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Overview of the Payment for Ecosystem Services Implementation in Indonesia

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OVERVIEW OF THE PAYMENT FOR ECOSYSTEM SERVICES IMPLEMENTATION IN INDONESIA

Mia Amalia and Shanty Syahril

EXECUTIVE SUMMARY

Payment for ecosystem services (PES) in Indonesia has been implemented since before 2002, and has been documented by international and local organizations in the field of forestry and environment. The available services include biodiversity conservation, watershed and landscape/seascape beauty protection, and carbon bio-sequestration. This study aimed to understand the legal basis for PES in Indonesia and the possible challenges in its future implementation, to review relevant studies and summarize the findings into a PES database for Indonesia, and to observe a number of PES sites in the country. The methods in the study used were (1) content analyses to identify PES related acts/laws; (2) internet searches and limited interviews to identify PES/PES-like cases; and (3) in-depth interviews with PES sellers, intermediaries, and buyers in a selection of operational PES/PES-like cases.

The study revealed that there are 14 acts/laws, government regulations, and ministerial decrees/regulations related to PES in Indonesia. In some of the regulations, PES is explicitly written; in others, PES is either only implicitly noted or mentioned in different terms. Some regulations can be used for future PES implementation in Indonesia. Some supportive policies are already enacted; however, the important institutions needed to make PES operational are yet to be established through laws and regulations. The regulations to be enacted are as follows: regulatory agencies, agencies to establish the science of ecosystem services so that distribution of payment is accurate and given to the ones providing the service, third-party certifiers and verifiers, PES registries, and agencies providing market information to sellers and buyers. In this study, a total of 10 PES cases were selected from 91 operational PES sites for in-depth interviews. The database and results from the in-depth interviews were used to propose a re-definition of PES for Indonesia; to understand the current stages of PES implementation in the country; and to recognize the current actors, services, and payment schemes already in place.

1.0 INTRODUCTION

1.1 History of Payment for Ecosystem Services in Indonesia

1.1.1 RUPES program

The World Agroforestry Centre (formerly known as ICRAF) started a RUPES program (Rewarding Upland Poor for Environmental Services) in 2002. The RUPES project tested mechanisms that enabled upland communities to provide services to local and global communities. At the same time that the project improved their livelihoods, poverty also decreased in the project area.

ICRAF conducted an extensive review of the market for ecosystem services in Indonesia from July to November 2003. This review was important to develop a mechanism for the implementation of the RUPES program. From this review, ICRAF found 81 examples of environmental services market existing in Indonesia (Suyanto et al. 2005), 41% of which were for biodiversity conservation whereas the rest focused on watershed protection (20%), carbon sequestration (18%), and landscape/seascape beauty (21%).

This study revealed that the development of environmental services in Indonesia was at the early stages when the study had been conducted. Very few cases showed that a truly functioning ecosystem services (ES) market had been implemented, as summarized in Table 1. Table 2 provides details of the functioning ES market. This study proposes seven new sites to be developed in the future.

Table 1. Development of environmental services market in Indonesia as identified by the RUPES Project (2002–2012)

Environmental Services	Number of Case Studies and % of Total		Functioning ES market		Potential ES Market
			Existing	Proposed	
Biodiversity conservation	33	41	1	2	30
Watershed protection	16	20	3	3	10
Carbon sequestration	15	18	1	2	12
Landscape/seascape beauty	17	21	4	0	13
Total	81	100	9	7	65

Source: Suyanto et al. (2005)

Table 2. List of functioning environmental services markets in Indonesia

Environmental Service	Existing	Proposed
Biodiversity conservation	Meru Betiri National Park, East Java	Bungo, Jambi Barugae, Maros, South Sulawesi
Watershed protection	Toba, North Sumatera Sumber Jaya, Lampung Cidanau, Banten	Sumber Jaya, Lampung Bandung, West Java Rinjani, West Nusa Tenggara
Carbon sequestration	Berbak NP, Jambi Sembilang NP, South Sumatera Sungai Puning, Buntok, Central Kalimantan	Singkarak, West Sumatera Kuningan, West Java
Landscape/seascape beauty	Halimun NP, West Java Gili Indah Village, West Nusa Tenggara Komodo Island, Nusa Tenggara Timur Togean Islands, Central Sulawesi	

Source: Suyanto et al. (2005)

Through a partnership with its major donor, the International Fund for Agricultural Development (IFAD), ICRAF coordinated with a consortium of research organizations, nongovernmental organizations (NGO), and national partners who were interested in contributing and becoming a part of RUPES. The first phase of the program commenced from 2002 to 2007, and was then followed by the second phase from 2008 to 2012. The research sites of RUPES are listed in Table 3.

In addition to the financial reward scheme, RUPES discovered exceptional benefits from implementing schemes based on nonfinancial rewards. A micro-hydropower unit was given as a reward to the Buluh Kapur village in Sumber Jaya for its effort in reducing siltation through a River Care Program. This approach is considered to be one of RUPES's most successful examples of implementing a nonfinancial reward scheme.

Table 3. RUPES research sites in Indonesia

RUPES Site	Phase		Ecosystem Services	Stage
	1	2		
Singkarak, West Sumatra	√	√	Carbon, watershed, landscape beauty	Implementation
Bungo, Jambi	√	√	Carbon, watershed, biodiversity	Negotiation
Sumber Jaya, Lampung	√	√	Watershed	Implementation
Cidanau, Banten	–	√	Watershed	Implementation
Citarum, West Java	–	√	Watershed	Implementation
Kuningan, West Java	–	√	Watershed	Implementation

Source: World Agroforestry Centre (2008); Finlayson et al. (2013)

1.1.2 PES development for Deli and Progo watersheds

The United States Agency for International Development (USAID) also has a strong interest in supporting the development of payment for ecosystem services (PES) in Indonesia. The Indonesian Institute for Forest and Environment (RMI) under the Environmental Services Program (ESP) conducted a study to develop a PES scheme for the Deli and Progo watershed. As part of the study, RMI examined existing PES schemes in Sumber Jaya (Lampung), Cidanau (Banten), Kuningan (West Java), Rinjani (West Nusa Tenggara), and Brantas (East Java) (DAI 2007).

1.1.3 Danida's PES readiness assessment

The objective of the PES readiness assessment initiated by the Danish International Development Agency (Danida) was to provide a qualitative assessment on how PES should be developed and scaled up in various stages. It also intended to assess the gaps in the established PES protocols so they could be further refined. The readiness of six PES schemes listed in Table 4 was examined against the requirements within a defined protocol to come up with a shortlist of PES pilot projects. This assessment revealed that the ones in the Cidanau and Rinjani sites were the most ready schemes to expand and develop. Cidanau has comparative advantages in terms of well-defined land tenure arrangements compared to other sites. In Rinjani, some of the areas planted by farmers are categorized as public land.

Table 4. Danida's PES locations and their status

Site	Ecosystem Services	Stage
Singkarak, West Sumatera	Carbon, watershed	Implementation
Cidanau, Banten	Watershed	Implementation
Citarum, West Java	Carbon, watershed	Implementation
Tahura, Bandung, West Java	Carbon, watershed, biodiversity, landscape beauty	Preparation
Rinjani, West Nusa Tenggara	Watershed	Implementation
Sungai Wain, East Kalimantan	Watershed	Negotiation

Source: LPM Equator (2012)

1.1.4 REDD/REDD+

Market-based and voluntary schemes are the two principles that PES and REDD/REDD+ (Reducing emissions from deforestation and forest degradation) have in common. According to Mardiasuti (2012), as of June 2012, there were 77 REDD+ related projects in Indonesia. However, only two REDD+ pilot projects have reached the validation stage so far.

The Ulu Masen project was developed by the Provincial Government of Aceh with assistance from Fauna and Flora International (FFI) and the carbon brokerage firm, Carbon Conservation. The Ulu Masen was the first REDD+ project in the world to meet the Climate Community Biodiversity (CCB) design standard on 6 February, 2008. The CCB standard was developed for the voluntary carbon market, and is used by majority of REDD+ pilots to assure investors and buyers of the quality of their projects. Aceh has the largest remaining area of natural forests on the island of Sumatra, covering approximately 3.3 million ha. The Ulu Masen REDD+ Pilot Project covers 750,000 ha of forests in northern Aceh.

On achieving the CCB standard, the Aceh government completed a pre-purchase agreement with Merrill Lynch (now Bank of America). The bank agreed to purchase eventual certified emission reductions at a price of USD 4 per tonne of avoided carbon dioxide (CO₂) emissions. The project planned to reduce emissions of CO₂ by approximately 100 million tonnes over 30 years. The Aceh government stated that the funds generated by the project will be used for the welfare of Acehnese, whereby 50% of revenue would be distributed to communities whose customary lands overlap with the project. However, despite the aforementioned agreement with the Ulu Masen project, the latest finding revealed that the CCB validation for Ulu Masen had expired in February 2013.

Rimba Raya¹, the world's largest REDD+ project developed by InfiniteEARTH, was finally approved by the Indonesian government on June 20, 2013. Likewise, it has been verified using Verified Carbon Standard (VCS), which is a leading certification standard for carbon credits. Rimba Raya's backers (i.e., Gazprom [Russia] and Allianz [insurance firm]) can sell tradable carbon credits in the voluntary carbon market. The 64,000-hectare forest carbon project in Indonesia's Central Kalimantan is expected to reduce CO₂ emissions by 119 million tons over its 30-year lifespan. The emissions reductions are expected from reducing carbon leak from peat lands' drainage systems and reducing conversion of its forests into oil palm plantations.

1.1.5 Marine conservation agreement²

In 2007, a multilateral initiative called the Coral Triangle Initiative (CTI) was established by the governments of Indonesia, Malaysia, Papua New Guinea, the Philippines, Solomon Islands, and Timor Leste. The project aimed to save and protect their invaluable marine resources and the well-being of their citizens. Figure 1 shows the implementation area of CTI. CTI is also working on a marine conservation agreement (MCA). An effective MCA is expected to culminate in PES that can better assure success of ocean and coastal conservation efforts.

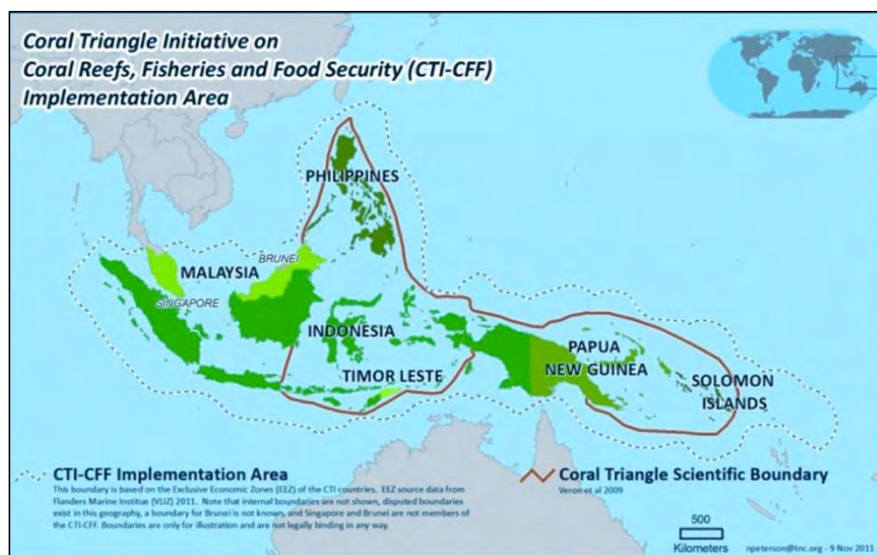


Figure 1. Implementation area of the Coral Triangle Initiatives

Source: Djohani (2010); Dirhamsyah et al. (2012)

1.2 Objectives

This study has three objectives, namely,

1. To summarize all the possible legal bases for PES in Indonesia and to identify the possible challenges in future PES implementation;
2. To review all existing relevant studies in Indonesia and summarize a number of cases of existing PES/PES-like projects, disaggregated by sector: watershed, biodiversity, carbon, and recreation; and
3. To survey PES/PES-like sites, and closely observe and learn PES implementation in the four aforementioned sectors.

¹ This section is a summary of the reports written by Mardiasuti (2012), Forest Peoples Programme (2011), CCBA (2007), Lang (2013), and *Mongabay Environment News* (2013).

² This section is a summary of the reports written by Djohani (2010) and Dirhamsyah et al. (2012).

1.3 Methodology

This study was undertaken between end of August 2012 and April 2013. Three methods were applied in this study:

1. Content analyses to identify PES related acts/laws, government regulations, and ministerial decrees in related fields such as natural resource and environmental management, forest conservation and utilization, and watershed protection.
2. Collection of lists of existing PES/PES-like cases through web searches and limited interviews. Further internet searches were performed to gather more detailed information on listed cases.
3. In-depth interviews with PES sellers, intermediaries, and buyers in operational PES/PES-like sites.

2.0 LEGAL BASIS FOR THE PAYMENT FOR ECOSYSTEM SERVICES MECHANISM IN INDONESIA

There are acts/laws, government regulations (GR), and ministerial decrees/regulations related to PES in Indonesia. In some of the regulations, PES is explicitly written; in others, PES is implicitly noted or mentioned in different terms. Some regulations can be used for future PES implementation in Indonesia.

2.1 Environmental Protection and Management Act (32/2009, Article 42-43)

The Environmental Protection and Management Act (32/2009) of Indonesia states in its Article 42 that in order to protect the environment, local governments need to implement environmental economics instruments, which include plans for development and economic activities, environmental funding, and incentives. Instruments used in developing and planning economic activities are natural resource and environmental balance; green GNP and GDP, which include natural resource and environmental depletion; compensation for environmental services; and environmental internalization cost.

