Payments for Ecosystem Services

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Ecosystem Services enhance Human Well-being.
How valuable are ecosystem services?

Indicative Estimates:

- Annual economic value of global ecosystem services estimated to be around US$33 trillion (Costanza et al. 1997)
- Fish catch worth approximately US$58 billion annually
- Herbal medicine market generates almost US$ 43 billion/year
- Pollination by honey bee for agriculture worth about US$ 2-8 billion/year (UNEP 2007)
Ecosystem Services are declining...

More than 60% of the environmental services are degrading faster than they can recover (MEA 2005).

Population index of species
Source: CBD 2006 p.25
Sustainable resource management pays!

Net Present Value in dollars per hectare

Vital to shift from unsustainable to sustainable resource mgt

Source: MEA 2005, p.10
Sustaining Ecosystem Services entails substantial costs.

- US$8-10 billion invested annually in biodiversity conservation globally,
- US$28 billion may be required annually over the next 30 years to expand IUCN priority habitats to 10% of the area of all countries,
- Protection investment could yield US$5 trillion value in protected areas → benefit-cost ratio of 100:1!
- Costs of conservation vary widely (US$ 0.01 per hectare/yr in remote areas up to US$ 1,000 per hectare/yr in densely populated areas) (TEEB 2008).

Measures are needed to spur investments in sustaining ecosystem services and conserving biodiversity.
Payments for Ecosystem Services (PES):
What They Are, What They Do

- Economic instrument to provide incentives to land users (resource stewards) for their conservation activities, on behalf of service beneficiaries (FAO, 2008).
- Reduce degradation of ecosystem services by rewarding conservation activities in areas where ecosystem values are high.
PES: Key Action Pillars

• **Identify** Ecosystem Services (ES) and potential buyers in a particular area.

• **Estimate** economic value of ES and assess capacity of different stakeholders for designing fair and efficient agreement.

• **Manage** (with a policy or market mechanism to capture this value), and reward people for conserving ecosystem services.

Co-benefits for Biodiversity Conservation & Human Welfare

WIN-WIN!
PES: Economic Tools

1. **Direct Public Payments**
   - Governments pay land owners

2. **Direct Private Payments**
   - Private organizations pay landowners

3. **Tax Incentives**
   - Individuals receive tax breaks from government

4. **Cap-and-Trade Markets**
   - Government or regulatory body sets a limit in a given area and controls individual activities

5. **Voluntary Markets**
   - Businesses or individual consumers engage in voluntary markets

6. **Certification Programs**
   - Consumers buy environmental products
Comparing PES to other conservation approaches
Source: Developed from Wunder 2005 p.6
Types of Payment Mechanisms:
Some Illustrations

- Land Acquisition
- Beneficiary Payments
- User Fees
- Farm Land Support Systems
- International Financing
- Cap and Trade Mechanisms
# Land Acquisition

Purchase of biodiversity-rich land to prevent conversion to industrial or housing use

## Acquisition by Government

<table>
<thead>
<tr>
<th>Lake County, Florida, USA</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ County prepared US$36 million in bonds for the acquisition,</td>
</tr>
<tr>
<td>▪ Citizens can sell high-valued lands to the county,</td>
</tr>
<tr>
<td>▪ The county protects land and water through providing recreation areas.</td>
</tr>
</tbody>
</table>

## Acquisition by Private Entity

<table>
<thead>
<tr>
<th>BP’s Cooper River plant in South Carolina, USA</th>
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<tbody>
<tr>
<td>▪ BP uses 450 acres for its plant; reserves 5,550 acres for conservation purposes,</td>
</tr>
<tr>
<td>▪ Site certified by Wildlife Habitat Council; more than 10 thousand people participated in environmental activities.</td>
</tr>
</tbody>
</table>

→ **Conservation entails high costs; requires capital funds**
Beneficiary Payment Scheme

Costa Rica’s Pioneering PES Program

Hydroelectric power producers and water bottlers (beneficiaries of water-related ecosystem services) pay for watershed protection by upland residents.

