

REVIEW OF THE DEVELOPMENT ENVIRONMENTAL SERVICES MARKET IN INDONESIA

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TABLE OF CONTENTS

ABSTRACT	v
BACKGROUND.....	1
OBJECTIVE AND METHOD OF THE STUDY	1
OVERVIEW OF DEVELOPING MARKETS FOR ENVIRONMENTAL SERVICES IN INDONESIA.....	3
Biodiversity.....	4
Carbon sequestration	4
Watershed protection	8
Landscape/seascape beauty	8
BRIEF ANALYSIS	12
CONCLUDING REMARK.....	13
REFERENCES.....	13
APPENDICES.....	15
Appendix 1. Selected case studies of existing markets for biodiversity.....	15
<i>Community based - medicine plantation conservation at Meru Betiri National Park.....</i>	<i>15</i>
Appendix 2. Selected case studies of potential markets for biodiversity conservation.....	16
<i>Rewarding rubber tapers for the environmental services provided by agroforests in the Bungo district in Batang Hari catchment, Jambi</i>	<i>16</i>
<i>Rewarding mechanism to the upland poor community of Barugae: providing and protecting watershed services.....</i>	<i>17</i>
Appendix 3. Selected case studies of research on carbon sequestration	19
<i>Demonstration study on carbon fixing forest management in Indonesia</i>	<i>19</i>
<i>Promotion of Clean Development Management (CDM) in the framework of sustainable forest management with community involvement.....</i>	<i>19</i>
<i>The role of carbon sequestration credits in influencing the economic performance of farm forestry systems</i>	<i>19</i>
<i>Land-use change and terrestrial carbon stocks: capacity building, impacts assessment, and policy support in South and Southeast Asia</i>	<i>21</i>
Appendix 4. Selected case studies of existing market for carbon sequestration	23
<i>Climate change, forest and peatland in Indonesia (CCFPI)</i>	<i>23</i>
Appendix 5. Selected case studies of potential markets for carbon sequestration	25
<i>Development of reward mechanisms for environmental services provided by upland poor at Singkarak watershed (RUPES).....</i>	<i>25</i>
<i>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.....</i>	<i>26</i>
Appendix 6. Selected case studies of research on watershed protection.....	27
<i>The value of water resources in Lore Lindu National Park, Central Sulawesi, Indonesia.....</i>	<i>27</i>
<i>Pricing ecological services: willingness to pay for drought mitigation from watershed protection in Eastern Indonesia.....</i>	<i>27</i>
<i>Economic benefits of improved water quality in the Ciliwung River, Jakarta.....</i>	<i>28</i>
Appendix 7. Selected case studies of existing markets for watershed protection	29
<i>Annual fee of PT INALUM for Toba Lake conservation</i>	<i>29</i>
<i>Multi level dialog of Negotiating Support System (NSS) for integrated natural resource management.....</i>	<i>29</i>
Appendix 8. Selected case studies of potential markets for watershed protection	31
<i>Action-learning to develop and test upstream-downstream transactions for watershed protection services: a diagnostic report from Segara River Basin, Indonesia.....</i>	<i>31</i>

<i>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</i>	33
<i>Preserving natural spring water through cultivating local varieties plants</i>	34
<i>Exploring and developing reward mechanisms for upland farmers for watershed functions in Sumberjaya</i>	35
Appendix 9. Selected case studies of existing markets for landscape/seascape beauty	36
<i>Komodo National Park collaborative management initiative</i>	36
<i>Community based eco-tourism package in Gunung Halimun National Park (GHNP)</i>	37
<i>Community based ecotourism development and conservation in Togean Island</i>	39
<i>Sustainable, fairness and participatory ecosystem management of Tiga Gili ecotourism area</i>	41
LIST OF LITERATURE FOR FOUR TYPES OF ENVIRONMENTAL SERVICES	42
Biodiversity	42
Watershed	44
Carbon.....	45
Landscape beauty.....	46

LIST OF FIGURES

Figure 1. Environmental Service Recognition and Reward (Source: <i>van Noordwijk et al, 2003</i>).	2
Figure 2. The collaboration of multi-stakeholder in developing watershed protection markets in Segara River Basin, Lombok: a suggestion (Munawir et al 2003).	32
Figure 3. Existing payment for environmental service scheme in Cidanau, Banten	34

LIST OF TABLES

Table 1. Development for environmental services market.....	4
Table 2. Type of effort, seller and reward for existing ES market in Indonesia	12
Table 3. Existing water service payments in Segara Basin, Lombok.....	32

ABSTRACT

The objective of this study was to assess the development of the market for environmental services in Indonesia through a review of literature on related projects and researches. The assessment follows the typology of environmental services developed by van Noordwijk et al (2003). The focus of the assessment was on the identity of the buyers and sellers of environmental services, the payment/rewards, mechanisms, intermediaries, transaction costs, and other actors. Also included was identifying the stage of development of the environmental service markets.

By documenting the development of the market in environmental services, it is expected that concerned stakeholders will better understand the stages of development of the markets of environmental services in Indonesia, and to identify possible gaps in knowledge in recognizing the potential markets for environmental services and developing appropriate transfer mechanisms.

