

**Location:** villages surrounding the Berbak National Park (Jambi Province), future Sembilang National Park (South Sumatra Province) and the community peatland area of Sungai Puning, Buntok (Central Kalimantan Province).
**Seller**: Community
**Buyer:** Wetland International-Indonesia Program
**Intermediaries**: Local NGO
**Supporters:** Canada International Development Agency
**Mechanism**:
**Community-based peatland management in specific sites in Sumatra and Kalimantan.**
A five-year loan contract is the form of reward. The amount of the loan is equivalent to the quantity of planted trees on agreed areas, compacted in the buffer zone of National Parks. The value of each tree is varied depending on its type (from Rp. 5000 to Rp 10000). It is the average of the seedling price and the maintenance cost until the third year of planting. The loan will be used to increase the welfare of communities, such as an additional for their financial capital or for improving the quality of their livelihoods. It cannot be used to buy seedling that will be planted in the conservation areas. These seedlings must be gained from their own efforts. The quality of the trees determines the amount of money that has to be returned. The Wetland International-Indonesia Program has a set of criteria and indicator for quantifying the quality of the trees and its money conversion. The principle is the better the quality, the lesser the return. If the community has reached a certain agreed percentage of planting success, for example 80%, the return will be zero and they do not have to pay their loan. On the other hand, if they cannot maintain their trees and the quality is lower than

expected, then they have to return the loan. They accompanied facilitators as the partners of community, who give technical assistance in implementing the project and measure the amount of returns.

### 13. Restoration of drained peat land in Kalimantan site (Canal Blocking)

**Review:**
Located at Sungai Puning, Central Kalimantan, this activity is aimed to block the canals that previously function as traffic lane of illegal logs. These canals cause unstable decrease of water table especially in dry season and make the area susceptible to fire. The community can earn some additional income as daily labors. After the program finished, the community can obtain the loan based on the quantity of trees that will be planted and maintained surrounding the blocked canal. The contract and mechanisms is similar to the previous program.

**Small grant funding**
The small grant funding is given to the communities who have not been involved in the pilot projects yet. They can propose loans with similar requirements and values to the ones of the pilot projects.

## A.5. Selected case studies of potential markets for carbon sequestration

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### 14. Development of reward mechanisms for environmental services provided by upland poor at Singkarak watershed (RUPES)

**Project description**: National Strategy Studies on Clean Development Mechanism conducted by the Ministry of Environment, identified Singkarak Lake as one of the potential site for the implementation of forest-carbon projects. On the current proposal to RUPES, this site proposes developing markets for bundle environmental services, watershed protection and carbon sequestration, but this review only focuses on carbon. Singkarak Lake is located in the central part of West Sumatra and is the heartland of the former Minangkabau Kingdom. About 32% of area of the surrounding lake (18.664 ha) is critical land (mostly covered by Imperata grassland) while other area is used for rice paddy (21%), upland crops (17%), and other uses (30%). Most of these critical lands plus 9,773 ha of uplands belongs to the clan (Ulayat Kaum or clan land) and local community (Ulayat Nagari). Deforestation increased in this area and is creating more unproductive and critical land (grasslands and land in steep areas). This community normally opens the forest without practicing proper water and soil conservation techniques (Yunizar, 1996). An estimation of 4,559 families are practicing shifting cultivation in about 10,624 ha. After 1998, there were no significant land rehabilitation projects taking place at Singkarak Lake. Now total area of critical land is about 18.664 ha (Pemda Sumbar, 2002). As the community is more aware of the important of forest cover on Singkarak Lake, they have started to reforest and rehabilitate the critical and degraded forest, even though this is still happening at a relatively low rate compared with the need. One of the initiatives started in February 2003, is a rehabilitation program called a Million

Trees Planting Program (Penanaman Sejuta Pohon). It is targeted at rehabilitating about 540 ha of the critical land in the watershed.The total area that has been rehabilitated by the community to date, using a community fund, is only 30-40 ha. Some members of the local community at Singkarak Lake have shown their interest in forest carbon projects as this could provide additional funding to support the land rehabilitation program. The local government also showed their interest to this mechanism, as this mechanism may be one of the potential funding sources to accelerate the degraded land/forest rehabilitation program. The challenge is how to develop capacity of the local stakeholders (human resources and institutional capacity) to participate in such mechanisms.

**Location:** villages surrounding the Singkarak Lake, West Sumatra.

**Potential Seller:** Community surrounding Singkarak Lake

**Potential Buyer:** Investors from developed countries (Kyoto and non-Kyoto mechanisms)

**Potential Intermediaries:** Badan Pengelola Danau Singkarak (BPDS) – management body of Singkarak lake

**Potential Mechanism:** The local government along with other community leaders has taken the initiative to establish a management body for Singkarak Lake called Badan Pengelola Danau Singkarak (BPDS). This body consists of members from the two districts (Legislative representatives, Bupati or Regents of the two districts, Wali Nagari, other community leaders, and representatives of the ES buyers). As part of the RUPES project there will be an assessment of the role of this body in transfer payments and to assess the landscape management in terms of providing environmental services. The body might consist of two components, i.e. Steering Committee and Secretariat. The Steering Committee will act as Focal Point and Liaison with Governor and the National Authorities for ES. This body will provide inputs for local government on policy setting and the establishment of new local regulations as necessary related to the rewards system. While, the secretariat will take care the daily activity of the body, i.e. to implement and to coordinate the SC meetings, to establish system for transfer payments process following the policy made by the SC, and coordinate the implementation of environmental services activities surrounding the lake.

### 15. Supporting local and regional partnership to develop and test reward mechanism to the upland poor communities for sustainable environmental services they provide, in Ciremai Mountain, West Java

**Project Description:** The Ciremai Mountain area provides ecology and economic contribution for surrounding community. In spite of that important fact, the existence and supporting functions of the area are experiencing heavy pressures on social economic activities that sustainable benefits of the area becoming threatened. Ciberes-Bangkaderes sub-watershed is part of the area that is most stressed significantly. Some crucial pressures to the site are come from activities of local poor people who take natural resources and cultivate lands, regardless of their stability and sustainability. This is merely due to immediate interest to meet daily basic needs and also because of no appropriate incentives to seriously perform sustainable land management, have made local poor people in the area tend to cut the forest and take some cash and tangible stuffs with no conservation

and sustainability basis. However, some of them have established good crop cultivation, such as agroforestry, although it is performed in a minimum scale and with less conservation practices. Investments on environmental enhancement and community development have been allocated at site by two predominant parties, namely state-owned forest enterprise (Perum Perhutani) and Kuningan's District Government (Pemda). The investments of Perum Perhutani are land rehabilitation and the development of eco-tourism. Those two parties also indirectly invested on other activities by allocating a "supporting fund" through the LPI-PHBM that committed the development of community-based forest management in the area particularly for state forest areas.
**Location**: Ciremai Mountain, West Java
**Buyer**: Community and enterprises (water user)
**Seller**: Community
**Intermediaries**: Local NGO (LP PHBM)
**Supporters**: ICRAF (RUPES)
**Mechanism**: The community in the dry land area, commonly and voluntarily manage their landscape in the form of mixture garden that combine quick yielding or cash crops with forestry plants (trees). This land management pattern has resulted in a mosaic of agroforestry that give very significant contribution to the production of environmental services. Thus, this community group will obviously be the main seller of environmental services in the site. In other hand, the environmental services of the site generally flow to lowland areas and utilized by their inhabitants for several needs such as drinking water, water supply for cultivation, hotel and industrial activities (e.g cement industry), and natural recreation. The parties who benefited by the flow of those environmental services comprise households, farmers, and enterprises. Therefore, they are considered as potential buyers who will be explored and identified in this project.

## A.6. Selected case studies of research on watershed protection

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### 16. Pricing ecological services: willingness to pay for drought mitigation from watershed protection in Eastern Indonesia

**Review:**
The study attempts to quantify how conservation of tropical forests may facilitate economic development by combining the predictions of a basic hydrological model with contingency valuation methodology to value a complex ecosystem service: drought mitigation provided by tropical forested watersheds in Ruteng Park on the island of Flores to agrarian communities of eastern Indonesia. The forest hydrology literature posits that extensive tree cover maintains baseflow levels in areas with environmental characteristics similar to Ruteng, i.e. clayey and compacted soil, steep terrain and intense rainfall. The three forest hydrology studies in Mangarai region show that forests are net producers of baseflow. The primary economic role of baseflow is as a fixed input in agricultural production because agricultural is the predominant economic activity in the region and because the farmers who benefit from this service cannot choose levels of forest

protection to generate drought mitigation. Thus, by identifying the main agricultural production relation and economic tradeoffs and linking them to baseflow, the value of drought mitigation can be estimated as 'willingness to pay' measured in terms of incremental profits resulting from the baseflow increase. Agricultural households can directly be questioned to elicit their willingness to pay (WTP) for the drought mitigation using Contingency Valuation (CV) surveys. In CV methodology, values are elicited by first describing a proposed (hypothetical) service and its markets to the survey respondents and then asking them directly to state their WTP for the proposed service. The estimated WTP reflecting households' combination of perceived value and perceived increase of baseflow they expect to receive is US$ 2-3 annually. It is approximately 10% of annual agricultural costs, 75% of annual irrigation fees, and 3% of annual food expenditures and therefore reflects credible demand for drought mitigation. Households with high WTP are farmers who grow rice, use fertilizers, are educated and wealthy, believe in productivity of irrigation, and live in watersheds with low forest cover and rainfall. This reveals that policy makers should consider a selective approach, targeting watersheds with low level of baseflow and forest and those in the rain shadow of the wet southern winds to fulfil management goals. The annual aggregate WTP amount is US$ 27,000 (evaluated by multiplying the mean WTP of US$ 2 by number of affected households). It is a referendum support for watershed management that may enable watershed managers to obtain larger shares of the public budget on the grounds generating locally desirable and valuable drought mitigation service. The estimated economic models and the parameters of the study provide some signals for policy makers regarding the economic magnitude and spatial distribution of the local economic value of watershed protection. They also offer management information for financing and targeting watersheds.

