

RUPES: An innovative strategy to reward Asia's upland poor for preserving and improving our environment

The upland poor are often forgotten protectors of the hillsides and mountains that cover almost half of Asia.

Asia's upland poor-often indigenous minorities- manage forested areas that provide environmental services such as clean water and biodiversity conservation that benefit all humanity", says Dr. Dennis Garrity, Director General of the World Agroforestry Centre (ICRAF), based in Nairobi.

"But the upland poor seldom get rewarded or recognized for their efforts in protecting those fragile environments."

ICRAF and its partners hope to change that through an innovative program called RUPES – Rewards for, Use of and shared investment in Pro-poor Environmental Services schemes. RUPES was formed through a funding partnership with the International Fund for Agricultural Development (IFAD), and is coordinated by ICRAF's Southeast Asia Regional Programme, based in Bogor, Indonesia.

The rural poor earn income by harvesting natural resources, such as by cutting rain forests to sell timber, and to clear new farm land," Garrity explains. "But ironically, protecting those environmental resources provides no income".

At least, not yet. RUPES is working with partners on how rewarding upland farmers for their role as stewards of upland landscapes can reduce their poverty while supporting environmental conservation – globally as well as in the Asian uplands."

Environmental Services

Asia's upland poor who comprise almost a fourth of Asia's absolute poor³ inhabit the hilly areas where forests and crops intermingle, and some of the world's last great rain forests. Those ecosystems slow global warming by trapping amounts of carbon from the carbon dioxide and other "greenhouse gases" that cars and factories spew into the atmosphere.

"Agroforestry systems are also a haven for biodiversity" Garrity says. "Plants in the forested areas – many not yet identified – will give us and our children new medicines, foods, and industrial products."

Healthy upland watersheds filter rainwater, to provide clean water for drinking, sanitation, irrigation, and power. They also prevent erosion, landslides, and flooding in the lowlands. And the forest beauty offers ecotourism benefits for ecologists and tourists – which means economic opportunities for poor communities.

But the upland ecosystems- which make life better for all of us - are deteriorating rapidly. Forests are falling to the chain saw. Housing developments, road construction, and ploughs to open new land for farming are forever changing hillside ecosystems. "Jungle rubber" agroforests – reservoirs of plant and animal diversity that also produce large amounts of rubber – are giving way to monoculture plantations or rubber and oil palm. Population and economic pressures force farmers to adopt environmentally unsustainable farming practices such as slash-and-burn agriculture on steep slopes, with insufficient fallow periods to recover the soil's health. The result is erosion, landslides and flooding.

³About 250 million people.

Upland farmers, especially in Asia, been an unfair share of the negative side of development, IFAD has pointed out. They are often victims of economic exploitation because they often lack legal rights to farm, or even love on, the land that they work-much less to pass that land to their children.

Upland farmers seldom have a choice in environmental degradation. Many have no rights to the land, so they have few incentives to protect it. The poorest of the poor; bypassed by economic development and with few livelihood options, often must destroy, or stand by and watch others destroy, the natural resources that feed and sustain their family.

The RUPES Strategy

Environmental services for which upland communities may be rewarded include:

- Carbon sequestration
- Watershed protection
- Biodiversity protection, and
- Landscape beauty

The heart of RUPES strategy is to test a range of methods by which beneficiaries of environmental services can pay upland communities for their environmental stewardship. Also, the program is testing methods and institutional innovations that upland communities need to increase their options for their livelihood by providing recognized and valued services to others.

To make it possible, communities must learn to monitor and measure the environmental services they provide, so they can have greater

knowledge and control in term of "selling" these services to potential buyers.

Rewards to upland communities include development of credit and market infrastructure, providing improved tree and crop varieties, better extension services to promote such agroforest technologies, and direct cash payments.

Helping upland communities determine what rewards and reward mechanisms work best for them is a RUPES priority."

Land tenure can be enabling mechanism or a detriment to providing environmental services.



Carbon sequestration

Greenhouse gases (GHG) in the atmosphere, such as carbon dioxide, methane, and nitrous oxides, allow sunlight to enter the atmosphere freely. But when that sunlight strikes the earth, some heat is reflected back toward space. GHG trap that heat in the atmosphere.

Most environmental scientists agree that increasing levels of GHG cause global warming, which may soon raise the earth's temperature by 1 to 5 degrees Celsius. This could trigger glacier melting, which change the ecosystems of the Himalayas, the Andes, and the lowland regions that depend on them. Melting ice caps may raise sea levels, inundating low coastal regions such as Bangladesh, Mekong Delta, and much of Florida and Louisiana. Several Pacific islands would disappear from world maps. Other impacts of global climate change are several climate change, coastal erosion, increased salinization and loss of coral reefs.