The review reveals that the development of environmental services in Indonesia is still at an early stage. However, there are many initiatives, emerging projects and research related to the development of markets for environmental services. Meanwhile, each environmental service market (watershed protection, carbon sequestration, biodiversity conservation and landscape beauty) shows different levels of market development. We found that in terms of all four markets in Indonesia the one for landscape beauty is relatively more progressive

BACKGROUND

An environmental service market is defined as a creation of an incentive system that provides the link between providers and beneficiaries of environmental services (Landell-Mills and Porras 2002). In Asia, the environmental service market is still nascent, although it is recognized that rural communities (often poor) that provide environmental services to outside beneficiaries, are not equitably sharing in the benefits such services provide. The services provided include clean and abundant water supplies, biodiversity protection, and stocks of carbon that may contribute to the alleviation of global warming. Rewarding the poor providers could add to their livelihood options; reduce poverty, while contributing to the maintenance of environmental services.

There is a new paradigm in environmental policy to recognize and to reward for the provision of environmental services. A popular example is the 1996 forest policy reform in Costa Rica. This policy introduced the concept of payment for environmental services, based on the principle that the providers of the environmental service will receive payment to compensate them for the benefits that accrue to the Costa Rican society (de Camino, Segura and Kelly 2002). The intent of this policy is to increase income from forest activities to make them competitive with alternative land uses. The National Forestry Financing Fund has been established as the main agency to administrate the fund. The sources of financing for the Fund come from national sources (including a fuel tax) and from international agencies. This policy has been successfully implemented.

China also has made progress in establishing the rules and framework for setting up mechanisms for environmental services payment. Forest Law 1998 introduced the Forest Ecological Benefit Compensation fund as a responsible institution that channels the money from beneficiaries to providers. The implementation on the ground, however, is still limited (Wenming *et al* 2002).

At a smaller scale, the small village of Sukhomajri in northern India has provided a model for development of watershed services payments. Here the village's inhabitants share the costs and benefits of environmental restoration to ensure that everyone gains from the process (Kerr 2002). The initiative was to share water rights among all residents, including the landless. This can be seen as a type of environmental service payment as an agreement to share the benefits that would accrue

from providing the service. The outcome of this mechanism was a major transformation in the village, with success in regenerating vegetation on the hillsides, increasing agricultural production and raising incomes throughout the villages.

In the Southeast Asian region initial work on developing environmental service market has begun. One example is the work carried out by the World Agroforestry Centre (ICRAF) in building a consortium among international and national research centres, government and non-government organizations and other interested parties to conduct action research for rewarding the upland poor in Asia for environmental services they provide (RUPES). This project is funded by a grant from the International Fund for Agricultural Development (IFAD). The overall goal of the project is *enhanced livelihood and resource security for poor upland communities in Asia*. Improved livelihoods in this context refer to: improved food security, income and welfare of poor households and communities in upland areas; improved nutritional status; greater access to and control over the use of resources. Appropriate methods for transfer payments to upland communities will be tested and monitored through action research.

OBJECTIVE AND METHOD OF THE STUDY

The objective of this study was to review the development of the environmental service market in Indonesia. The assessment followed a typology of environmental services developed by van Noordwijk *et al* (2003) (Figure 1). The focus of the assessment was on the development of environmental service markets where there was a clear indication of the buyers, sellers and other actors in the environmental service markets, the existence of payment/rewards, mechanisms, intermediaries and transaction costs,. Also examined was the stage of development of the market for environmental services e.g. existing, proposed and those with potential.

By documenting the development of the environmental service market in Indonesia, this study aimed to assist concerned stakeholders to understand the stages of development of the markets to identify possible gaps in knowledge in recognizing the potential markets for environmental services and developing transfers mechanisms.