## 17. Economic benefits of improved water quality in the Ciliwung River, Jakarta

**Review:**

In this study estimation was made on the total economic value of improved water quality in Ciliwung River. This study also collected data to understand the willingness-to-pay of the residents to improve the water quality using a Contingent Valuation Study. The scenario asked how much the respondents would be willing-to-pay for a water quality improvement that provided safe swimming condition. The resultant mean willingness-to-pay was Rp. 675.00 per month for individuals older than 15 years of age. Based on a population of approximately 10 million, this would suggest that the economic benefit of improving water quality of US$ 30 million per annum (in 1996). Alternatively, it can be stated that market and government policies and their implementation leading to the present level of pollution in the Ciliwung River, have an opportunity cost of US$ 30 million per annum. Therefore, there is a need for an improved level of evaluation of both public and private investment. The result of the study suggested that local taxation for local management of pollution in rivers was an acceptable response to resolve the problem. A program of an

environmental management trust fund would be necessary to minimize the misuse of the funds.

## A.7. Selected case studies of existing markets for watershed protection

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### 18. Annual fee of PT INALUM for Toba Lake conservation

**Application Year**: 1985 - present
**Project Description:** PT Indonesia Asahan Alumunium (INALUM) - an aluminum refining and power generation corporation – is a Japanese overseas investment in North Sumatra, Indonesia. The electric power is produced in Asahan Hydropower Plant using the water from Toba Lake. This supply of electric power is for use in aluminum industry and sale of electricity for public use (80% from the total production in North Sumatra). Starting in 1985, INALUM compensates the conservation cost of Lake Toba yearly through Dana Konservasi Alam Danau Toba (Nature Conservation Fund for Toba Lake). The focus of the fund is to rehabilitate critical lands in five districts on the catchments areas of the Toba Lake and on the watershed areas in Asahan and Tanjung Balai.
**Location:** Toba Lake, North Sumatra
**Buyer:** PT Indonesia Asahan Aluminium (INALUM)
**Seller:** District Governments
**Mechanism**: Four components of annual fee are put aside to conserve the Lake Toba. The first three components are fixed payments of as much as 2.6 million US Dollar; those are Pajak Bumi dan Bangunan (land and building tax), Iuran Jasa Air (retribution of water service) and other taxes both from provincial level and district level governments. The fourth component is an additional one as the result of the difference between the exchange value of Rupiah and US Dollar in selling the products of PT INALUM. In 2002, the additional payment was 23 billion Rupiah. Accordingly, the total fund from PT INALUM was 49 billion Rupiah. Despite this large amount, there is no real cost-benefit measurement of the environmental impacts of this company as its cost in consuming the water is very cheap (Rp. 5.18 per cubic meter) compared to regular tariff that is Rp 75 – Rp 100 per cubic meter). In one year, Asahan Hydropower Plant uses approximately 2,9 billion cubic meter of water.

### 19. Multi level dialog of Negotiating Support System (NSS) for integrated natural resource management

**Application Year**: 2000 – present
**Project Description**: In the Way Besai watershed of Lampung, four state forest zones cover the upper watershed ecosystem. Population pressure on the state forestlands is high caused by forest status disputes, poverty and lack of rural economic infrastructures, the market drivers for coffee, and the person-agriculture land ratio. Forest conversion is blamed for erosion and sedimentation in the Way Besay River, which is affecting the hydropower plant downstream. Previous governmental repressive policies that evicted people from the forest have left a

legacy of distrust with those that remain landless and those that have returned to once again take up their traditional forestland. In 2000, ICRAF and local NGO Watala collaboratively began developing mutual trust between local people and government to build basic social capital to create space for dialog, negotiation and collective action. The Hutan Kemasyarakatan (HKm), or 'Social Forestry' program is being promoted by the government as used as a policy entry point for reconstructing mutual trust based on land tenure conflict resolution.

**Location**: Sumberjaya, Lampung Province

**Buyer**: Forestry Department

**Seller**: Community

**Intermediaries:** ICRAF, WATALA (local NGO)

**Supporters:** Ford Foundation, DFID

**Mechanism**: The most current policy on Community Forestry (HKm) from the Indonesian Forestry Service is Surat Keputusan No. 31/Kppts-II/2000 and lays out the rules for obtaining a HKm Initial License. This policy obligates communities, who are want to get a HKm licence to form community groups. The groups are then expected to draw up rules for their group and to participate in land use mapping to determine their management area. After completing all these requirements, the community group can make a proposal to the Forestry Service for their licence.

**Results so far:** In operating the HKm, some constraints which caused by inconsistency of policy and limited resources appeared. Legal location of HKm proposed by district/province has not been approved by the national level of Forestry Department. In addition to that, the Forestry Department admit that currently they only have very limited human and financial resources in developing the HKm. From the community perspectives, there is still limited socialization about the HKm policy and the process in applying the license is considered too long and tedious. Supports from external parties such as research centers or NGOs are still needed. In term of monitoring and evaluation process of HKm, no participative process operates. ICRAF and its partners is working on how to develop the mechanism of participative monitoring and evaluation process of this HKm including its criteria and indicators. Some initiatives in supporting the development of HKm have been done by both the government (the Forestry Service) and the communities. The government starts to do some socialization of this HKm and provides supports by supplying the multi purpose tree species (MPTS) seedlings. The community response these efforts by actively joining in forest rehabilitation under HKm either using the seedling from the Forestry Service or initiatively obtaining seedlings in groups. Up to now, there are 12 HKm groups (about 1035 farmers as members) facilitated by ICRAF and Watala. Three groups of them had have HKm Initial License valid for 5 years issued by Bupati Lampung Barat and become the first HKm groups licensed by Bupati in Indonesia under Ministry of Forestry Decree No. 31/Kpts-II/2001.

## A.8. Selected case studies of potenstial markets for watershed protection

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### 20. Action-learning to develop and test upstream-downstream transactions for watershed protection services: a diagnostic report from Segara River Basin, Indonesia

**Application Year**: 2001 - 2005
**Project Description:** The overall goal of this project is to promote maintenance of water services that support local livelihoods. It is aimed to increase understanding of the potential role of market-based approaches in promoting the provision of watershed services for improving livelihoods in Indonesia, especially in Segara River Basin, Lombok. Despite its early stage and lack of accurate hydrological information, the mechanisms for linking downstream water users to upstream land managers in the Segara Watershed exist. A financial arrangement for land and forest management in the upstream area of Segara River Basin has emerged. It responds the environmental degradation in the upstream area that is perceived causing decline of dry season water flows, decrease of water quality and unexpected flooding. A negotiation between the state-owned water supply enterprise (PDAM) and a rafting company (the Lombok Inter-Rafting Company) raised a decision to pay the communities around the Bantek village.
**Location**: The Rinjani National Park, in the Segara River Basin of Lombok
**Potential Buyer:** Six Water Users' Associations (921 hectare), PDAM drinking water company, Lombok InterRafting Company, and local communities.
**Potential Seller:** Communities in upper watershed through community organizations, such as Majlis Kerama Adat or Desa (traditional institutions), Kelompok Masyarakat Peduli Lingkungan (community group for the environment), Tim Pengelola Kawasan Hutan Ex. HPH (forest management team for the ex-logging area),Banjar Pengelola Hutan Mejet (Mejet forest management institution).
**Intermediaries**: KONSEPSI, YLKMP
**Supporters:** LP3ES, IIED, Government of Indonesia, International Development Agency (AusAID) and WWF.
**Mechanism**: Several financial arrangements for water and related environmental services have emerged independently in the Segara Basin. A number of payment schemes to finance irrigation infrastructure (Sawinih, Irrigation Service Fees, and operational fee) contributed by farmers with irrigated land have been already managed by the six associations of irrigation water users, but still nothing is transferred upstream communities. PDAM pays land tax to the local government of the Bantek village to compensate the individual land-owners that are affected by its water pipeline. Together with the Lombok Inter-Rafting Company, some financial payments are delivered to contribute the village development through the village administrators. The amounts transferred from PDAM are Rp 2 million in 2001 and Rp 5 million in 2002, while the Lombok Inter-Rafting Company contributes Rp 600,000/village/year. Basically, the funds are used to cover forest guard salaries, to plant trees and to subsidize various social activities in the village. Community tradition in Bentek shows their strengths in protecting forest.