Instruments used in environmental funding are environmental insurance fund, pollution prevention and environmental recovery fund, and environmental conservation trust fund. Instruments used for environmental incentives are environmentally friendly procurement process; environmental tax, levy, and subsidy; environmentally friendly financial institution and stock exchange; emission permit; PES; environmental insurance; ecolabeling; and incentives scheme for environmental protection and management.

The detailed implementation of all of the above instruments is mandated to be regulated using government regulation. However, no government regulation has thus far been enacted for the above instruments. This act uses two terms for PES: (1) environmental compensation among local governments, which is defined as a means to compensate the provision of environmental services by users (e.g., residents, society at large, and/or local governments); (2) payment for environmental services, which defines payment from environmental service users to providers in general, and does not differentiate who pays whom.

In this act, payment does not only refer to direct payments to service suppliers, but includes reward, compensation, and transactions in the market. Services can be in the form of general service, immaterial, or non-extraction of natural resource benefit. The definition for environment includes ecosystems.

2.2 Water Resource and Management Financing Act (7/2004, Article 77-80)

This Act states that the funding system depends on a needs assessment having been conducted. Funding is available for information system, planning, construction, operation, and maintenance as well as monitoring, evaluation, and community-empowerment activities that are sourced from government budget, private sector investment, or from PES (Article 77). Funding for water resource management is the responsibility of national and local governments, state- and local government-owned enterprises,

corporations, and individuals (Article 78). Where there is a need to utilize water resources in an inter-administrative catchment area, management funding is set together by the national and local governments through a partnership scheme.

This law provides ways to incorporate PES in the field of water resource management. PES schemes can be implemented in the public sector, especially for water resource management in inter-administrative, inter-province or inter-local government jurisdictions. Cooperation among local governments can be done through a partnership contract whereby the buyer (one local government) can specify the amount of payment to the seller (other local government) for providing, for instance, watershed protection services by preserving conservation areas needed for the whole watershed to function properly.

2.3 Natural Resource and Ecosystem Conservation Act (5/1990)

This Act states that sustainable natural resource and ecosystem utilization can be implemented through using environmental services without degrading the biologically diverse condition of the ecosystems. One way to utilize current environmental traits without decreasing their quality is by selling services provided, not by exploiting nature. This Act recognizes ways to gain income other than through direct use of natural resources. The content of this Act is important for PES implementation in Indonesia. However, there is no further explanation on the types of possible PES to be gained from natural resources and ecosystem conservation.

2.4 Coastal and Small Islands Management Act (27/2007)

The coastal and small islands resources referred to in this Act include natural and man-made resources as well as environmental services. Coastal and small islands management involves planning, utilization, monitoring, and control of human interaction in the form of natural resource and environmental services utilization. Utilization activities included in the definition are the development of coastal and small islands, coastal reclamation, mangrove utilization, and marine ecotourism. The Act is important for PES implementation in coastal and small islands. However, this Act only recognizes marine ecotourism or recreation as the only possible options for PES implementation in those areas. Biodiversity and carbon sink potential are yet to be recognized.

2.5 Non-tax Revenue Act (20/1997)

In Indonesia, government revenues comprise of tax and non-tax revenues. This Act regulates all revenues obtained by the central government from non-taxable activities. This type of revenue can be used for research and development, health services, education and training, law enforcement, natural resource conservation, and services (Article 8). This Act explicitly allows government to gain income from natural resource conservation and environmental services. Furthermore, this type of income can be used for buying services, including PES. However, there is no further explanation of probable sellers in this Act.

2.6 Government Regulation for Income Type and Payment for Non-tax Revenue (22/1997)

Although there are explicit definitions of natural resource conservation and ecosystem services in Act No. 20/1997, there is no further regulation provided in GR No. 22/1997. In this GR, environmental services, water, carbon, and biodiversity services are not recognized and are not given special codes. If PES is going to be implemented formally by the government, then it should be included in the national, provincial, and local budgeting code so it can be implemented accordingly.

2.7 GR for Forest Production and Direct Use (6/1999)

In this government regulation, forest resources are defined as natural resources produced by forests, which include: (1) plants and their derivatives, such as logs, bamboo, rattan, grasses, mushrooms, medicinal plants, gums, and parts of plants such as plant oils; (2) fauna and all derivatives; (3) other products of forest ecosystems, such as water and clean air, but excluding minerals; and (4) services such as ecotourism, scenery and animal hunting. Part (4) states that ecotourism and scenery and animal hunting services are forest services recognized by this government regulation. By using this regulation, private sectors, communities, and local government can generate income by providing such services in the forest area to other parties.

2.8 GRs for Forest Management, and Forest Management and Utilization Planning (GR 6/2007 as amended by GR 3/2008)

According to this GR, forest utilization intends to gain benefit in the form of optimal and sustainable use of goods and services for citizens' welfare (Article 17, 23, 33). Forest utilization can be done through utilization of area, environmental services, wood and non-wood products. Forest utilization is an implementation of forest management plan.

The GR also regulates PES in Articles 25 and 31, which include PES in conservation and production forests through utilization of water services, water utilization, ecotourism, biodiversity conservation, environmental protection, and carbon sink services. This GR forbids forest utilization in conservation and production forests that reduce, change, or omit their main function; change their landscapes; and ruin the balance within forest ecosystems. A decree from the Ministry of Forestry is currently being prepared for the detailed implementation of the sustainable utilization of environmental services.

Permits in conservation and production forests are given in accordance with goods and services provided (1) 25 years for water services; (2) 10 years for water utilization, limited to 20% of the overall water debit; (3) 35 years for ecotourism limited to 10% of all utilization area given; (4) 50 years for biodiversity conservation; (5) no time limit for environmental conservation; and (6) 30 years for carbon sink services (Article 29). Permit holders for water services and water utilization should pay the government in the form of non-tax government revenue. Extension of permits depends on the results of the evaluation of the permit provider. All permit holders must produce an activity plan for all areas and should actively use the area within six months for environmental services in forest area (Article 71). The same scheme can be given to local communities. Local communities can gain access and permits as private and public sectors in both conservation and production forests (Articles 87 and 94).

The Minister of Forestry and governors can facilitate local communities in gaining access and in obtaining permits for forest utilization for forest area utilization, forest plantation and rehabilitation, environmental service, and woods and non-woods product in conservation and production forests. Permits can be given to a group of local people and to corporations. Permit holders should manage the forest according to sustainable forestry principles (Article 96).

Compensation fund from water service and water utilization should be given to the government treasury office (Article 25). All permit holders should make a plan for all areas, utilize the area within six months for environmental services, delineate the area, protect the area, hire professionals in the field of forestry, pay non-tax government revenue as stated by law, and not harvest wood from protected areas (Article 71).

2.9 GR for Forest Area Usage (24/2010)

Forest area utilization can be done in production and conservation forests, but should not change the forests' main function, and should take into account sustainability principles in area delineation and in determining the utilization period.

2.10 GR on Income from Ecotourism in Wildlife Conservation Areas, National Park, and National Forest Conservation (36/2010)

In the lists provided by this government regulation, PES in forest areas is included in the list of services in Indonesia [Class (f) requirements (Article 3)].

2.11 GR on Grant for Local Government (2/2012)

This government regulation focuses on regulating grants received by the local government. Grants for local government can be in the form of fund, goods, and services (Article 3); they can be given by central government, national agencies or organizations, and groups of individuals within Indonesia. It can be obtained from the national budget in the form of national revenue, international grants, and international loans (Article 4). Local government can also provide grants to other parties. Grants from local government can be given to central government, other local governments, local government- and state-owned enterprises, the private sector, and community organizations or NGOs, which is managed according to local budget mechanisms (Article 21). This article provides room for a local government to “pay” other local governments for providing ES; grants from local government can be included in the local budget.

2.12 GR on Management of Watershed (37/2012)

Funding for watershed management can be obtained from national and local budgets, grants or other nonbinding sources as stated in national regulations (Article 67). According to the explanation provided in this article, other sources of funding can also be obtained from the United Nations Development Program Global Environmental Facility (UNDP-GEF), Global Mechanism (GM) trust fund, environmental fund, and PES. This government regulation recognizes PES as one of the possible sources of watershed management funding. However, there are no further explanations of the procedures on how to obtain the funds from buyers and how to value services provided by sellers.

2.13 Ministry of Forestry Regulation (MoFR) on Business Permit Procedure for Forest as Carbon Sink in Production and Conservation Forests (36/Menhut-II/2009)

This regulation provides more information for ES sellers, including procedures for gaining approval from the Forestry Minister. Hence, it would be easier for sellers to be recognized and to enter the national and international markets for carbon sink. In its introduction section, this regulation states that an ES, as a carbon sink, is a type of utilization in production and conservation forests. The rights for ES utilization in conservation and in production forests are given by the Indonesian government in the form of a business permit for ES.

A management right is given to utilize ES in production forests with or without existing permits (Article 1). Carbon sink and carbon storage (i.e., UPRAP KARBON and UPPAN KARBON) are types of ES in production and conservation forests (Article 2). Sellers need to submit their proposal to the Minister of Forestry, who will then form a proposal assessment team. The assessment will include the technical aspect for forest utilization, type of business, cash flow projection, and planned socioeconomic activities for local communities (Article 6).

The proposal can be submitted by an individual, state- or local governments-owned enterprises, and national private companies (Article 7). The value of services provided is income obtained from carbon selling certified and paid in accordance to ERPA (Emission Reduction Purchase Agreement) (Article 17). Income gained by the Indonesian government from this activity is classified as non-tax government revenue.

2.14 MoFR on Ecotourism in Wildlife Conservations Areas, National Parks, and Nature Parks (48/Menhut II/2010)

This regulation focuses on services provided for ecotourism in conservation forests, and defines ecotourism to include activities that provide goods and services needed by tourists. The business permits given to sellers are special permits for environmental services in ecotourism (Article 1). The business is defined as ecotourism services and infrastructure development in ecotourism sites (Article 5). Ecotourism services are information for tourists, tour guides, transportation, travel agents as well as food and beverages (Article 6). There is no regulation on incentives for local communities who provide services in the form of improved sceneries for tourism as well as for preserving their environmentally friendly culture.

3.0 PES PROJECTS IN INDONESIA

This section is written using available resources in English and Indonesian languages. The lists of programs provided in this section do not represent all PES practices in Indonesia. Most of the well-documented PES projects are usually the ones funded by grants from foreign countries, through bilateral (or government-to-government) agreements as well as other types of cooperation. It is highly possible that some good PES projects exist in Indonesia, although these may not be formally written or well-documented. Hence, these may not be available on the internet and or academic databases, and thus cannot be used as sources for identification. Locally or nationally developed PES projects usually have less documentation than those available on the web.

In total, the researchers identified 91 PES/PES-like cases/projects in Indonesia (Table 5 and Figure 2). The PES-related studies described in the Introduction section were the main sources used to identify PES projects in Indonesia. The stage of PES development for each case was then cross-checked with more recent publications through web searches and through personal communication with report writers or researchers in particular cases. The stages of PES development used to guide this study are the ones developed by Leimona (2011) in Dirhamsyah et al. (2012):

1. Stage 1 involves the scoping and stakeholder analysis stage, where ecosystem service beneficiaries (as potential buyers) and all agents with claims to the resources (as potential suppliers) are assessed. Baseline indicators are then determined, and monetary values estimated, both in terms of opportunity costs of second-best options, and the reward/payment required. Subsequently, structuring the payment modalities can then be drafted.
2. Stage 2 involves the negotiation phase that follows. This should include detailed deliberation and agreement on the terms of contract, including amount of payment, the rights and liabilities of contracting parties, and methods for monitoring.
3. Finally, once these steps are completed to the satisfaction of all parties involved, Stage 3 involves the start of the implementation of the contract, accompanied by implementation of the agreed monitoring protocols.

Considering the time and resource allocation available to the researchers, 10 PES projects (out of the 91 working projects) covering 54 sites were selected for in-depth interviews with actors (Table 6). These 10 projects are operational sites. They were selected to represent all four services included in the database (i.e., watershed protection, landscape/seascape beauty, recreation, and biodiversity). Some of the sites or resource persons reside in proximity. For instance, the resource persons for Raja Ampat and Ecolodges reside in Bali close to the Village Ecotourism Network and Belok Sidan Village.

