Rewards for watershed services in Sumberjaya, Indonesia

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Type of tool: economic instruments in water management / investments in the protection and improvement of biodiversity
Issue: watershed management
Location: Sumberjaya, Lampung province, Indonesia, Southeast Asia

Introduction

Government's perception that uncontrolled deforestation and conversion to coffee farming on the slopes of Sumberjaya has led to increased soil erosion, threathening the operation of the newly constructed Way Besai hydropower dam and reducing water availability for irrigated paddy rice downstream has resulted in the eviction of thousands of farmers in the Sumberjaya forest between 1991 to 1996. On the contrary, studies by the World Agroforestry Centre (ICRAF) since 1998 in the area show that multi-strata coffee farms provide livelihoods to farmers and also control erosion in a way similar to that of natural forest. Therefore, coffee farming and forest protection should not be viewed as antagonistic practices. Multiple stakeholders have different knowledge and perceptions on forest and watershed functions which they use to justify their actions, but through negotiations, these differences have led to a new discovery of what stakeholders can do together to reduce conflict on the way the watershed should be managed. Rather than 'eviction', rewards schemes for watershed service provision was used to meet the multiple goals of coffee farmers, local government, district foresty, and the hydropower company.

Drivers of change

Since 2002, the World Agroforestry Centre (ICRAF) has been implementing the **'Rewards for Use of, and shared investment in Pro-poor Environmental Services'** or RUPES project in Asia, covering China, Indonesia, Nepal, Vietnam, Philippines and India. RUPES is dedicated to developing practical environmental services schemes that can be adapted in different countries with different circumstances. It aims to integrate rewards for environmental services into development programs to alleviate rural poverty and protect the natural environment.

The environmental services (ES) discourse in Indonesia gained more attention after the RUPES Project organised a national ES seminar in February 2004. At the office of the Indonesian National Development Planning Agency (BAPPENAS), a seminar was conducted with participants from ES practitioners around the country. At the end of the seminar, the participants agreed to form a national level network, named 'COMMITTEES' to advance the thinking and

application of ES rewards schemes to protect the environment and improve the welfare of poor farmers in upstream areas. Members of the COMMITTEES are currently working hand in hand with a number of partners to pass an ES policy in Indonesia.

At the field level, the Sumberjaya ES program is one amongst a number of pilot ES rewards schemes carried out by NGOs. Today, ES in Indonesia finds an increasingly significant place at the national discourse as evidenced by the increasing number of collaborative programs in both pilot and implementation levels involving various stakeholders including the government (especially the Ministry of Forestry), local NGOs, national and international research and development agencies.

About 40% of the 45,000 ha Sumberjaya watershed is protected forest. It has a history of conflict, including forced eviction which rooted distrust and tension between local people and various levels of government. From 1991 to 1996, thousands of farmers in the Sumberjaya forest were evicted by government based on their perception that coffee farming in the slopes has increased soil erosion, thereby putting the operations of the Way Besai hydropower dam at risk of sedimentation and low water levels. In 1998, ICRAF began its research to assess the impacts of multi-strata coffee farming on watershed functions, and found that this farming system provides good income for farmers and can control soil erosion in a way similar to that of natural forest.

In 2004, the RUPES project started facilitating local communities in understanding their important role in managing the watershed. Dialogues with local government officials, district foresters, local people and the Way Besai hydropower company were facilitated by RUPES staff. Using ICRAF's results from land use and hydrological studies, stakeholders understood that eviction and soil erosion should not be a consequence of multi-strata coffee farming – in that, watershed protection and coffee farming can be combined in a way that is not detrimental to the hydropower dam. Clearly, different stakeholders have different understanding about watershed functions, as well as different interests on watershed services and on the management of the watershed. Coffee farmers would want to continue cultivating the hillsides for their livelihood, whilst the Forestry Department and the Local Government wants control over the area and the hydropower company wants more water in the dam. The lack of secure land tenure by local people in the area was the basis for their eviction by the government, in favour of the hydropower dam. However, through the RUPES project, dialogues were facilitated to reconcile the differences in knowledge and expectations of multiple stakeholders; as a result, the stakeholders agreed to cooperate and use existing approaches or create new ways of rewarding local communities in their efforts to manage the watershed.