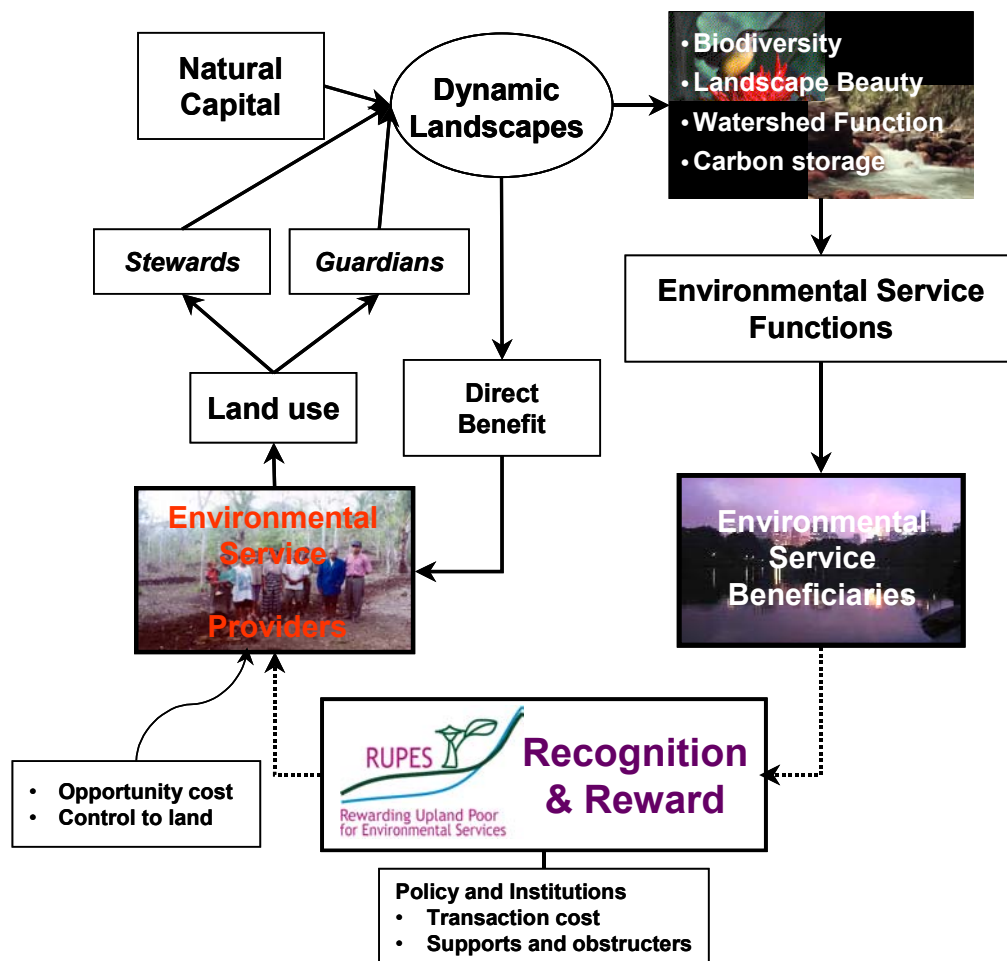


Figure 1. Environmental Service Recognition and Reward (Source: van Noordwijk et al, 2003).

The discussion on environmental service market is developing its own language. For ease of reference the following terms are used as part of the terminology adopted by the RUPES project in van Noordwijk et al (2003):

Sellers of environmental services (ES providers): any actor or collection of actors who modify the landscape and through this modification; provide environmental services to potential buyers of these services.

Buyers of environmental services (ES beneficiaries): Any stakeholder who recognizes environmental services are being provided, and who can be morally, legally or rationally motivated to pay for these services.

Environmental (ES) reward/payment: Compensation for service, merit or effort, and/or incentive for maintaining or enhancing environmental service functions, received by the sellers or paid by the buyers of the environmental

service(s). Compensation may be made in terms of direct payments, financial incentives, or in kind. Rewards and payments in kind may include the provision of infrastructure, market preference, planting materials, health and educational services, skills training, technical assistance or other material benefits. In addition to indirect and direct monetary payments rewards can take the form of land tenure security.

Transfer Mechanism: Any mechanism or institution by which rewards/payments are made available to intended beneficiaries. Development of a reward/payment mechanism involves identifying who receives the reward or payment, for what reason, when it is made, in what form, who delivers it and the source of the reward. Some examples of mechanisms can include direct payments to communities who use funds for local development, payments to individuals, land tenure conditional upon maintenance of services, forms of ecolabelling for premium prices.

Intermediaries: Institutions or persons who can link the buyers, or potential buyers, to the actors in the landscape and broker agreements for the continuation (or increase) in the supply of environmental services.

Transaction (intermediation) costs: The costs involved in establishing and maintaining a transaction between buyers and sellers. These costs will generally include the costs for negotiating agreements, monitoring of the landscape consequences, enforcing contracts and the necessary institutional mechanisms.

Supporters: Institutions or individuals – for example government agencies, NGO's, or donors – who provide an enabling environment and/or legal basis for reward mechanisms and support the function of intermediaries. The RUPES project is itself a 'supporter', facilitating the emergence of honest brokers and intermediaries.

Obstructors: Institutions or individuals – for example government agencies, NGO's, or donors – who discourage the development of enabling environment and/or legal basis for reward mechanisms and hinder the functions of intermediaries.

Bundling of environmental services: Any land use pattern can be said to produce different types of environmental services that may be relevant to different groups of external stakeholders. Bundling involves mechanisms that provide rewards to sellers that are based on payments made by a single buyer interested in multiple services, or by different groups of buyers for separate services.

We also define the type of environmental service **rewards**¹ as follows:

Land lease/land concession defined as allocation of land use rights in a defined area to the lessor who commits to maintain and/or to produce certain environmental service(s).

Best management practice contract defined as contract between landowners and those who wish to produce or maintain certain environmental service function(s), whereby the landowner is paid to manage their land in ways that achieve the desired contract objective.

Eco-certification/eco-labelling defined as environmental service friendly products that attract

a price premium, because the price difference reflects consumers' willingness to pay for environmental service function(s).

Carbon credit defined as contract between landowners and those who wish to reduce emission or increase the rate of carbon sequestration through a set of regulations either through the Kyoto Protocol or outside the Protocol.

Entrance permit defined as fee for capturing beneficiaries' willingness to pay for scenic beauty.

Ecotourism service - a broader benefit that includes value-added features in recreation activities.

Ecotourism concession - a concession to deliver ecotourism services, mostly the concessionary is private company.

OVERVIEW OF DEVELOPING MARKETS FOR ENVIRONMENTAL SERVICES IN INDONESIA

Major sources of literature for this study come from published and unpublished documents, internet searches and limited interviews, undertaken between July and November 2003. Thus the authors realize a limitation to the scope of this study.

In total, 81 case studies have been reviewed from across Indonesia. Table 1 shows a summary list of studies related to the environmental services market. Although some of these studies relate to a bundle of services, the study classified these cases into a single service (major important service) of biodiversity conservation, watershed protection, carbon sequestration or landscape/seascape beauty. Of these 41% were in the market of biodiversity conservation, with the rest focusing on watershed protection (20%), carbon sequestration (19%) and landscape/seascape beauty (21%).

The first lesson from our review is that the development of environmental services in Indonesia is still in its early stage. Very few cases show that a truly functioning ES market has been implemented. Similarly, studies that proposed an ES market are also rare. However, there are many initiative/emerging projects and research that is in some stage in the development of ES markets.

¹ The term 'reward' in this report refers to 'commodity used in emerging market of environmental service' in Landell-Mills and Porras (2002). 'Commodity' is defined as tangible product bought and sold in an environmental service market transaction.

