

Rewarding Upland Farmers for Providing Environmental Services

A case study of Sumberjaya Watershed,
Lampung Province, Indonesia

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The World Agroforestry Centre (ICRAF) is part of the alliance of the **Consultative Group on International Agricultural Research (CGIAR)** centres dedicated to generating and applying the best available knowledge to stimulate agricultural growth, raise farmers' incomes and protect the environment.



Headquartered in **Nairobi, Kenya**, we operate in **six eco-regions** in Southeast Asia, South Asia, Latin America, East Africa, Southern Africa and West-Central Africa, and conduct research in **26 countries** in the developing world.

Mission

To generate science-based knowledge about the diverse roles that trees play in agricultural landscapes, and use its research to advance policies and practices that benefit the poor and the environment.

Our core business is understanding the role of trees in enhancing the 'multi-functionality' of landscapes.

ICRAF's 3 major networks of action research and learning sites on P/RES and climate change issues:



Rewards for, Use of and Shared Investment in Pro-poor Environmental Services schemes in Asia (2002-2012) in 8 countries (China, Vietnam, Indonesia, Philippines, Nepal, India, Thailand and Cambodia - upcoming)



Pro-poor Rewards for Environmental Services in Africa (2006 - 2011) covering 5 countries (Tanzania, Kenya, Uganda, Guinea & Malawi)



Global partnerships on Alternatives to Slash & Burn (ASB) in the tropical forest margins with 12 benchmark sites in the Amazon, Congo Basin and Southeast Asia

Network of more than 3 dozen action and learning sites in the tropical world.

Case study: Sumberjaya watershed

- 55,000 has
- 40% protection forest , 10% national park
- in reality, the forest cover is <10%
- 82,453 people (2003)
- 150 people/km²





- ❑ Soil loss of 20 cm in 4 years
- ❑ 500 tons per hectare/ year



River bank collapse

a key source of erosion in some catchments





Key Issue

Government perception:

- uncontrolled deforestation and conversion to coffee farming on the slopes has increased soil erosion
- threatens the operation of the newly constructed Way Besai hydropower dam
- reduces water availability for irrigated rice production

Government action:

- eviction of thousands of farmers in Sumberjaya forest between 1991 to 1996



But,

- Soil erosion & land use studies and hydrological modeling conducted by ICRAF since 1998 has shown that multi-strata coffee farms provide livelihoods to farmers and also control erosion in a way similar to that of natural forest.
- Hence, coffee farming and forest protection should not be viewed as antagonistic approaches.

RUPES in Sumberjaya

- RUPES begun working in Sumberjaya in 2003
- To support and mobilize upland communities and government agencies to develop environmental service reward schemes
- Brokered and facilitated negotiations using research-based information on the relations between land use and watershed functions
- Three potential P/RES schemes were seen:
 - ✓ Land tenure security → tree planting and protection of remaining forest
 - ✓ Direct monetary reward for reducing sedimentation → River Care
 - ✓ Direct monetary reward for land conservation at sub-catchment scale → Soil Conservation Program





1. Land tenure scheme through HKm

- Community Forestry Program
- Probationary land tenure contract for 5 years; renewable for 25 years if compliance is high; revocation of contract for non-compliance.
- 6,400 farmers were granted with conditional land tenure in 2006
- Farmers adopt environment-friendly farming practices and protect the remaining natural forest
- Ensure that the land will continuously produce forest and watershed protection benefits
- Conditional land tenure is a pro-poor R/PES scheme
- Covered 70% of Sumberjaya's protection forest or 13,000 hectares of forest land



Impacts

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

Impact assessment by the RUPES Project, Michigan State University, and the International Food Policy Research (IFPRI)



2. RiverCare Groups as ES sellers

Establishment of RiverCare in 2 sub-catchments:
Gunung Sari (2006-2007) and Buluh Kapur (2008-2009)

Governance

- Forum committees were formed at sub-level in the sub-catchment
- Forum committees consist of
 - village chief
 - secretary
 - treasurer
 - conservation service section
 - community development section
 - agriculture and economic section
 - public work section
 - hamlet administrators, community forestry administrators and mosque administrators





- Activities of Forum Committees
 - Formulate a workplan and budget
 - Create and implement rules
 - Monitor and evaluate activities based on plans

- The Forum Committees are used for
 - Community capacity building
 - Social networking
 - Conflict resolution