The community holds regular ritual celebrations through Sedekah Gumi Paer. This activity stems from both customary law and religion, which aims to protect community members from natural disasters and diseases. Both the Muslim and Hindu communities of Bentek participate in this occasion. Bentek Village has adopted its own long-standing customary law as a basis for drafting local law on natural resources management, which is commonly called "awiq-awiq" to protect the watershed. Furthermore, this effort also intends to develop good relation between upstream land managers and downstream water user in synergy with the programs of the local government, as they have not involved in current developed mechanism. In order to improve the mechanisms, the project results the diagram below that is important to be considered.

**21. Poverty alleviation for upland poor communities through developing mechanism for rewarding them for the watershed protection services for sustainable use of water in Province of Banten, Indonesia**

**Project Description:** Cidanau Watershed is one of the important watersheds in Banten Province. The area has two main roles in the economic development of the western area of the Province. Firstly, it is the only water reservoir with adequate discharge in this area to provide water for heavy industrial activities and domestic uses and secondly, Cidanau watershed includes the Rawa Danau Nature Conservation, which is the only remaining mountain swamp conservation site in Java and contains several endemic species of plants and animals. Encroachment to the swamp and intensification of land use in the catchment as a whole affects the quality of the waterflows from the Cidanau watershed and urgent action is needed. In the newly created province of Banten integrated management of the Cidanau watershed is a priority. Decree Number 124.3/Kep.64-Huk/02 of the Banten Governor, dated May 24th 2002, formally established the Forum Komunikasi DAS Cidanau – FKDC (Cidanau Watershed Communication Forum). FKDC as the intermediary is now in the process of establishing an alternative financial institution which will collect all the 'rewards' and channel them to the providers of the environmental services. PT. Krakatau Tirta Industri (KTI), the water company that pipes water from the lower part of the river for industrial and urban use, has partially funded development activities within the conservation area and is ready to contribute to a comprehensive solution that will protect the water resources. A Memorandum of Agreement between FKDC represented by Banten Governor and KTI was developed at the end of 2004. In this agreement, KTI voluntarily would compensate community's efforts in a 50-hectare-pilot site to maintain good forest cover for two years and it was renegotiable until five years. This could become a very good start for establishing the reward for environmental services scheme.
**Location:** Cidanau Watershed, Banten Province
**Potential Buyer:** PT Krakatau Steel, the state-owned water supply enterprise (PDAM)
**Potential Seller:** Community at Cidanau Watershed
**Intermediaries:** Forum Komunikasi DAS Cidanau
**Mechanism:** The negotiation process between FKDC and KTI has resulted in some points, such as:

- KTI voluntarily agreed to pay the 'environmental services' from Cidanau watershed in as much as Rp. 3,500,000 per ha yearly for a 50-hectare-pilot-site or the total of Rp. 175,000,000. This amount would be paid in the first and second year of the agreement.
- A Memorandum of Agreement of Payment for Environmental Services between FKDC and KTI would be valid for 5 (five) years or until the year of 2009.
- The payment for environmental services for the third to fifth year will be resulted from renegotiation process between FKDC and KTI.

To implement this mechanism, FKDC established an Ad Hoc Team based on Letter of Decision of Daily Operational Head of FKDC. The main task of this team is to manage the fund and to further develop an institution of environmental service management in Cidanau (Lembaga Pengelola Jasa Lingkungan Cidanau). The Ad Hoc Team also has to fulfil the buyer requirements, such as monitoring the sellers' and buyers' rights and obligations as well as payment realization schedules, accountability and transparency in managing the fund. The community at the pilot site has to maintain minimal 200 trees at the end of the 5th year with the composition of 70% wood tree and 30% fruit tree.

**22. Existing payment for environmental service scheme in Cidanau, Banten Preserving natural spring water through cultivating local varieties plants**

**Application Year**: 1998 -1999
**Project Description:** In Bandung, West Java, almost half of the 23 springs are vanishing because of water pollution as well as excessive draining and exploitation. Decrease of water biodiversity, low quality of water and high water pollution primarily caused by farming chemicals and domestic waste indicate that the deteriorating quality of water is already at an alarming stage. On the other hand, there is insufficient information on how to use and manage the water resources. The project intended to conserve spring water sources by involving the communities surrounding the springs as well as to give additional income for their livelihood. It would increase the level of information and awareness of the importance to conserve the environment among the communities. As an indication of the success of the program, there was some duplication of the activities in several areas in West Java. **Location:** Bandung, West Java
**Potential Buyer:** The state-owned water supply enterprise (PDAM) and its consumers
**Potential Seller:** Community surrounding the spring especially in radius of 200 meter
**Intermediaries**: KSM Tirta Wahana
**Supporters:** Global Environment Facility – Small Grant Programme, United Nations Development Programme (GEF-SGP UNDP), Local Government
**Mechanism**: Basically, the reward given to the communities was in the form of in-kind rewards, such as training in how to increase their income through agroforestry and to apply simple technology in maintaining the environment. Nine farmer groups with the total of 125 members were formed in five locations of the projects. They were encouraged to plant productive perennial plants such as fruit trees, coffee, cocoa and clove, combined with shade tolerance medicinal herbs and

food crop, using organic manure. An efficient system of 'longyam' (balong ayam), putting the poultry cages above the fishpond was introduced to eliminate water pollution from the poultry waste and excessive evaporation of the water pond. The other programs were to build infrastructures such as sanitation and clean water system, and to purify organic liquid waste using simple method. In line with these activities, the communities were trained not to throw away their domestic waste to the rivers or water bodies.

### 23. Exploring and developing reward mechanisms for upland farmers for watershed functions in Sumberjaya

**Project Description:** The overall goal of this project is to support (and mobilize capacity) of poor local upland communities and government agencies in West-Lampung to develop workable reward schemes for environmental services provided by upland poor. In the first year attention will be given to three sub-watersheds of 200-1500 ha: Way Petai, Way Ringkih and the Gunung Abung-Simpangsari watershed. In year two and three the out scaling to neighboring watersheds will be explored. Among those types of watershed commodities, the first three points: water flow, water quality and sediment control are the most potential to be traded at the Sumberjaya site. In Simpangsari, a village of 8500 inhabitants, some of the inhabitants do pay to get piped water for domestic use directly taken from the Way Petai River. However supply is often not enough and the sediment load seems unacceptably high for the users, a lot of people did stop paying their monthly contribution for the piped water. At a larger scale it is hoped that this example will move the Forestry Department to consider this as an important base for criteria and indicators for their Community Forestry Scheme (HKM) and be a meaningful input into the negotiations.
**Location**: Sumberjaya watershed
**Potential Buyer**: Downstream communities, Hydropower Company
**Potential Seller**: Upstream communities in three sub watersheds
**Intermediaries**: WATALA, ICRAF
**Supporters**: RUPES Program, BAPPEDA

## A.9. Selected case studies of existing markets for landscape/seascape beauty

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### 24. Komodo National Park collaborative management initiative

**Application Year:** The process has been started since 1995
**Project Description:** The goals for Komodo National Park are to protect its biodiversity (particularly the Komodo dragon) and the breeding stocks of commercial fish for replenishment of surrounding fishing grounds. The main challenge is to reduce both threats to the terrestrial and coastal marine resources and while avoiding conflicts between stakeholders. A comprehensive 25 year management plan completed in 2000 provides the basis for adaptive management to regulate all uses in the park and address threats while maximizing benefits for local communities in a sustainable way. The objective of the Komodo National

Park Collaborative Management Initiative (KCMI) is to ensure effective long-term management of Komodo National Park (KNP), by:

- Improving the effectiveness of park management through the adoption of a collaborative management approach, involving all key stakeholder groups, including the Park authority (PHKA), local government, a joint venture between an international NGO (The Nature Conservancy) and a local tourism company (Jaytasha Putrindo Utama), and with additional input from local communities, government agencies and private sector organizations;
- Supporting the conservation of the marine and terrestrial resources of KNP, using an adaptive management approach to identify and respond to the changing threats facing these resources;
- Establishing structures and guidelines to promote environmentally sensitive tourism development in the region and developing a strategy for the appropriate use of tourism revenue generated by KNP, to ensure long-term financial security for the park and sustainable benefits for the local communities; and
- Introducing a system of appropriate incentives to encourage conservation-enhancing livelihoods and stimulate the development of a local economy based on the sustainable use of the resources in and around the park.