Table 5. List of PES/PES-like sites

No	Province	Conservation Site	Project Name	Status	ES	Source
1	Banten	Cidanau	IIED & LP3ES Research Site 2001-2006, RUPES Research Site 2008-2012	3	W	1,2,3
2	West Nusa Tenggara	Rinjani (Segara Watershed)	IIED & LP3ES Research Site 2001-2006	3	W	2,3,9,10
3	East Java	Brantas Watershed	IIED & LP3ES Research Site 2001-2006	4	W	3
4	Lampung	Sumber Jaya, Way Besai Watershed (Community Forestry)	RUPES Research Site 2008-2012	3	W	1,3,11,12
5	Lampung	Sumber Jaya, Way Besai Watershed (River Care Program)	RUPES Research Site 2008-2012	3	W	1,3,11,12
6	West Java	Citarum Watershed (Sunten Jaya Village)	RUPES Research Site 2008-2012	3	W	1,2,13,14
7	West Java	Citarum Watershed (Cikole Village)	RUPES Research Site 2008-2012	3	W	1,2,13,14
8	West Java	Kuningan	RUPES Research Site 2008-2012	3	W	1,3
9	West Sumatera	Singkarak Lake (Watershed)	RUPES Research Site 2008-2012	5	W	1,2
10	West Sumatera	Singkarak Lake (Voluntary Carbon Scheme)	RUPES Research Site 2008-2012	3	C	1,2
11	Aceh	Krueng Aceh Watershed	3PESA	3	W	4
12	Aceh	Krueng Peusangan Watershed	3PESA	3	W	4
13	West Java	Gede-Pangrango National Park (Ciliwung watershed)	Green Radio Tree Adoption Program	3	W	
14	Central Kalimantan	Sebangau National Park	WWF NEWTrees & MyBabyTree Program	3	B	
15	West Nusa Tenggara	Rinjani National Park	WWF NEWTrees & MyBabyTree Program	3	W	
16	West Java	Ciliwung Watershed	WWF NEWTrees & MyBabyTree Program	3	W	
17	Banten	Ujung Kulon National Park Buffer Zone	WWF NEWTrees & MyBabyTree Program	3	B	
18	West Java	Citarum River Delta (Muara Gembong)	WWF NEWTrees & MyBabyTree Program	3	B	
19	North Sumatera	Samosir Botanical Garden, Samosir Island	WWF NEWTrees & MyBabyTree Program	3	W	
20	East Java	Lamong Bay, Surabaya	WWF NEWTrees & MyBabyTree Program	3	B	
21	Central Kalimantan	Rimba Raya	CCB Standard (verification approved Jan 9, 2014) & VCS	3	C	6
22	Jambi	Villages surrounding Berbak National Park	Wetland International-Indonesia Program Research Site	4	C	7,21
23	South Sumatera	Villages surrounding Sembilang National Park	Wetland International-Indonesia Program Research Site	4	C	7,21
24	Central Kalimantan	Villages surrounding Puning River, Buntok	Wetland International-Indonesia Program Research Site	4	C	7,21
25	Bali	Belok Sidan Village	ICDP	3	W	
26	Bali	Utama Spices	Green Product	3	B	
27	North Sulawesi	Bunaken Marine Protection Area	Ecotourism	3	L	15
28	West Papua	Raja Ampat Marine Protection Area	Ecotourism	3	L	17
29	East Nusa Tenggara	Komodo National Park	Ecotourism	3	L	16

Table 5 continued

No	Province	Conservation Site	Project Name	Status	ES	Source
30	West Nusa Tenggara	Gili Trawangan	Ecotourism	3	L	7,21
31	South East Sulawesi	Togean Islands	Ecotourism	3	L	7,21
32	West Java	Halimun National Park	Ecotourism	3	L	7,21
33	Bali	Tenganan Village	Village Ecotourism Network	3	L	18
34	Bali	Pelaga Village	Village Ecotourism Network	3	L	
35	Bali	Sibetan Village	Village Ecotourism Network	3	L	
36	Bali	Ceningan Village	Village Ecotourism Network	3	L	
37	Bali	Udayana University, Jimbaran	Ec lodge (Udayana)	3	L	
38	East Nusa Tenggara	Komodo National Park	Ec lodge (Bajo)	3	L	
39	Central Kalimantan	Tanjung Puting National Park	Ec lodge (Rimba)	3	L	
40	Lampung	Way Kambas National Park	Ec lodge (Satwa)	3	L	
41	East Nusa Tenggara	Kelimutu Crater Volcano Lake	Ec lodge (Kelimutu)	3	L	
42	Bali	Banjar Bengkel, Tabanan	Seacology	3	B	
43	North Maluku	Pumlanga Village, Halmahera	Seacology	3	B	
44	East Nusa Tenggara	Hupumada Village, Sumba	Seacology	3	B	
45	West Papua	Saubeba, Warmandi, Wau	Seacology	3	B	
46	West Papua	Fafanlap, Daram, Raja Ampat	Seacology	3	B	
48	West Papua	Pam, Saukabu, Saupapir, Fam Besar Island, Raja Ampat	Seacology	3	B	
49	Bali	Pelilit, Nusa Penida	Seacology	3	B	
50	East Nusa Tenggara	Sano Nggoang, Flores	Seacology	3	B	
51	North Sulawesi	Kahuku, Bangka Island	Seacology	3	B	
52	Bali	Banjar Anyar	Seacology	3	B	
53	Aceh	Teluk Nibung, Ujung Sialit, Pulau Balai, Suka Makmur, Banyak Island	Seacology	3	B	
47	West Java	Mandalamekar	Seacology	3	B	
54	East Nusa Tenggara	Benteng Dewa, Flores	Seacology	3	B	
55	East Nusa Tenggara	Cunca Lotos, Flores	Seacology	3	B	
56	East Nusa Tenggara	Umbu Langang, Sumba	Seacology	3	B	
57	West Papua	Warsamdin, Waigeo, Raja Ampat	Seacology	3	B	
58	North Sulawesi	Ensem & Niampak, Karakelang	Seacology	3	B	
59	West Papua	Deer, Dibalai, Tolobi, Kofiau, Raja Ampat	Seacology	3	B	
60	North Sulawesi	Ranawangko	Seacology	3	B	
61	North Sulawesi	Tulap	Seacology	3	B	
62	North Sulawesi	Tulaun	Seacology	3	B	
63	Bali	Sarinbuana	Seacology	3	B	

Table 5 continued

No	Province	Conservation Site	Project Name	Status	ES	Source
64	West Papua	Saubeba, Warmandi	Seacology	3	B	
65	North Sulawesi	Manado Tua Satu, Manado Tua	Seacology	3	B	
66	North Sulawesi	Kwangkoan	Seacology	3	B	
67	Aceh	Iboih, Weh Island	Seacology	3	B	
68	Maluku	Kaibolafin, Kola	Seacology	3	B	
69	North Sulawesi	Pinasungkulan	Seacology	3	B	
70	North Sulawesi	Poepoh	Seacology	3	B	
71	North Sulawesi	Teling	Seacology	3	B	
72	North Sulawesi	Molas, Meras, Tongkeina, Bahowo	Seacology	3	B	
73	North Sulawesi	Alung Banoa, Bunaken	Seacology	3	B	
74	North Sulawesi	Kumu	Seacology	3	B	
75	Maluku	Masihulan and Sawai, Seram	Seacology	3	B	
76	Papua	Asmat	Seacology	3	B	
77	Central Sulawesi	Tomil, Togeang	Seacology	3	B	
78	South-East Sulawesi	Sampela, Kaledupa	Seacology	3	B	
79	Bali	Tirtagangga	Seacology	3	B	
80	East Kalimantan	Maratua	Seacology	3	B	
81	North Sulawesi	Tiwoho	Seacology	3	B	
82	East Nusa Tenggara	Komodo Island	Seacology	3	B	
83	West Java	Citarum Watershed (Grand Forest Park Juanda)		1	B	2
84	North Sumatra	Deli watershed	Environmental Service Program USAID	1	W	3
85	East Java	Progo Watershed	Environmental Service Program USAID	1	W	3
86	West Kalimantan	Kapuas Hulu		1	B	20
87	Jambi	Bungo	RUPEs Research Site 2008-2012	2	B	1
88	East Kalimantan	Wain River		2	W	2.9
89	Aceh	Ulu Masen	CCB Standard (validation expired in Feb 6, 2008)	2	C	5
90	East Java	Sebangau National Park	CCB Standard (undergoing validation)	2	C	
91	North Sumatra	Toba Lake		5	W	7, 19, 21

Notes: (1) Status: 1 = Project preparation (scoping, potential buyers and seller, baseline, valuation, payment scheme); 2 = Negotiation and agreement on contract (amount of payment, the rights and liabilities of contracting parties, and methods for monitoring); 3 = Implementation; 4 = Phased out; 5 = Unclear. (2) Ecosystem services (ES): W = watershed; B = biodiversity; C = carbon; L = recreation, ecotourism, and landscape/seascape beauty.

Sources: (1) Finlayson et al. (2013), (2) LPM Equator (2012), (3) DAI (2007), (4) 3PESA (2011), (5) Forest Peoples Programme (2011), (6) Mongabay Environment News (2013), (7) Suyanto et al. (2005), (8) CCBA (2007), (9) Prasetyo et al. (2009), (10) Rooswadiji (2012), (11) Suyanto (2007), (12) Setiawan and Pasha (2009), (13) Yayasan Peduli Citarum (2011), (14) Munawir & Vermeulen (2007), (15) UNDP (2012), (16) Djohani (2010), (17) Dive Raja Ampat (2013), (18) The Rufford Foundation (2013), (19) Porras and Neves (2006), (20) Widmann et al. (2012), (21) Ginoga et al. (2013), (22) de Oliveira et al. (2014), (23) Seaology (2014), (24) Sutopo (2013)

MAP OF ECOSYSTEM SERVICES IN INDONESIA

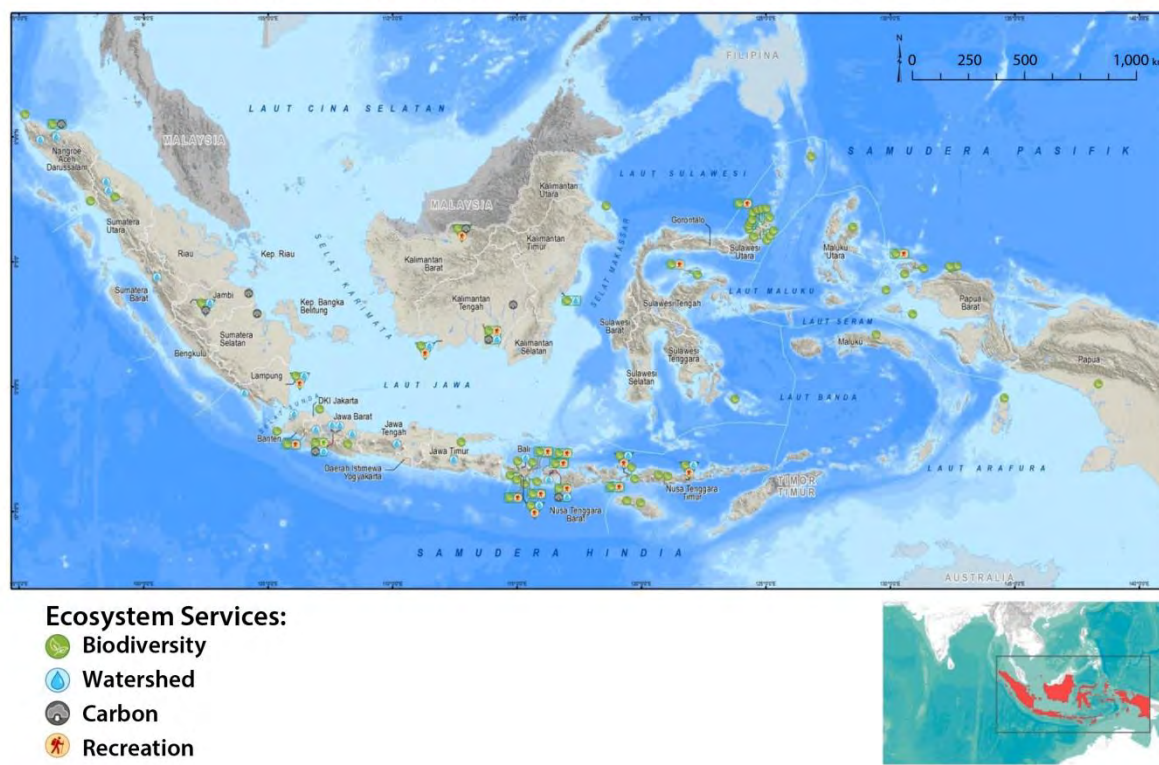


Figure 2. Distribution of ecosystem services in Indonesia

Table 6. Selected PES projects for in-depth interviews

No	Project	Province	Direct/Indirect Benefit*	Ecosystem Services
1	Cidanau watershed	Banten	Direct	Watershed protection
2	Rinjani watershed	West Nusa Tenggara	Direct	Watershed protection
3	Citarum watershed	West Java	Direct	Watershed protection
4	Green Radio Tree Adoption Program	West Java	Direct	Watershed protection
5	Village Ecotourism Network – Tenganan village	Bali	Indirect	Landscape/Seascape Beauty
6	Belok Sidan village	Bali	Indirect	Landscape/Seascape Beauty
7	Ecolodges Indonesia	Bali	Indirect	Recreation, biodiversity
8	Utama Spice	Bali	Indirect	Biodiversity
9	Raja Ampat MPA	West Papua	Direct	Biodiversity
10	Seacology	Eastern part of Indonesia, Nanggroe Aceh Darussalam, West Java	Direct	Biodiversity

Note: *Direct or indirect benefits refer to the payment. A direct payment is the payment to landowner based on the number of hectares of undisturbed or preserved area. An indirect payment is the payment to subsidize the use of the other nonhabitat, inputs of eco-friendly activity.

3.1 Cidanau, Banten^{3,4}

Cidanau watershed is located in the Serang and Pandeglang districts in Banten province. The total watershed area is 22.26 ha and includes the Rawa Danau Reserve (4.2 ha). Rawa Danau is the catchment area for Cidanau River with over 131 endemic species. This watershed has experienced rapid land-use change from forestland into agriculture. This consequently increased the number of illegal farming activities, thereby negatively affecting its biodiversity (Finlayson et al. 2013).