Table 1. Development for environmental services market

Environmental Service	Total number of case studies (%)	Functioning ES market		Potential ES market
		Existing	Proposed	
Biodiversity Conservation	33 (41)	1	2	30
Watershed protection	16 (20)	3	3	11
Carbon sequestration	15 (19)	1	2	12
Landscape/Seascape beauty	17 (21)	4	0	12
TOTAL	81	9	7	65

Biodiversity

There is one clear case study on a market for biodiversity conservation in the number reviewed. The project called “Community Based-Medicine Plantation Conservation at Meru Betiri National Park” reported by Kaswito (1999) is coordinated by an Indonesia NGO (Latin) and the Bogor Agriculture University (IPB). In this case study the local community has obtained a land lease to manage the buffer zone around the national park. As part of this agreement they are required to plant local medicinal trees (Box 1).

Two studies for developing a market for biodiversity conservation have been proposed and the Bungo case is now being implemented as pilot project. The first, “Rewarding Rubber Tapers for the Environmental Services Provided by Agroforests in the Bungo District in Batang Hari Catchment, Jambi” is coordinated by a partnership of researchers and NGOs. This project is exploring kinds of rewards that are either ‘area based’ or ‘market based’ and could be relevant for a considerable part of the rural poor in Indonesia. Exploration of market-based environmental service instruments can have considerable spin-off where the focus is on a test case of reducing transaction costs for individual applicants (Joshi 2003).

The second proposed market mechanism currently being tested is “Local Asset of Barugae with the Potential to Provide Global Communities with Sustainable Environmental Services” (Alam et al, 2003). Based on the need of maintaining the biodiversity functions and increasing land productivity, a specific community forest management (known as *HKM pola Sul-Sel* meaning community based forestry management for South Sulawesi) is being designed that gives attention to

the development of multipurpose trees based on candlenut agroforestry.

One strategy to promote and open markets in biodiversity conservation at the global level, is a recent trend to advance charismatic or flagship species. A study from Swanson and Kontoleon (2000) showed that there was internally consistent willingness to pay for the purchase of property rights for the habitat required for the conservation of flagship species. The strategy also has shifted to principles that recognize the concerns and needs of people, who compete with the conservation activities for resources. World Wildlife Fund with its flagship species programs pays attention to improving people’s livelihoods as part of its strategy to conserve global biodiversity (Box 2).

Carbon sequestration

In Indonesia, the market for carbon sequestration is stimulated by international efforts to control green house gas emissions (GHG) started by the adoption and signing of the Kyoto Protocol in 1998. The Kyoto Protocol is a legal instrument designed for implementing the Climate Change Convention to stabilize the GHG concentration in order not to disturb the earth’s climate system (Murdiyarso 2003). As a developing country, Indonesia can technically participate through one of three mechanisms of Kyoto Protocol, namely the Clean Development Mechanisms (CDM). The Indonesian government has shown their enthusiasm in signing the Kyoto Protocol. In collaboration with some international and national institutions, they have explored possible national strategies for GHG reduction in all sectors including forming a Designated National Authority (DNA) as the primary requirement within the National Strategy (Box 3).

Box I. 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 its tangible value (40% of 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) indicated that there are 331 species of medicinal plants in this area.

Local community groups intensively harvest these medicinal plants from the forest and sell to increase their daily income. Combined with other activities such as illegal logging and land encroachment, this activity can add 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 include 600-ha critical land involving 2400 households. This 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 scaled-up until all the critical land in the buffer zone area (about 4730 ha) is rehabilitated.

Location: Buffer zone of Meru Betiri National Park.

Buyer: Management of National Park, Perum Perhutani (State owned enterprise on timber plantation)

Seller: Farmer Groups

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), Local Government

Mechanism:

Land use rights in buffer zone of national park are rewarded to the farmer groups. 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 eighth-year, they do enrichment planting with high-value medicinal plants that existed in the national park area. Starting from the eighth-year the community will grow shade resistance medicinal plants and be able to harvest fruits, bamboo, rattan and also the medicinal plants. The community gets continuous incentives from each growing stage as additional incomes.

The medicinal plant agroforestry impacts on other activities such as home industry processing of 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.

Box 2. Harmonizing People and Wildlife

WWF's Asian Rhino and Elephant Action Strategy (AREAS) is based on the recognition that conserving endangered mammals will only be possible through an approach that goes beyond protected areas to include their surrounding landscapes and the land-use practices. One of this landscape approaches includes managing buffer zone so that local communities benefit from conservation.

In Indonesia, WWF has identified three priority sites to concentrate conservation efforts for Sumatran Rhino including areas surrounding Gunung Leuser, Kerinci-Seblat and Barisan Selatan in Sumatra and one site for Javan Rhino that is Ujung Kulon National Park in Java. Community-based initiatives, environmental education and environmentally sound ecotourisms with benefits to local inhabitants are of major importance in the Kerinci Seblat National Park. In addition to that, WWF activities have been expanded to address encroachment through designation areas for conservation, agriculture and resource extraction, and the introduction of alternative sources of income for people living in the Ujung Kulon National Park.

Box 3. National Strategy Studies

The Kyoto mechanisms, in particular the CDM, could become an interesting instrument for developing countries which may possess large potential for reducing green house gasses (GHG) emissions. The instrument, that creates emission reductions through investment projects, might not only lead to a modernization of the existing capital stock for energy production and consumption but may also generate a financial surplus for the hosting country in the form of additional financial flows. Indonesia is interested in how it could benefit from the CDM.