A key element of the 25-year park management plan is the development of self-financing mechanisms for the park through the establishment of an Eco-tourism Concession with the goal of protecting the park's biodiversity and generating revenues required for the park in a way that is environmentally sound, socially responsible and economically viable. By the end of the seven-year grant period, it is expected that the park will be self-financing. Innovations brought in by this project include: the testing of new park management and financing models; the partnership of an international NGO with a local tourism operator to form a Joint Venture and their using of a collaborative management approach with strong links to local community and private sector stakeholders; and the adoption of an adaptive management approach. The joint venture is established as a for-profit company whose revenues will be re-invested in the park

**Location:** Komodo National Park, East Nusa Tenggara

**Buyer:** Tourist, both local and foreign

**Seller:** Management of Komodo National Park

**Intermediaries:** a Joint Venture company (JV) "Putri Naga Komodo" between The Nature Conservancy (TNC) and a local tourism company (Jaytasha Putrindo Utama), as well as local communities, government agencies, and private sector organizations as a concession holder.

**Supporters:** Government of Indonesia representing by Park Authority (PHKA) and Local Government

**Mechanism**: At present, basic funding for the Park is provided through the Government of Indonesia. These funds, however, are insufficient to meet all the management needs for the Park. Revenues from the Park are not fed back to Park management resulting in limited incentive to increase infrastructure needed to attract a greater number of eco-tourists. If park revenue were funnelled back into the Park, tourists would supply much needed revenue to the area. Komodo National Park has been selected by the Ministry of Finance as a pilot site to test new Park financing mechanisms and privatization of tourism management. The

Komodo National Park management will conduct an assessment of options for restructuring tourist gate fees and reforming the gate fee distribution system within PHKA, so that a significant portion of these fees can be channelled directly to Park management support. Following this assessment, the Park will work with partners to implement the gate fee reform as a way to fund future conservation activities in the Park. The most likely form of financial management system may be a Concession for Tourism Management. The Tourism Concession will be responsible for financial management, investments in Park infrastructure and marketing. It will require an initial outside infusion of funds (possibly from the Global Environmental Fund) to make the necessary Park improvements to justify later increases in user fees. After several years, the Park should be financially self-sustaining. The Tourism Concession will collect user fees and distribute the funds to the Park management. If successful, the concession could lay the foundation for expanding management activities to include additional aspects of Park management such as enforcement and sustainable community development projects. Economic success in the tourism sector will depend heavily on the maintenance of environmental quality. To sustain projected increases in tourism, any development must be compatible with the environmental surroundings.
While the collaborative management agreement provides the governance structure for the management of the Park, the Tourism Concession will be responsible for financial management, investments in Park infrastructure and marketing. A Joint Venture company (JV) "Putri Naga Komodo" has been established to run the concession. The charter of the JV directs that any profits and revenues earned will be invested back into conservation. The rationale behind the agreement was based on a proven track record of each partner in investing in KNP, as well as complementary between the conservation NGO and the tourism-oriented private sector company.

**25. Community based eco-tourism package in Gunung Halimun National Park (GHNP)**

**Application Year**: 1995 - 1998
**Project Description:** A consortium for ecotourism development consisting of five institutions initiated a community-based tourism enterprise in Mt. Halimun National Park in 1995. Those five institutions are the Biological Science Club (BScC – a local NGO), the Wildlife Preservation Trust International (WPTI – an international NGO), Gunung Halimun National Park Administration – local authority, the Center for Biodiversity and Conservation Studies (CBCS – a research institution)-University of Indonesia (UI), and McDonalds Restaurant/ Indonesia –a private company. The diverse backgrounds of the organizations collaborating in this consortium were meant to help ensure a successful community-based ecotourism industry.
Some of the reasons Halimun was chosen as a project site were:

- The existence of a large and developed tourism infrastructure surrounding the park
- No direct competition to GHNP as a source of nature tourism for residents of Jakarta. The area surrounding the only alternative nearby park, Gunung Gede Pangrango, is jammed with over 10,000 people every weekend

- Sustained economic growth: the local economy grew by 7% in 1994 and 1995
- An increasing Indonesian middle class, which has demonstrated an increasing awareness regarding environmental issues
- A sympathetic and innovative park administration
- Halimun's richness and location near various universities and research centers offers many opportunities for conducting field studies and educational tours. This, in turn, can be an attraction in and of itself.

Together, these factors offer a unique opportunity for ecotourism, which if conducted properly, to benefit the local community as well as be in a better position to control the direction of its process. Over the course of three years (1996-1998), the job of the consortium was translating these opportunities into a profitable community-owned ecotourism enterprise. Taking advantage of the existing tourism infrastructure, the consortium intended to:

- Promote community-owned ecotourism by developing human resources and tourism infrastructure such as guest houses, tour guiding, handicraft sales and agro tourism in three access corridors of GHNP;
- Develop managerial skills necessary to maintain these activities through various training programs;
- Generate information to promote the community-owned enterprises and park administration; and
- Increase the ability of local groups to monitor changes in their social and biological environments, and help them make appropriate adjustments when negative trends are noted.

In the community development process, members of community-based tourisms enterprises were divided into several groups: guest house operators, guides and conservation personnel, food services providers and handicraft producer. They are given an opportunity to participate in different training activities based on their areas of specialty. Throughout the planning process, a series of meetings and exercises were held in the communities close to the park's boundaries. Based on the results of these activities, the consortium, in collaboration with the local communities, formulated an action plan, which reflects the aspirations of the local residents as well as the interests of all the stakeholders. The GHNP consortium was also promoting ecotourism to generate incentives for biodiversity. Community enterprise and community fund intermediary get a share of revenue from ecotourism collected, e.g. through guest house, and is channelled back to local communities through community development and conservation funds.

**Location:** Mt. Halimun National Park

**Buyer:** domestic and international tourists

**Seller:** The community around Mt. Halimun National Park (Community based tourism)

**Intermediaries:** Consortium of Ecotourism Development in Gunung Halimun National Park.

**Supporters:** Government of Indonesia (Forestry Department – PKA ), Biodiversity Support Program (a consortium of the World Wide Fund for Nature (WWF), The Nature Conservancy (TNC), and World Resources Institute, with funding from the United States Agency for International Development (USAID).

**Mechanism**: It is widely accepted that ecotourism activities should benefit the local communities living in and around a national park. In cooperation with the

GHNP administration, several strategies have been developed. First, the Directorate General of Forest Protection and Nature Conservation (PHPA) included community activities in the park management plan giving the community higher status and legal recognition. In addition, the community enterprises in GHNP (under consortium supervision) were the only village organizations, which were allowed to run ecotourism ventures. The head of each group administered financial arrangements of the community groups. Funds were available to individual community members or used to fund community development projects. In the establishment of community enterprises, a special body was formed to manage, record and report routine expenditures and revenues. The organization's revenues (generated through the community fund by service fees collected) were to be put in a local bank. The profit distribution was then arranged after deliberation with the communities, and payments would be in the form of cash or materials or support for community-based-tourism product development and maintenance. Because the cooperatives are multipurpose in nature, group members can gain other benefits such as savings and loans, supply of fertilizers and seeds, which would also be provided through the community fund. At the end of the project in 1998, the Consortium of Ecotourism Development initiated the Halimun Ecotourism Foundation (Yayasan Ekowisata Halimun-YEH) as the facilitator, mediator and communicator for the community-based ecotourism. On the other hand, the management of Mount Halimun National Park formally commits to continuously support this effort while the communities obligate to support the conservation of the National Park. Unfortunately, the monetary and political crisis occurred right in the middle of the funding period. This meant that economically the project did not achieve as much as had been expected. Therefore it is not possible to discuss the achievement quantitatively. However, the local communities have achieved a considerable amount qualitatively. They have increased their confidence and ability to negotiate with external parties and government, such as National Park, with or without some assistance from YEH. All the three communities show an increased interest and concern for the natural resources. They are also able to manage their enterprises, mostly on their own. In this case, YEH still assists some activities such as promotion and marketing. Funding for monitoring training and subsequent monitoring programs is insufficient at the moment. Therefore monitoring data is incomplete. However, some monitoring efforts are being conducted by JICA and the National Park.

### 26. Community based ecotourism development and conservation in Togean Island

**Application Year**: 1997 - present
**Project Description:** Ecotourism in Togean is one of the long-term development activities of the Togean Consortium established in 1997 by the Conservation International Indonesia (CII) and Yayasan Bina Sains Hayati (YABSHI). The ecotourism development programme involves groups of local community, private sector, related government agencies and local NGOs. The program covers local community managed attraction, product marketing and promotion, capacity building of stakeholders and policy reform. The consortium has the role of facilitating community and policy makers, and building capacity of stakeholders

on management and sustainable ecotourism development, while government takes role in making policies. The main objectives and strategies are:

- Minimize degradation and biodiversity and habitat through income generating from non-destructive activities;
- Developing tourism attraction managed by local groups; mangrove forest boardwalk in Lembanato Village by Wakatan group, forest tracking path in Malenge Village by Marombo group, and handcrafting in Papan Island by Tikuan group;
- Optimize the generation of income from ecotourism business, that benefits communities and provide funds to restore environment;
- Establish the Togean Ecotourism Network (TEN) that consist of groups in some villages to develop business of each group and diversification of ecotourism products;
- Conduct capacity building programs for local operators and TEN members on the technical and management aspect of tourism business;
- Promote eco-tourism to open the market wider. Formal and informal discussions were done at the government and community level. Cooperation with some national and international tour operators was initiated;
- Enhance cooperation between locals, village and government.