Rekonvasi Bhumi is an environmental NGO in Banten province. It has been involved in environmental advocacy since 1998 and created the Cidanau Communication Forum (FKDC), which has 13 members from various organizations. In 2002, this forum was legalized through a governor's decree (Finlayson et al. 2013). One of its focus areas is the sustainability of the Cidanau watershed. Accordingly, a proposal was developed and has been submitted for partnership with the Institute for Social Economic Research Education and Information (Lembaga Penelitian, Pendidikan dan Penerangan Ekonomi dan Sosial [LP3ES]) for the development of PES in Indonesia; Cidanau became one of the project sites. In Cidanau, good watershed management was already being implemented and was well-understood before the PES scheme was implemented. PES has become a way to achieve the goal of sustainability.

The PES unit in FKDC consists of government institutions (Serang, Cilegon, Ministry of Public Works); an intermediary (Rekonvasi Bhumi); and a buyer (PT Krakatau Tirta Industri or KTI). In this unit, sellers are represented by Rekonvasi Bhumi. In 2013, FKDC had a 50-hectare PES contract with KTI for watershed improvement. The governance system included payments for all PES unit members of IDR 150,000 per month. This payment is regarded as compensation for the time spent in improving the watershed and as an incentive to increase professionalism in PES management. The total amount of payment used for administrative purposes is 15% of the total payment obtained from KTI.

The sellers are composed of six forest farmer groups (kelompok tani hutan or KTH) from four villages located in Kabupaten Pandeglang and Kabupaten Serang. They were chosen based on the critical aspect of their land, including steep slopes prone to erosion. The groups from Cibojong and Kadu Agung villages dropped their contracts after two and three years, respectively. The main cause was that the amount of payment was considered too low, especially for farmers who possessed bigger parcels of land than the other farmers in the same village. A lesson learned from the above problem is that a more selective process for KTH is required; FKDC tends to select areas where farmers have relatively uniform land area. FKDC also considers selecting smaller blocks of 10 ha.

KTI, a state-owned company, acts as the buyer of the service. It provides water to the Cilegon industrial area, the state-owned drinking water company PDAM (Perusahaan Daerah Air Minum), and the state power company PLN (Perusahaan Listrik Negara). KTI constructed a 28-kilometer water transmission pipe from Rawa Danau to Cilegon. It is the only buyer of fresh water available in Rawa Danau. Asahi Mas, as a buyer from KTI, contributes by paying for 10 ha.

The service provided by the sellers is water provision for KTI—no pollution originates from industries in Cidanau watershed, and no pollutants other than fertilizer infiltrates into the water body. The price was decided through negotiations with the buyer (KTI), the intermediary (FKDC) and the sellers (farmers' groups from the four villages). The amount of payment was calculated based on the cost of inputs for the Community Forest Program Development (Program Pengembangan Hutan Rakyat [P2HR]) (Finlayson et al. 2013).

In 2004, KTI signed an agreement with FKDC; the former would provide USD 95,000 for the environmental services that the 50-ha watershed would provide for five years. The payment was distributed in installments: USD 35,000 for Phase 1 in 2005–2007 and USD 40,000 for Phase 2 in 2007–2009. The third payment in the fifth year was USD 20,000. In 2005, this program required USD 3,505/ha for 500 trees, totaling USD 17,500 per year. As the contract progressed, KTI's payment for the 50-hectare land has increased from

³ The discussion in this section is based on the results of the in-depth interview that the researchers conducted on 29 November, 2013 at FKDC Secretariate and Watershed Management Board (BP DAS). The key informants were (1) Mr. N.P. Rahadian, Secretary for Cidanau Communication Forum and Executive Director for Rekonvasi Bhumi; and (2) Mr. U.A. Majid of BPDAS.

⁴ RUPES conducted a study in Cidanau on PES impact on the environment.

⁵ Approximately IDR 3.5 million (USD 1 = IDR 10,000)

USD 17,500 to USD 20,000 to USD 25,000 per year in 2005–2006, 2007–2009, and 2010–2014, respectively. The total amount of payment for the last 10 years has been USD 225,000 (with tax).

FKDC, as the intermediary, pays the sellers (i.e., farmers' groups) according to their land area: USD 120 and USD 170 per hectare per year in 2005–2006 and 2007–2013, respectively.⁶ Monitoring is conducted biannually. The contract stated that sellers can reduce the number of trees in the third year, from 500 to 300 per hectare. However, to date, sellers do not use this part of the contract since they benefit more from the continuous water supply. Of the total money received, 80% went to the communities, of which 95% was used for rehabilitation and the remaining 5% for local business investment. Meanwhile, 14% of the total money was allocated for transaction costs and was managed by FKDC. The transaction costs included capacity-building activities, finding potential buyers, and monitoring and verification processes. The remaining 6% of the total money was for government taxes (Finlayson et al. 2013).

3.2 Rinjani, West Nusatenggara⁷

Rinjani area accounts for one-third of Lombok Island and serves as the catchment area of four watersheds in Lombok. Rinjani is also home to Segara Anak Lake (250–300 m deep), which supplies water to 2.4 million Lombok island inhabitants. More than 500,000 people live around Rinjani area, and their livelihoods depend on the forest area and agriculture fields in the lower valley of the mountain.

The development of the PES scheme in Mt. Rinjani in West Lombok was driven by environmental problems in the forested area that resulted in declining water supply along the Dodokan, Menanga, Putih, and Jelateng rivers as well as reducing water springs in the forested areas. Poverty had caused people living in the mountain area to engage in unsustainable forest practices, such as illegal logging, encroachment, and land conversion. In addition, conflict over the use and access of water during 2001–2002 was rampant, resulting in around 89 cases of conflict (LPM Equator 2012).

The PES scheme in Lombok was initiated in 2001 by the World Wildlife Fund for Nature (WWF) Mataram Chapter. The project is known as Payment for Watershed Services (PWS), which was initially designed to address environmental problems. Konsepsi, a national NGO, acted as intermediary in the initial stage of PWS. In the process, a multi-stakeholder institution (Institusi Multi Pihak or IMP) was formed, which acts as intermediary alongside WWF. PDAM, a local water company and the buyer for PWS in Lombok, is a member of the IMP. PDAM and the local forestry agency are in charge of monitoring and evaluation.

The local government supports PWS by enacting related local regulations. Payments are made by households in the downstream area who use tap water from the local drinking water company. The amount of payment was determined based on the expressions of willingness to pay (WTP) by downstream communities, which ranged from USD 0.05 to USD 0.5. The final payment of USD 0.1 per household was agreed upon after endorsement from local parliament, and is included in the monthly water bill. Collected funds are managed through IMP. IMP allocates 75% of this fund for PES programs while the remaining is for management purposes. Of this amount, 85% is allocated for restoration program while 15% is used for capacity building and alternative economic activities (LPM Equator 2012).

The Lombok City government, who also benefits from the scheme, pays PDAM an accumulated amount of USD 50,000 per year. Payment from Lombok Barat City to IMP is made through the government budget system.⁸ IMP is treated as a legitimate institution that can receive direct funds from the government budget in the amount of USD 100,000 per year.

PDAM's evaluation showed that IMP is not efficient and has too many members, and thus requires more funds for its operations. The funds, supposed to be used for conservation, failed to support its initial purpose. The local farmers, who are the sellers, do not obtain substantial payment for the services they provide. There is also uncertainty regarding the impact of the payments on the water quality. In 2011, on top

⁶ With the amount of payment from KTI, FKDC can provide funding for 300 ha, which is 250 ha more than that stated in the contract between FKDC and KTI.

⁷ A field visit was conducted in February 2014 to learn more about the PES project in Rinjani.

⁸ Gaps remain in terms of regulatory constraints and earmarking mechanisms for public fund transfers for conservation programs. This issue is crucial and needs to be resolved before any initiative can be expanded in the future.

of payment from buyers in Lombok and Lombok Barat cities, PDAM allocated operational costs to replant upland forest. There were 40,000 ha of upland forest in critical condition. Up to now, only 300 ha have been replanted using payment from water buyers and 90 ha using PDAM operational cost.

3.3 Citarum Watershed, West Java⁹

LP3ES and RUPES, with support from the West Java Environmental Management Agency and Asian Development Bank, designed a program called Compensation for Watershed Protection Services (CWPS). CWPS is an innovative mechanism that aims to overcome the complex environmental problems in Citarum by providing better watershed management. A description of the Citarum watershed and the problems prevailing in the area are elaborated in Finlayson et al. (2013).

The CWPS program established pilot demonstration activities in two villages upstream of Citarum watershed. Each site adopted different transaction models in their respective PES mechanisms. The first model is implemented through “direct transactions,” where the beneficiaries directly compensate the providers. The second is through “intermediary transactions,” where the beneficiaries use an intermediary for compensating the providers.

Syurga Air farmers’ group in Sunten Jaya has an agreement to use direct transactions with their buyer, PT Aetra Air Jakarta. PT Aetra Air Jakarta manages, operates, maintains, and invests in a clean drinking water supply system in the eastern part of Jakarta. The company works out of a joint-contract with PAM JAYA (a state-owned drinking water company) for 25 years or from 1998 to 2023. PT Aetra currently distributes drinking water to 400,000 customers. PT Aetra sources all of its raw water supply from Citarum River that flows into Jatiluhur reservoir, which is then channeled into Jakarta through the West Tarum Canal. The degradation of the quality and quantity of raw water from Citarum River has caused PT Aetra some serious water production problems. Mr. Syahril Japarin (President Director of PT Aetra from January 2008 to February 2011) had been approached by the LPE3S and BPLHD (the Indonesian regional environmental management agency), and consequently decided to support the PES program in the upstream area of Citarum to reduce sedimentation.

Syurga Air farmers’ group and PT Aetra agreed to conserve an area of 22 ha under an agroforestry system model. The period of contract commenced for six months from September 2009 to February 2010. PT Aetra provided compensation to the farmers’ group amounting to USD 5,000, with three stages of payment: (1) 50% payment after the agreement had been signed and all tillage had been completed by the farmers’ group; (2) 25% payment three months after the signing of the agreement and after the farmers’ group had established land for conservation and cultivation of crops on private land (crops planted had grown well); and (3) 25% payment six months after the signing of the agreement.

The USD 5,000 payment was solely for leasing 22 ha of land from the farmers’ group for five years. PT Aetra spent about USD 7,500 for LP3ES to facilitate and train the farmers’ group during the initial six months. The company provided seedling cost at the initial stage, a manual coffee husk machine after the first harvest, and later an electric coffee husk machine. Farmers could harvest the timber after at least seven years, but would have to replant the same type of tree and at least the same number. Besides planting timber, farmers also planted coffee and intercropped vegetables. PT Aetra maintained intensive communication with the farmers’ group and monitored the project since the beginning. PT Aetra intended to end their support during the five-year period of land leasing by giving the farmers’ group training to become a cooperative. The fund to support the conservation in the Citarum upstream areas came from PT Aetra’s corporate social responsibility (CSR) budget. The Syurga Air farmers’ group initially consisted of 32 farmers with total land of 22 ha as stated in the contract. Due to the farmers’ request, the number increased to 39 farmers with a total land area of 25 ha without any demand for additional cost to lease the land.

Despite the success of the program, the current President Director of PT Aetra decided to discontinue their financial support for conservation in Citarum upstream. The termination of the project was due to the lack of evidence that the project provided positive impact to the company’s water supply.

⁹ This section is based on the results of the researchers’ interview with Rika Enjelika, Corporate Communication Manager of PT Aetra (12 March, 2014). The section is also based on Finlayson et al. (2013).

3.4 Green Radio Tree Adoption Program¹⁰

Java's largest tracts of remaining rainforest are protected under two mountainous national parks: Gunung Gede Pangrango National Park and Gunung Halimun Salak National Park, which are collectively known as Gedepahala. Its rich forests are the primary water catchments that serve the 20 million people who live in its five surrounding cities, including Jakarta. In the rainy season, the Gedepahala forests provide protection from flash floods as the mountain enables the water to drain into the rivers and creeks around Jakarta. Several of the rivers also continue to flow throughout prolonged dry seasons, providing a form of insurance against drought.

The parks have long been recognized as a place for biological research, recreation, ecotourism, and environmental education. The parks are also rich in biodiversity, including flora and fauna that provide important resources for human life. The parks' forest is also considered as the last stronghold for the endangered and endemic Javan Gibbon (*Hylobates moloch*), Javan Hawk Eagle (*Spizaetus bartelsi*), Javan Leopard (*Panthera pardus melas*), and Grizzled Leaf Monkey (*Presbytis comata*).

In recognition of the value of Gunung Gede Pangrango, the Indonesia Ministry of Forestry released a Minister Decree in 2003 for the expansion of the Gunung Gede Pangrango National Park from 15,196 ha to 21,975 ha. In addition, the ministry also expanded the neighboring national park, Gunung Halimun Salak National Park; this opened the possibility of creating a corridor between the two parks.

The entities with authority for both national parks, the Conservation International (CI) Indonesia and Gedepahala Consortium, developed a tree adoption program to restore the expanded areas of Gedepahala National Park, which kicked off in late 2007. CI started a weekly educational radio program (i.e., Green Radio) in Jakarta's newly established and first radio station to focus on environmental issues. Green Radio served as a strategy to increase the number of tree adopters. The station with a tagline of the eco-lifestyle of Jakarta started to air in February 2008. By July 2008, Green Radio program and CI Indonesia successfully encouraged listeners to adopt 5 ha worth of trees. The show was successful in encouraging local listeners to be part of the solution for the Jakarta flooding by "adopting" one or more trees in the park by making a small donation. At the time, most of Jakarta's citizens still remembered very well how bad the major flood hit the city in February 2007.