Poor people are especially vulnerable because they depend on the weather for their livelihoods, and they are concentrated in the tropics, where global warming will have the greatest impacts.

The combustion of fossil fuels such as gasoline, diesel and coal for industry and transportation generates about 65% of the GHG. Globally, agriculture, including brush burning for slash-and-burn farming, generates about 20% of the greenhouse gases.

World carbon emissions are 1.1 tons per person yearly. That's high, but emissions are 3.1 t/ha in developed countries, and 5.6 tons in the United States.

The Kyoto Protocol, signed by 180 nations in 1997, commits 38 industrialized countries to cut their emissions of GHG, by 2012, to levels 5.2% lower than in 1990⁴.

Living plants trap and store, or sequester, atmospheric carbon, so their maintenance can help counter global warming. Decomposition and burning of organic matter return carbon to the atmosphere.

Ecosystems differ in efficiency as "carbon sinks". In mature forests, decomposition offsets carbon sequestration. Relatively young forests have the highest rates of net sequestration.

"A hectare of nonproductive cropland or grassland traps no carbon", says Meine van Noordwijk, ICRAF's Global Science Adviser. "But when shifted to agroforestry, that hectare can trap more than 3 tons of carbon."

"Carbon swapping" is a strategy through which companies in industrial countries can help finance projects that traps GHG, such as maintaining carbon sinks through forests, as tradeoff of their own carbon emissions.

Watershed protection

We pay a heavy price for degradation of Asia's upland watersheds. Today, a fifth of the earth lacks safe drinking water, and half lacks proper sanitation.

⁴The Kyoto Protocol has not yet been ratified by enough countries to come into force.

Flooding leaves thousands of people dead, and hundreds of thousands homeless, every year. Property destruction costs billions of dollars. Siltation of hydropower reservoirs makes electricity less reliable, and more expensive. Nutrient pollution threatens the fish, animals, and plants of delicate aquatic ecosystems, and the quality of water that we drink and use for sanitation.

van Noordwijk says, "Forests have three major functions in maintaining healthy watersheds.

"First, forest soils have a high rate of water infiltration, so forests help even out flow of water in rivers and streams. Forests also provide a relatively slow drainage system, with lots of temporary storage of water on its way to rivers."

But we don't need full forest cover to take full advantage of these functions, van Noordwijk points out. "Farmers can grow trees, along with crops, on their farms and the world will have similar benefits."

Clearly, guardians of the watersheds that prevent erosion and flooding, and that ensure abundant and clean water for drinking, sanitation, irrigation, and power, should be rewarded.

Upland communities can market watershed protection through services such as better forest management and protection, and reforestation.

Commodities to market watershed protection include:

- **Water quality credits.** Beneficiaries of reduced sediments, chemicals and nutrients in water may pay the upland stewards with water quality credits through which improve the watersheds and thus, upland people's own livelihoods
- **Watershed protection contracts.** Set payments may be negotiated between watershed protectors and downstream beneficiaries such as hydroelectric plants, water districts, and irrigation systems.
- **Salinity credits.** In areas where excessive salt in the soil is a problem, as in much of Australia, the planting of trees lowers water tables and thus, reduces salinization of surface soils through evaporation. This decreases salinity in runoff water, benefiting both the uplands and the lowland areas that they serve.

18 Biodiversity Conservation

An estimated 24% of the earth's mammal species and 12% of the bird species face a high risk of extinction, according to the Food and Agriculture Organization. Loss of habitat is the main cause of extinction. Tropical deforestation will cause an estimated loss of 5 to 15% of the world's biological species between 1990 and 2020, according to the World Resources Institute.

Impoverished upland communities can act as guardians and stewards for the rich biodiversity of plants, animals, and microorganisms of the forested areas, but the poor communities seldom have the means to support and protect that biodiversity. RUPES is monitoring the emerging trends for markets for the protection of forest biodiversity.

Commodities used to market biodiversity protection services include:

- **Biodiversity business shares.** Commercial businesses that profit from biodiversity may issue shares to pay poor communities for protecting their forest resources.
- **Bioprospecting rights.** Purchasers of bioprospecting rights – to collect and test genetic material from a forest area – could include pharmaceutical and biotechnology companies, and research institutes.

- **Biodiversity credits.** When development reduces biodiversity, developers might be required to offset this damage by issuing credits to enhance biodiversity elsewhere.
- **Biodiversity-friendly products.** Some biodiversity-friendly products bring higher prices than conventional products. This price difference can be applied to biodiversity protection. For example, shade-grown or Bird Friendly coffees, marketed by Smithsonian Institution, are grown organically, under canopy trees. The alternative is “sun coffee” farms, which require large amounts of polluting pesticides and fertilizers.