Within the framework of promoting market based instruments for GHG reductions, the World Bank in close co-operation with partner organizations like the GTZ assists developing countries to explore the opportunities and benefits they may have when participating in the CDM. The assistance provided to Indonesia by the GTZ within the National Strategy Studies involves the initiation and commissioning of a study that explore possible national strategies for GHG reduction in all sectors.

The study has pursued this objective from an Indonesian perspective and through a well balanced and integrated dual set of tasks: First, the study has analyzed general elements that will impact a future market for GHG emission reductions; second, the study has, within the general context of its objectives, address a small number of carefully selected particular issues that are of special interest to the partner country. In particular, the study has addressed issues like Indonesia's negotiating position on the CDM, the CDM in Indonesia, international demand and markets for certified emissions reductions, benefits for Indonesia as CDM host country, institutions and policies required in Indonesia to stimulate, support and regulates CDM projects, and a realistic and representative portfolio of possible and replicable CDM projects.

Source: <http://www.gtz.de/climate/deutsch/projekte/laender/indonesia2.html>

The DNA will design the activities that relate to project development and capacity building and to increase public awareness of carbon sequestration. A study of the on-going market for carbon sequestration is being implemented through the project "Climate Change, Forest and Peatland in Indonesia". Here the project participants in the community will be given a 'loan' equal with the number of trees that they have planted under a 5-year contract signed with the Wetland International-Indonesia Program (Box 4).

A proposed market mechanism to develop carbon credits is being carried out in a pilot project for the National Strategy "Development of Reward Mechanisms for Environmental

Services Provided by Upland Poor at Singkarak Watershed" (Boer et al, 2003).

In addition, research and studies have been conducted to support Indonesia's readiness to participate in the carbon market (Appendix 3). The Indonesian Ministry of Forestry, in collaboration with Japan International Cooperation Agency (JICA), has established new techniques and methodologies related to carbon fixing plantation forestry. Other studies include how to provide practical and feasible information for the design of carbon projects in establishing markets for GHG especially for participating in CDM projects.

Box 4. 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 to sequester and store carbon. The other intention is to improve local community welfare.

The project is an action research project 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 revisions to the Indonesian National Strategy on Wetlands to ensure the inclusion of peatland in climate change issues. Activities related to this project include:

- 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: Communities

Buyer: Canada International Development Agency through the Canada Climate Change Fund

Intermediaries: Local NGO, Wetland International-Indonesia Program

Mechanism:

Community-based peatland management in specific sites in Sumatra and Kalimantan:

A five-year loan contract is the reward mechanism being tested. The amount of the loan is equivalent to the quantity of planted trees on agreed areas in the buffer zone of the National Parks and is based on the average seedling price and the cost of maintaining the trees for three years. The value of each tree varies depending on its type (from Rp. 5000 to Rp 10000).

The loan provides additional income for financial capital or for improving the quality of livelihoods. It cannot be used to buy seedling that will be planted in the conservation areas. These seedlings must be produced 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 indicators for quantifying the quality of the trees and its money conversion. The principle is the better the quality, the less the return. If the participants reach a certain agreed percentage of planting success, for example 80%, the return will be zero and they do not have to pay back 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. Facilitators who act as partners with the community give technical assistance in implementing the project and measure the amount of returns.

Restoration of drained peat land in Kalimantan site (canal blocking):

Located at Sungai Puning, Central Kalimantan, the aim of the activity is to block the canals that previously functioned as the traffic lanes for illegally harvested logs. These canals are judged to cause instability, decrease the water table especially during the dry season and make the area more susceptible to fire.

Community members can earn some additional income as daily labourers. Similar to the sites in Sumatra, after the program finishes, participants can have the loan rescinded based on the quantity of trees that will be planted and maintained around 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 yet become involved in the pilot projects. They can propose loans with similar requirements and values to the ones of the pilot projects.

Watershed protection

For watershed markets, there are two cases of where market mechanisms are being used. The first case is payment of an annual water fee by PT Inalum (PT Indonesia Asahan Alumunium) to the North Sumatra district government to support efforts to protect the watershed functions of Lake Toba (Hutabarat, 2002; Kompas Cyber Media, 2002). The second is a project being coordinated by ICRAF in collaboration with a local NGO (Watala) and the local government of Lampung in Sumberjaya Province, Sumatra to support leasing of land state-land to the local community for protecting watershed functions (Box 5).

A third market being studied is in the project "Poverty Alleviation for Upland Poor Communities through Developing Mechanism for rewarding them for the Watershed Protection Services for Sustainable use of Water in Banten Province". The strong and legal intermediary is now in the process of establishing an alternative financial institution that through pilot site, is on-going collect all the 'rewards' from the existing buyer and channel them to the providers of the environmental services (Box 6).

A fourth market is being investigated through the project "Development Markets for Watershed Protection Services in Segara River Basin, Lombok" (Munawir et al, 2003). This is a negotiation between the state-owned water supply enterprise and a rafting company to pay the communities around the Bantek village for a sustained water supply.

A proposed market is being developed through the project "Exploring and Developing Reward Mechanisms for Upland Farmers for Watershed Functions in Sumberjaya". Among the types of watershed commodities, water flow, water quality and sediment control have the most potential to be traded at the Sumberjaya site and payment by water users for watershed protection is being investigated and tested.