Since then, Green Radio has proceeded to play an active role in the tree adoption program. Green Radio successfully covered a 38-hectare area in Sarongge Village with about 400 trees per hectare in five years, although it has closed off accepting new adopters for the Gede Pangrango area. However, Green Radio will monitor the progress for at least another two years (for the batch of trees planted in 2013).

Green Radio also established the Green Initiatives Foundation to manage the tree-planting activities and to work with the local farming community in establishing alternative livelihoods that would eliminate the need to encroach on national park land. The Green Radio program enabled individuals to "adopt" one tree by donating as small as IDR 108,000 (USD 11). The distribution of the donation is as follows: (1) 35% for seedling cost and maintenance for three years, (2) 50% for community development to improve the rural economy, and (3) 15% for the management of Green Radio program. Each tree is labeled with the adopter name, and the exact latitude and longitude coordinates can be viewed on Google Maps. A certificate of tree adoption is sent out to each adopter.

The program became popular as many public figures joined as adopters. Many individuals paid for tree adoption to commemorate their birthday, and also as a birthday present and even dowry. Companies can also adopt trees, to offset the CO₂ generated from company activities. Green Radio is currently developing a tree adoption program to reforest about 100 ha of former tree plantations managed by Perhutani in Sentul, West Java.

¹⁰ This section is based on the following: (1) Interview with Tosca Santoso, Director of Green Radio (14 March, 2014); (2) GEDEPAHALA Consortium (n.d.); (3) Green Initiative Foundation (n.d.); (4) Gunung Gede Parango (2015)

3.5 Village Ecotourism Network, Bali¹¹

In response to some of the problems brought to Bali due to mass tourism, four villages launched the Village Ecotourism Network or Jaringan Ekowisata Desa (JED) in 2002. JED aims to increase the incomes of the villages by diversifying and supplementing their agricultural livelihoods and to raise funds and awareness for conservation. JED is owned and run by the communities of the four villages and one NGO, the Wisnu Foundation, under the legal form of a cooperative.

Each village is uniquely defined by different characteristics (The Rufford Foundation 2013):

1. Kiadan Pelaga village is a producer of organic coffee, located in the central Bali highlands where the air is cool and clean.
2. Dukuh Sibetan village produces snakefruit (*salak*) and Bali's salak wine.
3. Tenganan Pegringsingan is an ancient village famous for double *ikat* weaving and for its culture, which is different from the other villages in Bali. Likewise, the forest around Tenganan is one of Bali's healthiest remaining natural forests.
4. Nusa Ceningan is a small island off Bali's east coast. The Ceningan people are seaweed farmers. The sea around Ceningan Island varies from crashing waves on the southern tip to coral garden on the north, from the quiet shallows of the western plantations to the river-like flows dividing Ceningan from Penida Island on the east.

JED invites tourists to come to the villages to see and experience village life. Local guides escort visitors to the forest-gardens and explain the variety and uses of the plants. The visitors also learn about the governance and culture of the villages. Trekking, snorkeling (in Ceningan), and overnight family homestays are also available. At the same time, local guides are relearning about their ecosystems and finding new pride in their local natural resources.

After a very slow beginning, JED embarked on a new phase after receiving a Rufford Small Grant in September 2006 in the amount of USD 7,500. The fund was spent on hiring a manager and an assistant, preparing marketing kits, and training the local guides. Since then, the tour sales have steadily increased and have been able to cover all operational costs. The JED sales office shares a building with the Wisnu Foundation office in Seminyak, but the organization independently manages its own operation. A day trip costs USD 55–75 per person and an overnight trip costs USD 85–130 per person. The price depends on the number of persons, with a minimum of two. The tour package includes transport to and from the village, meals, local guide, and accommodation (if staying overnight).

In 2013, JED attracted about 450 visitors, mostly from foreign countries such as those in Europe, Japan, United States of America, Australia, Korea, and Latin American countries. The sales reached IDR 367 million with around IDR 65 million in net profits. JED does not focus on the amount because the most important thing is that the community understands the potential of their village, how to sell it, and how to gain benefit from it without destroying their way of life. For example, Tenganan village limits 15 visitors per day, and its law does not allow outsiders to stay overnight.

JED has been designed to ensure that income does not only benefit the members directly involved in JED but the whole community as well. Some of the profit gained is allocated for the *banjar* (community group) or village, local temple, and future environmental conservation projects. The income is distributed as follows:

1. After deducting transportation costs, 30% of the net income is used for sales office expenses and 70% is allotted for the villages visited by tourists.
2. By the end of each year, 30% of the sales office income is allocated for office expenses, while the remaining fund is shared by Wisnu Foundation and the cooperatives in the four villages.
3. About 70% share for villages is allocated to pay all expenses. A share of profit is divided among community institutions such as Banjar, temple congregations, and village cooperatives as well as for

¹¹ This section is based on the following sources: (1) Interview with Gede Made Astana Jaya, JED Manager (30 January, 2014); Nengah Sudja, Tenganan Village Leader (30 January 2014); (2) JED (2015); (3) JED (2006); (4) *Bali Antara News* (7 March, 2014); (5) *The Bali Daily News* (13 August, 2012); and (6) Yayasan Wisnu (2009).

environmental conservation. At the end of the year, the members of the village cooperative decide where to use the remaining funds.

In Tenganan village, the community agreed to allocate IDR 5,000 for Banjar; IDR 5,000 for the temple; and IDR 5,000 for conservation from the contribution of each visitor. The community also has plans to organize an outing for them.

3.6 Belok Sidan Village¹²

Belok Sidan village is located next to the Kiadan Pelaga village, which is part of JED. Both villages share similar characteristics. Both are producers of coffee, and both are located in the central Bali highlands where the air is cool and clean. The village is surrounded by a forest that includes native bamboo, rice fields, rivers and gorges, which makes it an area with beautiful trekking routes. Most of the residents are farmers that grow vegetables and cut flowers; they plant rice in flatlands or in gently sloping areas. They also adopt agro-forestry systems for growing coffee in sloping areas. This village used to suffer from landslides until the Wisnu Foundation, with financial support from Kehati Foundation, started empowering communities in 1999 to envision a better future for the village.

The activities facilitated by the Wisnu Foundation were actually part of the process of setting up community-based ecotourism. The communities had come up with a consensus on a sustainable land-use plan for their villages and accordingly implemented such plan. Kehati Foundation also awarded another grant to the village to enable them to conduct the following activities: coordination meeting, food and beverage training, village workshop, rare plant planting for ceremony, infrastructure to support ecotourism such as hiking paths and rest areas, organization and marketing for flower-cutting tourism, and public awareness campaigns. The village continues to adopt their sustainable land-use plan after almost 15 years since the consensus. The community realizes that the conservation brings benefit to their lives.

3.7 Ecotodges Indonesia¹³

Ecotodges Indonesia (ELI) is a small company pioneered by Dr. Alan Wilson (a veterinarian) and his wife Meryl Wilson in 1994. ELI aims to use wildlife tourism through sustainable job creation, using the local people with no training in tourism or hotel management. ELI allows travelers to have a real encounter with the flora and fauna of each unique location. The company has thus far built and operated five Ecotodges in environmentally sensitive locations around Indonesia on the edge of national parks (Figure 3 and Table 7).



Figure 3. Locations of Ecotodges in Indonesia

¹² The discussion in this section is based on the researchers' interview with Made Darma, farmer and trekking guide (2 February, 2014).

¹³ This section is based on the following sources: (1) Interview with Gede Ori Ariandika (4 February 2014); (2) *Dick Vet News* (Spring 2011); and (3) *Dick Vet News* (Winter 2011).

Table 7. Ecolodges location and flora/fauna

No.	Ecolodge	Location	Special Flora/Vauna	Open	Room
1	Udayana	Udayana Univeristy, Jimbaran, Bali	Birds, Butterflies	1996	15
2	Bajo	Labuan Bajo, Flores, East Nusa Tenggara	Komodo	1999	16
3	Rimba	Tanjung Puting, Central Kalimantan	Orang Utan	2003	32
4	Satwa	Way Kambas, Lampung, Sumatra	Elephant, Rhino	2007	8
5	Kelimutu	Flores, East Nusa Tenggara	Crater volcano lake	2010	11

After a very difficult start, the company has made great headway in showing the importance of conservation in relation to job creation. The total occupancy of 82 rooms at all lodges reached 6,000 room-nights in 2013. The occupancy has increased by 5% per year. The socioeconomic benefits of these guests to the outlying areas of the lodge have been enormous and very effective in delaying ecological destruction.

Rimba Ecolodge is the most visited among the Ecolodges. Initially, recruiting local staff was very difficult because most of them would rather work in the palm oil plantation or in mining. Eventually, the local people have come to understand that the nature reserve can provide an alternative livelihood due to the growing number of visitors and the interaction with the eco-minded visitors. As a result, more local people are now interested in working for ecotourism.

All the lodges are established as conservation areas. ELI developed a company ecological standard of measurement based on the Green Globe 21 principles with a possible score of over 8,000. Each lodge is scored and required to improve through annual plans. The main targets are to (1) conserve the immediate environment; (2) conserve water by storing rainwater for use where possible, and recycling all water onto the gardens through a biological recycling system; (3) minimize waste by recycling rubbish (paper, bottles, cans, and clean plastic) and through vermiculture of kitchen waste; (4) keep chemical cleaners and sprays to a minimum; (5) reduce the use of nonrenewable energy by applying solar hot water systems, solar lights, and energy-saving bulbs; (6) conduct training programs to raise awareness of the environment amongst staff, guests, and the wider community; (7) keep over 99% of the staff local; and (8) ensure that the accounts are transparent and that a percentage of profit is used for further environmental protection.

ELI is aware that the company primarily depends on the presence of wildlife. Apart from creating sustainable jobs, ELI directly supports efforts to protect some of the world's most endangered species through maintaining the bird conservation area in Bajo Ecolodge and the rhino conservation and Alert Bird Club in Satwa Ecolodge; and through supporting Way Kambas National Park ranger activities by offering tours, especially those involving camping in the park. The tour and travel department of ELI formed a sister company in 2009, called Ecosafari Indonesia (ESI). ESI organizes domestic flights, park entry permits, boat hire, and any other travel requirements. ESI also offers tailored trip packages with a professional guide. A USD 10 fee from each trip reservation through ESI is directly allocated for the conservation fund.

3.8 Utama Spice, Bali¹⁴

Utama Spice is a traditional skincare company based in Ubud, Bali. It focuses on applying ancient Balinese herbal knowledge to produce beauty products. They also provide information about the source of the raw material and how they are preserved and processed using traditional knowledge. Utama Spice does it by using only 100% pure natural ingredients. The creators believe if you would not cook with it, you should not put it on your body.

Utama Spice was started by Dayu Suci and Melanie Templer in 1989 after they realized that the ancient Balinese medicinal herbal knowledge, which has proven to provide extremely powerful and effective medicines for the Balinese over the past hundreds of years, was being pushed aside to make room for modern products containing dangerous chemicals. They also noticed that not only was this herbal knowledge being lost, but the herbs themselves were being lost from being replaced by cash crops, further

¹⁴ This section is based on the following sources: (1) Interview with Ria Templer (3 February 2014) and (2) Utama Spice website

perpetuating the cycle. As a business, Utama Spice strives to balance between generating income from the herbs and ensuring it does not damage the environment in which the herbs grow. They lower the impact on the environment by supporting local producers and organic farming methods as well as avoiding the use of endangered materials, such as sandalwood.

Utama Spice works with a large number of small farmers and local manufacturers to source the raw materials. They have strict procedures that ensure the products and the raw materials are checked at every stage, guaranteeing the highest standard of quality control. They give advice to enhance local farming skills. Utama Spice got incorporated in 2000 (Sertori 2009) and now employs 25 team members. They have a very flat management structure with the team leaders often standing beside their team and getting involved. No data exists on Utama Spice's current sales volume, but in 2007 (with 16 team members), it reached IDR 80 million per month.

3.9 Raja Ampat Marine Protection Area, West Papua¹⁵

Raja Ampat is located on the northwest tip of Bird's Head Peninsula on the island of Papua, West Papua province. Raja Ampat (which means "four kings") is an archipelago with over 1,500 small islands, cays, and shoals around the Misool, Salawati, Batanta, Waigeo, and Kofiau islands. The main occupation of the local people is fishing. The Raja Ampat islands are within the central area of greatest marine biodiversity, referred to as the Coral Triangle (McKenna et al. 2002).

Until fairly recently, Raja Ampat's isolation and low human population have played a large part in keeping its reefs healthy and thriving. However, the region's rich coastal and marine resources have made it a target for economic development, ranging from fisheries and marine tourism, to more destructive activities such as oil and gas exploration, mining, and logging. Thus, the paradox of Raja Ampat: unique in the world, globally outstanding, bursting at the seams with biodiversity—yet highly threatened.

Conservation International, The Nature Conservancy (TNC), and the Indonesian government's Coral Reef Rehabilitation and Management Program (COREMAP), together with the local government and other local institutions and stakeholders, are facilitating the management of Raja Ampat. WWF and the local NGO Papua Sea Turtle Foundation play a key role in sea turtle conservation. In May 2007, the Raja Ampat local government declared a network of seven marine protected areas (MPA) that covers nearly 900,000 ha and approximately 45% of Raja Ampat's coral reefs and mangroves. Effectively implemented, these MPAs should ensure the long-term health and sustainability of Raja Ampat's marine ecosystems.

