



Outcome based payments for improved water quality, RUPES, Indonesia

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Main source: Porras and Neves 2006, Watershed Markets:

www.watershedmarkets.org/casestudies.html

and Pasha et al. 2012.

Short title: Outcome based payments for improved water quality, Indonesia

Key Message: Secure land tenure can be a major incentive for farmers for participating in and complying with a PES scheme.

Reviewer: Beria Leimona

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1. What was the problem?

Sumberjaya is a sub-district in the Bukit Barisan mountains, at the west coast of Sumatra, Indonesia. Although 40% of the area is classified as protected forest and 10% as national park, coffee plantations make up 70% of the area (ICRAF Sumberjaya Brief No. 1).

In the Way Besai watershed a hydroelectric power plant started its service in 2001. In 2002 a landslide occurred near the plant and interrupted power production. Although this erosion event was linked to the construction of road, deforestation was also identified to be a reason for high erosion in the watershed, reducing the capacity of the plant for power production (ICRAF Sumberjaya Brief No. 1). The Way Besai hydroelectric power company (PLTA) needed up to USD 1 million a year to clean sediment from their reservoir (World Agroforestry Centre, in prep.). Furthermore, water supply for rice paddy irrigation further downstream was believed to be negatively affected by upstream land use.

Already in 1990 the government designated forest protection areas in the watershed for reducing uncontrolled deforestation and soil erosion. Thousands of small scale farmers were seen to be the problem, causing a threat to the forest. Between 1991 and 1996 there were even military interventions against farmers (Porras and Neves 2006). In particular in areas where land tenure was insecure, farmers had little incentives for investing in tree planting or establishing agroforests with greater tree diversity.

As a result, the multi-strata coffee plantations on private land had a much higher tree cover with more benefits for water services than the forest land owned by the government, where small scale farmers practiced illegal short term land uses due to insecure land tenure (Porras and Neves 2006).

In order to improve this situation the Indonesian Community Forestry Programme or Hutan Kemasyarakatan (HKm) started in 1998, which allows farmers to obtain access to manage their gardens in return for protecting remaining forest and planting trees in their coffee farms. It resulted from an initiative by the Government of Indonesia, the International Centre for Research in Agroforestry (ICRAF), the local NGO Watala, the Ford Foundation and the UK Government's Department for International Development (DFID) to develop a Negotiation Support System (Porras and Neves 2006).

Rewarding Upland Poor for Environmental Services (RUPES), an initiative by ICRAF, was established in Sumberjaya in 2004, in order to support local communities in gaining access to the HKm programme and to develop a reward mechanism for environmental services provided by upland communities. As part of RUPES, a River Care programme was initiated in the Way Besai catchment aiming at reducing erosion through improving land management practices (Pasha et al. 2012).

2. Which ecosystem services were examined and how?

Reducing sedimentation into the river and the reservoir of the hydroelectric dam is one of the ecosystem services that RUPES is focusing on. The scope of RUPES is broader aiming at enhancing the livelihoods of upstream farmers through rewarding them for maintaining biodiversity and multiple ecosystem services including watershed services (e.g. erosion control and water quality for hydroelectric power production), carbon sequestration, and landscape beauty (ICRAF Sumberjaya Brief No. 2).

The combination of simple soil and water conservation techniques, such as riverbank retainer, compaction of dirt road, dams, terracing, sediment pits and grass strips, and multi-strata coffee plantation aimed to reduce sedimentation into the river. Multi-strata coffee plantations that include fruit trees and timber plantations were found to provide multiple benefits by generating income for local farmers and at the same time maintain ecosystem services, in particular control of soil erosion (ICRAF Sumberjaya Brief No. 2, Porras and Neves 2006).

3. Did the examination of ecosystem services generate impacts on decision-making or policies and, if so, how?

After three years of research two reward mechanisms have been found to be relevant:

- a) granting conditional land tenure for forest land stewardship, and
- b) paying farmers as a reward for reducing sedimentation.