RUPES: Background, Activities and Developments

- a) **Realistic:** A realistic reward scheme reduces and avoids threats to environmental services that are likely to happen in the absence of further intervention. To make it possible, the benefits of sellers and buyers should be tangible and sustainable.
- b) **Conditional:** A conditional rewards should be able to connect actual environmental services provision with the reward being provided, in a manner that ensures transparency in the conditions determining when rewards can be granted or not.
- c) **Voluntary:** A reward is voluntary when environmental service providers are engaged through free choice rather than regulations. Both sellers and buyers voluntarily agree on the contractual agreements. Thus, increases the bargaining power of both sides.
- d) **Pro-poor:** A pro-poor reward considers equitable impacts on all actors while the design of the scheme is positively biased towards poor stakeholders.

The concept of rewarding people to protect or enhance environmental services that benefit the businesses or the wider population has much potential. The challenge is devising schemes that actually work in practice, and can sustain themselves without ongoing external funding and institutional support from development agencies and NGOs. RUPES is a long-term research program dedicated to developing practical environmental services schemes that can be adapted to work in different countries with different circumstances.

Over five years from 2002-2007, the program's first stage, RUPES 1, built working models of best practices at six research action sites in Indonesia, the Philippines and Nepal., and studies the experiences at another 12 'learning sites' across Asia.

RUPES 1 has had significant achievements with reward schemes for watershed-related environmental services (e.g. water quality and quantity) for hydroelectric power stations and downstreams urban populations. One of the keys was **clearly defining the environmental services, where and how they originated and beneficiaries.**

Also, RUPES 1 identified and begun to constraints to establish schemes such as:

- lack of political will, institutional capacity and supportive legal framework;
- limited financial resources; and
- limited community interest and commitment.

The establishment of independent national networks in Indonesia and the Philippines with members from different backgrounds, pave the way those constraints.

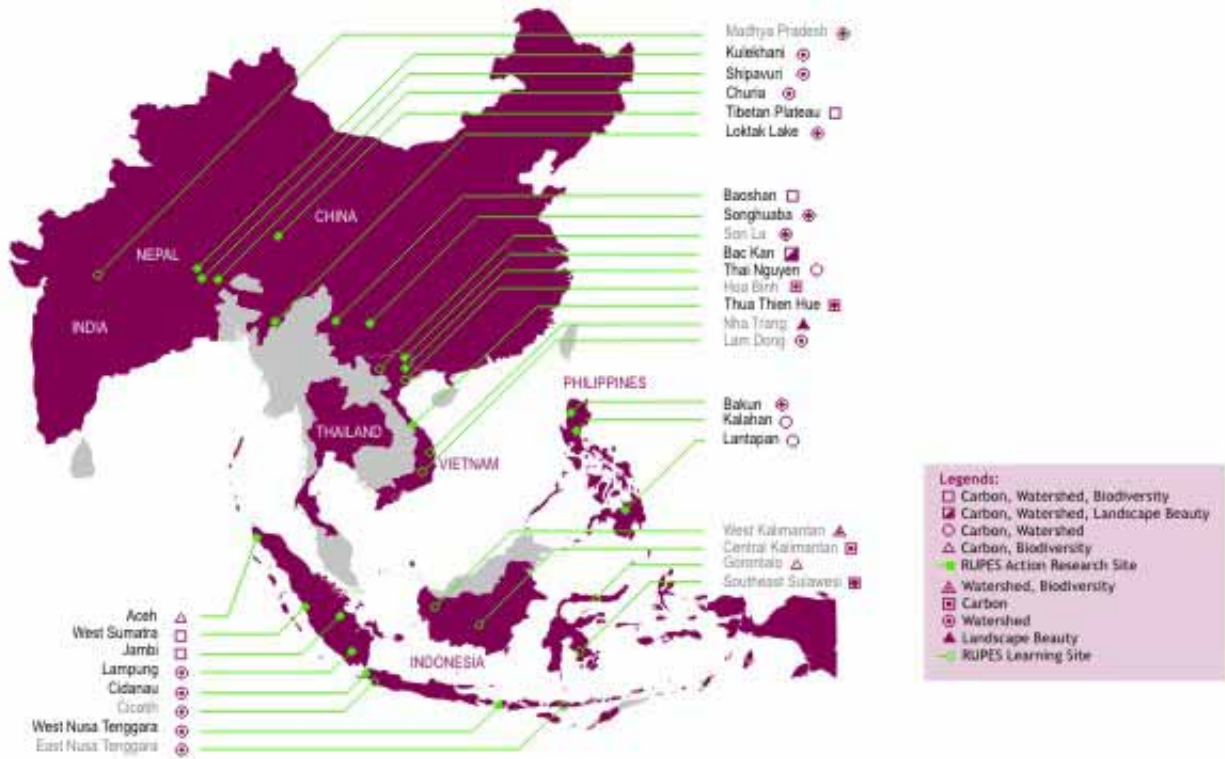
Criteria and indicators were developed to better identify 'realistic, conditional, voluntary and pro-poor' rewards relevant to target seller.