The tag system has been adapted from the very successful Bonaire and Bunaken Marine Park systems. The 2008 tag features an endemic pygmy seahorse, one of over 1,200 fish species found in Raja Ampat—the most biologically diverse marine regions in the world recorded to date. Visitors are required to carry their tags or cards at all times—tags can be easily affixed to guests' snorkeling or diving gear or to their dive bag. The entrance fee system is enforced through spot checks conducted by official patrols. The money collected is managed by a multi-stakeholder management team and is divided between tourism development, conservation, and community health projects. The entrance fee for foreign visitors is IDR 500,000 (USD 55) per person, for which they will receive a waterproof plastic entrance tag featuring a photo of Raja Ampat. All Indonesian visitors from outside Raja Ampat are required to pay IDR 250,000 (USD 25) before receiving an entry card. The fee for foreign visitors was established based on the WTP of visitors of live-aboard vessels. Annual tag sales for Raja Ampat are presented in Table 8.

The money collected from the tags is divided into two major components: (1) the Retribution fee, which goes directly to the Department of Tourism for tourism development projects, and (2) the Non-retribution fee, which is managed by a multi-stakeholder team and divided between conservation/MPA management projects and community development projects (Figure 4). None of the conservation funds has been utilized. CI and TNC still support the patrol cost.

¹⁵ This section is based on the following sources: (1) Interview with Ii Rosna Tarmidji, Conservation International, Marine Tourism Development Specialist for Raja Ampat, Kaimana Bali, Anambas (31 January, 2014); (2) Dive Raja Ampat website.

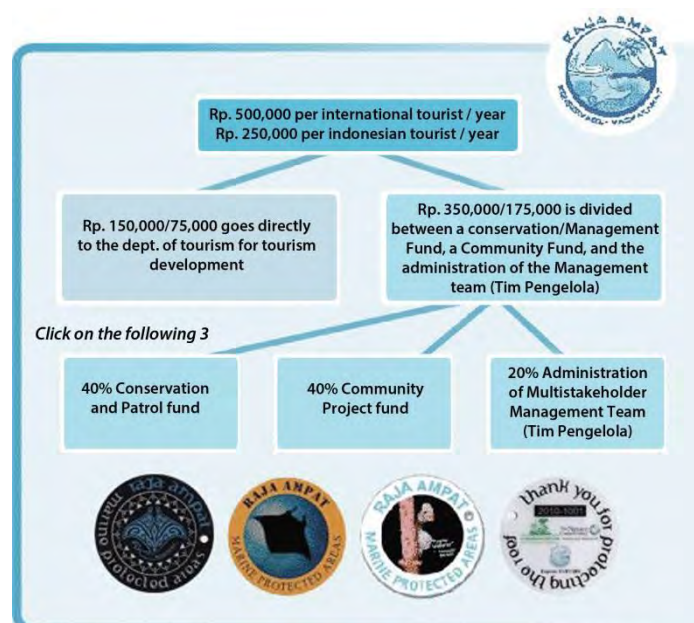


Figure 4. Payment distribution scheme for Raja Ampat MPA

Table 8. Annual Raja Ampat tag sales, 2007–2013 (in '000 IDR)

Year	Inter Sales	Local Sales	Total Income	Government Fund	Conservation Fund	Community Fund	Management Fund
2007	932	66	482,500	144,750	135,100	135,100	67,550
2008	2,366	279	1,252,750	375,825	350,770	350,770	175,385
2009	2,872	338	1,520,500	456,150	425,740	425,740	212,830
2010	3,857	658	2,093,000	586,040	586,040	586,040	293,020
2011	5,159	1,246	2,891,000	867,300	809,480	809,480	404,740
2012	6,037	1,717	3,447,750	1,034,325	965,370	965,370	482,485
2013	8,318	2,838	4,868,500	1,460,550	1,363,180	1,363,180	681,590
Total	29,541	7,142	16,556,000	4,924,940	4,635,680	4,635,680	2,317,600

3.10 Seacology¹⁶

Seacology helps island habitats and assists local communities by offering villages a unique deal: if they agree to create a forest or marine reserve, then Seacology will provide funds for something the village needs, such as schoolhouse, health clinic, community center, or water system. Since 1991, Seacology has worked with over 200 villages in 149 islands in 51 countries, helping to protect about half a million hectares of vulnerable habitats.

Seacology's history started in 1990 when the Samoan government gave Falealupo, a remote village, an ultimatum: build a better school or lose their government-funded teachers. The village leaders wanted to provide good education for their children, but they simply didn't have the money to build a new school. Their only option, it seemed, was to sell the logging rights to more than 12,000 ha of rainforest surrounding their village. This caught the attention of Dr. Paul Cox, an American ethno-botanist doing field research in the forest. He approached Falealupo leaders with a proposal: if he could raise the money to build a new school, would they agree to conserving the forest in perpetuity?

¹⁶ This section is based on the results of the researchers' interview with Irman Meilandi (5 March, 2014), a fiscal administrator for Mandalamekar project in 2009, Seacology prize winner in 2011, and a Seacology representative for Indonesia since 2012.

Seacology started its first project in Indonesia in December 2000. Since then, Seacology has funded over 40 projects in the country. About 40% of Seacology's reserve areas are located in Indonesia and mostly on the eastern part. Seacology has distributed almost USD 1 million for all the projects in Indonesia.

Seacology operates with a small staff out of an office in Berkeley, California, and relies on a network of part-time field representatives around the world. These field representatives work directly with island communities and local NGOs to oversee Seacology projects and to seek out new project opportunities. Because each island village has different needs and circumstances, each project is different. In consultation with the staff, field representatives negotiate the terms of the agreement with villages—what will be protected, and what they need in return. Once a tentative agreement is set, the project is submitted to the Board of Directors for approval for funding.

To finalize the agreement, a Covenant between the community and Seacology is then signed. The covenant consists of only one page and is not complicated, as it merely stipulates a few important points: (1) Seacology will provide the funds required to build the agreed village need; (2) Seacology will not claim ownership over any land or sea belonging to the community; and (3) in return, the community pledges to protect the no-take zone agreed upon.

For each Seacology project, the village leader would sign the covenant on behalf of the community, and s/he would also play a role as the project leader. In addition, a fiscal administrator is responsible for monitoring the project spending and reporting to Seacology. The fiscal administrator, usually a well-educated community member, needs to have basic administration and communication skills. The four keys to the success of a Seacology project are as follows: (1) a motivated community; (2) an infrastructure project that benefits everyone in the community; (3) conservation restrictions to enhance the sustainability of the local economy, and not harm it; and (4) conservation restrictions that are enforceable. Seacology only pursues projects upon knowing that a community is motivated and capable of enforcing the terms of the restrictions.

3.10.1 Seacology project in Mandalamekar, West Java

Mandalamekar village, located in the highlands of West Java, is home to 3,200 people who are mainly engaged in farming. In 2000, the village encountered a water crisis that triggered a conflict among the residents. It took about two years for the community to finally realize that the crisis was due to the forest degradation in the catchment area.

In 2002, the community took it upon itself to rehabilitate 98 ha of their village forest and to protect this forest into perpetuity. In addition, the community created a forest from about 40 ha of village land and planned to thin the forest by half in 2025. The timber sale would give the village extra income. The forest features several significant waterfalls and is an important habitat for several primate species, such as lutungs, the endangered Javan Surili, and many kinds of birds. The village effort to enhance the critical watershed function attracted Seacology's attention. In 2008, Seacology offered to support what the village needed. The primary need in Mandalamekar village was a multi-purpose community building for village meetings, art, culture, and recreation. The community was keen to make an agreement to protect the no-take forest in exchange for this much-needed village facility.

In 2009, Seacology agreed to provide funding not exceeding USD 200,000 to build a multi-purpose community building. In return, the village committed to protecting 108 ha of existing no-take forest and 30 ha of replanted forest. The village government, village police, village civil defense force, and an informal community group called Mitra Alam Muggaran would patrol and build a communication system to facilitate the patrols. Note that Seacology never interferes or tries to influence what the community wants to build. The amount of funding provided does not depend on the size of the protected area. Seacology basically values the process that has been pursued by the community, and believes in mutual trust and kinship.

Table 9. Seacology projects in Indonesia (2000–2014)

No	Site	Province	Time	Area	Reward
1	Banjar Bengkel, Tabanan	Bali	Feb 2014	650 ha no-take rainforest into perpetuity	Community building
2	Pumlanga Village, Halmahera	North Maluku	Jun 2013	Protection of 2,000 ha traditionally owned forest	Community center
3	Hupumada Village, Sumba	East Nusa Tenggara	Feb 2013	6,000 ha no-take forest zone for 10 years	Village-wide solar power
4	Saubeba, Warmandi, Wau	West Papua	Feb 2013	108 ha leatherback turtle nesting beach for 3 years	Full university scholarships for 7 students
5	Fafanlap, Daram, Raja Ampat	West Papua	Jun 2013	40,300 ha no-take marine zone for 14 years	Community center/kindergarten
			Jan 2013	Support recent laws that the government passed on banning shark and manta ray fishing	Purchase equipment to support a media and outreach program
6	Pam, Saukabu, Saupapir, Fam Besar Island, Raja Ampat	West Papua	Jun 2012	58,000 ha no-take marine zone for 25 years	Solar power for junior high school Construction of community-patrolled guard post/lookout tower
7	Pelilit, Nusa Penida	Bali	Jun 2011	0.5 ha no-take turtle nesting beach for 10 years	Construction of a turtle guard post
8	Sano Nggoang, Flores	East Nusa Tenggara	Jan 2011	380 ha existing no-take forest + creating 30 ha no-take forest for 10 years	Community clinic
9	Kahuku, Bangka Island	North Sulawesi	Jul 2010	Creating 30 ha no-take coral reef	Village health clinic
10	Banjar Anyar	Bali	Jul 2010	800 ha no-take rainforest into perpetuity	Community building
11	Teluk Nibung, Ujung Sialit, Pulau Balai, Suka Makmur, Banyak Island	Aceh	Jan 2009	780 ha protected land and marine habitat for 10 years	Soccer fields for Teluk Nibung and Ujung Sialit Community meeting hall for Pulau Balai Storm gutter for Suka Makmur
12	Mandalamekar	West Java	May 2009	108 ha existing no-take forest and 30 ha replanting forest	Multi-purpose community building
13	Benteng Dewa, Flores	East Nusa Tenggara	May 2009	6,000 ha no-take forest	Community health clinic
14	Cunca Lolos, Flores	East Nusa Tenggara	May 2009	5,000 ha no-take forest	Village freshwater system
15	Umbu Langang, Sumba	East Nusa Tenggara	June 2008	Protection of 3,000 ha rainforest and savannah for 10 years	Freshwater system
16	Warsamdin, Waigeo, Raja Ampat	West Papua	June 2007	50,000 ha MPA	Solar power and radio for Araway village Solar power for Beo Island Paved footpath for 6 villages Public toilet and bathing facilities for Warsamdin village
17	Ensem and Niampak, Karakelang	North Sulawesi	Jan 2007	24,600 ha rainforest reserve for 20 years	Medical clinic Kindergarten school
18	Deer, Dibalal, Tolobi, Kofiau, Raja Ampat	West Papua	Jun 2007	16,700 ha no-take marine reserve	Medical equipment, school books, and equipment
19	Ranawangko	North Sulawesi	Jun 2006	14 ha permanent no-take sea turtle nesting beach	Fresh water supply, public toilet, and access road

Table 9 continued

No	Site	Province	Time	Area	Reward
20	Tulap	North Sulawesi	Jun 2006	14.5 ha permanent no-take sea turtle nesting beach	Public stairway
21	Tulaun	North Sulawesi	Jun 2006	12 ha permanent no-take sea turtle nesting beach	Freshwater supply, public toilet, and access road
22	Sarinbuana	Bali	Jan 2006	800 ha permanent no-take rainforest reserve	Library/music/dance building Instruments and equipment
23	Saubeba, Warmandi	West Papua	Jan 2006	1,000 ha no-take leatherback turtle nesting beach and fringing forest reserve	Secondary and tertiary scholarships
24	Manado Tua Satu, Manado Tua	North Sulawesi	Jan 2006	48 ha of rainforest and 65 ha of coral reef as a no-take reserve	School reconstruction
25	Kawangkoan	North Sulawesi	Jul 2005	30 ha permanent no-take forest reserve	Elementary school reconstruction and school furniture
26	Iboih, Weh Island	Nangroe Aceh Darussalam	Jul 2005	14 ha permanent no-take mangrove forest reserve	Coral reef clean-up and mangrove restoration
27	Kaibolafin, Kola	Maluku	Jan 2005	200 ha no-take forest reserve	Upgrade of village rainwater collection system School reconstruction
28	Pinasungkulan	North Sulawesi	Jul 2005	77 ha no-take rainforest reserve and a 40-ha no-take mangrove and coral reef reserve	Village-scale fresh water well system
29	Poopoh	North Sulawesi	Jan 2005	200 ha no-take forest reserve	Village-scale fresh water well system
30	Teling	North Sulawesi	Jan 2005	100 ha no-take forest reserve	Upgrading and repairing an existing fresh water system
31	Molas, Meras, Tongkeina, Bahowo	North Sulawesi	Jul 2004	65-ha MPA	Outdoor cultural theater
32	Alung Banoa, Bunaken	North Sulawesi	Apr 2004	No data available	Purchase, installation, and transportation of EcoReef reef rehabilitation modules
33	Kumu	North Sulawesi	Jul 2002	No-take zone at Bunaken National Park	Community landing dock in exchange
34	Masihulan and Sawai, Seram	Maluku	Jul 2004	50 ha no-take forest reserve	Elementary school renovations
35	Asmat	Papua	Jul 2003	150 ha rainforest no-take zone	Rural health clinics Community health training/education
36	Tomil, Togeon	Central Sulawesi	Jul 2003	No-take marine zone extending approximately 19 km outward from the coast	Outboard motorboats for patrol and enforcement of community fishing grounds
37	Sampela, Kaledupa	South-East Sulawesi	Nov 2003	1,300 ha marine sanctuary	Fisheries enforcement and community infrastructure
38	Tirtagangga	Bali	Jul 2002	1.4 million ha Wakatobi Marine National Park	Village-based fisheries management program
39	Maratua	East Kalimantan	Jul 2002	No data available	Reef rehabilitation
40	Tiwoho	North Sulawesi	Nov 2001	2-ha area	Fish Aggregation Devices
41	Komodo Island	East Nusa Tenggara	Dec 2000	No data available	Construction of a Community Coastal Resource Centre for mangrove/sea grass bed preservation Alternative fishing program

4.0 LESSONS LEARNED

4.1 Definition of Payment for Ecosystem Services

PES has been formally defined by Wunder (2005) as “(1) a voluntary transaction, where (2) a well-defined environmental service or a land use likely to secure that service (3) is being ‘bought’ by a minimum one service buyer (4) from a minimum one service provider (5) if and only if the service provider secures service provision (conditionality).” Referring to the Wunder’s definition of PES, it did not seem easy to find a project in Indonesia that fulfilled all its criteria.