**Location:** Togean Islands, Central Sulawesi
**Buyer:** International and domestic tourists
**Seller:** Community of Malenge, Lembanato, Katupat and Kabalutan Villages in Togean Islands
**Intermediaries:** Togean Consortium (Conservation International Indonesia, Yayasan Bina Sains Hayati, groups of local community, private sector, related government agencies and local NGOs)
**Supporters:** Keidanren Nature Conservation Fund, Healthy Community Initiative, Office of Tourism in District Poso and local people.
**Mechanism**:

- Economic benefits generated through the project for conservation organizations and authorities (including communities) managing natural area.
- Marombo and Wakatan group gain entrance fee from tourist for forest tracking and experiencing the mangrove ecosystem. Revenue is shared to members of groups periodically. Tikuan group takes benefit from selling wood-curving product, mainly bookmarks.
- Authorities got taxes and Regional Income, while private sectors benefits are from accommodation, transportation services and shared profit with local community that manage the ecotourism attractions and canoes rental.
- Community involvement and benefits
- Local community gets the benefits from guiding, entrance fee to attraction, transportation, food supply, providing home stays and cottages.
- Educational and interpretation features
- Based on local knowledge, interpretative and regulation sign were installed at points of interest along the ecotourism sites. In addition, local's perspective on nature resources management is included in visitor's guidebook.

- Environmental practices in the development and operation of ecotourism facilities, establishment and services
- Local people constructed a boardwalk in a mangrove area without cutting any single mangrove tree.

Trekking route in Malenge forest uses the existing pathway that is traditionally used by local people when they gather forest products. Tikuan handicrafts are made by recycling the unused woods that is floating in the water or in the forest.

**Progress/Current Activities/Result Achieved:**

Togeans declared as an ecotourism destination by Provincial Government in 1996

- Government committed and support the maintenance of the Boardwalk
- Increased number of Tourist to Togean Islands up to 4000 in 1997
- Increased length of stay in Togean from 5.6 days to 7 days
- Increased number of rooms in Togeans (community owned) by 141,9 % in 1997
- Increase revenue from tourism to the islands
- In 1998, TEN won the British Airways Tourism for Tomorrow Awards as the highly commended for

Asia Pacific Through an ecotourism and fisheries economic valuation study, the consortium of Togean organisations has succeeded in convincing the Provincial Government to stop forest concession extension in Togean Islands.

### 27. Sustainable, fairness and participatory ecosystem management of Tiga Gili ecotourism area

**Application Year**: 2000 -2002

**Project Description:** Tiga Gili is three cluster islands (Gili Trawangan, Gili Meno and Gili Air) located off the coast of north Lombok. This site is located in the popular tourism area of Nusa Tenggara Barat Province and rich in biodiversity including mangrove forest and coral reef ecosystems. The tourism activities in Tiga Gili began in 1980 when the tourists still stay in the villagers' houses because of no tourist accommodations available at that time. Nowadays, the tourism investments in Tiga Gili have been increasing in parallel with the increase of accommodation facilities and tourism activities. However, these have been balanced with integrated environmental managements both in community and government levels. Three main problems have been identified: (1) unorganised communities who have no negotiation power and capability, (2) tourism management only focused on economic development without involving environmental issues, fairness and sustainability, (3) policy of tourism management not based on ecosystem and community involvements.

• Through the funding of UNDP and Yayasan Bina Usaha Linkungan, the Aliansi Tiga Gili implemented a project that had the objectives of: (1). Empowering local organization; (2) Establish management of tourism that emphasizes ecological, sustainability and fairness; and (3) Establish policy on management of tourism that has an ecosystem basis and involves local communities through a partnership system.

**Location**: Gili Indah Village, Pemenang sub-district, West Lombok district, West Nusa Tenggara Province.

**Buyer**: International and domestic tourists

**Seller**: Communities at three cluster islands
**Intermediaries**: the Aliansi Tiga Gili
**Supporters**: UNDP and Yayasan Bina Usaha Lingkungan
**Mechanism**: A traditional law called 'awig-awig' was revised to include environmental management both land and sea, such as garbage management, beach cleaning and coastal zonation then was socialized to the communities and local governments. Three community groups were given loans to increase their incomes in tourisms and part of their incomes would be channelled to support the environmental rehabilitation regulated by the 'awig-awig'. The projects also included some supportive activities, such as organic farming training and workshop, beach clean-up campaign, audio-visual media environmental campaign, newsletter publication and regular monitoring and evaluation efforts.

**28. Building Shared Responsibility in Natural Resource Management: Development of Local Regulation on Environmental Services for Conservation Fund in the District of West Lombok - Lombok NTB**
By: Edy Djuharsa and Mulyadin

Review:
Bearers of ideas: 1. Plantation and Foestry Service (Dishutbun) West Lombok, 2. Tourism, Culture and Art Service (Dissenbudpar) West Lombok, 3.National Park Office ( BTN) Mt Rinjani, 4. BKSDA NTB, 5. WWF Indonesia Nusa Tenggara program, 6. The Legal Division of the Local Secretariat of West Lombok Regency, 7. DKP West Lombok.
Step: 1. Conducting research on natural resources (SDA) Economic Regions Rinjani and Gili Matra, 2. Develop Small Team of Multistakeholder (SK Regent West Lombok), 3. Study visits to areas that have made use of environmental service ( jasling), 4. Workshop in Regency level, 5. Jasling Promotion to the public, officials, parliament, tourism, actors and businessmen, 6. Inventory and identification in order to collect the data base of potential jasling (al. water, natural attractions, historical relics found in forest areas, coastal areas), 7. Equate the idea of development jasling with communities, authorities, and other stakeholders), 8. Discussion with esksekutif and legislators in West Lombok, 9. Consultation with the Ministry of Finance and Ministry of Home Affairs. Draft of Pra Local Regulation: 1. General Provisions, 2. Principles and Objectives, 3. Object and subject of environmental services, 4. Charges for environmental services, 5. Object management of environmental services, 6. Responsible for collecting and managing, 7. Guidance and control, 8. Criminal provisions, 8. Investigation, 9. Final provisions. Environmental service management objectives: To realize the management of natural resources in an environmentally sound in order to support conservation and development activities in the region, especially for communities around the object environmental service. Results Environmental Service Charges: 1. Balance: 5% for Central government, 25% for Local government, 70% environmental service management activities; 2. Local Government Revenue: 25% province, and 75% for district / regency.

## A. 10. Selected case studies of existing markets for microhydro energi

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**29. Title: Partnership between Government, Development Agency, NGO, Cooperative and Private sector assure energy access for community: case from micro-hydropower generation in Cinta Mekar village, Indonesia.**
(Source : Personal Communication With Dr. Verania Andria, UNDP Jakarta).

**Location:** Cinta Mekar Village, West Java
**Application Year:** Since 2004
**Discription:** Since April 2004, microhydro (120 kW) in Cinta Mekar village has been providing access to electricity for almost all low income households. The village is located in Subang district, West Java Province, Indonesia. Following the proposal from an NGO namely IBEKA, in 2003 the village received USD 75,000 funding from Dutch government through UN-ESCAP with support from Indonesian Ministry of Mineral and Energy, Ministry of Cooperative and SMEs and National Electricity Company. To support the project, the NGO and private company committed additional financing for USD 75,000 each; as well as guaranteed the cooperative to access loan from the bank to cover in advance construction cost. The fund form UN-ESCAP was channeled to the village through a cooperative that was set up as prerequisite of the fund, under supervision of the NGO. The generated electricity has been sold to National Electricity Company grid and the monthly profit is shared among cooperative, private company, and NGO for 20%, 20%, and 60% respectively. The NGO is responsible for the maintenance of hydropower.Furthermore, the profit of 20% received by the cooperative is allocated 65% for paying onetime cost for connecting electricity from the grid to the low income households; while the rest is split for cooperative operational cost, education, small credit for cooperative members, basic healthcare, village infrastructure development, and village operational expenses. The low income households are targeted as main beneficiaries. To date, almost 200 low income households have access to electricity.

## B. Practices Environmental Services in Other Countries

### 1. Amazon Fund

**Institution: Amazon Fund**
**Location: Brazil**
**Discription:** Amazon Fund was established to preserve millions of acres of the Amazon as quickly as possible. Amazon Fund has been established to provide incentives for the preservation through conservation sponsorships that any individual or organization can use to make a difference. Amazon Fund has established a strategic alliance with Amazonia Association which has a 15 year old established eco-preserve of 450,000 acres. The preserve is a cooperative where the local natives are co-owners and work to preserve the acreage in exchange for preservation of their local culture and education, economic and health benefits for their families. Amazon Fund enabled the expansion of the eco-preserve to 465,000 acres in July 2005. The purchase price of Amazon land is only a fraction of the cost. Once acquired, land must be protected against poachers and fire. Natives already on the land are the best people to do this. Amazonia Association has a proven model to make this happen.