Landscape/seascape beauty

Five cases were identified where there are currently working models of payments for landscape beauty. The rewards are derived from entrance permits, ecotourism service and ecotourism concession. One such model examined was the "Komodo National Park Collaborative Management Initiative". The overall strategy seeks to make Komodo National Park a self-sustaining entity with its management costs being covered by

tourism revenue. The project includes substantive positive incentives and will enforce negative incentives to encourage local communities to switch from the current destructive fishing practices to sustainable livelihoods based on the rational use of park resources (Box 7).

Other cases include:

- A consortium of ecotourism development implementation of a project called "Community Based Ecotourism Package in Gunung Halimun National Park". A share of revenue from ecotourism was collected and is channelled back to local communities through community development and conservation funds.
- "Community Based Ecotourism Development and Conservation in Togean Island". The concerned consortium established long-term development of ecotourism in Togean. The program includes local community-managed attractions, 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.
- "Sustainable Community Based Ecotourism in Tiga Gili". 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 objectives of this project are: (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.

The government issues licenses for environmental services concession for up to 10 years and up to 1000 ha areas. The mechanism to pay for the environmental service are entrance fees and user fees e.g. for facilities in the park (Government regulation PP no. 34/2002 "Tourism Licences/Concessions in Protected Area").

Box 5. Multi level dialog of Negotiating Support System 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 as a result of forest status disputes, poverty, 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 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 caused by inconsistent application of policy and limited resources have appeared. Legal locations of HKm proposed by district/province have not been approved by the national level of Forestry Department. In addition, the Forestry Department admit that currently they only have very limited human and financial resources for developing the HKm. From the community perspective, there is still limited socialization about the HKm policy and the process in applying for a license is considered too long and tedious. Supports from external parties such as research centers or NGOs are still needed. In terms of monitoring and evaluation process of HKm, no participative process operates. ICRAF and its partners are working on how to develop the mechanism of participative monitoring and evaluation of HKm including 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 has started to do some socialization of HKm and provides supports by supplying multi purpose tree species (MPTS) seedlings. The community response to these efforts has been to actively participate in forest rehabilitation either using the seedlings provided by the Forestry Service or taking their own initiative and collectively raising and/or obtaining seedlings.

Up to now, 12 HKm groups (about 1035 farmers as members) have formed 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.

Box 6. 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 private 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. The mechanism of this scheme is provided in the Appendix 1.

Box 7. Komodo National Park Collaborative Management Initiative

Application Year: The process started in 1995

Project Description:

The goals for Komodo National Park are to protect its biodiversity (particularly the Komodo dragon) and the breeding stocks of commercial fishes 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.

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 goals of protecting the park's bio-diversity 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 using collaborative management 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 by 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.

BRIEF ANALYSIS

This study found 10 cases that seem to indicate market mechanisms to provide environmental services are being implemented. Of this number it can be determined using categories developed by van Noordwijk et al (2003) that there are three 'efforts' that contribute to the provision of the environmental service:

- Natural capital, generally properties that 'come with the territory'
- Absence of threats or more active 'avoiding negative effects' through guardianship
- Mitigation of threats or 'causing positive effects' through stewardship e.g. an increase in 'filter functions' that reduce downstream pollution or increase in C stocks

Stewardship is important for conserving biodiversity, carbon sequestration and watershed protection, while natural capital and guardianship are more applicable for landscape beauty functions. Land leases, carbon credits and water fees are rewards often associated with stewardship. The rewards are most likely given to individuals, although to be practical the individual should be

grouped into some sort of group. On the other hand rewards for natural capital and guardianship often materialize as entrance permits and ecotourism services. The reward is given to the owner or manager of the natural capital (National Park) and communities who provide a service as a guardian (park guards, tour guides). To guard the natural resources, it will be effective if there is an agreement among the member of the community (See Table 3).

It is interesting that the type of seller or provider can be related to the type of effort or environmental service. For example, the rewards for natural capital are directed to the owner of the capital (Government and National Park in the case of landscape beauty). Rewards for guardianship service are directed at the community, while it is individuals or farmer groups that are rewarded for their stewardship.

As part of this study the environmental service providers in the cases that were reviewed can be classified according to these broad categories.

Table 2. Type of effort, seller and reward for existing ES market in Indonesia

Case Study	Type of effort	Type of seller	Type of reward
A. Biodiversity:			
Community based-medicine plantation conservation at Meru Betiri NP	Stewardship	Farmers group	Land lease
B. Carbon			
Climate change, forest and peatland in Indonesia	Stewardship	Farmers group	Carbon credit not Kyoto
C. Watershed			
Toba Lake site	Natural Capital	Government	Water use fee
Negotiation Support System (NSS) and Social Forestry (Hutan Kemasyarakatan)	Stewardship	Farmers group	Land lease
D. Landscape beauty			
Community based ecotourism Package in Gunung Halimun National Park	Natural Capital Guardian	National Park Community	Eco-tourism services
Komodo National Park Collaborative Management Initiative	Natural Capital Guardian	National Park	Eco-tourism concession
Community based Ecotourism Development and Conservation in Togeang Island	Natural Capital Guardian	National Park Community	Entrance permit and Ecotourism services
Sustainable Community Based Ecotourism in Tiga Gili	Natural capital Guardian	National Park Community	Entrance permit and Ecotourism services

Currently, the development of markets for biodiversity in Indonesia is increasingly driven by both local and international research centres and NGOs. Private demand in Indonesia for conservation is not yet widely recognized, as access to genetic material is still considered free. However, as shown in the case study from the community-based medicine plantation conservation at Meru Betiri National Park, East Java there is a huge potential opportunity to develop payments by bio prospectors². In the other example from Jambi, there are efforts being made to develop a market for biodiversity-friendly products from the jungle rubber systems that house rich biodiversity.