RiverCare contract with Way Besai Hydropower Company:

Sediment reduction in erosion hotspots within 522 has in the watershed

- Construction & maintenance of small dams to trap sediments from forest, coffee garden, paddy field, foot paths
- Diversion of waterways & construction of ridges and sediment pits in coffee gardens to prevent erosion
- Planting grass strips in sloping coffee gardens
- Installation of water channels & PVC pipes to stabilize water flows



Conservation Agreement

Payment schedule of operational cost	In total US\$ 1,100 – 50 percent at inception; 50 percent at two months contingent on performance
Payment as ES reward	Reducing sediments by: <ul style="list-style-type: none">■ 30 percent and above: In Buluh Kapur, US\$ 2,200 or a micro hydropower plant with capacity of 5000 watt to energize the community; In Gunung Sari, 2,000 USD■ 21 to 29 percent: US\$ 850■ 10 to 20 percent: US\$ 550■ less than 10 percent: US\$ 280
Period of contract	One year with monitoring every three months
Cancellation of contracts, if	<ul style="list-style-type: none">■ 50% of contracted activities are not completed at the middle of the contract■ Deliberate destruction of public physical structures (e.g. sediment pits)■ Friction and conflict among community members■ Indication of corruption■ Uncontrollable events such as natural disasters

Benefit sharing

- Village government : 10%
- Mosque administration:10%
- RiverCare Forum Committee: 10%
- Youth group: 5%
- Women group: 5%
- 60% for HHs based on their participation in the program (e.g., attendance in meetings and participation in field activities)



3. Soil Conservation Contracts: an experiment

- RUPES as the artificial buyer of ES for 1 year
- Procurement auctions as an approach to understand
- ✓ farmer behaviors toward conservation and their willingness to accept responsibility as ES provider
- ✓ value ES based on farmers' opportunity costs
- 82 farmers participated the auctions; 34 farmers received contracts covering 20 hectares
- Quarterly monitoring
- Compliance was high in the first year and farmers were paid 160 USD/ha



Why did the scheme work?

2 Principles in P/RES: Fairness and Efficiency

■ **Realistic (Efficiency)**

- ✓ Targeting erosion hot-spots
- ✓ Good knowledge about causes and effects of soil erosion and its solution

■ **Conditionality (Efficiency)**

- ✓ Linking rewards with specific sediment reduction levels

■ **Voluntary (Fairness)**

- ✓ Voluntary involvement of farmers

■ **Clarity in measuring ES -transparency (Fair & efficient)**

- ✓ Participatory water quality monitoring and sediment measurement



What did we learn?

- RES negotiation will succeed if the community
 - ✓ appreciates their opportunity, roles and impacts as ES seller
 - ✓ Understands their bargaining positions based on optimal threat and cooperation with others stakeholders
 - ✓ has well-functioning structure
- Identifying environmental problems, capturing local knowledge and understanding farmers' management options are important steps in initializing R/PES
- Consider heterogeneity (on soils, geology, etc.) & other landscape elements (footpaths, roads, landslides & river bank collapse) in solving landscape problems.



Poverty and Environmental Trade-off



- Targeting hot spots than specifically poor farmers or vice versa (although on average, the income per capita in this area is below \$2/day)
- Outcome based conditionality (high ES benefit) may not be a pro-poor approach due to high uncertainty in ES provision, for example,
 - landslides upstream (forest area) can jeopardize the efforts of the community.
 - if contracts are cancelled without consideration of *force majeure* events that can harm the poor.
- Rewards for ES can only be achieved if there is synergy between natural, human and social capitals

Status, expectations of different stakeholders before 2000

- **Hydro-power dam**
 - ✓ Water quantity: regular flow > 24 m³/s
 - ✓ Water quality: problem on siltation of the lake
- **Farmers** struggle to secure their livelihoods from coffee farming
- **Forestry Department:** wants more forest and more trees in the landscape

Present situation

- **Hydro-power dam**
 - ✓ Increased water quantity
 - ✓ Improved water quality but some rivers still have high sediment levels; need to identify other sources of erosion
- **Farmers**
 - ✓ Improved tenure security
 - ✓ Additional income
 - ✓ More responsible and committed to forest and watershed protection
- **Forestry Department:** Less forest, but more trees
 - ✓ more mixed multi-strata coffee systems in the landscape

The Sumbejaya case is relevant to other developing countries where:

- a. forest contested areas are inhabited by poor people who eke-out a living from small-scale cultivation and extraction of forest resources.
- b. Governments have full control, but have limited capacity to manage forests and watersheds.