<table>
<thead>
<tr>
<th>Company</th>
<th>Watershed</th>
<th>Area Covered (Hectares)</th>
<th>Payments for Conservation (US$/ha/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydroelectric Power Producers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energia Global</td>
<td>Rio Volcan</td>
<td>2,493</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Rio San Fernando</td>
<td>1,818</td>
<td>10</td>
</tr>
<tr>
<td>Platanar S.A.</td>
<td>Rio Platanar</td>
<td>1,400</td>
<td>10</td>
</tr>
<tr>
<td>La Manguera S.A.</td>
<td>La Esperanza</td>
<td>3,000</td>
<td>10</td>
</tr>
<tr>
<td>Water Bottlers:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida Ice &amp; Farm</td>
<td>Rio Segundo</td>
<td>1,000</td>
<td>42</td>
</tr>
</tbody>
</table>

Source: FONARIFO, Costa Rica
User Fee Scheme  ▪  Forest Protection

**Mt. Rinjani in Lombok Island, Indonesia (WWF):** Villagers who use water from mountains pay for reforestation costs (Water spring support)

<table>
<thead>
<tr>
<th><strong>Background</strong></th>
<th>The forests in the region provide up to US$50 million ES to agricultural sector, supply $14 million for domestic water, and they also promote tourism industry.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organizer</strong></td>
<td>WWF</td>
</tr>
<tr>
<td><strong>Buyer</strong></td>
<td>Nearly 43 thousand households</td>
</tr>
<tr>
<td><strong>Payment</strong></td>
<td>Inhabitants pay up to US$0.60 per month for provided services.</td>
</tr>
<tr>
<td><strong>Provided services</strong></td>
<td>Conserve watershed forest</td>
</tr>
</tbody>
</table>

Indirect payment (not for water itself) - beneficiary/use payment principle, low cost through community participation; requires designing and consensus building skills and management capacity.

User Fee Scheme  ▫
Marine Biodiversity Protection
*(Satoyama is about seascapes too!)*

**Mabini & Tingloy municipalities (aka Anilao) in Batangas province, Philippines (WWF)**

- Prime scuba diving area closest to Manila
- Recreational divers required to pay PhP100 ($2)/day or PhP1,800 ($36) for an annual pass, which allows access to all Anilao dive sites
- Collected funds are split between the two municipalities; independently managed to support costs of conservation efforts
Farm Land Support Systems

Rice terraces owner system in Kohshoku City, Nagano, Japan

Call for supporters

- Lease the land
- Receive land rental fee
- Pay ¥30,000 (about US$ 280)/10acre/year and join farm works for 4 times a year

Kohshoku City

Land owner

Coordinators (Local farmers)

Supporters (mainly people residing in cities) holding cultivating rights

- Train supporters on farming practice
- Exchange of knowledge

Open up the farm to city residents and share yielding

Pay ¥30,000 (about US$ 280)/10acre/year and join farm works for 4 times a year

Partnership between farmers and city workers with limited direct returns. Satisfaction from farming activities and supporting rural landscape management.
International Financing (for Forest Carbon Management)

Forest Carbon Partnership Facility (FCPF) by World Bank

- Commenced in 2008 with the announcement on UNFCCC/COP13 in Bali,
- Finances efforts by developing countries to conserve forests and to halt illegal logging
- Now helping 37 developing countries especially for projects on Reducing Emissions from Deforestation and Forest Degradation (REDD),

International funding unlikely to persist in the long term; need to move to long-term funding mechanism.
Cap and Trade Mechanisms

- Fishing permits, CDM (carbon trade), water use permits, tradable pollution permits...

New Variation:

**Green Development Mechanism (GDM)**

Obtain credits from conservation or restoration practice that can be used as offset, or sold/purchased

- Can create concrete and on-going source of finance for biodiversity,
- Generate a well-defined set of suppliers of biodiversity,
- Match-up demand and supply in a structured framework,
- Monitor and enforce the agreement to maintain biodiversity (Mullan and Swanson 2009).

Concept already developed, but needs further elaboration for practical application.
Desirable Features for PES Mechanisms

- Decentralization
- Flexible mechanisms
- Tap private sector as provider of public services
- Appropriate design to address biophysical and socio-economic contexts
- Promote corporate self-regulation
- Uphold consumer sovereignty
- Civil regulation (FAO 2007).
Observations on PES

- Provides useful framework for providing economic incentives to sustain ecosystem services,
- Current efforts still tend to focus on short term benefits; underestimate long term sustainability
- Limited social capacity to assess cost and benefits of ecosystem & biodiversity conservation
- Social considerations important in design of PES, as relation between ES providers & beneficiaries is complex.
- Needs to be designed to protect interests of the poor, who are most vulnerable to environmental degradation
Recommendations

• Design PES to achieve multiple objectives of biodiversity and ecosystem conservation, poverty reduction, food/fuel/income provision, and improvement of human well-being
• Undertake further research to examine PES mechanisms and their impacts
• Support pilot projects to experiment with more innovative applications of PES
• **Satoyama Initiative** should feature support for above research and pilot projects
• Build upon existing mechanisms and networks for undertaking activities under **Satoyama Initiative**
Thank you
Terima kasih