RUPES provided capacity building and training for farmers in order to increase awareness about the link between land use and erosion. Methods for monitoring soil erosion were tested with the farmers with the aim of providing compensation payments to farmers for reducing erosion. Payments came from the hydropower producer (ICRAF Sumberjaya Brief No. 2).

a) Granting conditional land tenure for forest land stewardship

For gaining access to land tenure, communities must form a group and apply to the Forest Department. This scheme was regulated by Decision of Ministry of Forestry number 31 year 2001 (five year trial-permit with the extension up to 25 years) and revised by Ministry of Forestry Regulation number 37 year 2007 (permit of 35 years without trial period). An inventory of the tree cover of the land is done and farmers agree in a contract to protect existing forest and plant trees on degraded land. In 2006, 19 farmer groups successfully gained permits for land use for five years. Currently, the permits of 14 out of 19 farmer groups were extended to 25 years. The remaining five groups still have problems with their land boundary, thus are not able to extend the permits. New groups that submitted their proposal after 2007 will automatically receive a 35 year permit if the submission is approved.

The costs for farmers include start-up costs, land fees, opportunity costs and transaction costs. In particular the application process turned out to be long and costly and monitoring can be a challenge. In times of low coffee prices the fees and transaction costs can exceed the income generated from coffee production. However, when coffee prices are low the diverse income from fruits and timber from the diversified multi-strata coffee plantations can be beneficial for the income of farmers.

Despite the costs, securing land tenure is a strong incentive for farmers as they no longer have to pay bribes for avoiding eviction and become part of mainstream society and partners with the government. Thereby they are also in a better position to prevent illegal logging. Local farmer groups become also more independent in negotiating their needs. As farmers need to form a group also poorer and less enterprising people get involved in the scheme as well (Kerr 2004, Porras and Neves 2006).

Participants consider that the HKm does offer the opportunity for a secure livelihood (Kerr et al. 2005, Porras and Neves 2006) which is also supported by a survey by RUPES (2005) which found that in particular poorer farmers are the ones that can benefit most from this scheme.

b) Paying farmers as a reward for reducing sedimentation

For compensating farmers as reward for reducing sedimentation the River Care programme was developed in four stages: 1) scoping; 2) stakeholder analysis; 3) negotiations; 4) implementation and monitoring.

Through negotiations it was agreed that the sedimentation rate in the Air Ringkih sub-watershed should be reduced by 30% within one year. As reward, the hydropower company would provide a micro-hydropower unit valued at IDR 20 million (around USD 2120) to the farmers (Pasha et al. 2012). Furthermore, RUPES established a pilot payment scheme between the farmers of the Buluh Kapur village (provide reduction in soil erosion) and the management of the hydropower company (buyer). The farmers formed a River Care group and the group were to receive payments of USD 1000 for a reduction of 30% or more, USD 700 for a 20–30% reduction,

USD 500 for 10–20% and USD 250 for less than 10% (World Agroforestry Centre, in prep.).

Activities for reducing soil erosion include vegetative conservation in areas vulnerable to erosion and landslides using plantations of trees and grass strips; 2) conservation of the river banks and body with the construction of dams with wood and stones; and 3) conservation in the community's coffee garden through constructing terraces, sediment pits, and reducing surface runoff by improving the drainage system (Pasha et al. 2012).

It was found that 86% of the community activities for reducing sedimentation were successful leading to a reduction in sedimentation by 20%. Although this was below the agreed reduction target, the hydropower company appreciated the efforts by the communities and provided the micro-hydropower unit (Pasha et al. 2012).

Due to the success the payment scheme was also extended to the Talang Anyar village including a total amount of USD 27 000 for two years (2011–2013). The design of the program is combining soil and water conservation with development activities as the rewards, such as goat breeding, nursery development, rattan planting, farmers' training in home industry and a coffee plantation demonstration plot (World Agroforestry Centre, in prep.).

4. Lessons learned

Monitoring enhancement of erosion control and thus the compliance with the scheme is a major challenge. Capacity building is still needed and incentives for compliance need to be increased.

Intermediaries such as NGOs are found to play an important role in supporting the negotiation process and to reduce the transaction costs in the multi-stakeholder process by contributing to conflict resolution, improve trust and shared responsibility (Arifin 2006).

There are also trade-offs between environmental goals and poverty reduction. Areas that are most relevant for reducing soil erosion are not always those where poor people live and wealthier landowners can be a major group of beneficiaries while the benefit for poorer marginalised people is limited (Kerr 2004).

The example of the River Care programme shows that co-investment in watershed by both up-stream provider and down-stream user of water services can be an important factor for sustainable watershed management. Co-investment can foster stakeholder participation and, together with fair and transparent processes, it can help to create trust among stakeholders, enhancing the successful implementation of sustainable management practices (Pasha et al. 2012; van Noordwijk & Leimona, 2010).

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