The approach to watershed management

The RUPES project is composed of three programs: the *Community Forestry Program (HKm)*, the *River Care Program*, and the *Soil Conservation Program*. The HKm is implemented by the Local Forestry Department following the rules and regulations of the National Government's Community Forestry Program; whereas both the RiverCare and Soil Conservation Program are governed by Forum Committees—both receive technical advice and organizational capacity building to ensure that the contracts are complied.

1. *Community Forestry Program (HKm)*

To avoid eviction, the RUPES Project helped local communities gain access to the Indonesian Government's Community Forestry Program (HKm). The HKm Program provides farmers with conditional land tenure for forest protection. In exchange, farmers adopt environment-friendly farming practices and protect the remaining natural forest, thus ensuring that the land will continuously produce forest and watershed protection benefits. The RUPES project participated in dialogues with HKm administrators, making use of research results to argue that sustainable coffee farming could not be the main culprit of sedimentation in the river and the dam. With persistence and effective boundary spanning strategies, the HKm administrators eventually, approved the granting of conditional land tenure to coffee farmers in Sumberjaya. To date, the HKm Program has covered 70 percent of Sumberjaya's protection forests and involved nearly 6,400 farmers, protecting 13,000 hectares of forest land. The RUPES Project views the HKm as a non-monetary reward for farmers who provide environmental services. HKm represents a major success for farmers, who are no longer at risk of eviction.

A recent impact study of land tenure in Sumberjaya carried out by researches of the RUPES Project, Michigan State University, and the International Food Policy Research (IFPRI) found that community forestry permits:

- increased land tenure security;
- doubled the local land value;
- reduced corruption;
- increased income, mostly due to a reduction in bribes;
- increased equity, relative to local resources farmers have;
- promoted tree planting/agroforestry;
- promoted soil and water conservation; and
- gave farmers more reasons to protect the remaining natural forest.

2. *River Care Program*

The Way Besai hydroelectric company (PLTA) in Sumberjaya would need up to USD 1 million per year to remove the sediments from its reservoir. This is a huge amount of money that may not be necessary if they can keep sediments from reaching the reservoir in the first place. The RUPES Project set up a pilot project with one community and one sub-catchment area to develop a payment mechanism for reducing sediments through a "RiverCare" program. A Forum or Working team was formed at each sub-village consisting of hamlet administrators, community forestry administrators and mosque administrators. The Forum is used as a medium for capacity building, social networking and conflict resolution. The Forum Committee consists of the chief, secretary, treasurer, conservation service section, community development section, agriculture and economic section, and public work section.

In the program, RiverCare members work with RUPES facilitators and researchers to learn principles and practices related to soil and water conservation, as well as sediment monitoring and measurements. Facilitated by the RUPES project, a Conservation Agreement was developed by the RiverCare group and the Way Besai Hydropower Company. The Agreements include activities such as the following:

- Construction and maintenance of dams to retain sediments from forest, coffee garden, paddy field, foot paths;
- Diversion of waterway and construct limited ridging and sediment pits on coffee gardens to prevent erosion;
- Planting grass strips along potential landslide hotspots on coffee gardens;
- Installing water channels and PVC pipes to stabilise water flows.

'Conditionality' is the main principle in this initiative. The Way Besai Hydropower Company was committed to pay for water quality via sediment reduction in the dam, as long as the RiverCare group delivers the service. The terms of the Conservation Contract are outlined in the table below.

Payment schedule of operational cost	US$ 1,100 total <u>Schedule of payment</u>: 50 percent at inception 50 percent at two months contingent on performance

Payment as ES reward	Reducing sediment up to: • 30 percent—cash payment up to US$ 2,200 (Gunung Sari) or a micro hydropower plant with the capacity of 5000 watt with similar monetary value to Gunung Sari (Buluh Kapur); • 21 to 29 percent-- US$ 850 • 10 to 20 percent: US$ 550 • less than 10 percent: US$ 280
Duration and monitoring	One year with monitoring every three months; termination if 50% of the contracted activities are not completed by midterm monitoring.
Cancellation or non-compliance results in:	• Ineligibility for second payment installation • Purposively destructing public physical construction and properties • Friction and conflict among community members • Indication of corruption • *Force majure* or natural disasters

3. Soil Conservation Program

Another reward scheme is through a soil and water conservation program. The scheme involves paying farmers for reducing erosion and sedimentation. The practices applied by farmers on their farms are terracing, sediment pit and strip weeding techniques.