For the carbon market, awareness raising is ongoing to establish incentive-disincentive systems. It has been targeted at the communities and institutions directly involved in land rehabilitation or re-greening activities.

Watershed protection markets are beginning to evolve in Indonesia. In many cases, strong intermediaries and willingness-to-pay studies often stimulate the emergence of the markets. In other words, the markets are established in a perception that forests are 'good' and people are willing to pay for the services they believe are provided. However, only limited supporting scientific evidence – especially on the cause and effect of land use-water linkages – has been undertaken. It will be essential to clarify the issue on which service from which watershed is being demanded and the drivers for this will depend on people's needs and values.

It is particularly noticeable in looking at forest land that users will have different interests and different management practices that will affect the environmental service provision. In this situation, conflict management becomes an urgent consideration to shorten the gap between expected results and real world. The Negotiation Support System (NSS) is one of approaches in managing the conflict over natural resource uses (see Box 4).

With reference to Landell-Mills and Porras (2002), the payment for landscape beauty is often related to the establishment of a mechanism for protecting biodiversity. On the other hand, as landscape beauty is the commodity purchased by the tourists, it should be noted that increasing the biodiversity protection does not always raise scenic beauty and equally, the sale of the scenic beauty may not encourage biodiversity protection. Some case

studies reveal that the communities living in and adjacent to the tourism area serve as the local land steward to provide the scenic beauty. Efforts to compensate them have been made by setting up consortiums that act as intermediaries for the payment of the landscape beauty. These consortiums usually consist of government, local and international NGOs and private sectors.

CONCLUDING REMARK

Based on the review of 84 studies in Indonesia that relate to the marketing of environmental services, this study reveals that the development of environmental services in Indonesia is still in its early stage. There are very few cases studies where an environmental service market has been implemented. However, there are increasingly many more initiatives, emerging projects and research related to the development of market of environmental services, which illustrates the various levels of market development for environmental services. The review indicates that the market for landscape beauty is probably the one showing the most progress.

Although the existing environmental markets are limited in this study, it is clear that the reward is given for the efforts made to produce the environmental service function, such as stewardship, guardian and natural capital. Among the cases where there is a market mechanism it shows that stewardship is important for biodiversity conservation, carbon sequestration and watershed protection, while natural capital and guardianship is more applicable to landscape beauty. Land lease and carbon credits are used as rewards for stewardship services. In the setting where dependency of a community's livelihood on land or forest is high, using land leases (that require sustainable land management) could be effective rewards that would provide environmental services and enhance livelihoods. On the other hand, entrance fees and eco-tourism services are the rewards most often used for natural and guardian services of landscape beauty.

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² Bioprospecting is the search for commercially valuable biochemical compounds or genetic material in the wild for seed, pharmaceutical and crop industries.

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APPENDICES

Appendix 1. Selected case studies of existing markets for biodiversity

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 its 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 scaled-up until all the critical land in the buffer zone area (about 4730 ha) is 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 eighth-year, they do enrichment planting with high-value medicinal plants that existed in the national park area. Starting from the eighth-year and over, the community will grow shade resistance medicinal plants and be able to harvest fruits, bamboo, rattan and also the medicinal plants. The community gets continuous incentives from each growing stage as additional incomes.

The medicinal plant agroforestry impacts on other positive activities 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 paramedics. It is expected that the paramedics can include these herbal medicines into their prescriptions.

Appendix 2. Selected case studies of potential markets for biodiversity conservation

Rewarding rubber tappers 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.

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 sellers-intermediaries-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.

Appendix 3. Selected case studies of research on carbon sequestration

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 be 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.

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.

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

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 standpoint, 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 Oscar 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.

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)

Appendix 4. Selected case studies of existing market for carbon sequestration

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.

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

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.

Appendix 5. Selected case studies of potential markets for carbon sequestration

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 Sumbang, 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.

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.

Appendix 6. Selected case studies of research on watershed protection

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 state-owned 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 and decision-makers, and that the needs of conserving Lore Lindu's forests be incorporated into all of Central Sulawesi's development plans.

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

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.

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

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.

Appendix 7. Selected case studies of existing markets for watershed protection

Annual fee of PT INALUM for Toba Lake conservation

Application Year: 1985 - present

Project Description: PT Indonesia Asahan Aluminium (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.

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.

Appendix 8. Selected case studies of potential markets for watershed protection

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 (Table 3).

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 Bantek 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 Bantek participate in this occasion.

Bantek 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.

