

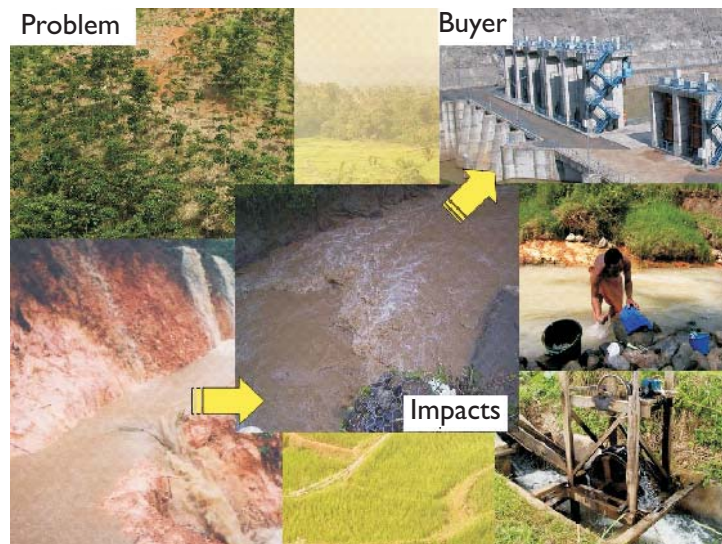
Clean Rivers, Lighted Lights: Monetary Rewards for Reducing Sediment

On September 19, 2006, a half day black-out in Jakarta shut down factories and kept flights from taking off. Hospitals delayed surgeries or turned away patients altogether. Throughout this city of 10 million, traffic moved inch by inch.

The economy suffered significant losses.

Unfortunately, this blackout was unusual only for its length. Indonesia receives regular reminders of its electrical crises as shortages frequently shut down the electrical grid.

Blessed with ample water, Indonesia fills a crucial portion of its energy needs with hydroelectricity. However, the supply of hydroelectricity has declined in recent years because of increasing sediment loads in the water used to generate electricity. RUPES researchers in the upper Way Besay watershed in Sumberjaya



have isolated land degradation, land slides and erosion as primary factors in creating extremely high sediment loads that reduce production capacity and dramatically increase costs.

One demonstrated way to reduce land degradation problems involves building simple structures in critical areas. While technically feasible, this approach poses complications in real situations. Typically, the structures must be located on community-held land. They also require community labor, but provide little direct benefit to the community.

As a solution, RUPES is investigating mechanisms for the community to “sell” environmental services to hydroelectric company “buyers.” These mechanisms go beyond usual environmental payment schemes that ask buyers to make payments while trusting they will receive value. As an alternative, the project is testing a mechanism that directly measures levels of sediment reduction. Buyers will then only pay for reduction actually achieved.

RUPES :
 The Program for Developing Mechanisms for Rewarding the Upland Poor in Asia for Environmental Services They Provided is Supported by the International Fund for Agricultural Development (IFAD).

RUPES Goal:
 To enhance the livelihoods and reduce poverty of the upland poor while supporting environmental conservation on biodiversity protection, watershed management, carbon sequestration and landscape beauty at local and global levels.



RUPES Project

RUPES has worked in Sumberjaya since 2004. RUPES goal is to explore and develop ways to preserve ecological services by rewarding the upland people who provide them. In Sumberjaya, RUPES has focused on watershed functions. ICRAF leads the project in collaboration with local government officers, local NGOs, and farmers groups.

After working for almost 3 years, RUPES has found two reward mechanisms that can realistically be implemented in Sumberjaya: 1) granting conditional land tenure for forest land stewardship and 2) paying farmers as a reward for reducing sediments. This brief explores the monetary reward for reducing sediments.

Organizing the Community to Provide RiverCare

With RUPES help, members from the community around the hydropower reservoir have organized themselves into the RiverCare group, taking on responsibility for producing clean water for electrical generation.

For one year, members of the community have worked with RUPES to learn principles related to water conservation, including reducing sediments. They also constructed and maintained needed check dams, drainage along pathways and terraces. RUPES has supplied the capacity building assistance as well as “seed capital,” paying the group for their work so both the researchers and RiverCare can gain needed experience before starting work with real buyers.



Communicated the Program to the Real Buyer (Electricity Company)



River Care Group Activity



Community Actions: Reduce Runoff Speed and trap sediment on Path Road

In the current experimental learning phase, RUPES as the stand-in buyer and RiverCare as the seller have crafted an agreement that clearly spells out the level of measurable sediment reduction required for specified payment amounts. At the end of the commitment period in 2007, RiverCare will receive:

- \$1,000 for a reduction of 30% or more;
- \$700 for a 20 to 30% reduction;
- \$500 for a 10 to 20% reduction: and
- \$250 for a less than 10% reduction.

By the end commitment, RiverCare should have a proven product to offer the hydroelectricity company-one that can not only improve the environment, but also lessen the electricity crisis while enhancing community welfare.



Community Actions: Control sedimentation and water flow from upper watershed, increase ground water table for surrounding areas.

Future Challenges and Opportunities

Over the last year, RUPES and the RiverCare group have made significant accomplishments, including:

- Developing definitive scientific answers about the main factor that increase sediment in water used to generate hydropower as well as confirming technical solutions.
- Generating data about how to design payment mechanisms that couple community environmental activities to measurable results, so that clear rules can be used to calculate payments. This kind of mechanism addresses fundamental issues of transparency and conditionality in a way that should be attractive to actual buyers.
- Building the necessary community knowledge, skills and institutions to progress into new research realms for connecting payments on actual environmental performance in preserving environmental services.

With these accomplishments in place, we are eager for the opportunity to begin working with real buyers. We have an ongoing dialogue with the electricity company, to share what we have learned and the company is receptive. Working with the company will allow us to learn to adapt the mechanisms to meet buyer needs as well as seller needs.

RUPES now faces the challenge of developing the necessary data for designing scaling-up activities that can help stabilize electrical supplies and strengthen upland communities throughout Southeast Asia.



Way Besay Reservoir

Study Site

Sumberjaya is a sub-district in the Bukit Barisan mountain range. These mountains span the west coast of Sumatra and form the upper watersheds of all major rivers on the island. The 55,000 ha sub-district almost coincides with the Way Besay upper watershed at between 720 and 1900 m. The population was about 87,350 people in 2004, with a density of about 161 people/km². About 40% of the sub-district is classified as “protection forest” and about 10% as National Park. Nevertheless, coffee gardens, also known as multistrata coffee, now cover about 70% of the total area.

The Way Besay watershed feeds the Tulang Bawang River (one of Lampung Province's three major rivers, along with the Way Sekampung and Way Seputih). The Way Besay also supplies a hydroelectric run-off dam owned by PLTA Way Besay. Electricity generation started in 2001 with a maximum capacity of 90 MW. In 2002 a landslide near the turbines interrupted service. The landslide was linked to a poorly designed and built road, but was generally blamed on 'deforestation'.