The monitoring activity is conducted four times in a year. The first monitoring is done on the 3rd month after contract signing, followed by the 6th month, 9th month and at the end of the contract. The farmers receive cash payments in the amount of Indonesian Rupiah 1,600,000 ($160) per ha for a one year contract period.

Evaluation: economic, environmental and social benefits

Economic benefits

In all three programs, local people directly benefit from higher yields in the multi-strata coffee production system and cash payments from soil erosion control and sediment reduction. The payments may be small, but could represent an increment in household incomes.

Environmental benefits

All programs have a strong 'conditionality', which is essential in a contract-mediated ES reward scheme. The payments or rewards are conditional, subject to environmental performance in the area of forest protection, soil and water conservation and sediment reduction. The benefits to the environment are thus manifold. The HKm conditional land tenure scheme requires protection of remaining natural forest and adoption of sustainable coffee production techniques whereas the RiverCare and the Soil Conservation Programs involve soil and water conservation technologies to reduce on-and off-farm soil erosion and sedimentation in waterways.

Social/poverty alleviation benefits

Clearly, all programs have had positive social impacts. Because poverty is multi-dimensional, the conditional land tenure acquired by forest people was a step towards emancipation from poverty. Local people are no longer threatened from eviction, giving them a sense of protection and security for their livelihoods. On the other hand, members of the RiverCare program and farmers involved in the soil conservation program not only earn additional income from soil erosion control and ediment reduction activities, but also raise their profile and value from doing extra work for the community. More importantly, the local community gained respect from the Local Government, the Hydropower company, the forest department, and scientists for their contribution to wider society, and for having accepted the responsibility of being environmental stewards.

Lessons learnt from implementation

Why did the reward schemes work?

- Hotspot areas were identified through research, and expected environmental service outcomes are clearly linked to it. The cause-effect relation is thus clearly established.
- Stakeholders involved have good knowledge about the causes of soil erosion, the location of hotspots and how to tackle the problem.
- The contract has a clear conditionality – the rewards are linked to a specific service, which is sediment reduction and monitoring is done in a participatory way.
- The pilot program was oriented involving several steps such as identification of environmental problems, capturing local knowledge and understanding farmers' management options.

What did we learn?

- Good social mobilisation
- RES negotiation will succeed if the community appreciates its opportunity and their role and impacts as "ES seller".

- The communities should be involved in the scheme in a voluntary manner, and should understand their bargaining positions based on optimal threat and cooperation with others stakeholders.
- Community based institutions should have well-functioning structures in order to effectively support an operational RES mechanisms.
- Modifying the current policy criteria.
- It is important to consider the heterogeneity of biophysical characteristics (on soils, geology, etc.) and other landscape elements (footpaths, roads, landslides and river bank collapse) in solving landscape problems. Policy responses should encompass various issues, tackle divergent sources of landscape problems, and address specific issues, rather than apply a 'single solution' fits all approach (e.g. reforestation).

Scaling up and relevance for developing/transition countries

The experiences of the three programs provide lessons to learn from, especially for forest contested areas in developing countries where poor people eke-out a living from small-scale cultivation and extraction of forest products. The experience in Sumberjaya suggests that reward schemes for delivery of environmental services are a better option than 'eviction' of forest people. On hindsight, misunderstanding of expectations from forest and watershed functions where eviction is used as an option could lead to serious damage. The experience is very relevant for governments who often have full control, but have limited capability to manage forests and watersheds. It shows that educating decision-makers and stakeholders with research-based information can lead to changes in attitudes and actions towards sustainable forest/watershed management. It also shows the business case for private-sector engagement in ES rewards schemes. Finally, the experience demonstrates that rather than coercion, provisioning environmental services can be secured through negotiated arrangements amongst the government, private sector, local people, and scientists with a shared understanding on the relations between land use and watershed functions as a first step.

The potential constraint for scaling up however, is the amount of research and information gathering needed to structure an ES reward scheme. Substantial data is needed to inform decisions and to agree on the conditions binding the ES contract. However, research collaboration can be developed by governments intending to initiate a PES program – they can also streamline relevant ministries and mainstream the PES concept in sectoral plans, and using common sense knowledge and available data, a PES program or policy can be designed at the national level.

References

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