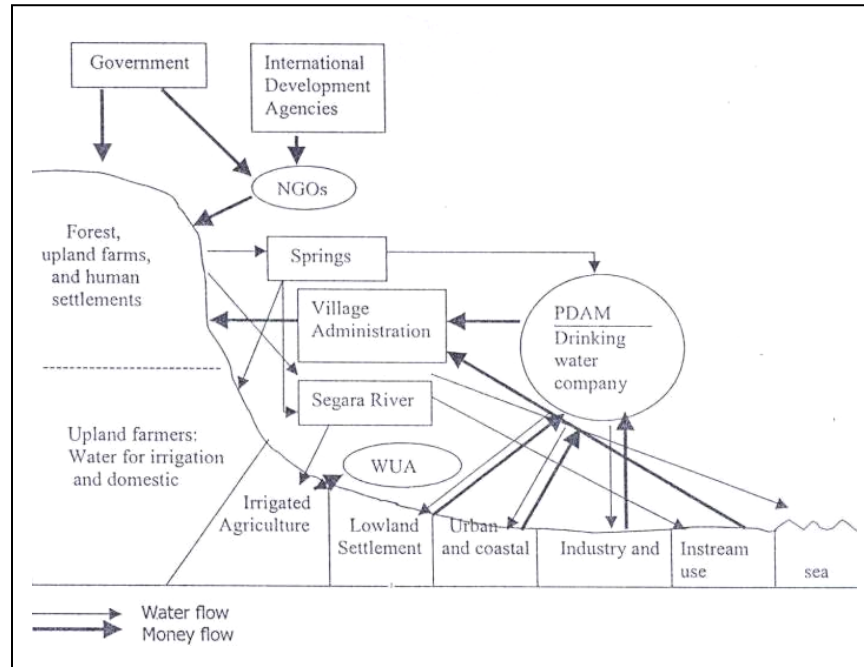


Figure 2. The collaboration of multi-stakeholder in developing watershed protection markets in Segara River Basin, Lombok: a suggestion (Munawir et al 2003).

Table 3. Existing water service payments in Segara Basin, Lombok

Name of Payment	Details / Amount paid	Used for	Contributed to	Contributed by
Sawinih	Sawinih: Rp 7,500 per 0.5 ha Paid once a year at the second rice crop	Operational budget of Water Users' Association (WUA) and infrastructure improvement	Pelopor WUA, Gondang Village, Gangga Sub-District	Farmers with irrigated land
Sawinih, Irrigation Service Fee (ISF) and Operational fee	ISF: Rp 15,000/ha/year Sawinih: Rp 5,000/cropping season. Operational fee for head of tertiary irrigation block: Rp 5,000/ha	Rehabilitation of irrigation system Sawinih is for WUA operation Operational fee is collected when water is scarce	Sumber Rejeki WUA	Farmers with irrigated land
Contribution to village development	Bentek and Jenggala Villages: Rp 600,000 per village/year	Meeting of Majelis Kerama Adat (customary council)	Majlis Kerama Adat	Lombok Inter Rafting Company
Social fund	Ad hoc payments depending on existing social activities	Tree-planting and other social or environmental activities	Upstream community groups	Lombok Inter Rafting Company

Name of Payment	Details / Amount paid	Used for	Contributed to	Contributed by
Contribution to village development	Rp 2,000,000 (2001), Rp 5,000,000 (2002).	Salary of Lang-lang Jagad (forest guards) and local work on reviving and codifying traditional rules on environmental protection	Upstream community groups	Drinking water company (PDAM)
Land tax	Variable annual cost – PDAM has contracted to pay for 30 years	Payment of land tax on behalf of individual land-owners affected by route of water pipes	Local government	Drinking water company (PDAM)
Ngaji-Lawat	Voluntary payments to cover costs of buffalo sacrifice, other food etc	Celebration of Berangkat religious ceremony, which links forest protection to lessons of the <i>ngaji</i> (Holy Qur'an)	Upstream community groups	Downstream residents
Sedekah Gumi Paer	Voluntary payments to cover costs of food etc	Annual religious/Environmental ceremony at Bebekeq Grave	Organizers of ceremony	Other Bentek residents

Source: Munawir *et al* (2003)

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.

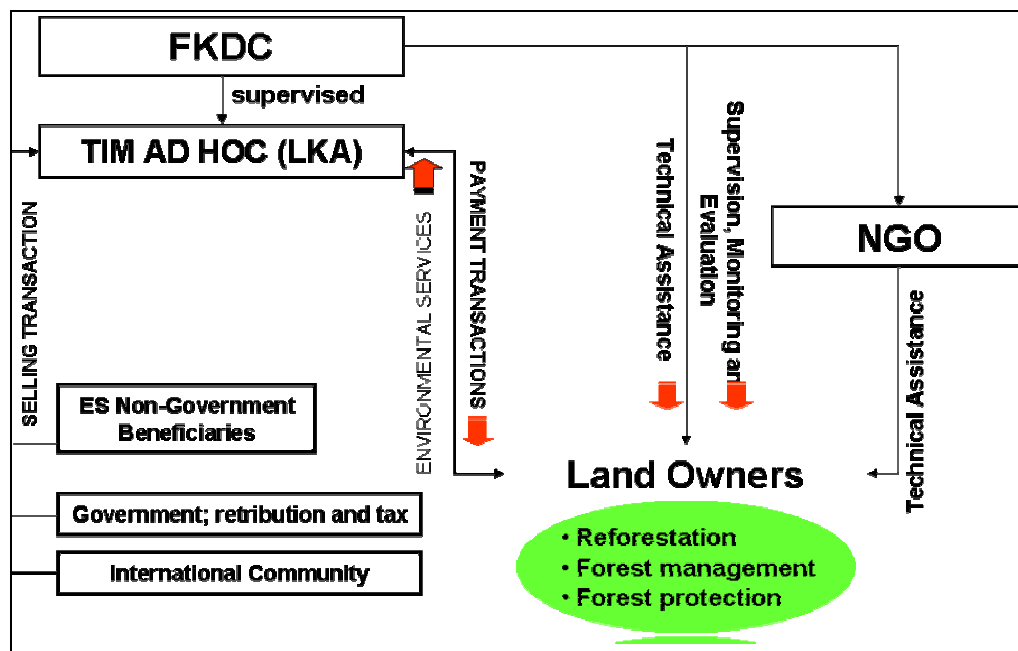


Figure 3. Existing payment for environmental service scheme in Cidanau, Banten

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.

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

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

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.

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 (BSC – 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 tourism 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.

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:

Togean Islands 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.

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 Lingkungan, 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.

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