First, in the case of Rinjani, there is no voluntary transaction. Although the amount of payment was set according to the WTP study, in practice, the buyers (water consumer) pay the amount set by the local water company; there is no option for non-payment. The payment is being made without an understanding that their payment means better water quality for their households or that their payment will contribute to the watershed conservation being done by the upland farmers. Since the amount of payment is stated in local regulation, there is a regulatory constraint for payment from the water consumers in Lombok Barat to be considered voluntary. The same condition is most probably applied in government-led PES schemes. Voluntary condition can be accepted when a public awareness campaign is involved, such as Green Radio’s tree adoption project. The transparent monitoring system shown by Green Radio for its tree adoption program can increase voluntary payment for environmental services and provide higher possibility of replication in other critical landscapes. Based on the PES projects and PES case studies in Indonesia, it can be said that transparency in the management of funds and the presence of a good monitoring system are important features needed for the payment to be voluntary.

Second, the environmental services provided by sellers are mostly well-defined. However, the science behind the environmental service provided and the environmental protection effort being conducted by sellers are yet to be explained. Hence, in the case of Cidanau and Citarum, sellers do not have enough information to defend their claim on the service being provided. In the end, they did not have a voice when buyers, such as the local water company in Citarum, discontinued their contract and the payment to local upland communities in favor of replanting services. The services provided by local communities were seen as an unprofessional approach to water production.

Third, with regard to the criterion of “being bought by a minimum buyer from a minimum service provider,” all PES projects have at least one buyer and one seller. The buyers are private or local government corporations (12 projects), government (2 projects), donors (4 projects), direct users (16 projects) and indirect and non-users (49 projects, mostly Seacology projects). Sellers could be defined to some extent, but the main problem is not the sellers’ identification but rather the distribution of payment. Whether or not the actual sellers obtain the highest proportion of the payment is in question. In the case of Raja Ampat, the actual sellers (i.e., the local community) obtain approximately 40% of the total payment; another 40% is used for monitoring and maintenance of the service. With this scheme, along with the WTP exercise undertaken to set the amount of payment, it can be said that the amount of payment for the service is appropriate and that sellers obtain the appropriate proportion of payment. This is not always the case in the Indonesia PES projects.

Fourth, the conditionality criterion requires that the service provider secures service provision. For recreation services (e.g., Raja Ampat, VEN, Belok Sidan, and Ecolodges) and direct but sustainable use of biodiversity (e.g., Utama Spice), the conditionality requirement is fulfilled. However, in the other case studies, especially in the watershed protection services such as Cidanau, Rinjani and Citarum, the conditionality requirement cannot be met, primarily because of the lack of science to link the sellers’ actions with the service provided.

Another requirement, not stated in Wunder’s definition, is additionality. In Indonesia’s PES cases, additionality can be grouped into (1) the continuance of “good” land management practices (48 cases), (2) the abandonment of bad behavior (3 cases), and (3) the adoption of new good practices (20 cases). In the village ecotourism network, the scheme implemented in Bali increases local people’s understanding of their way of life, the importance of conserving the ecosystem around them, and how to gain benefit without compromising their way of life and the natural environment. The same additionality can be seen in Belok Sidan village; realizing that conservation brings benefit to their lives, the villagers have been adopting their

sustainable land-use plan for almost 15 years, since the consensus with Kehati and Wisnu Foundation. In Ecolodges, a deeper understanding that nature reserves can provide alternative livelihood has made more local people interested to work in the ecotourism sector. The same condition also applies to Seacology projects, whereby the local community understands how their actions can cause environmental degradation, and accordingly identified how to solve the problem. For farmers selling rare spices to Utama Spice, this new demand provides a new understanding that biodiversity can be sold in the form of direct use of the products as an alternative to indirect use or existence value. All are forms of additionality were observed in Indonesia's case studies. However, since the baseline condition for each case was not recorded prior to PES implementation, close observation of additionality is difficult to conduct.

Observing all five points of discussion above, only the Seacology projects can be justified to have fulfilled Wunder's criteria, especially for conditionality. However, if the PES definition of van Noordwijk et al. (2003) [as cited in Suyanto et al. (2005)] is to be followed, all on-going projects presented in Table 10 are considered to be adequate PES sites in Indonesia (54 sites). Table 11 summarizes the findings from 10 PES projects selected for in-depth interviews.

Table 10. Summary of 54 on-going PES sites in Indonesia

No.	Project	No. of Sites	PES Attributes					
			Voluntary	Well-Defined	Buyer	Seller	Conditionality	Additionality
1	Cidanau watershed	1	+	+	+	+		+
2	Rinjani watershed	1		+	+	+		+
3	Citarum watershed	1	+	+	+	+		+
4	Green Radio	1	+	+	+	+		+
5	VEN-Tenganan village	1	+		+	+	+	+
6	Belok Sidan village	1	+				+	+
7	Ecolodges Indonesia	5	+		+	+	+	+
8	Utama Spice	1	+		+	+	+	+
9	Raja Ampat MPA	1			+	+	+	+
10	Seacology	41	+	+	+	+	+	+

Table 11. Summary of 10 selected projects for in-depth interviews in Indonesia

Location	1	2	3	4	5
	Cidanau, Banten	Rinjani, West Nusatenggara	Citarum, West Java	Tree Adoption, Jakarta	Village Ecotourism Network, Bali
Description	Total watershed: 22.26 ha Total Rawa Danau area: 4.20 ha, 131 endemic species	30% of the land area of Lombok Island serves as catchment area for 4 watersheds Segara Anak Lake (water for 2.4 M Lombok inhabitants) 500 people live in the area	Citarum River provides water intake for PT Aetra Air Jakarta. Degradation of quality and quantity	Gunung Gede Pangrango National Park and Gunung Halimun-Salak National Park has primary catchment area for 20 million people. In 2007, the tree adoption program was launched.	VEN was launched in 2002 by four villages. Tenganan forest is one of Bali's healthiest remaining natural forests
Intermediary	1998 FKDC (+Rekonvasi Bhumi), legalized in 2002: Improvement of Cidanau watershed, manage 14% of total fund	WWF Mataram Chapter and IMP (multi-takeholder institution) Konsepsi IMP: local water company (PDAM)	LP3ES (USD 7,500 for 6 months for farmers' training) BPLHD (Governor) only in setting up stage	Conservation International, Gedepahala Consortium, Nat Parks Green Radio (2008–2013), Green Initiatives Foundation working with farmers	VEN
Seller(s)	Forest farmer group (KTH + Rekonvasi Bhumi) from 6 villages	Local farmers in Lombok Barat 12 blocks, 25 ha	Syurga Air Farmers Group, 22–25 ha agroforestry system model Farmers could harvest the timber after 7 years Membership up: 32–39 farmers	Local farmers	Tenganan people
Buyer(s)	Krakatau Tirta Industri (KTI)	PDAM's consumers: 60 in Mataram and 30 in Lombok Barat	PT Aetra Air Jakarta (400,000 customers)	Adopters (certificate and location)	Tourists
Service	Watershed improvement, water for KTI	Watershed improvement	Watershed improvement	Land condition improvement	Ecotourism

Table 11 continued

Location	1	2	3	4	5
	Cidanau, Banten	Rinjani, West Nusatenggara	Citarum, West Java	Tree Adoption, Jakarta	Village Ecotourism Network, Bali
Payment scheme	In 2013, six 50-hectare PES contracts were existing Price was established through negotiation using cost of input as guidance KTI to FKDC USD 350–500/ha per year; FKDC to KTH USD120–170/ha per year	USD 0.1 per month per household PDAM's operational cost (earmarking problem) 75% for PES (replanting), 25% for IMP	Direct transactions: Sept 2009–Feb 2010 was USD 5,000 Intermediary transactions	38 ha, 400 trees per hectare USD 11 for 1 tree 35% for seedling cost (3 years); 50% for community development; 15% for Green Radio's program management	Payment for day trip USD 55-75 per person per day; USD 85-135 per person per overnight 30% official used (staff salary, marketing, office expenses), 70% for the villages (tourists' expenses, banjar, temple and village cooperatives)
Lessons learned	Strict selection for KTH Tend to choose KTH with relatively uniform land area, not too big, no dominant ownership Selecting smaller block of 10 ha	Regulatory constraint (consumers in Mataram), earmarking mechanism	Discontinued in favor of paid and more "professional" conservation project to improve raw water quality PES was seen as an unprofessional approach to water production	Possible replication for other critical land, for instance, in Sentul, West Java	Local people better understood their way of life, how it helps to conserve the ecosystem around them, and how to gain benefit without compromising their way of life and natural environment
Local policy	Governor of Banten decree	Head of Lombok Barat District Decree: PES tariffs, IMP	Citarum River provides water intake for PT Aetra Air Jakarta Degradation of quality and quantity		
Monitoring	Rekonvasi Bhumi	IMP	PT Aetra Air Jakarta	Green Radio (2013)	VEN

Table 11 continued

Location	6		7		8		9		10	
	Belok Sidan Village, Bali		Ec lodges		Utama Spice, Bali		Raja Ampat MPA, West Papua		Seacology, Indonesia	
Description	Belok Sidan village produces coffee It is surrounded by forest, native bamboo, ricefields, rivers, and gorges		Founded by Dr. Alan Wilson and Meryl Wilson in 1994 in environmentally sensitive locations near National Parks		Utama Spice is a traditional skincare company based in Ubud, Bali It is designed to protect against loss of local knowledge and high-quality local herbs		Marine life diversity is the highest recorded on Earth, greater than in the Coral Triangle		Seacology helps in conservation of habitats and assists local communities Seacology provides what the village needs in exchange of marine or forest reserve 41 locations in Indonesia	
Intermediary	Wisnu Foundation, Kehati Foundation		ELI		Utama Spice		Conservation International, TNC		Seacology	
Seller(s)	Belok Sidan People		Local staff		Local farmers, supplier, and manufacturer		Local people		Local communities	
Buyer(s)	Tourists		Tourists		Buyers		Tourists		Individual contributors	
Service	Ecotourism (not yet professional)		Wildlife tourism through sustainable job creation for local people Supports wildlife protection		Biodiversity and cultural protection		Ecotourism to support conservation and community projects		Protection of marine or forest areas	
Payment scheme	Entrance fee		USD 10 from each trip is directly allocated for conservation fund		Payment for products (USD 8,000 per month)		Tourism entrance fee system USD 55 per person per year 40% conservation and patrol fund; 40% community project fund; 20% administration of multi-stakeholder team		USD 1 million for all projects in Indonesia	

Table 11 continued

Location	6	7	8	9	10
	Belok Sidan Village, Bali	Ecolodges	Utama Spice, Bali	Raja Ampat MPA, West Papua	Seacology, Indonesia
Lessons learned	The village has continued to adopt their sustainable land-use plan after almost 15 years since the consensus with Kehati and Wisnu Foundation; they realized that the conservation brings benefit to their life.	Understanding that nature reserve can provide alternative livelihood More local people are interested in working for ecotourism sector	Demand for high-quality and rare local plants can promote PES for biodiversity		Local community understands how their actions cause environmental degradation and how to solve the problem International buyers provide payment for nonuse value of the ecosystem
Local policy	None available	None available	None available	None available	None available
Monitoring		Company ecological standard of measurement based in the Global Globe 21 principles (score over 8,000)	Utama Spice and buyers		Seacology

4.2 Legal Basis

According to the PES literature released by the United Nations Environment Program (UNEP 2008), PES implementation needs strong institutions (Figure 2) and the following ideal conditions:

- Demand for ecosystem services is clear and financially valuable to one or more players;
- Supply is threatened;
- Specific resource management actions have the potential to address supply constraints;
- Effective brokers or intermediaries exist;
- Contract laws not only exist but are enforced, and resource tenure is clear; and
- Clear criteria for evaluating equitable outcomes across partners are established.