**Benefit:**

- Carbon reduction : Carbon reduction of hundreds of thousands of tons annually to slow global warming
- Fresh water : Fresh water (over 20% of the fresh water on Earth flows through the Amazon) and breathable air (over 20% of the oxygen generated on earth)
- Native cultures : Unspoiled native cultures able to teach us more about living with Nature
- Endangered habitats : Home to many unique plants and animals, including the giant otter
- Medical cures **:** Possible new medical cures derived from one of the most dense biomasses on earth

**Legal Structure**

- Amazon Fund is incorporated in Virginia, USA.
- Amazonia Association is a Brazilian Non-Government Organization (NGO) non-profit.
- Amazon Fund Brazil will be a new Brazilian NGO established to sponsor for preservation additional Amazon lands beyond the initial 464,000 acres. These lands are also to be managed by Amazonia Association.

**Organization**

At this time the Amazon Fund is a one-person organization and shall remain so as long as possible to keep overhead down and to enable 100% of all conservation sponsorships to go directly to the Amazon. The Amazon Fund Founder will cover all overhead costs of the Amazon Fund.

**Preservation Guidelines**

**Whereas the Associação Amazônia holds as aims the preservation and conservation of the biodiversity and the social diversity in the tropical forests of Amazônia, being able :**

- **a.** to suggest, promote, coordinate or execute actions and projects with those aims;
- **b.** to promote the interest into and knowledge of the culture of the peoples of the forest;
- **c.** to favor the creation of a degree economic self-sufficiency and of financial independence for the inhabitants of the Amazon forest, through the balanced handling of renewable natural resources ;
- **d.** to increase the knowledge of the ecosystems and of the interaction with man, through projects of scientific investigation, that allow to define the type of appropriate intervention, and to implement methods and techniques of maintainable development,
- **e.** to promote actions of environmental education, publications, generation of images, networking and exchange among sister organizations, specialists of the field and students. (Art. 3 of the Associaçao Amazonia Statute)

**The Amazonia Association has implemented the following model for the management and care of the lands protected and preserved :**

- **a.** The Possession Rights are bought and transferred to the Amazonia Association
- **b.** The sellers of the Possession Rights are immediately made full members of the Amazonia Association
- **c.** When new members are accepted into the Association, measures are taken to maintain a balance between forest indigenous members and non indigenous members. Optimally the Indigenous Members of the Association hold the majority of votes in the General Assembly of the Amazonia Association.

**First action is to provide essential services of :**

- **a. Health :** construction of a health post and insure the presence of a certified nurse
- **b. Education :** construction of a school and insure the presence of certified elementary teacher
- **c. Transport :** provide a boat to help economic activities and to be used in emergencies
- **d. Work :** provide basic salaries and rancio for the families working as guards of the reserve

**Successively :**

- **a.** sustainable development activities are initiated like ecotourism, handicraft production, logistic support to media operators and to visiting scientific researchers

**b.** modern ecological agricultural activities are implemented to assure the right to good and sufficient nourishment and the right to alimentary sovereignty to the inhabitants of the reserve

**c.** projects of scientific research of the forests and its biodiversity are implemented and run

**At the same time the essential services of Health, Education, Transport and Communications are maintained and improved. In the reserve the following regulations are observed :**

**a.** No commercial fishing
**b.** No commercial logging
**c.** No hunting with the occasional exception of peccaries, pacas, cutias which invade and destroy the plantations.
**d.** It is permitted to use up to 1% of land area for plantations and intensive extraction
**e.** No garbage disposal with obligation to the inhabitants of the reserve to collect any items of garbage they find
**f.** It is permitted to use up to 19% for sustainable fruit harvesting and the sustainable extraction of other forestry resources. Guided visits to this area by visitors, researchers, photographers and documentary film makers are permitted.
**g.** 80% core area of the reserve where no activities take place, no human presence except for authorized entry in exceptional circumstances. The local people control this area
**h.** The reserve is run by the local inhabitants. A reserve manager and vice manager chosen by them in free elections make the day to day decisions. More important decisions regarding running of the reserve are made in open assemblies.

**Follow the Money**

Start-up throughout the life of AF

Amazon Fund Brazil Investment Account (AFBIA) getting 50%

Amazonia Association (AA) getting 50%

Amazon Fund getting 0%

Distributions are guaranteed and will be reported on each end-of-year statement for the Amazon Fund.

- Amazon Fund costs for marketing and general and administrative expenses are paid by the Founder.
- Amazonia Association uses its funds to maintain sponsored lands and to support the indigenoeus people who protect the land.
- Amazon Fund Brazil Investment Account uses its funds for the sponsored preservation of new lands to be protected and to be made available for sponsorship.

**2. Project: Socio Bosque Program in Ecuador**
**Location: Equador**
**Discription**: The objectives of Socio Bos que are 1) Protect forests and their ecological, economic, and cultural values, 2) reduce deforestation rates and their associated emission of GHGs, 3) improve the living conditions of poorest, 4) insentif tahunan secara langsung per hektar hutan yang disediakan oleh pemerintah kepada orang-orang yang menjaga hutan mereka, 5) voluntary, 6) conditional on compliance. **Principles:** 1). joint with individual and indigenous communities, 2) respect of indigenous right, 3) direct and equitable distribution economic benefit, 4) prior and informal consent. **Goals of SB**: Conservation of 4 millions ha of forest, 1 millions benefeciaries, significant reduction of GHGs emission**. Operation**: implemented by M of E, Gradual national implementation, reaching the goal 4 million ha over the coming 7 years, prioritazation of greg, detailed operation manual. **Prioritazation of Areas**: 1. areas with high deforestation pressure 2.areas with high importance for ecosystem services (carbon, water, biodiversity), 3. areas with high poverty. **Key elements of conservation agreement**: 1. Identification of forest area under agreements, 2. Obligation of benefeciaries, 3. Obligation of government, 4. Duration of contract, 5. Level of incentive, 6. Sanctions, 7. Monitoring, 8. Social investment plan in case of communal land (a. transparent use of resources on the basis of community consencus, b. proposed by communities themselves, c. to assure social and economic benefit that are equitable and transparent). **Monitoring:** 1. Remote sensing anf field visit to monitor compliance of benefeciaries (fine scale), 2. National level monitoring of forest cover change and accounting of GHG emissions cased by deforestation, 3. Compatibilty with international methodologies (baselines, carbon stock), 4. Application of international standards. **Current state implentation 2008**: 165.271 ha signed, 15.000 benefeciaries. Goals 2009: 1 juta ha, 74.000 benefeciaries.Socio Bosque: Key element in the New Ecuadorian **SB:** 1. control illegal logging, 2. land titling, 3. reforestation, 4. sustainable forest, 5 monitoring. **Financial Sustainability:** - creation of trust fund for SB (public funding, international cooperation, market).

**3. Pimampiro, Equador a Payment Programme for The Protection of TheirDrinking-Water Service**

**Review:**
In 2000, the Municipality of Pimampiro (12.951 inhabitants) launched a payment programme for the protection of their drinking-water service. The PES system grew from their forest management plan. The executing NGO, the Ecological Corporation for the Development of Renewable Resources (CEDERENA for its name in Spanish) identified several alternatives for the conservation and sustainable use of the forest, including ecotourism, medicinal plants, and PES. Young engineers acquainted with Costa Rica's PES system included this latter element, introducing significant modifications that constitute a clear innovation (CEDERENA, 2003, pp. 7). A facilitating factor for the implementation of PES in Pimampiro was the long period of drought during 1999 and the construction of a canal to increase the flow of water. The following remarkable improvement of

the drinking water service increased the willingness-to-pay by the users (A. Guerrero, pers. comm.). Such circumstance was explored by the municipality to establish the payment system, in order to maintain the regulation of the water's quality and quantity (CEDERENA, 2003, pp. 13-23).

The community that receives the PES is made up log the owners of Andean forests, páramos, short-cycle crops, and grasses of the Asociación Nueva America, located 32 km from Pimampiro between 2.900 and 3.950 masl. In the upper watershed of the Palaurco river stands the intake of drinking water that lose to 60 l/s and feeds the urban centre of the municipality. 27 families, with an area of 638 hectares, compose the upstream population. The landscape looks disturbed. Before the introduction of the payment system to the association, 10% of the forest area had been used in short-cycle crops and 18% of páramos in grasses for cattle. The families do not live in situ but in lower areas such as the towns of Pimampiro, Ambuquí, and Ibarra. Nowadays, 19 families (70%) with 496 persons (77%) participate in the PES system.

The contracts last five years and they are expected to be updated in 2005. Each family with a contract receives 0,5 US$ per hectare of forest or páramo in recovery and 1 US$ per hectare of primary forest or undisturbed páramo per month. This payment is financed with the interests generated by a fund with an initial capital of 15.000 US$ and 20% of the water consumption fee by the 1.350 families that possess a water meter in Pimampiro (Figure 1).