Lessons:

- Rewards for ES delivery are a better option than 'eviction' of forest people.
- Educating decision-makers and stakeholders with research-based information can lead to positive actions.
- Rather than coercion, ES provisioning can be secured through negotiated agreements amongst stakeholders based on a shared understanding on the relations between land use and watershed functions as a first step.





Synthesis of knowledge and lessons learned from RUPES

PES Paradigms

CES: Commoditized Environmental Services

- Direct interaction of ES providers & beneficiaries
- Recurrent monetary payments based on **supply and demand**
- **No** explicit poverty target

COS: Compensating for Opportunities Skipped

- Paying for **accepting restrictions**
- Achievement of a **condition** or **effort**
- Poverty target **added** with certain conditions

CIS: Co- Investment in (landscape) Stewardship

- Entrust the local resource management
- Full trust of **management plan & local monitoring** with high **social capital**
- **flexible contract** ,

Proxies,
recurrent

Plans
investment

'Real' ES,
recurrent

Conditionality

RUPES approach

■ Efficiency principle

- Realistic: causal pathways to enhance ES are clear, real opportunity + implementation costs are offset, or benefits outweigh the costs
- Conditional: performance-based contracts, agreed MRV system for monitoring, reporting and verification

■ Fairness principle

- Voluntary: meets the Free and Prior Informed Consent standards; willingness to accept responsibilities
- Pro-poor: at minimum not increasing inequity, attention to gender balance

Can P/RES schemes be pro-poor and provide additional income ?

YES! P/RES can contribute to rural incomes in upstream areas that provide ES if the scheme

1. involves upstream providers who have low population density and /or a small area relative to downstream beneficiaries
2. downstream beneficiaries have relatively higher income than upstream providers; high willingness and ability to pay.
3. provides highly critical and non-substitutable environmental services that are substantial and worth paying;
4. is efficient and has low opportunity and transaction costs

YES, RES can be pro-poor if

- people's perspectives on factors contributing to poverty is properly assessed → portray social, economic and institutional dimensions of poverty
- rewards match people's needs and expectations
- there is recognition and respect of choice by local people

Human capital, social capital and physical capital (non-financial incentives) - are often the most preferred and possible types of rewards

WHAT IS THE RIGHT LANGUAGE?

PAYMENT OR Co- INVESTMENT FOR ES?

- A strict interpretation of realistic, conditional and voluntary PES (or commoditized ES) appeared problematic in most situations.
- Monetary incentives may be counterproductive for public pro-social activities, since it can
 - ✓ undermine existing norms (crowding out effect)
 - ✓ not sufficient and/or durable enough to offset the loss of intrinsic motivation
 - ✓ recurrent payments may be unsustainable
- Replacing the “payment” concept by “co-investment” language appeals to both social and financial concepts.

WHAT DOES A CO- INVESTMENT AND SHARED RESPONSIBILITY ENTAIL?

- “co-investment” and “shared responsibility” is
 - conducive to the type of respect,
 - mutual accountability and commitment to sustainable development with
 - reference to social exchange rather than financial transactions.
- An evolutionary process
After creating a basis of **respect** and **relationships** through the paradigm of CIS there may be **more space** for specific **follow-ups** in the paradigm of CES for **actual delivery of ES** to meet **conservation objectives**.

CONTRIBUTIONS OF P/RES TOWARDS A GREEN ECONOMY & RIO+20

- Negotiations enabled shared and greater understanding of differences in stakeholders' knowledge, preferences and aspirations—aligned to multi-stakeholder engagement and informed decision-making objective.
- Transforming local people from being passive recipients/beneficiaries of interventions, to providers of services, raising their profile in the playing field---aligned to pro-poor objective, through recognition of, and giving voice to poor, marginalized groups, including indigenous peoples.
- Alternative pathway for securing access to land by poor people with 'conditional tenure' as reward for provision of environmental services----aligned to improving access to land and natural resources.
- Alternative route to community/rural development----aligned to principles of adaptive management ,empowerment and rural development
- Incentivising interventions in a negotiated way, promote ownership----aligned to principles of equity, ownership and shared responsibility.



Thank You

More information about RUPES

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