Supportive Policies	Regulatory Agencies
Science of Ecosystem Services	3rd Party Certifiers
3rd Party Verifiers	Registries
Market Information	

Figure 5. Institutional actors in expansion of PES deals

Source: Forest Trends, the Katoomba Group, and UNEP (2008)

Since there is no national commission in charge of determining the value of the ES provided, it is highly possible that rent-seeking behavior would occur. Rent seekers can create communication problems between buyers and sellers, usually in determining the amount of payment. This is exactly the case in Kuningan. To remedy the problem, a multi-stakeholders forum was established in Kuningan in 2012.

In Indonesia, some supportive policies are already enacted; however, the important institutions needed for PES to be operational are yet to be established through laws and regulations. Using a list of laws and regulations and their analysis in Section 2, some gaps are recognized and need to be address. Using Figure 2 and Table 5 as guidance, the needed regulations to be enacted are as follows:

1. Regulatory agencies;
2. Agencies to establish the science of ES so that distribution of payment is accurate, and given to the ones providing the service;
3. Third party certifiers and verifiers;
4. Registries; and
5. Agencies providing market information to sellers and buyers as well as regulation on who should conduct environmental valuation needed to understand the approximation of the amount of payment from the buyers to the sellers.

Table 12. Summary of enacted laws and regulation on PES in Indonesia

Group	Regulation	Content
Possible type of payments	Environmental protection and management act	Payment: direct payment to service supplier, market, reward, and compensation. Services: general service, immaterial, non-extraction of natural resource benefit
Payment in public sectors	Water resource and management financing act	PES in the field of water resource management Can be implemented in the public sector, especially for inter-administrative water resource management, inter-province, or inter-local government

Table 12 continued

Group	Regulation	Content
Payment in public sectors	Grant for local government	Provides a room for one local government to “pay” another local government for providing PES
Indirect use of natural resources	Natural resource and ecosystem conservation	Ways to gain income other than by direct use of natural resources
	Non-tax revenue act	To gain income and to buy services from natural conservation and environmental services
	Income type and payment for non-tax revenue	Environmental services, water, carbon, and biodiversity services are not recognized and are not given special codes
ES for marine (ecotourism)	Coastal and small islands management act	Only recognizes marine ecotourism/recreation Biodiversity and carbon sink potential in those areas are yet to be recognized
ES for forest (biodiversity, carbon sink, ecotourism)	Forest production and direct use	Private sectors, communities, and local government can generate income by providing ES in the forest area
	Forest management and utilization planning	Forest utilization can be done through utilization of area, environmental services, wood, and non-wood products
	Forest area usage	Should not change the forests’ main function Should take into account sustainability principles (in agreement with ES principles)
	Ecotourism in wildlife conservations areas, national parks, and nature parks	There is no regulation on incentives for local communities who provide services in the form of improved sceneries for tourism as well as for preserving their environmentally friendly culture
ES for watershed protection	Management of watershed	PES as one of the possible sources for watershed management funding
Regulatory agency for forestry	Business permit procedure for forest as carbon sink in production and conservation forests	Procedure to gain approval from Forestry Minister, for certified and paid in accordance to ERPA (Emission Reduction Purchase Agreement)

4.3 Stages

Most of the 91 sites are in the implementation stage as PES and PES-like projects (77 sites), while others are in the negotiation stage (4 sites), project preparation (4 sites), unclear (2 sites) or already phased out (2 sites). Those in the negotiation stage are reaching agreement in terms of the amount of payment, rights and liabilities of contracting parties, and methods for monitoring. Table 13 shows the number of sites providing certain environmental services. Some sites sell only one service, while others sell a bundle of services (e.g., water and biodiversity; carbon, and biodiversity, and recreation).

Table 13. Environmental service provided

Status	Services Provided				Total Number of Sites
	Watershed	Biodiversity	Carbon	Landscape/ Seascape Beauty	
1—Project preparation	2	2			4
2—Negotiation	1	1	2		4
3—Implementation	12	48	2	15	77
4—Phased out	1		3		4
5—Unclear	2				2

Considering the limited local knowledge on biodiversity in Indonesia, maintaining the state of biodiversity in an area is not currently sellable to Indonesian customers. In very limited cases, biodiversity is sold together with other services available in those particular sites, for instance, with watershed protection or with carbon sequestration. However, 41 Seacology projects, currently in the implementation stage, prove that biodiversity protection in Indonesia is sellable, albeit mostly to the international market.

How do the local and international markets perceive environmental services? For the local market, the use value of an ecosystem still dominates. Sellable services in Indonesia are mostly services with use value such as water, recreation, or biodiversity protection embedded in a product (e.g., Utama Spice, Ecolodges). For the international market, Indonesia can provide nonuse environmental services such as biodiversity for most of Seacology projects.

The difference between the preferences of these two markets may be because of the knowledge discrepancy between local and international markets. Indonesia is yet to disseminate this potential market to its society as well as to provide national and local policies, regulations, and regulators for this scheme to be fully recognized and implemented in Indonesia.

4.4 Actors

Among the 77 sites that implemented PES and PES-like project (with the exception of Seacology), 12 projects are related to watershed protection; 2 are for carbon services (Singkarak and Rimba Raya), 7 sites for biodiversity conservation, 15 project sites are for landscape/seascape beauty and for recreation and biodiversity conservation (e.g., VEN, Bunaken and Raja Ampat). Water users are the most significant source of funding for PES schemes, and mostly include households, water treatment companies (state and private-owned companies), and hydropower plants. The 41 PES projects managed by Seacology are related to water and forest conservation as well as marine protected area conservation. Each type of ecosystem services attracts buyers from a specific market. Watershed protection service buyers are from the domestic market, while carbon sequestration buyers come from the international market. Recreation services are favored by both domestic and international markets. Buyers for all Seacology projects are mostly international buyers whose motivation cannot be identified, but most probably for nonuse of the services provided. Table 14 shows a list of buyers of PES selected projects for in-depth interviews.

Table 14. List of buyers for selected PES projects in Indonesia

No	Project	Government	Corporate	Individual
1	Cidanau watershed		+ Water company	
2	Rinjani watershed	+ Local	+ Water company	+ Water user
3	Citarum watershed		+ Water company	
4	Green Radio (tree adoption)		+ General public, Local	+ General, Local
5	Seacology		+General, International	+General, International
6	Raja Ampat MPA			+Visitor
7	Village Ecotourism Network			+Visitor
8	Belok Sidan Village			+Visitor
9	Ecolodges Indonesia			+Visitor
10	Utama spice		+Customer	+Customer

Most of the sellers of watershed protection services are the upstream villagers and farmers groups. Three of the sellers are national parks (Mt. Ciremai, Bunaken and Raja Ampat) and an NGO (InfiniteEARTH). The farmers and villagers group consist of members from as few as 49 farmers (Singkarak) to as many as 6,400 farmers (Sumber Jaya). Some of these are inter-village cooperatives (e.g., Krueng Peusangan and Cidanau).

Of all the observed PES cases in Indonesia, 61 involve intermediaries from the planning to implementation stages. Of these 61 cases, 9 intermediaries take the form of a multi-stakeholder forum, and the rest take the form of a single intermediary. Multi-stakeholder forums usually consist of sellers, local government, local or international NGOs, professional association, and researchers from local or national

universities. They take many forms: loose forums (Krueng Peusangan and Krueng Montala), communication forums (Sumber Jaya, Cidanau), foundations (Citarum and Brantas), and management boards (Bunaken and Raja Ampat). The most probable reason for this uniformity across the case studies is that this type of forum ensures transparency in fund management as well as provides beneficial means of communication among actors.

For Seacology, the intermediary is an international organization who attracts buyers from all over the world and provides transparent information to both buyers and local sellers through their website. Green Radio also takes the role of intermediary in the same way that Seacology does; however, Green Radio limits its clients (buyers) to the Indonesian local market. Nevertheless, it provides a transparent monitoring procedure by enabling its clients to track “their” trees through the Green Radio website. Ec lodges and Utama Spice take unique forms of intermediaries, they seem like sellers but they are actually intermediaries for the actual sellers (i.e., local communities), attracting both the international and local buyers for their unique products and their agenda in protecting the environment.

The number of stakeholders within a multi-stakeholder forum is also crucial. It can increase transparency, as discussed, but it can also reduce the effectiveness of the PES scheme, especially when a significant proportion of the funds are allocated for operational costs instead of actual conservation. This could be the case of Rinjani, where the local water company has opted to directly pay for the replanting of critical land in addition to the PES agreement with local farmers.

4.5 Services

Population increase and unsustainable farming practices put pressure on the environment. In Indonesia, the pressure on forest areas is becoming higher and higher, which reduce forest areas as well as degrade their function as a water “sponge” in watersheds. Water users have experienced water shortage during the dry season and water quality degradation due to pollution and high sedimentation. This problem calls for the development of PES for watershed protection.

For PES in landscape/seascape beauty for ecotourism areas such as the Bunaken and Raja Ampat national parks, the main service is to provide beautiful landscape/seascape and outstanding biodiversity conservation areas that attract many visitors. In order to conserve those recreational services, the park needs financing. This need is the main driver for managers to raise more funds, creating more services than conventional tourist attractions. In both national parks, entrance fees have been adopted as a tool to raise conservation funds.

In Bali, where mass tourism attracts damaging external investments, local communities have responded by developing the Village Ecotourism Network (Jaringan Ekowisata Desa or JED), which was launched in 2002. JED is a cooperation of four villages, which provides alternative tourism attractions with low impact to the environment and on the Balinese way of life. JED is owned and run by the local communities of the four villages and by one environmental NGO, the Wisnu Foundation.

For carbon sequestration services, PES development is mainly driven by the international market need. In this case, potential buyers put pressure on national and local sellers to provide the services they need to reduce their carbon footprint.

From the 10 selected case studies, the extent of coverage of PES schemes vary widely from 22 ha (Citarum) to 900,000 ha (Raja Ampat). The smallest parcel of land associated with PES for watershed protection is an agricultural area with farmer groups as the sellers. Three cases of payments for landscapes/seascape beauty have been identified (Bunaken, Raja Ampat, and VEN), whose rewards are derived from the entrance permit and ecotourism services.

Very few of the cases (e.g., Utama Spice) uniquely market a biodiversity conservation service as a single service (+products). Most sell biodiversity as a bundle of services combined with recreational services (Ec lodges, Bunaken, and Raja Ampat). Rimba Raya is the only PES project as well as REDD+ project that has passed the verification stage for the international carbon market. For Singkarak, without verification, carbon sequestration buyers are CO₂ operate BV from the voluntary carbon market. Seacology is a unique organization that “sells” non-use services to the international market.

The Bungo site in Jambi is a unique case in that the farmers protect the biodiversity of their farming area by avoiding monoculture farming. They estimate that their way of managing their land will benefit future society with a more biologically diverse farming site, less erosion, more water retention, and sustainable farming practices. However, up to now, they cannot find buyers for their services. It would seem that a “biodiversity-rich site,” which is a nonuse “service” for outsiders, can only be sold when there is a visible use value attached to them, such as a carbon sink value.

4.6 Payment Scheme

Most of the sellers have received indirect payments through intermediaries in the form of donation (41 cases), adoption program (8 cases) or payment for recreation services (13 cases). The only cases that used direct payments are as follows:

1. Syurga Air farmers’ group in Sunten Jaya village, which received payments from the PT Aetra Air Jakarta (Citarum); and
2. District Paninggahan, which received royalty from a state-owned electricity company.

Direct payments are given to local farmers for providing good quality and rare spices for Utama Spice. The same type of payment is also given to a local community working for Ecolodges in five of its sites. Not all payments are based on the amount of service provided; some of them are in the form of wages (Ecolodges).

Besides financial rewards, other types of payment include non-financial rewards, mostly in the form of conditional land tenure and micro-hydropower or facilities needed by the community. For instance, RUPES provides micro-hydro power for farmers in Sumber Jaya, Lampung. Seacology provides elementary schools, community centers, and local clinics for the community. RUPES and Seacology proposed this type of payment since the benefits are more sustainable compared to conventional financial rewards.

High variations in the amounts of payment provide insight that the amounts are not established through a perfect market system. Hence, low efficiency is the current feature of PES in Indonesia. The payment rates have been established through negotiation (Cidanau). In other (mostly recreation) areas, WTP studies were conducted to define payment amounts (Rinjani and Bunaken). However, there is no specific information provided for the other sites. The means of determining the payment rates for PES sites therefore needs further investigation. There are variations of contract durations for watershed protection services, which range from 6 months to 5 years. Commonly, financial rewards are paid in stages; the proportions of payments used in ecosystem services protection and conservation range from 75%– 80%. The administration fee for intermediaries is 20% of the conservation fund at the maximum.

Of the 91 PES cases, about 92% (76 cases) are on a one-year contract; only 4% (3 cases) of the cases have contracts of more than five years. At the moment, there is no assurance of long-term payments for all types of ES provided in Indonesia. Some schemes provide long-term income for sellers (Singkarak, Cidanau and Seacology), but some have time restrictions for the payments (Rinjani, Citarum and Brantas). Some vary according to the benefits obtained by the tourism sites (Bunaken, Raja Ampat and Ecolodges).

Since there is no assurance of long-term contracts, PES establishment faces a very difficult challenge in Indonesia. This type of service establishment needs significant amounts of time and funds, which become higher when uncertainty is taken into account. In addition to the need for laws/regulations, regulators, and institutions, an incentive mechanism for the service providers is critical in the decision-making process for service establishment. Tapping CSR funds from local and international private sector might provide an answer to the aforementioned problem. Not being legally bound, CSR can be used by regulators to encourage PES establishment. When the service is ready, appraised, registered and certified, then “real PES” can be implemented.

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