The payment difference is based in the supposition that primary forests and páramos mean a better water protection than areas under recovery. Unfortunately, each supposition has not been confirmed

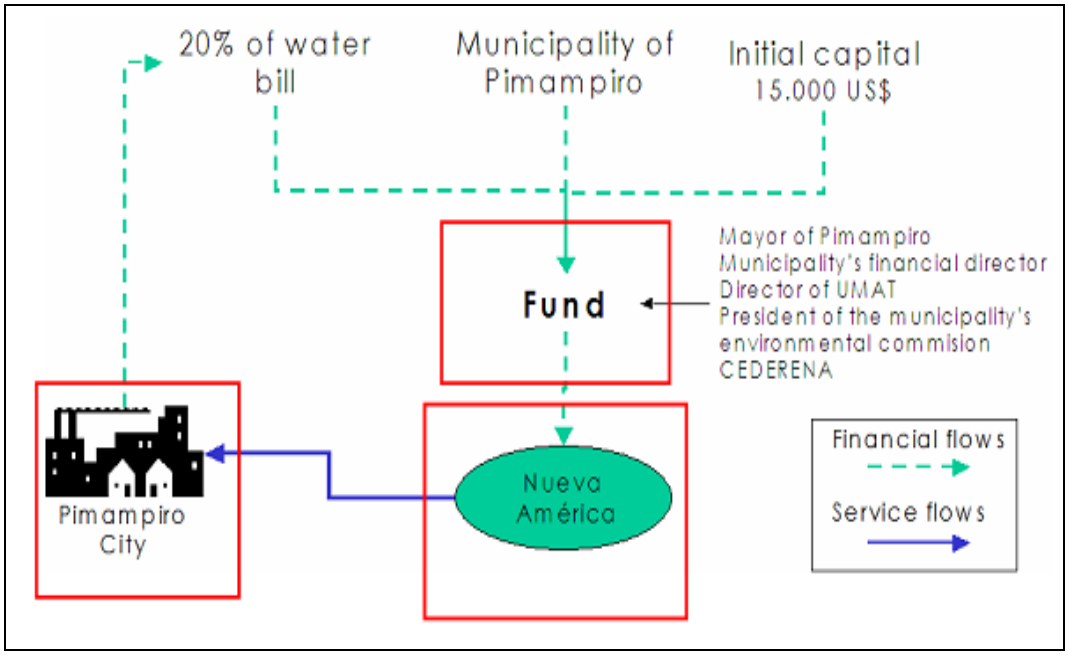


Figure 1. Pemampro operational schame

## 4. Tree Plantation and Subsequent Carbon Fixation PROFAFOR, Equador

**Review:**

PROFAFOR is an Ecuadorian company acting as the elongated arm of the FACE foundation, which is financed by Dutch electric companies interested in making up for their carbon emissions. Starting in 1993, PROFAFOR has signed contracts with private owners and local communities for tree plantation and subsequent carbon fixation; of these, 160 contracts are in the sierra and eight on the Coast region. At a national level, PROFAFOR was seen as a good support for the national reforestation plans (Albán and Argüello, 2004, pp. 19). PROFAFOR has reforested 22.306 hectares, corresponding to 31% of the total reforestation planned by FACE. Initially, it used single exotic rapid-growth species such as pine trees and eucalyptus; starting from 1999, it began to introduce some native species. FACE (2004) reports that Profafor has a fixation average of 100 t CO2/ha, at a rate of 3 to 10 t CO2/ha/year, estimated for the first 20 years of life of the plantations. The average is well under the capture potential (180 t CO2/ha,), mainly for problems related to pests and fires (L.F. Jara, pers. comm., Quito). The total amounts to 2'230.602 t CO2 for the first 10 years of the plantations. PROFAFOR measures the service every year through fixed sample parcels extrapolated to the rest of the contracts. The process is certified by the Swiss company SGS, but the captured carbon is not eligible to the Kyoto protocol framework as its year of launching is before the established in the Protocol.

The trees are planted after the signature of a contract between the landowner and PROFAFOR, with a duration of 25 or 99 years, based on the (re)establishment and maintenance of the vegetation cover. The landowner receives a single payment of 100-150 US $ per hectare, 75% of it on the third year, when the success of the plantation has been demonstrated, and 25% at the end of the cycle if the contractor is interested in reforesting after the harvesting. He/she is also entitled to the product of the sale of the harvest at the end of the productive cycle (and of the by-products of thinning, felling, etc., during the cycle), which represents an in-kind payment for the environmental service (Figure 2).

Payment Mechanism :

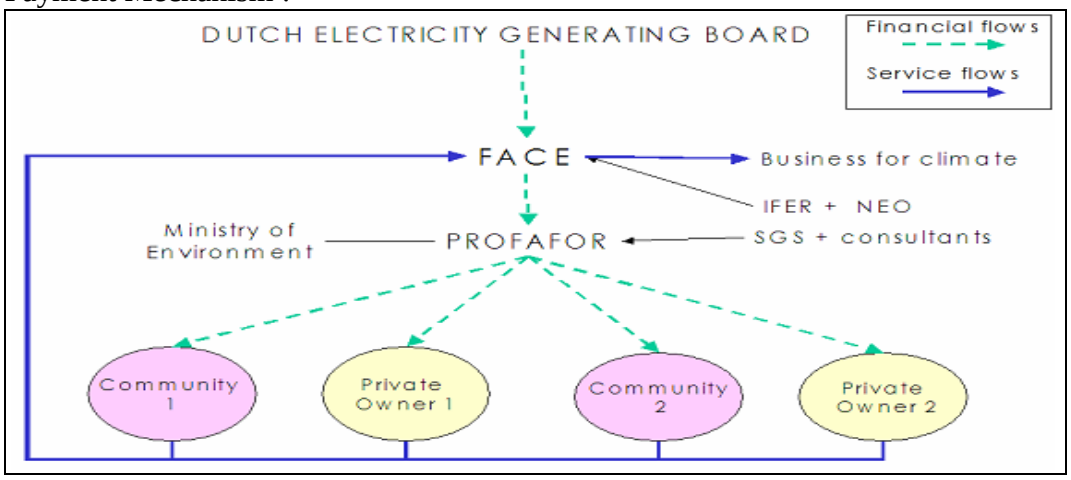


Figure 2 : PROFAFOR operational scheme

## 5. South Africa: Payments for Ecosystem Services Mechanism that Addresses both Poverty and Ecosystem Service Delivery in South Africa

**Source:** J.K. Turpiea, C. Marais, J.N. Blignaut, 2008. The working for water programme: Evolution of a payments for ecosystem services mechanism that addresses both poverty and ecosystem service delivery in South Africa, E C O L O G I C A L E C O N O M I C S 6 5 ( 2 0 0 8 ) 7 8 8 – 7 9 8.

**Review:**

A payments for ecosystem services (PES) system came about in South Africa with the establishment of the government-funded Working for Water (WfW) programme that clears mountain catchments and riparian zones of invasive alien plants to restore natural fire regimes, the productive potential of land, biodiversity, and hydrological functioning. The success of the programme is largely attributed to it beingmainly funded as a poverty-relief initiative, although water users also contribute through their water fees. Nevertheless, as the hydrological benefits have become apparent, water utilities and municipalities have begun to contract WfW to restore catchments that affect theirwater supplies. This emerging PES system differs from others in that the service providers are previously unemployed individuals that tender for contracts to restore public or private lands, rather than the landowners themselves.

The model has since expanded into other types of ecosystem restoration and these have the potential tomerge into a general programme of ecosystem service provision within a broader publicworks programme. There is a strong case for concentrating on the most valuable services provided by ecosystems, such as water supply, carbonsequestration, and fire protection, andusing these as ‘umbrella services’ to achieve a range of conservation goals. The future prospects for expansion of PES for hydrological services are further strengthened by the legal requirement that Catchment Management Agencies be established. These

authorities will have an incentive to purchase hydrological services through organisations such as WfW so as to be able to supply more water to their users.