RUPES II

The program is now on its second phase. It will build on the successes and lessons learned in RUPES 1, consolidate its gains and reach out to additional partners for widespread global adoption of rewards for environmental schemes. The research target group is indigenous forest dwellers and small farmers in less productive environments that are vulnerable to environmental degradation and climate change. Among the target activities are:

- **Policy:** Aiming to have significant impact on policies of national partners in China, Indonesia, India, the Philippines, Nepal and Vietnam, and other international partners through integrating environmental services schemes into national economic development and conservation priorities.
- **Government:** Supporting national, provincial and local governments in developing rewards for environmental services. One way is by examining conflicting regulatory jurisdictions as an institutional constraint.
- **Investment:** Testing innovative institutional arrangements for international investment on carbon sequestration schemes, to encourage partnerships with forest-based communities.
- **Buyers and sellers:** Promoting opportunities for buyers to participate in reward schemes while providing technical assistance to sellers in developing their business cases and drawing contracts.
- **Best practice:** Documenting cases of 'good practice' in negotiations to support emerging concepts and global standards for environmental services schemes. The Phase 1 action research sites will become learning centers to assist buyers, sellers and intermediaries, spread exemplary practices across Asia and ensure the sustainability of existing schemes.
- **New rewards:** Testing new options to continue the scoping for financial and non-financial reward mechanisms at community and household levels. The new in-kind rewards and their mechanisms are bio-rights schemes, micro-hydro projects and market access for organic products from well-managed landscapes.
- **New environmental service opportunities:** Bundling local benefits from watershed protection, and global carbon payments should be feasible after the UNFCCC COP13 in Bali in December 2007 resolved that 'demonstration activities' were needed on 'reducing emissions from deforestation in developing countries'. Also, seeking opportunities to facilitate and promote markets for eco-labeled products grown in agroforests and biodiversity-rich areas.

Map of RUPES Action Research and Learning Sites



Cambodia – Exploring new ES reward schemes for the poor

Potentials of PES for the conservation of Sisiphon River, Northwest Cambodia

The conservation area is located in Banteay Meanchey province, northwest of Cambodia. It is an important crossing border with Thailand to Siem Reap province of Cambodia.

The province of Banteay Meanchey is an important area for agriculture particularly for growing rice. Sisiphon River which has a basin area of 4,343 km² is the main source of water which supports the major agricultural production in the province and surrounding areas³. Sisiphon River (see fig 1) is a major tributary of the Great Tonle Sap Lake (as the largest freshwater lake in Southeast Asia and designated by UNESCO Biosphere area as an ecological hotspot). It receives about 1,500 mm of rain per year and the average runoff is estimated at 6,590 m³/s .

In the last 30 years, the area is dominated by agricultural landscapes; however, there are some inaccessible areas due to presence of landmines. While majority of the farmers and fishermen are Khmer, there are minority groups coming from Laos.



Figure 1. Map of Cambodian River

³http://www.wepa-db.net/policies/state/cambodia/river2_2_4.htm

Meanchey University, a newly established university (in 2007) and located along the Sisophon River, initiated the fish conservation effort by protecting the 200 m² long river area for breeding fish stocks. In 2009, the government official of Banteay Meanchey, H.E. Oung Oeurn, the University Rector Tauch Choern and the fish authority formally designated the area as protection area for breeding fish stocks. The purpose of this effort is to provide fish stocks for the fishermen living around the area and to the Tonle Sap Lake. At the same time, the University needs technical assistance to address the threat to the survival of the fish stocks in the river, since farmers from the upper area of the river heavily used inorganic pesticides and fertilizers. Once established, the area is aimed to be an eco-tourism site for fish conservation.

Other potential sites for new PES schemes

Ecotourism. Cambodia is endowed by majestic landscapes and waterscapes aside from its majestic Buddhist temples. The Cambodia Community-Based Ecotourism Network (CCBEN) is a network of local communities, non-governmental organizations, academic institutes and private companies who are working closely with ecotourism. It aims to support, promote and advocate for this unique style of tourism in order to conserve natural and cultural resources, to protect environment and to raise sustainable wellbeing of the local communities across the country. Website: www.ccben.org

Sustainable Land Management (SLM). The National Action Program (NAP) of Cambodia will identify good practices for farming that will enhance the environmental services in the agricultural landscape. The Ministry of Agriculture, Forestry and Fisheries (MAFF)/UNDP/GEF project will provide capacity building and mainstreaming actions at local level through:

- Improvement of knowledge and practical skills on SLM among rural communities and local government technical support agencies;
- Further strengthen enabling policies and improve knowledge sharing among stakeholders; and
- Effectively mobilize limited national and local resources to support SLM.



