Valuation of Ecosystem Services Overview

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Why ES are so important?

- Because they are the roots of multiple socio-economic activities
- Activities that respond to human needs
Why ES are so important?

4 categories of ES

Supporting
Provisioning
Regulating
Cultural
What is the problem?

• Failure to measure the ES values
  • Default value of zero in forest management decision

Is there a solution?

• Economic valuation of ES
  • Process of assigning the monetary values to ES

• Benefit-cost analysis
  • Requires a common unit of measurement
For what ES valuation could be helpful?

- Establish national policies or budget
- Develop economic and fiscal incentives
- Improve management decision-making
- Assess cost-effectiveness of investments
For what ES valuation could be helpful?

• Highlight economic contribution of ES to human needs and society development

• Support alternative financing mechanisms to enhance ES preservation

• Identify and evaluate trade-offs
What are the challenges?

• Use the right substitute or the good question
• Getting the right prices for ES
• Providing sufficient incentives
• Address equity effects
  • Intergenerational
  • Intragenerational
Example: Payments for environmental services (PES)

A voluntary transaction where ...

A well-defined ES

Is being bought by a ES buyer

From a ES provider

If and only if the ES provider secures ES provision

PES
Example: REED+ in Panama

- Showing benefits of embracing sustainable forestry in Panama.

<table>
<thead>
<tr>
<th>Service</th>
<th>Minimum value</th>
<th>Average value</th>
<th>Maximum value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timber provision without SFM ** (not per year)</td>
<td>266</td>
<td>419</td>
<td>572</td>
</tr>
<tr>
<td>Timber provision with SFM *</td>
<td>162</td>
<td>255</td>
<td>348</td>
</tr>
<tr>
<td>Fuelwood provision *</td>
<td>-</td>
<td>111</td>
<td>-</td>
</tr>
<tr>
<td>NTFP provision *</td>
<td>6</td>
<td>16</td>
<td>42</td>
</tr>
<tr>
<td>Pharmaceuticals provision *</td>
<td>0.1</td>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td>Water regulation in the Canal watershed *</td>
<td>-972</td>
<td>-25</td>
<td>2462</td>
</tr>
<tr>
<td>Water regulation outside of the Canal watershed *</td>
<td>-269</td>
<td>-41</td>
<td>682</td>
</tr>
<tr>
<td>Soil fertility *</td>
<td>-</td>
<td>490</td>
<td>-</td>
</tr>
<tr>
<td>Sedimentation control in the Canal watershed *</td>
<td>46</td>
<td>76</td>
<td>106</td>
</tr>
<tr>
<td>Sedimentation control outside of the Canal watershed *</td>
<td>40</td>
<td>70</td>
<td>100</td>
</tr>
<tr>
<td>Pollination *</td>
<td>0</td>
<td>0.3</td>
<td>151</td>
</tr>
<tr>
<td>Carbon Storage ** (not per year)</td>
<td>1,068</td>
<td>3,224</td>
<td>7,784</td>
</tr>
<tr>
<td>Ecotourism in protected areas *</td>
<td>15</td>
<td>-</td>
<td>16</td>
</tr>
</tbody>
</table>

*US$/ha/yr  ** US$/ha

Green = Low uncertainty
Yellow = Medium uncertainty
Red = High uncertainty
Example: REDD+ in Zambia

Figure 1: Spatial distribution of the aggregate value of forest ecosystem services (US$ per ha per year)

Benefits of forest ecosystems in Zambia and the role of REDD+ in a green economy transformation
Example: REDD+ in Cameroon

- Around Mount Cameroon
- Initiative aims:
  - To reduce forest loss and increase forest carbon stock
  - By offering support for people who depend on forest
  - To leverage alternative economic opportunities

(Sills and al. 2014)
Example: Voluntary Carbon Markets

In Africa, voluntary buyers have shown interest in supporting:

- Avoided deforestation
- Cookstoves
- Pro-poor projects

(Hamrick and Goldstein, 2015)
Example: Voluntary Carbon Markets

Figure 7: Cumulative Value and Average Price of Top 7 Project Types, 2007-2014

- **Avoided deforestation**: $442 M, $5.2/t
- **Wind**: $384 M, $4.6/t
- **Landfill methane**: $285 M, $5.9/t
- **Hydropower**: $170 M, $4.1/t
- **Tree planting (A/R)**: $270 M, $7.7/t
- **Clean cookstoves**: $162 M, $10.2/t
- **Forest Mgmt.**: $113 M, $8.4/t

Notes: Based on 412 MtCO$_2$e of transacted offsets associated with a project type, 2007-2014.
Conclusion

Social, economic, cultural and political framework

International framework

Short, medium and long-term impacts

Economic perspective sheds light on the decision-making process

Intergenerational equity

Intragenerational equity = complexity

Multiple actors = complexity