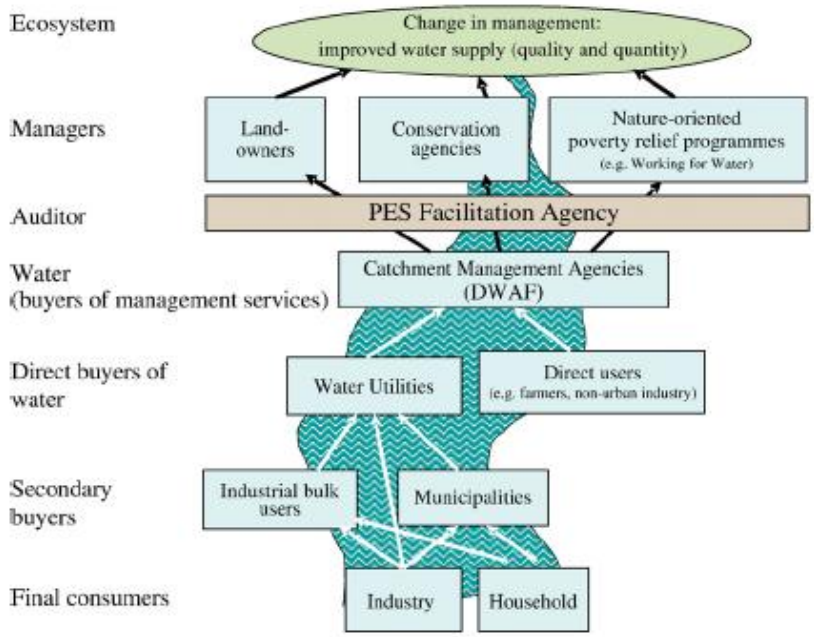


**Fig. 3 – A potential model for establishment of payments for hydrological services.**

Whereas links between ecosystem quality and service delivery have seldom been quantified in physical terms, South Africa presents a fairly unusual case in that the relationship between ecosystem quality and water yield are very well understood. Because of the increasing scarcity of water in South Africa, there has been a high level of support of research into the impacts of invasive alien plants on water supply. The quantification of these impacts spawned a government-funded effort at clearing invasive alien plants. Although well funded through the tax base and compulsory charges, voluntary private initiatives have also been undertaken to boost the funding to WfW. This is not only testament to the fact that the resultant restoration ofwater services makes financing WfW worthwhile, but also that there is a potentially large voluntary market for these services. The fact that delivery of these services is labour intensive and provides opportunities for poverty relief makes it even more attractive.

The restoration and protection of catchments to improve water yields also leads to the conservation of biodiversity, a benefit that is more difficult to commodify and sell. The same is potentially true for the restoration of woodlands and thicket for carbon sequestration. With this rationale in mind, major conservation initiatives in South Africa are looking to PES systems, mainly for water, as potential financing mechanisms. With the existence of WfW and its related programmes, and the legislative environment regarding the control of catchment water resources, it will be possible to implement these systems with little need for major innovations or institutional reform.

The key challenges that lie ahead include increasing the voluntary payments for hydrological services, identifying ways to monitor changes in service delivery, and linking payments to service delivery. It is also important to improve understanding of the relationships between management actions and service delivery for a broader range of situations than the clearing of alien invasive plants, such as the implications of wetland restoration for water yield.

## 6. Follow-Up Studies for The Design of a REDD-Complient Benefit Distribution System in Viet Nam. Collaboration UN-REDD Programme and Government of The Socialist Republic of Viet Nam.

Executive Summary

The study on Benefit Distribution Systems (BDS) published by UN-REDD and MARD in 2010 identified four critical issues for establishing a BDS in Vietnam: (1) participation by communities in REDD+ actions; (2) further development of the legal framework on community forestry; (3) use of a decentralized approach; and (4) application of R coefficients to differentiate benefits. This report follows up on these key issues identified in the 2010 report.

Various community forestry models have been piloted in Vietnam, with important lessons for any future REDD+ efforts. In particular, lessons applicable to the piloting REDD+ BDS include: the technical and administration guidelines for forest land allocation; options for linking payments to performance; the development of forest management plans that might serve as a foundation for timber harvesting, benefit sharing and benefit distribution; on the scale of upfront investment needed for the start-up of REDD+; and the potential for sustainable forest management through combination of forest protection and sustainable harvesting . Whilst these lessons could be useful for piloting REDD+ BDS, these guidelines still need to be adapted and improved so that they can be applied effectively on the ground.

Vietnam has the legal framework and administrative structures in place to enable community-based REDD+ actions. Yet, there is also the need for certain legal refinements and administrative capacity-building. Though community forestry can provide the foundations for REDD+ actions there are still a number of constraints which may prohibit communities from receiving an equitable share of REDD+ benefits. These constraints include: a top-down approach currently used for the allocation of forest land in Vietnam; lack of formal legal status for communities, preventing them from entering into economic transactions; and the absence of a legal framework enabling and regulating the interactions between civil societal organizations, the private sector and communities. For community-based REDD+ project to make a positive contribution to forests and local welfare, national forest policy in Vietnam needs to enshrine a more comprehensive set of rights for communities to protect and manage forests, to enable communities' engagement with civil society organizations and the private sector, and to recognize communities as legal entities.

Key principles must be set up to insure the institutional arrangements of participatory monitoring and the establishment of a recourse system to ensure cost

efficient management of REDD revenues. Independent monitoring of REDD+ and financial disbursements in accordance the international standards and norms is required and essential. Institutional arrangements of participatory M&E in the BDS were designed from the stakeholders' interests, tasks and functions and involvement of civil society, and also participation of an NGO. It is recommended that a new institutional framework is established to ensure proper participation of all stakeholders. It is necessary to have direct involvement of representatives from indigenous peoples groups at the grassroots level. Vietnamese civil society groups should be involved from the district level to the national level. NGOs should be involved at all levels from grassroots to national levels to safeguard efficient and equitable application of the BDS. To ensure effective use of the funds distributed a standard amount for administrative cost must be established. Quarterly reporting of funds from district, provincial and national level must be mandated and the information verified by independent auditors. The independent auditors would ideally be a panel including a member from GoV, NGOs and other stakeholders.

Based on the experiences drawn from the implementation of the government project on Payment for Forest Environmental Services (PFES) in Lam Dong and Son La, this report highlights that REDD+ revenues, if distributed based exclusively on performance, would trigger inequalities among different localities and increase the potential for local conflicts. It's suggested that the central and provincial governments should separate environmental objectives from social concerns and could use funds from other socially motivated efforts, such as poverty alleviation programmes, to redress inequalities in the distribution of REDD+ benefits. Doing this would require central government to decentralize REDD+ implementation authority to provincial governments, and simultaneously, to build the capacity of local administrations. Furthermore, the adoption of a step-wise approach should be used when implementing REDD+ BDS as provinces differ in terms of government capacity, political will, and tenure systems.

Under REDD+, local forest managers will be required to demonstrate actual performance prior to any disbursement of benefits, yet they will also require upfront resources and incentives to engage in REDD+ actions. Drawing on experience from micro-finance approaches adopted in Vietnam's forestry sector, the report argues that front-loaded financing can be made available through saving books, with withdrawals conditional upon compliance with contractual obligations and eventual performance. Disbursements should be made periodically, in order to avoid financial leakages. Because of the risks associated with upfront financial provision, it is important to establish risk-sharing and insurance arrangements, in order to spread the risks between forest managers and other stakeholders.

This report emphasizes that Vietnam is in an excellent position to make strong progress on preparing for REDD+ actions. The required conditions are in place for the government and UN-REDD to develop a REDD+ BDS pilot project in Lam Dong, and for the government and international donors to add REDD+ BDS components to their existing community forestry pilot projects in priority locations across the country. This report has identified three priority legal and policy issues on REDD+ BDS in Vietnam: (i) forest management and protection is sustained if economic incentives given to community are secured and sufficient;

(ii) legal status of village community; (iii) and linking payment to performance through R coefficient. UN-REDD Vietnam Programme should assist the government in simplifying existing procedures related to timber harvesting, and in strengthening legal status of village community. Collaboration with other agencies such as those mentioned above is important for the success of REDD+ project. The report has identified four priority issues in piloting REDD+ BDS in Vietnam. The first is community forestry management. The government should develop simply procedures to allow community to benefit not only from forest protection but also from the sale of timber harvest. UN-REDD Programme should support the government in simplifying procedures. The second is forest land allocation. The government should develop responsive procedures for the allocation of the remaining forestland particularly to local community to guarantee better benefits from the forest will be accrued to them. UN-REDD should assist the government to implement responsive allocation in REDD+ priority areas. The third is capacity of the local government. Local government's capacity should be strengthened with supports from central government and international community including UN-REDD Programme to allow them to adopt a stepwise approach in implementing REDD+ BDS. The final is risk sharing. The risk sharing and insurance arrangements should be developed by the government, with support from UNREDD Programme and other projects so that risks associated with implementation of REDD+ could be shared between local community and other stakeholders.

It is inevitable that even the most effectively designed BDS is going to be receiving complaints. Therefore a proper and effective recourse system must be in place to deal with problems and complaints in a timely manner. There are key principles of participatory recourse mechanism to be included such as legitimate, accessible, predictable, equitable, rights-compatible, transparency. The participatory recourse mechanism includes participation of mass organizations, civil societies, local indigenous peoples and an independent Vietnamese/international NGO. The GoV should develop recourse mechanism to include the participation of indigenous people, mass organizations at grassroots level, and Vietnamese civil society organizations from district to national level, the possibly there is a participation of international NGOs at national level given the completion of essential principles such as transparency, efficiency, effectiveness, equity and participation; and importance of managing complaints to ensure the BDS reward those who deserve to be rewarded on the basic of emission reductions and to generate information that can be used to improve the BDS, a credible recourse mechanism is required. The establishment of a policy/decree is recommended to ensure the participation of administrative bureaucracy and cooperation of an NGO. As much of the success of the UN-REDD Programme will depend on the active participation and involvement of indigenous peoples, it is essential to determine the cultural mechanisms already in place within each cultural group for dispute resolution.

The concise information for payment mechanism can be seen in Appendix 1.

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